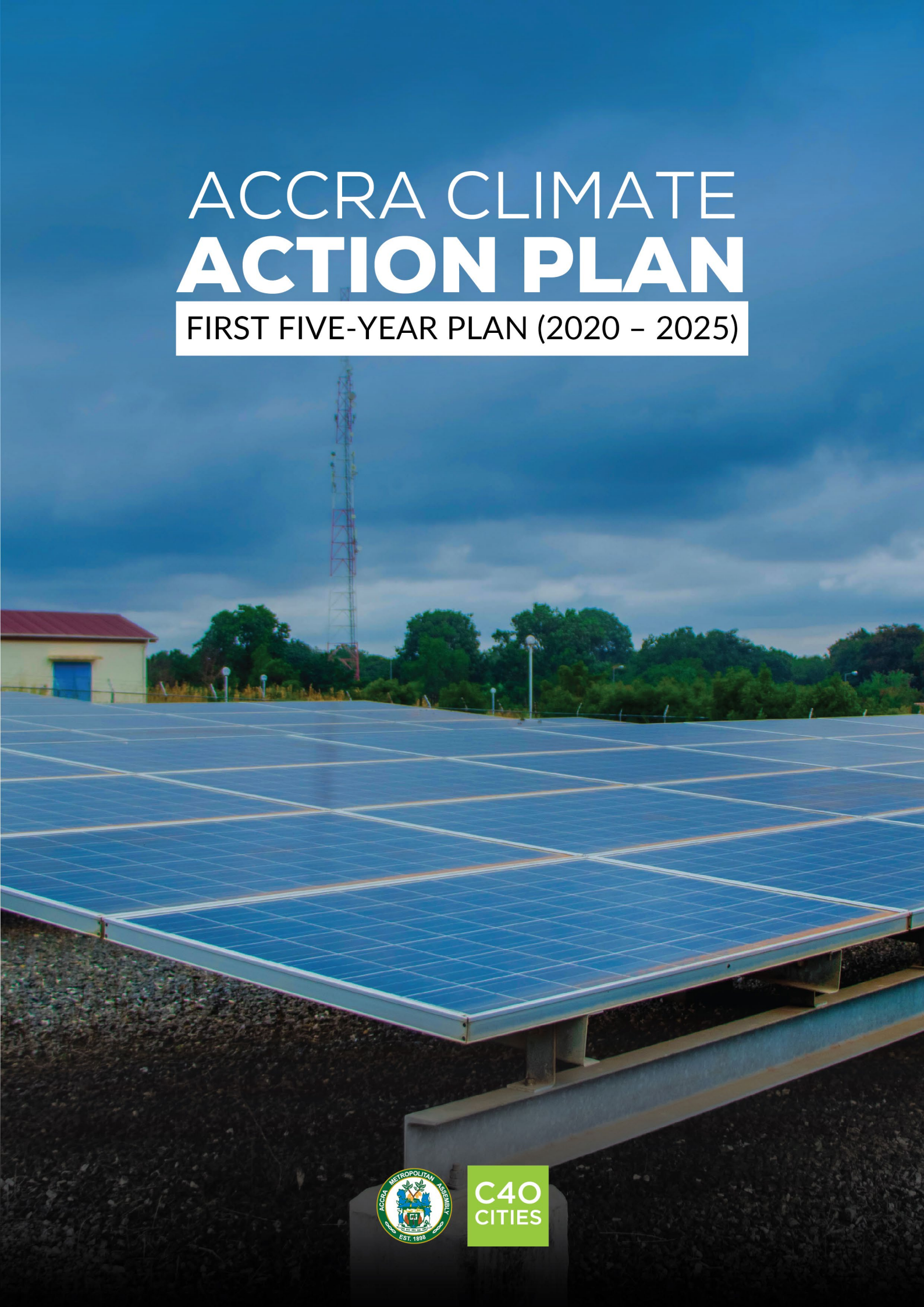
ACCRA CLIMATE ACTION PLAN

FIRST FIVE-YEAR PLAN (2020 – 2025)



FROM THE MAYOR

MOHAMMED ADJEI SOWAH
MAYOR OF ACCRA

Since 1877, when it became the capital of Ghana, the city of Accra has always offered an environment for thriving economic growth and a welcoming embrace for all. The city has grown from its early fishing roots to become the most cosmopolitan area in Ghana–home to the Pan African movement, a thriving center for art and an inspiration for innovative thinking and actions.

Once again, the ingenuity of the citizens and people of Accra has been called upon to play a part in addressing a major challenge of our time: climate change. It is a threat that has the potential to undermine the gains that humanity has made over the years; it puts our way of life as well as our very survival at risk.

Climate change is no longer a debatable issue: the time to act is now. The global authority on climate science, the Intergovernmental Panel on Climate Change (IPCC), warned in its Special Report on the impacts of global warming of 1.5°C, of the dire implications of even a small rise in temperature. The vision in Agenda 2063: Africa We Want is a clarion call by the African Union leadership to galvanize the whole continent to focus on a common goal of sustainable and inclusive development. This vision reiterates the need for collective responsibility to assure our common good. Cities are home to over 55% of the world's population and global south cities are projected to witness the fastest growth in urbanization in this century. As cities grow rapidly, they are increasingly becoming the hub for taking more robust and ambitious actions to be able to withstand change and assure residents and citizens of improved quality of life.

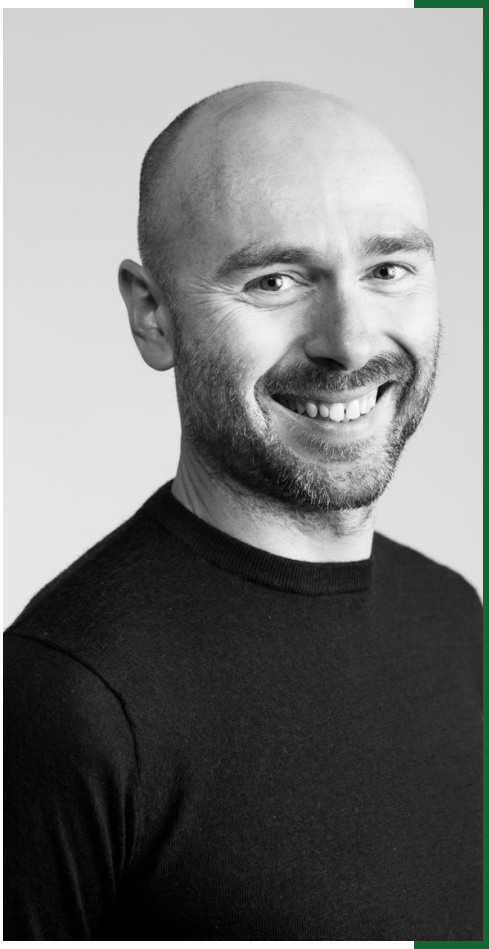
Responding to the global call to action; this Plan maps out the path that Accra's city government, citizens and businesses must take to achieve transformational action to deliver an emissions neutral and climate resilient city by 2050, consistent with the objectives of the Paris Agreement.

Our focus is on high impact, feasible actions with inclusive benefits to drive down our greenhouse gas emissions whilst preparing the city to adapt to the changes in climate that are projected.

Whilst finalizing the CAP, the world has witnessed a public health crisis which has impacted all facets of our way of life. Covid-19 (the pandemic) has taken the world by storm and proven that we are indeed in a global village where one city's challenge can rapidly impact all others. The pandemic gave no warning and our abilities to adequately prepare, and to act to forestall it was limited. Climate change has given us ample warnings and signs, and this CAP is a testament to Accra's determination to act as a responsible global citizen.

Accra is committed to leading in this quest to take action.

FROM C40 CITIES



MARK WATTS
EXECUTIVE DIRECTOR
C40 Cities Climate Leadership Group

Translating the ambition of the Paris Agreement into action on the ground is the aim of C40's Deadline 2020 programme. The City of Accra is the second C40 city in Africa to publish a climate action plan following its participation in a pilot program designed for cities that have the potential to deliver on environmental and conservation challenges as a part of their development goals.

Accra's ambitious plan sets out how the city will take action to help to limit global temperature rise to 1.5°C above the average pre-industrial temperature, and to protect its people and systems from the impacts of climate change that are already locked in as a result of historical emissions.

The twenty priority actions outlined in this plan have been prioritized through participatory workshops, drawing on the best available scientific climate evidence, and the actions have undergone extensive review by our C40 global experts. The result is an action plan that has transformational potential, when implemented, to see Paris Agreement-level ambition as action on the ground.

Accra's ability to sustain momentum through the global pandemic demonstrates exceptional perseverance. As many nations and cities reel from the loss of life and economic impacts of the pandemic, this plan can be seen as a green economic stimulus package, given that it outlines ambitious initiatives in key sectors and public services – transportation, waste, energy, and physical planning.

I would particularly like to acknowledge and appreciate Mayor Mohammed Adjei Sowah's strong and dedicated leadership on climate change, including in his role as a Vice-Chair on C40's Steering Committee, representing the Africa Region. The Mayor's contribution on the Steering Committee and in conversations with C40' Chair, Mayor Garcetti of Los Angeles, ensure the Africa region's voice is heard and has an impact on the strategic direction of C40 and the services it provides to cities, particularly those in the Global South.

C40 looks forward to continuing to work with the Accra Metropolitan Assembly, to learn from its journey, and to work together to achieve the ambition set out in this groundbreaking plan.

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*Lighthouse at Jamestown, British Accra

EXECUTIVE SUMMARY

Ghana is becoming increasingly urbanized, with close to 65% of the population expected to live in cities by 2050. Ghana's Environmental Protection Agency (EPA) has reported that the average temperature of the country has already increased more than 1°C since 1960, and heat-related mortality is estimated to increase by a factor of five by 2080.

The Paris Agreement, to which the Government of Ghana is a signatory, has set a target of limiting the global increase in average temperatures to 1.5°C above pre-industrial levels. At the national level, Ghana has committed to unconditionally reducing greenhouse gas emissions by 15% by 2030, and by 45% by 2030 if certain conditions are met, compared to a business-as-usual scenario. The National Adaptation Strategy also aims to enhance the country's adaptive capacity and to increase the resilience of vulnerable communities to climate-related risks.

Ghana's capital city, Accra, is the largest population center and the country's economic hub. The Accra Metropolitan Assembly (AMA) has developed a Climate Action Plan (CAP), which is the first of its kind to be prepared at a sub-national level. The Climate Action Plan builds on national climate policies and aligns with Ghana's Sustainable Development Goals. The Plan identifies a range of actions that, once implemented, will achieve significant greenhouse gas emissions reductions, improve quality of life, create green jobs and set the city on a path towards climate resilience and carbon neutrality by 2050.

Even if emissions worldwide are stabilized soon, global warming and its effects will last many years, and adaptation is necessary even with current emissions lock-in. As a result of global greenhouse gas emissions that are heating the world, Accra is expected to experience more intense storms and floods, rising surface temperatures, and sea level rise and storm surge.

If the world follows a worst-case greenhouse gas emissions scenario (RCP 8.5), by 2050, the city of Accra could be experiencing:

- An additional 21 days per year of temperatures exceeding 40°C
- Accra's waterfront could lose an additional 150 meters of coastline due to a rise in sea levels of 20 cm
- Rainfall projections are uncertain, so it is safe to prepare for more extreme rainfall patterns – fewer months per year with "normal" rainfall, and more extreme periods with exceptionally high rainfall or no rainfall at all (drought conditions)

If the world aggressively reduces greenhouse gas emissions and achieves a 1.5°C pathway by 2050, climate impacts will still be felt in Accra, but will be less extreme than those outlined above. The Climate Action Plan presents actions that will aid Accra's ability to adapt to the societal, economic and environmental changes that result from climate change.

To address the causes of climate change, the Climate Action Plan has used a city-scale greenhouse gas emissions inventory to build an understanding of how emissions are being generated in Accra and to predict the potential trajectories of these emissions into the future, both with and without interventions. This data was used to prioritize climate actions that offer the greatest potential for reducing forecasted greenhouse gas emissions (carbon dioxide, methane and nitrous oxide).

The first city-level GHG inventory for Accra was published in 2019, for the baseline year of 2015 (the year for which data was collected). The inventory used an international standard tailored for urban areas, which meets Intergovernmental Panel on Climate Change (IPCC) requirements.

Temperatures will continue to rise

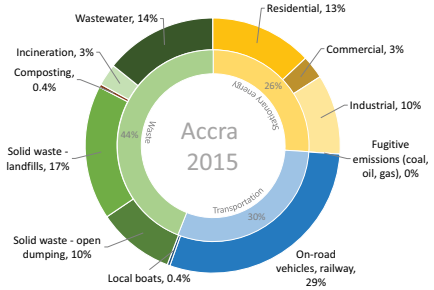
Accra currently has an average temperature of 26.3°C and its estimated temperatures have increased by 1°C since 1960.

By 2050, the picture could look very different...

	2050 RCP 2.6	vs. RCP 8.5
Average annual temperature	+1.4°C	+1.9°C
Number of Hot Days (Tmax > 35°C)	+31	+50
Extremely Hot Days (Tmax > 40°C)	+10	+21
Rate of evapotranspiration	+2.5%	+5%

Observations and projections for temperature

In 2015, the waste sector emitted the highest share of greenhouse gas emissions in Accra



Emissions results by sector and sub-sector in Accra (2015 inventory year)

Accra Climate Action Plan

According to the greenhouse gas inventory, Accra generated a total of nearly 2.4 million tonnes of carbon dioxide equivalent[1] (tCO_2e) in the year 2015. On average, a person residing in Accra would emit about 1.2 tCO_2e per year. Most emissions in Accra (44%) were generated due to solid waste and wastewater treatment, followed by transportation (30%) and finally stationary energy (26%). The 2015 baseline greenhouse gas profile was then modelled to 2050, accounting for changes in population and economic growth – termed the "business-as-usual" or "BAU" scenario

The business-as-usual scenario indicates that, if no climate actions are taken, Accra's emissions will triple by 2050. Through this Climate Action Plan and subsequent revisions, Accra aims to reduce emissions by 27% below business-as-usual by 2030, to further reduce emissions by 46% by 2040 and attain a 73% reduction by 2050. Achieving the proposed emission reduction targets will require ambitious action in all sectors, including by actors outside of AMA, in particular the national government and the private sector.

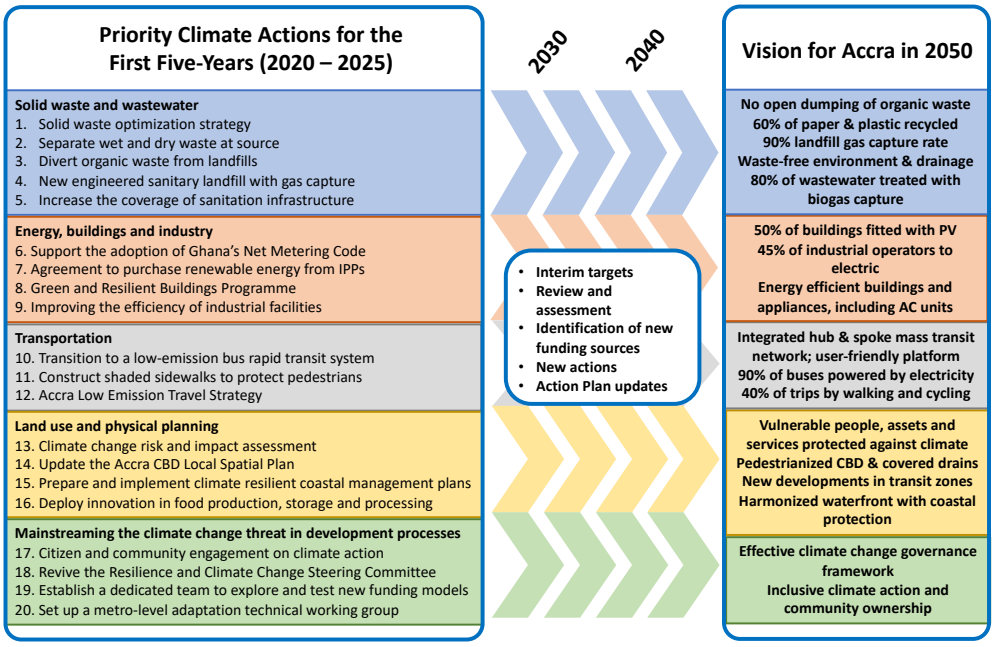
Year	Projected emissions without intervention (BAU) (tonnes CO2e/year)	Emissions reduction targets (% emissions reduced below BAU)	Total GHG emissions if targets are achieved (tonnes CO2e/year)
2015	2,405,522	Current emissions level	2,405,522
2030	4,350,472	↓ 27%	3,156,675
2040	6,309,550	↓ 46%	3,470,253
2050	9,184,537	↓ 73%	2,498,545

To tackle climate change, this Climate Action Plan identifies the most important focus areas for policymakers, planners, citizens, business owners and entrepreneurs to adapt to changes already locked into the climate and environment, and to reduce emissions.

The Plan sets out a series of priorty actions to be implemented between 2020 and 2025, which will set the city on a pathway towards resilient and sustainable development in 2050.

The priority actions for the first 5 years were identified by comprehensively reviewing existing national, regional and AMA-level policies and plans, using scenario modelling for evidenced-based decision-making, and obtaining key stakeholder input to directly link actions to immediate needs. Actions apply to solid waste and wastewater, energy, buildings and industry, transportation, land-use and spatial planning, and a number of measures aimed at mainstreaming the climate change threat into development processes over the next five years.

Actions taken in the next 5 years will put the city on a path toward low emission climate resilient development by 2050



Priority climate actions for the next 5 years and Accra's vision for 2050

1 Carbon dioxide equivalent or tCO_2e is calculated by converting the different greenhouse gases into their equivalent carbon dioxide value. For example, according to the IPCC, methane (CH_4) has a global warming potential equal to 28 tonnes of CO_2, so 1 tonne of methane is multiplied by 28 to convert it into its carbon dioxide equvalent value.

Priority Climate Action for the First Five-Year Plan		Timeframe					
		2021	2022	2023	2024	2025	Beyond 2025
Solid waste and wastewater							
1	Solid waste optimization strategy	▶	▶	▶			
2	Separate wet and dry waste at source	▶	▶	▶			
3	Divert organic waste from landfills	▶	▶	▶	▶	▶	
4	New engineered sanitary landfill with gas capture	▶	▶	▶	▶	▶	▶
5	Increase the coverage of sanitation infrastructure	▶	▶	▶	▶	▶	▶
Energy, buildings and industry							
6	Support the adoption of Ghana's Net Metering Code	▶	▶	▶			
7	Agreement to Purchase Renewable Energy from IPPs	▶	▶	▶	▶	▶	▶
8	Green and Resilient Buildings Programme	▶	▶	▶	▶	▶	▶
9	Improving the efficiency of industrial facilities	▶	▶	▶	▶	▶	▶
Transportation							
10	Transition to a low-emission bus rapid transit system	▶	▶	▶	▶	▶	▶
11	Construct shaded sidewalks to protect pedestrians	▶	▶	▶	▶	▶	
12	Accra Low Emission Travel Strategy	▶	▶	▶	▶	▶	▶
Land use and physical planning							
13	Climate change risk & impact assessment	▶	▶	▶			
14	Update the Accra CBD Local Spatial Plan	▶	▶	▶			
15	Prepare and implement climate resilient coastal management plans	▶	▶	▶	▶	▶	
16	Deploy innovation in food production, storage and processing	▶	▶	▶	▶	▶	
Mainstreaming the climate change threat in development processes							
17	Citizen and community engagement on climate action	▶	▶	▶			
18	Revive the Resilience and Climate Change Steering Committee	▶					
19	Establish a dedicated team to explore and test new funding models	▶	▶	▶	▶	▶	
20	Set up a metro-level adaptation technical working group	▶	▶				

Implemention of the Climate Action Plan will be financed through various sources, including AMA's internally generated funds, support from the national government, global climate finance project proposals, and private sector investments and partnership.

The Climate Action Plan has been developed through a program of stakeholder engagement and is underpinned by three core principles: inclusivity, participation and ownership. These principles are the basis for engaging and promoting the actions and initiatives identified in the Climate Action Plan for implementation.

This Plan will periodically be revised and updated in the future, in sync with the Government of Ghana's Nationally Determined Contributions.

*SDG Triangle,
Accra Central Business District

1 CLIMATE ACTION IN CONTEXT

1.1 Why is Accra acting on climate?

Global temperatures have already risen 1°C

There is now broad consensus that human activities are resulting in a warming climate, and these changes are considered to represent the single biggest long-term threat facing mankind. According to recent reports by the world's leading climate science body, the Intergovernmental Panel on Climate Change (IPCC), global warming will already reach 1.5°C of warming between 2030 and 2052, at current rates. Exceeding the 1.5°C global warming limit set out in the Paris Agreement, even if only temporarily, will lead us into a highly uncertain world, pushing natural and human systems beyond limits of adaptation and into an uncertain future.

Temperature rise is resulting in impacts to our way of life

Global warming has been found to result in direct physical consequences, such as rising temperatures, extreme heat waves, rising sea levels, and an increase in heavy precipitation, and indirect consequences, including increasing hunger, water crises and health risks, economic disruption, the spread of pests and pathogens, loss of biodiversity, ocean acidification, and challenges associated with the need to adapt to these ongoing changes.

Greenhouse gas emissions are still rising

In spite of these known consequences, greenhouse gas (GHG) emissions continue to rise. Global south countries are pursuing the same development path as more economically developed nations, with rapidly increasing populations and urbanization rates, and are set to emit more GHG emissions. Current projections indicate global GHG emissions will continue to rise, with catastrophic impacts, unless bold actions are taken very soon to change the paradigm of development to assure sustainable growth and prosperity without compromising the environment.

In light of these issues, the Paris Agreement has set a target of limiting the global increase in temperatures to 1.5°C above pre-industrial levels and outlines a global framework to avoid dangerous climate change by limiting global warming, strengthening countries' ability to deal with the impacts of climate change and supporting them in their efforts.

*Artist: Moh Awudu
Name of painting: Accra Will Rise Again

An effective climate change strategy will support wider benefits for the city

Ghana's urban population has more than tripled over the last three decades, and although this urbanization has contributed to the country's economic growth, it has also created challenges for urban centers. Accra faces a range of socio-economic pressures, including limited access to services, a need for much more affordable housing, high unemployment rates, air pollution and traffic congestion. Currently, 58% of the population live in informal housing and there is. an estimated backlog of at least 300,000 houses By 2050, 65% of Ghana's population are expected to live in cities, with Accra Metro being the largest contributor to growth. This growth will create opportunities for the city, but will also place further strain on the its healthcare and education systems, housing stock and transport networks.

This climate action plan (CAP) will support the implementation of actions that both reduce GHG emissions and offer a variety of benefits for the city of Accra. Actions over the next 5 years aim to support the local economy through the creation of jobs, the provision of access to new skills and training opportunities and the development of new markets across a variety of sectors. The package of actions will enable investments and improvements to clean energy access, clean water and sanitation, and sustainable housing practices. The actions will also achieve environmental improvements in the city and the wider area, including a reduction in pollutant emissions from transport, energy, industrial and waste sources, which will support Accra's aim of complying with the recently introduced air quality standards. Improvements in emissions to air and water will also contribute to the city's public health, water quality and biodiversity objectives.

Accra is helping to prevent global warming beyond 1.5°C

Contributing to the achievement of the Government of Ghana's national contributions to the Paris Agreement, outlined in the next section, this climate action plan (CAP) sets out Accra's plan for a carbon neutral, climate resilient and inclusive city by 2050, with ambitious 2030 and 2040 medium-term targets and a 5-year plan for immediate action.

The CAP was developed through a program of stakeholder engagement, involving representatives from Accra's administrations, other Metros in Greater Accra, national government ministries, NGOs, community groups and private sector organisations. The CAP aims to ensure ongoing inclusivity and ownership of the city's actions on climate change by all these stakeholder groups.

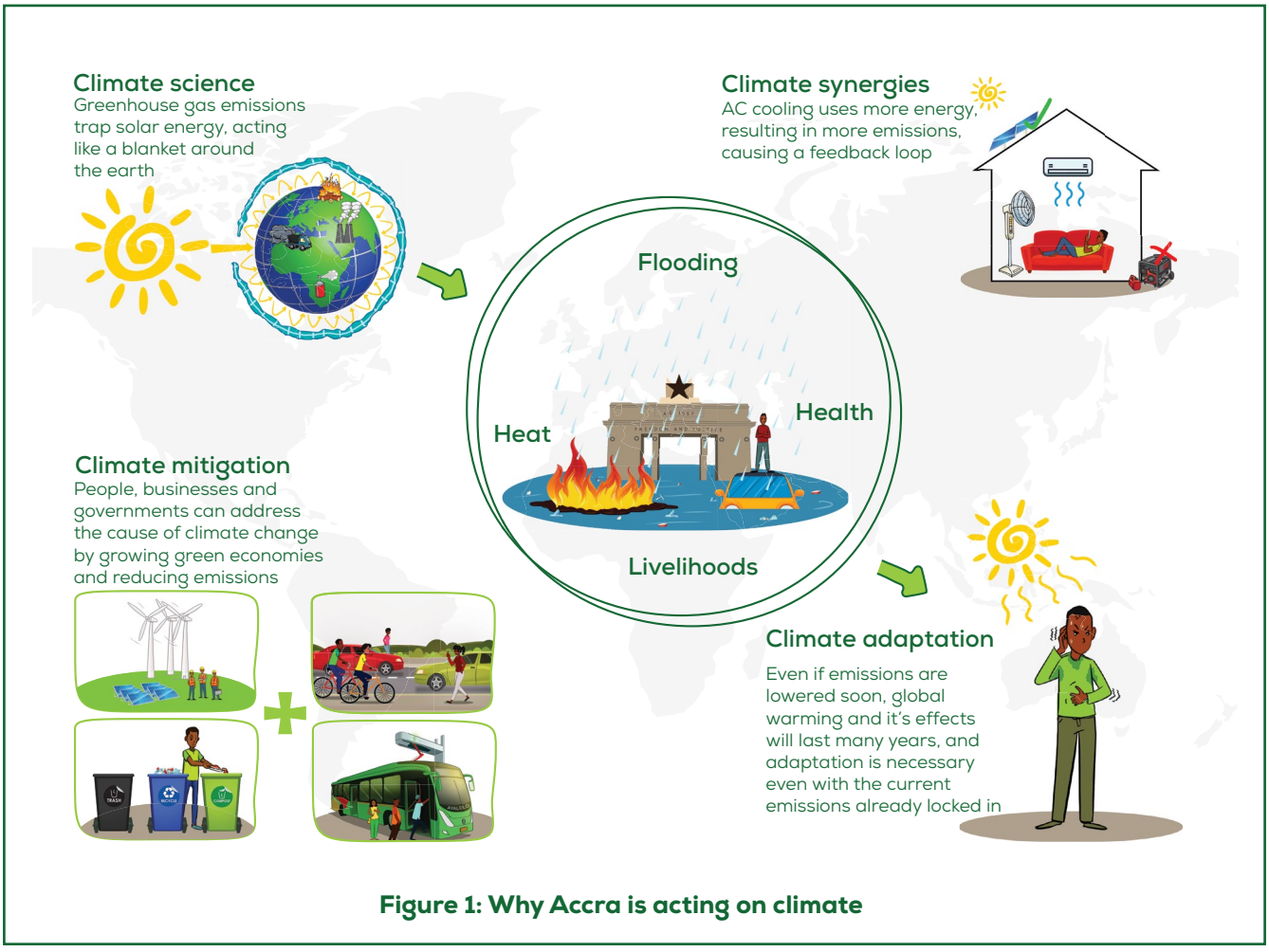


Figure 1: Why Accra is acting on climate

1.2 Localizing Ghana's national climate targets

Ghana's economy is heavily dependent on the export of commodities, such as gold, cocoa beans and timber, whilst long-term economic development depends on adding value through more complex industrial output, diversifying the economy and substituting imports. This focus on value addition and industrialization relies on strengthening the country's energy supply (total MW capacity) and affordability (cost of electricity per kWh).

Almost half of Ghana's electricity (43%) is provided by hydropower, and the Renewable Energy Master Plan has set a target to hike renewables' penetration (not including hydroelectric power) in the national generation mix. The reliance on hydropower in the energy mix raised concerns about the effects of climate change on river flows, especially through rising temperatures, droughts and storms (see Figure 13). A particularly intense cyclical energy crisis, and the discovery of offshore gas in commercial quantities, led to a major governmental policy shift to fossil fuel-based generation from indigenous sources, more to natural gas than crude oil as a result of a fuel diversification policy.

The agricultural sector employs 40% of Ghana's active labour force, making it key to the livelihoods of a large proportion of the population. Staple crops, such as maize, millet and cassava, are of great importance for food security, as are livestock, such as cattle and poultry. Cocoa is Ghana's most important cash crop, accounting for 11 % of total exports in 2017. Other cash crops include palm oil, groundnut, cotton and tobacco. Ghana's strong economic dependence on the agricultural sector highlights the country's vulnerability to the effects of climate change.

To address climate change within the overall national development context, the Government of Ghana's Ministry of Environment, Science, Technology and Innovation (MESTI) sets a national agenda on climate change through a series of high-level policies and plans. Cornerstone climate policies in Ghana's national climate change response seek to mainstream climate change at the sub-national level through the existing development planning processes. In 2017, the Government published a manual for mainstreaming Ghana's climate and development goals into Metropolitan, Municipal and District Assemblies (MMDA) Development Plans, which served as a key guiding document for this planning process (Figure 2).

Ghana's climate response is increasingly localized

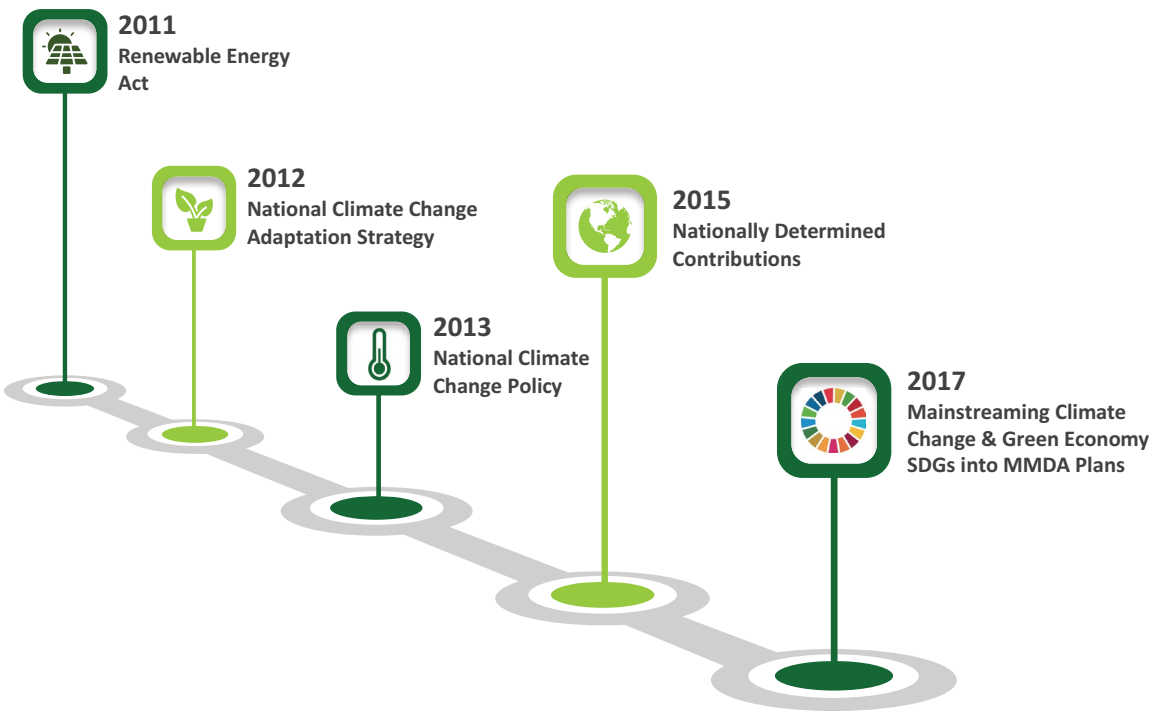


Figure 2: Progression of Ghana's national climate change policy framework

Accra Climate Action Plan

Building on decades of climate policy and planning, in 2015 the Government of Ghana committed to addressing the cause of climate change by:

- Unconditionally reducing greenhouse gas emissions by 15% by 2030, compared to the business-as-usual projection, and to
- Reducing greenhouse gas emissions by 45% by 2030 compared to business-as-usual, on the condition that external support is received to cover costs.

The Government of Ghana has committed to building resilience to the impacts of climate change through adaptation goals in the NDC, National Climate Change Policy and the National Climate Change Adaptation Strategy by:

- Enhancing Ghana's current and future development to climate change impacts by strengthening its adaptive capacity and building resilience of the society and ecosystems,
- Increasing the resilience of vulnerable communities to climate-related risks,
- Promoting city-wide resilient infrastructure planning,
- Undertaking integrated water resources management, and
- Managing climate-induced health risks.

The national medium-term development policy framework – An Agenda for Jobs (2018-2021) – reinforces climate change as a sustainable development priority, coupling the climate response with development priorities to invest in human capital, health, social protection, and viable and sustainable economic livelihood schemes for vulnerable people and persons with disabilities.

Accra's climate action plan is the first sub-national climate plan developed in Ghana, downscaling national climate change targets and ambitions to the level of a Metropolitan Assembly.

1.3 Greater Accra region and the Accra Central Business District

Ghana is made up of 260 political and administrative units, termed Metropolitan, Municipal and District Assemblies (MMDAs), of which the Greater Accra region on Ghana's southern coast consists of 29 MMDAs (Figure 3). These 29 MMDAs constitute the Greater Accra region.

Recently there has been significant in-migration, resulting in rapid urban expansion and population growth in the region, and as a result, Greater Accra houses 18% of the national population and 30% of the urban population. Half of its residents live below the poverty line, defined by the United Nations as living on less than a dollar a day.

Accra Metropolitan Area is one of two high-density zones in the Greater Accra Metropolitan Area (Accra and Tema)

Figure 3: Greater Accra Metropolitan Area

Within the Greater Accra region, the Greater Accra Metropolitan Area (GAMA) encompasses the urban area from Tema to Accra Metropolitan Area (AMA). According to the regional spatial plan, AMA is one of the two urban cores, or Central Business Districts (CBDs); the other being Tema. This CAP is focused on the AMA area with consideration for the Greater Accra Metropolitan Area (GAMA) and in the overall context of the national climate goals for urban areas.

The resident population within the AMA is just over two million people; however, the Accra Metropolis (Figure 4) receives close to 2 million visitors and workers from the outlaying MMDAs on a daily basis, who commute into the city center to trade, work and study.

Accra Metropolitan Area is a central business district with high urban density

Figure 4: Geographic boundary of Accra Metropolitan Area

Accra is an attractive prospect for investors, as illustrated in Figure 5. However, the environmental and social implications of rapid development pose significant challenges for the city, including high employment rates, a lack of affordable housing, air pollution and strains on the education and healthcare systems.

Ghana's political & commercial hub

- Population of 1.6 million, with 2 million commuters into the city
- High population growth rate of 3% per year

Attractive to Investors

- Robust economic growth
- Growing investment opportunities
- Expanding urban middle class

Dominant informal sector

- Informal housing for as much as 25% of the urban population
- Large employment (80%) in the informal sector
- 50% of the population lives on less than $1/day

Figure 5: Demographic and economic trends in Accra

1.4 How Accra will get the job done

The transformational climate targets presented in Chapters 2 and 3 include actions that are outside of AMA's scope of authority, as illustrated in Figure 6. Achieving the intended outcomes of this CAP will depend on collaborative actions taken by the Government of Ghana (GoG), other Metros in the Greater Accra region (29 MMDAs), the private sector, and to some extent the informal sector.

Building code enforcement, solid waste and coastal management are city responsibilities

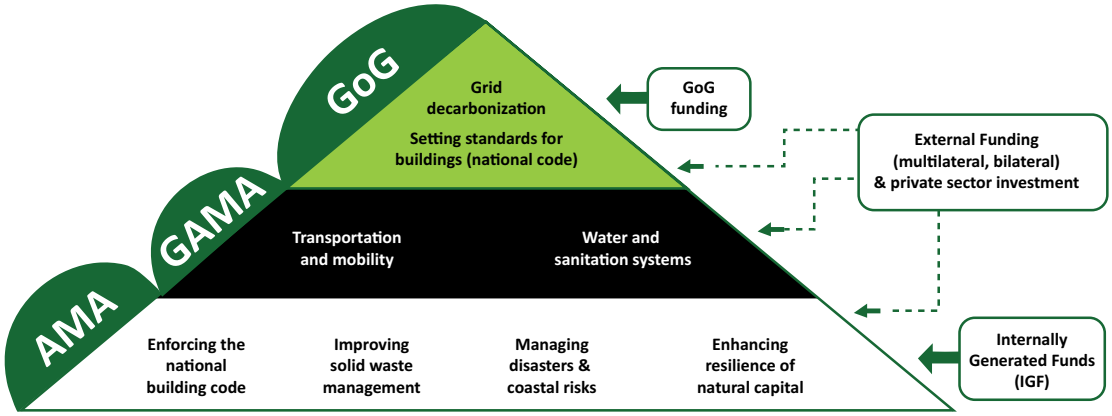


Figure 6: Levels of authority relating to climate action areas and potential funding sources

Overall, this CAP sits with the AMA Resilience & Sustainability Unit, which is overseen by the Mayor (Figure 7), with supplementary membership drawn from across various departments of the Assembly as well as other external experts. In the context of this CAP, where climate actions are not under the responsibility of AMA, AMA departments are identified as the lead but will play a coordination and collaboration role.

Key AMA departments leading on climate action

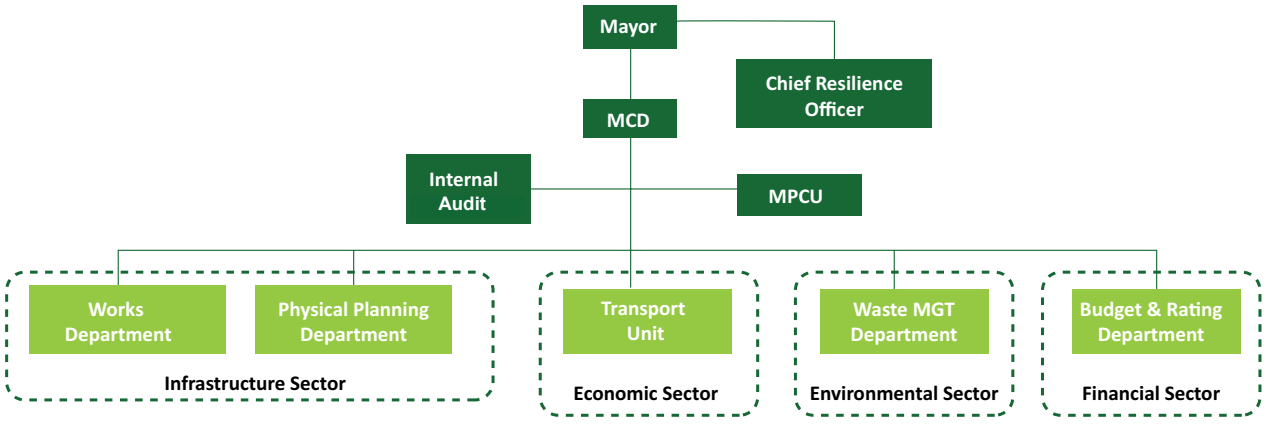


Figure 7. Simplified administrative structure for climate action in AMA

*MCD = Metro Coordinating Director; MPCU = Metro Planning and Coordination Unit

1.5 Principles for outreach and engagement

Climate action planning has been led by the AMA Resilience & Sustainability Unit, with oversight from the CAP Steering Committee with members mainly from AMA but also including a national government representative from the Environmental Protection Agency (EPA), and non-government participation from the University of Ghana and the International Growth Center. This climate action planning process began in 2016 with a greenhouse gas inventory workshop, followed by a strategic appraisal of climate action and initiation of the GHG emissions scenario modelling, with additional workshops over the course of 2017 to 2018. The 5-year actions were prioritized through a participatory process in 2019.

As part of the CAP process, a stakeholder engagement plan was developed as a formal strategy to identify and communicate with key stakeholders to encourage participation and support for CAP implementation. The engagement plan, which specifies the frequency and type of communications, media, contact persons, and locations of communication events, will continue to guide outreach.

The ongoing CAP stakeholder engagement and outreach program are underpinned by three core principles:

- Inclusivity
- Participation
- Ownership

Inclusivity: The city is comprised of approximately 80% informal sectors and the majority of citizens are vulnerable to the effects of climate change. Due to the sizeable scale of the informal sector, and its relevance in ensuring success or failure of local policies and programs, specific attention has been given to the need to develop a CAP that resonates and achieves buy-in from local communities across Accra.

With the growing population, there is a need to ensure that there is equality and all citizens are given the opportunity to offer their views through planning and implementation. To enable this, the Assembly has identified measures that are in line with the political vision of building an inclusive society to engage citizens to understand and own the developmental process.

Participation: The link between participation and local governance is an important means of improving the effectiveness of service, and empowering citizens to be involved in the developments that affect their lives. The Local Government Act 462 (enacted 1994) requires the active participation of citizens in the decision-making processes of all Assemblies. Engagement is critical to the successful implementation of the actions proposed in the CAP, and will be led by the Resilience Unit of AMA in accordance with Act 462, including:

- Town hall meetings;
- Public education and communication campaigns (largely through social media); and
- Community level or organized group meetings targeted at members of particular interest groups.

AMA will seek positive engagement with all departments on the need for action on climate change, including those that have different agendas or perspectives, and aim to gain the support of individuals or organizations that have reservations or concerns about the proposed actions. Citizens wanting more information or to get involved can email inquiries to: **climateaction@ama.gov.gh**

Ownership: The CAP has been developed with support from C40 Cities, and Accra will continue to benefit from external assistance, both financial and in-kind support, to tackle the threat of climate change as a global collective responsibility. In accessing external support, AMA, citizens and stakeholders must be in the driver's seat to move the agenda forward in ways that meet the city's urgent sustainable development priorities. Empowering people, businesses and different levels of government to act on climate is a key principle guiding ownership of process and implementation.

AMA will ensure that the three principles above form the basis for engaging and promoting the actions and initiatives to mitigate and adapt to the impacts of climate change in the city. The CAP will promote greater understanding amongst the populace, who are the key stakeholders, and promote accountability in the implementation of the outlined actions.

*Mayor Sowah at High Level Inclusivity Engagement

1.6 How stakeholders were engaged

The law requires at least four (4) community engagements per Assembly per year, but the structure of Accra Metropolitan Assembly and its operations means that many more workshops and engagements are held annually. An area that influenced stakeholder engagements was to ensure linkages and integration with other climate relevant projects currently being undertaken by the AMA. Some of these ongoing initiatives at the Assembly include the Bloomberg Philanthropies' Initiative on Global Road Safety and Partnerships for Healthier Cities, the 100 Resilience Cities program, World Health Organizations' Urban Health Initiative on Air Quality and Health Impacts project as well as the International Migration Organization's cities project. Within the government's reporting mechanisms, the United Nations Sustainable Development Goals are also being mainstreamed into the mandatory reporting requirements of the Assemblies, which includes Goal 13 on climate action.

Based on these factors, stakeholder engagements targeted four key groups (Figure 8).

Climate action planning engaged four key stakeholder groups

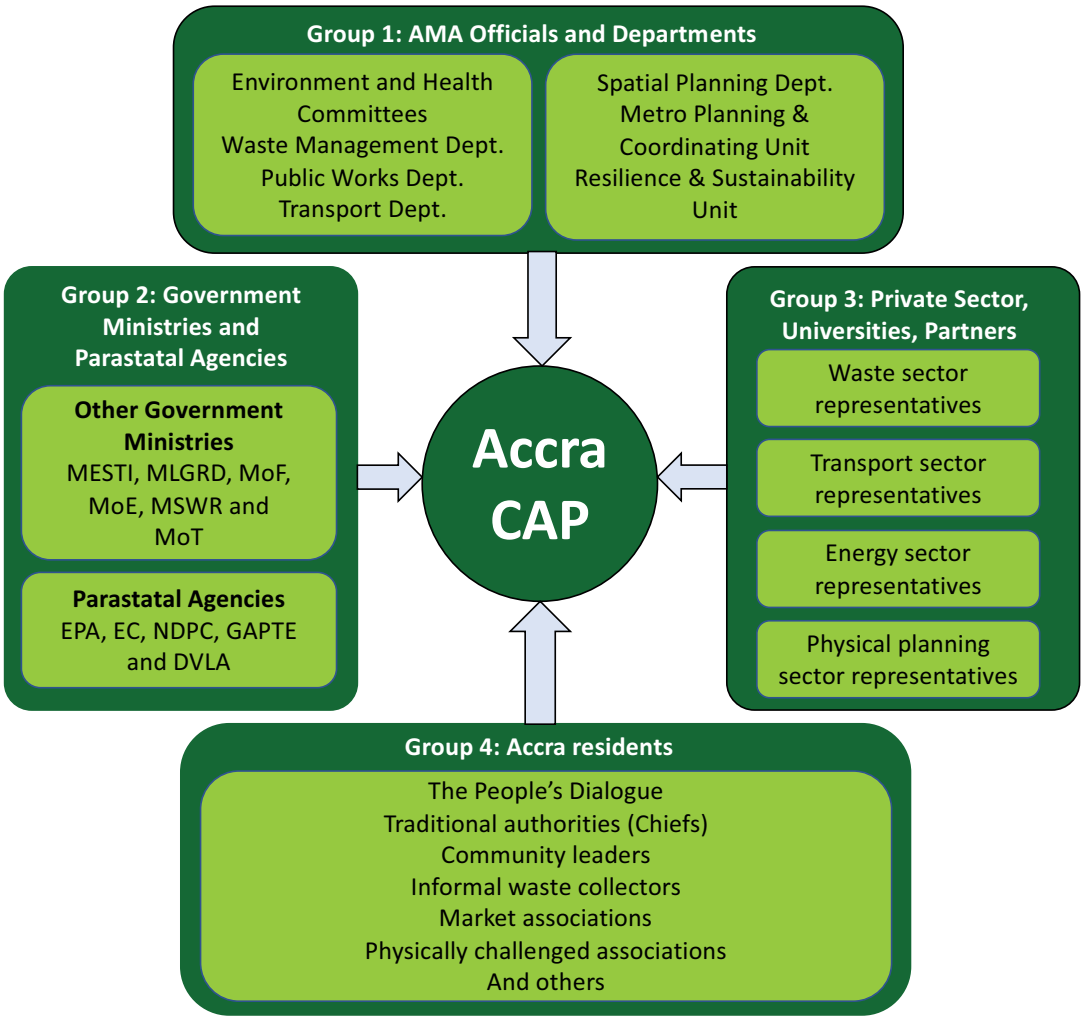


Figure 8. Stakeholder involvement in climate action planning

*Participants at Climate Risk Workshop in Accra

The first target group, AMA Officials & Departments, aimed to ensure all the internal city officials and departments within the AMA whose work has a bearing or impact in the CAP process were identified and engaged. This included the various committees of the Assembly, such as the Environment and Health Committees, as well as the specific departments. These departments and units were very instrumental in the compilation of the greenhouse gas inventory, strategic appraisal assessments, GHG emissions scenario modeling, action prioritization, action implementation planning and input into the writing of the CAP. These departments ensure ownership of the CAP, and easy integration and alignment with the medium-term development plan (the main tool that dictates the annual focus for central government financing and support) of the Assembly.

The second group covers Government Ministries and Parastatal Agencies with influence and interest in either the development or subsequent implementation of the CAP. This group includes national level institutions like the Ministry of Environment, Science, Technology and Innovation (MESTI), which has the primary responsibility for climate-related issues in Ghana.

The Ministry of Local Government and Rural Development (MLGRD) is the parent ministry of all local governments of which Accra Metropolitan Assembly operates, and the Ministry of Finance has overall financial decision making for central government. Others include the Ministries of Energy, Sanitation & Water Resources, and Transport. Parastatals engaged from the beginning of the process and envisioned to continue to be very relevant in the implementation of the CAP included Environmental Protection Agency (EPA-Ghana), Energy Commission (EC), National Development Planning Commission (NPDC), Greater Accra Private Transport Executive (GAPTE), Driver Vehicle and Licensing Authority (DVLA). These agencies have at various times been invited to be part of dialogues, workshops, make presentations at workshops to help ensure the CAP development is aligned with governmental protocols, regulations, agreements and international/local conventions. These stakeholders have commented on and informed the development of the final CAP.

Our aim has been to meet the vertical integration aspects of the CAP Framework. At other times, data and statistics have been shared with these agencies for comments and verification. The EPA-Ghana and NDPC also have representation on the Steering Committee of the Accra CAP process.

The third target has been the inclusion of Private Sector and Development Partners. As part of stakeholder mapping in the initial strategic appraisal, most relevant private sector operators whose activities have an impact in the waste, transport and energy sectors within the jurisdiction of Accra Metropolitan Assembly were identified and their strengths and roles clearly defined. With this as a backdrop, these major influencers were involved at all critical points in the CAP process, i.e., at the action prioritization workshops. Some of the workshops were sector-specific and included key stakeholders from that sector. Other engagements that included questionnaires, site visits, focus discussions and seeking professional opinions. In addition, the CAP has been informed through engagement with leading climate change research and academic groups within the country.

The fourth target group and most critical in the process had been the identification and inclusion of residents and city dwellers especially with a focus on organized, identifiable groups and operators in the informal settlements and sectors, such as the People's Dialogue. The key emphasis on this target group has been to inform, educate and collect feedback to improve the quality of the actions for meeting the needs of all groups. The Assembly is keen to promote citizen engagement as a part of the city's strategies to improve service delivery, and this is a key stakeholder group.

There are also mandatory requirements by the National Development Planning Commission (NDPC) that must be met. The NDPC develops and monitors the medium-term development plans of local governments in Ghana to ensure that there are least four (4) community engagements by Assemblies in various localities per year. These target groups included the traditional authorities (Chiefs), community leaders and identifiable/organised groups like informal waste collectors.

Based on the nature and objective of the engagements, meetings were either in the form of one-on-one interviews, focus group meetings, or in a sector-based workshop or mixed group workshops. These engagments resulted in three key milestone workshops, covering 1) the greenhouse gas inventory and 2050 scenario planning, 2) climate risks and impacts and 3) priotising climate actions and preparing for implementation. These groups will continue to be engaged in CAP implementation to support inclusive climate action.

Creating a City Vision Stakeholder Workshop

2 TOWARDS A CARBON NEUTRAL AND CLIMATE RESILIENT ACCRA

This chapter considers the projected changes in greenhouse gas (GHG) emissions and climate risk and identifies opportunities for addressing climate change. The climate risk assessment and adaptation section will be updated after a comprehensive climate risk assessment is undertaken.

This chapter presents a summary of the GHG emissions currently being generated in Accra, using baseline data for the year 2015. The baseline year is used to form a projection of emissions up to 2050, with interim targets for the years 2030 and 2040, based on the best opportunities for mitigation (reducing emissions) in Accra.

2.1 Climate risk assessment

It is widely acknowledged that the African continent will experience environmental change as a result of climate change, with a projected level of warming greater than the global average.

The world's leading climate science body, the Inter-Governmental Panel on Climate Change (IPCC), defines climate adaptation as "the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects".

The level of actual or expected climate change impacts and therefore adaptation needs depends on whether the world follows a high emissions future (known as a Representative Concentration Pathway or RCP 8.5) or a Paris Agreement low emissions future (RCP 2.6), as shown in Figure 10.

However, even if emissions are stabilized soon, global warming and its effects will last many years, and adaptation is necessary even with the current emissions already locked in.

The following sections outline the climate change that Accra has already experienced since 1960, and the changes that Accra is expected to experience by 2050, namely: more intense storms and floods, rising surface temperatures, and sea level rise and storm surge.

Future climate impacts depends on whether world emissions remain high or decline

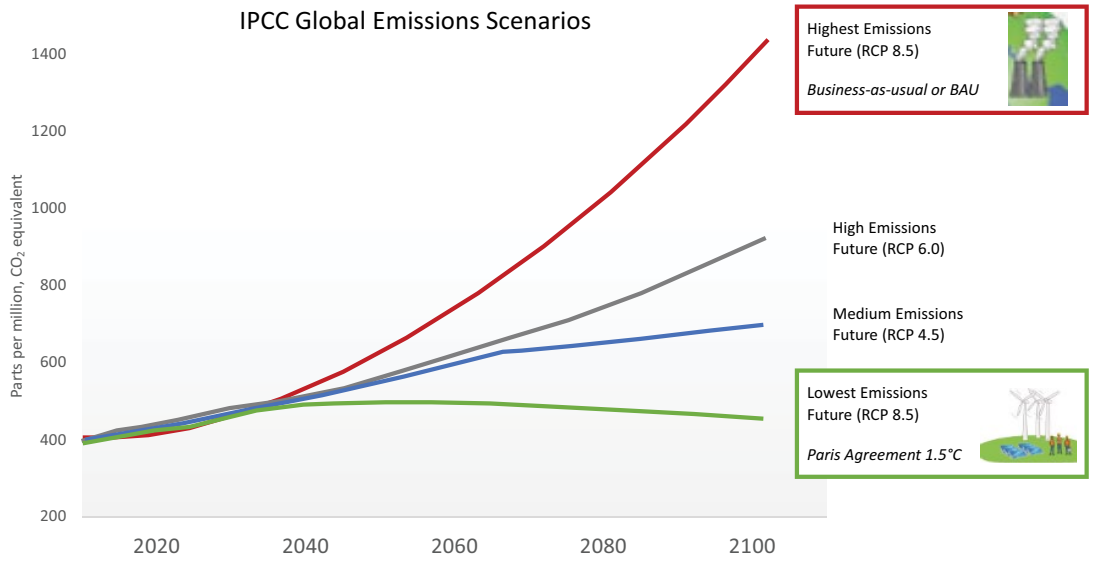


Figure 9. Possible greenhouse gas emissions futures developed by the IPCC

Future projections in this section cover two different global outcomes, namely the highest (RCP 8.5) and the lowest (RCP 2.6) global emissions scenarios. Due to a lack of downscaled climate projections specific to Accra, data from the national level of Ghana is used unless otherwise stated.

In summary, if the world aggressively reduces greenhouse gas emissions and achieves a 1.5°C pathway by 2050, climate impacts will still be felt in Accra, but will be less extreme.

2.2 More intense storms and flooding

Changes in precipitation

Climate models are generally not very reliable for predicting future rainfall, given that rainfall is more complex than temperature, with micro-climate and macro El Nino conditions influencing rainfall cycles. The results presented below should be viewed in this context. In general, for rainfall, it is a worthwhile investment to prepare for more extreme rainfall patterns – fewer months per year with "normal" rainfall, and more extreme periods with exceptionally high rainfall or no rainfall at all (drought conditions).

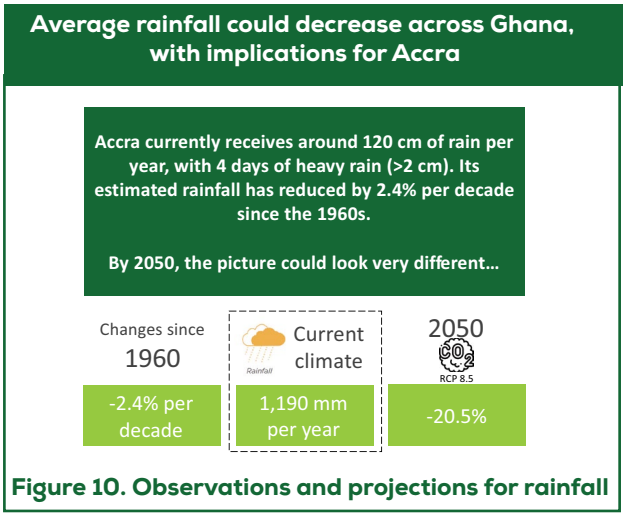


Figure 10. Observations and projections for rainfall

Data sources: Greater Accra Regional Spatial Development Framework Vol 1, p. 39; World Bank Climate Knowledge Portal, accessed 1 June 2020 https://tinyurl.com/yajnb2gf

Flood risks and impacts

Accra has a history of flooding. The city is located between two lagoons, the Korle to the west and Kpeshie to the east. The city is low-lying with the highest elevation of 61m above sea level. The natural topography coupled with issues of poor waste practices and encroaching buildings has led to inefficiencies in the built and natural drainage systems. Indiscriminate dumping of waste into rivers and water bodies, which act as natural reservoirs during periods of heavy rainfall, reduces the capacity of wetlands and retention ponds and makes the city more prone to flooding.

Increased precipitation would exacerbate the flooding challenges of the city and will require the adoption of more preventative resilience mechanisms. As an example, a flood which occurred on 3rd June 2015 was not particularly severe (10-year average recurrence interval), however it resulted in US$120 million in damages in Accra[1].

2.3 Temperatures are rising

Changes in surface temperature

Temperature predictions using climate models are consistent and have a high degree of confidence. Data is available for more climate indicators, not just average temperatures but also changes at the extreme range. If the world follows a worst-case greenhouse gas emissions scenario (RCP8.5), the region could experience an additional 21 days per year of temperatures exceeding 40°C (Figure 11).

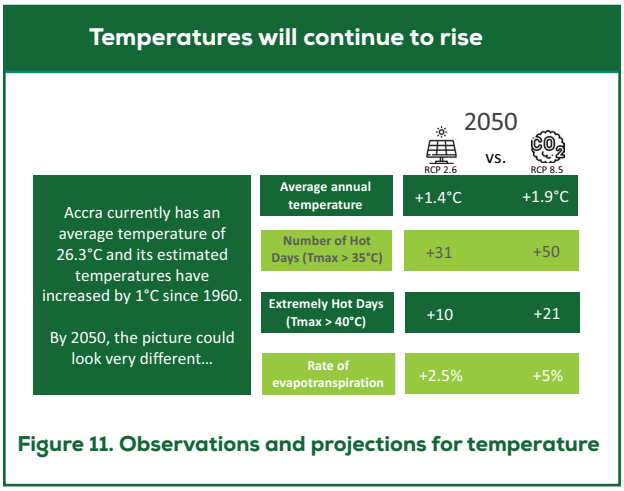


Figure 11. Observations and projections for temperature

Data sources: Greater Accra Regional Spatial Development Framework Vol 1, p. 39; World Bank Climate Knowledge Portal, accessed 1 June 2020 https://tinyurl.com/yajnb2gf

Urban Heat Islands

Rapid population growth and urban development rates, including the use of more non-permeable materials in the city, has reduced the availability of green space. Green space has a noticeable cooling effect, and without shade, cities can suffer from head islands where localized temperatures are several degrees higher than averages. Average temperature has already increased by over 1°C in the last forty years and is anticipated to increase further with the projected rate of development. Urban heat islands present a chronic risk[2] to citizens, especially the elderly and vulnerable groups, and heat waves, which present an acute risk[3]. Walking rates in Accra are high, with approximately 51% of trips in 2012, and heat islands can negatively affect people walking and cycling.

1 World Bank, 2018, Accra Climate Risk Mitigation Strategy, p. 29-31

2 A chronic risk is a slow-onset or stressor event that might go unnoticed by the authorities and media, although the stress causes frequent but less obvious ongoing losses and damages.

3 An acute risk is an extreme event that, if it manifests, has severe and usually short-term impacts.

Public Health

The coastal areas of Accra have high population densities and are more prone to disease outbreaks due to challenges with sanitation and access to cleanwater in communities. As temperatures increase, adaptation mechanisms must be implemented to ensure communities are made aware of the risks and the necessary steps to protect human health and can afford protection.

2.4 Sea levels are rising

Changes in sea level and storm surge

Observational changes in sea level along Ghana's southern coast are well documented in national reports, and complemented by local studies on coastal erosion within Accra, providing a clear lens for climate futures at the coastal zone, if no adaptation actions are taken. If the world follows a worst-case greenhouse gas emissions scenario (RCP8.5), Accra's waterfront could lose an additional 150 meters of coastline due to a rise in sea levels of 20 cm (Figure 12).

Sea level rise and storm surges will accelerate coastal erosion

Since the 1960s, it's estimated that annual sea level rise and coastal erosion along Accra's seafront has occurred at rates of +2.1 mm and -1.13 m, respectively.

	Changes since 1960	Current climate	2050 vs. RCP 2.6	2050 vs. RCP 8.5
Sea level rise	+2.1 mm per	+2 cm	+16.5 cm	+20 cm
Coastal erosion	-1.13 m per year	-67 m	-105 m	-146 m

Figure 12. Observations and projections for sea level and storm surge

Data sources: Ghana's Third National Communication, 2015, p. 13; Addo, K.A. et al, 2011. Impacts of coastal inundation due to climate change in a cluster of urban coastal communities in Ghana, West Africa. Remote Sensing, 3, 2029-2050.

Coastal Erosion

The primary livelihood of the indigenous people of Accra is fishing, and several landing sites along the coast have already been lost to the sea. With the projected increases in coastal erosion, there is potential for disruption of economic activities of these particularly vulnerable communities.

2.5 No city is an island: transboundary climate impacts across Ghana

Within the national context, the Government of Ghana climate policies have prioritized flooding and heat threats to urban transportation network and buildings. Ghana's National Communications identifies Accra as a strategic area for building national infrastructure resilience. In addition to the Accra-specific direct climate impacts, Ghana's national climate vulnerability assessment shows how regional vulnerabilities could affect the city's ability to cope with future climate impacts (Figure 13).[1]

Climate impacts across Ghana could affect Accra

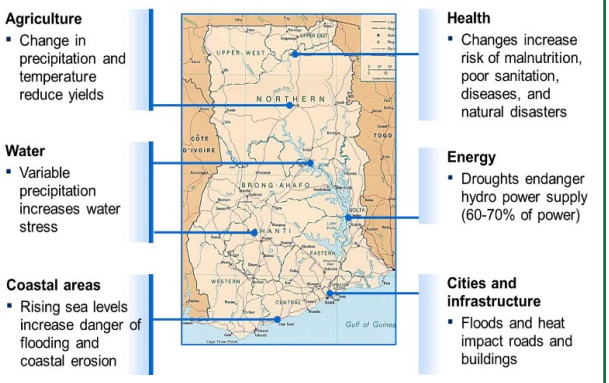


Figure 13. Major spatial climate change vulnerabilities across Ghana

Food security and energy security risks are identified as key transboundary climate impacts to Accra.

Food Security

In Northern Ghana, reduced agricultural productivity is likely to directly affect Accra's food supply, and can indirectly affect the city by increasing internal rural-to-urban migration, burdening city systems unless preparations are made. Internal migration is already evidenced as the northern Sahelian region of Ghana warms and dries. At Accra's current population growth rate of 3% per annum, assuring food security in the face of a changing climate is a key objective for the city. It is anticipated the city could increasingly be reliant on imported food due to loss of agricultural land and the city's growing population.

Energy Security

Climate change is a risk to hydropower, due to increasing evaporation rates and unpredictable rainfall patterns, which could affect power supply in the city if an extended drought coincided with high power demand (e.g. air conditioning to cope with a heat wave).

2.6 Greenhouse gas emissions inventory

Estimating Accra's greenhouse gas emissions

The first city-level GHG inventory for Accra was published in 2019, using data for the year 2015. The inventory used the GPC Protocol for Cities[2], which meets IPCC standards but tailors the methodology to an urban context. The GPC standard requires that cities, at a minimum, report emissions in the following areas:

1 Republic of Ghana, 2015. Ghana's Third National Communication Report to the UNFCCC.

2 GPC Protocol: https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities

- ***Stationary energy***: fuel combusted to generate energy for use in buildings (residential, commercial and industrial), including both solid/liquid fuels (scope 1) as well as electricity supplied to buildings by the grid (scope 2)
- ***Transportation:*** fuel combusted to generate energy for travel purposes, including both liquid fuels (scope 1) as well as grid-supplied energy for electric engines (scope 2)
- ***Waste***: emissions from the treatment of solid waste (e.g. waste disposed of in open landfills, dumping, burning) and wastewater (e.g. wastewater treated in septic systems, anaerobic digestion, open discharge) both within the city boundary (scope 1) as well as waste generated in the city but treated outside the city boundary (scope 3)

These three sectors are typically the highest emitters in urban areas. Other sectors, such as agriculture, forestry, industrial processes and product use, are recommended however are not required under the GPC standard.

Emissions were calculated using available data and input into an excel-based tool, the City Inventory Reporting and Information System (CIRIS), to produce a BASIC reporting format.

This GHG inventory covers the now outdated boundary of AMA, which included 10 sub-Metros[1] spanning 137 km^2 with a resident population of 1,999,810 people[2] and a GDP of US$4.2 billion[3].

Accra's greenhouse gas emissions profile

According to the 2015 GHG inventory, Accra generated a total of 2,384,240 tonnes of carbon dioxide equivalent (tCO_2e) in the year 2015. Broken down by gas, carbon dioxide has the most severe climate impact at 1,376,149 tCO2e (58%), followed closely by methane at 968,713 tCO_2e (41%) with a much smaller impact from nitrous oxide at 39,377 tCO_2e (2%). On average, emissions per capita amounted to 1.2 tCO_2e per person.

Most of Accra's emissions (44%) were generated by the waste sector, followed by transportation (30%) and finally stationary energy (26%). However, there is uncertainty associated with the results, as activity data was not always available. In these cases, the inventory team benchmarked against other cities, downscaled national data and/or used international estimates in accordance with best practice. Assumptions are transparently documented with proposed improvements in the Greenhouse Gas Emissions report and the City Inventory Reporting and Information System (CIRIS).

In 2015, the waste sector emitted the highest share of greenhouse gas emissions in Accra

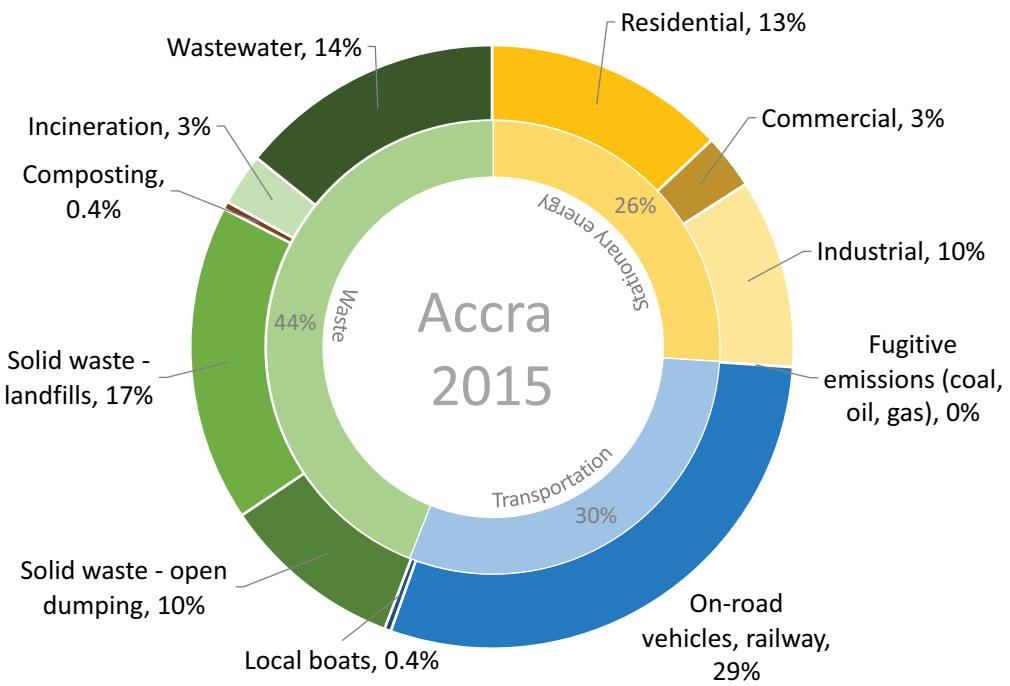


Figure 14: Emissions results by sector and sub-sector in Accra (2015 inventory year)

1 The 10 sub-Metros included in the GHG inventory are: Ashiedu Keteke, Ablekuma North, Ablekuma South, Ablekuma Central, Ayawaso East, Ayawaso West, Ayawaso Central, Osu Klottey, Okaikwe North, Okaikwe South

2 Population data obtained from the 2014-2017 Medium Term Development Plan for the Accra Metropolitan Assembly (AMA)

3 Estimated with 2015 GDP data obtained from www.tradingeconomics.com/ghana/gdp

Usually, stationary energy is the largest source of emissions in urban areas. However, in Accra, the largest overall sector is waste, while just one quarter of emissions are from stationary energy. The large share of waste emissions is driven by a few factors, including a slightly lower grid emissions factor (43% of grid electricity from hydropower in 2015) that reduces the relative share of stationary energy emissions. Households also consume wood/charcoal, which per IPCC Emissions Factor values have a low net impact on global warming (although a large impact on air quality). Accra also has a high per capita solid waste generation, high organic content of waste, and disposal of solid waste to unmanaged landfills where anaerobic conditions generate methane gas, which is not captured.

Greenhouse gas emissions from waste in Accra

Emissions from waste arise due to the decomposition of organic matter under anaerobic conditions resulting in the generation and release of methane into the atmosphere, which has a higher Global Warming Potential (GWP) than CO_2 but doesn't stay in the atmosphere for as long[1]. The burning of waste by households and open dumpsites also results in emissions of GHGs and air pollutants.

Waste currently accounts for 43% of Accra's emissions, mostly (2/3) from solid waste. Accra also represents approximately 36% and 31% of national solid waste emissions and biological treatment (composting) emissions, respectively.

Greenhouse gas emissions from stationary energy in Accra

In stationary energy (Figure 15), a slightly larger share of emissions is from the electricity grid compared to combustion of other fuel types (diesel, petrol, charcoal, LPG, kerosene and firewood). Overall, residential buildings use a mix of different fuels and generate the most emissions, followed by industries, manufacturing and construction (with proportionally larger electricity-related emissions).

In 2015, the use of energy in buildings and industry in Accra, including grid electricity, emitted 621,634 tCO_2e (26% of total greenhouse gases).

Energy demand by residential buildings drives up emissions in the energy sector, in particular LPG, petrol and grid-supplied energy. However, grid-supplied electricity, in particular for industrial facilities, accounted for the greatest overall share of emissions by fuel type.

GHG emissions from household, industrial and commercial energy use

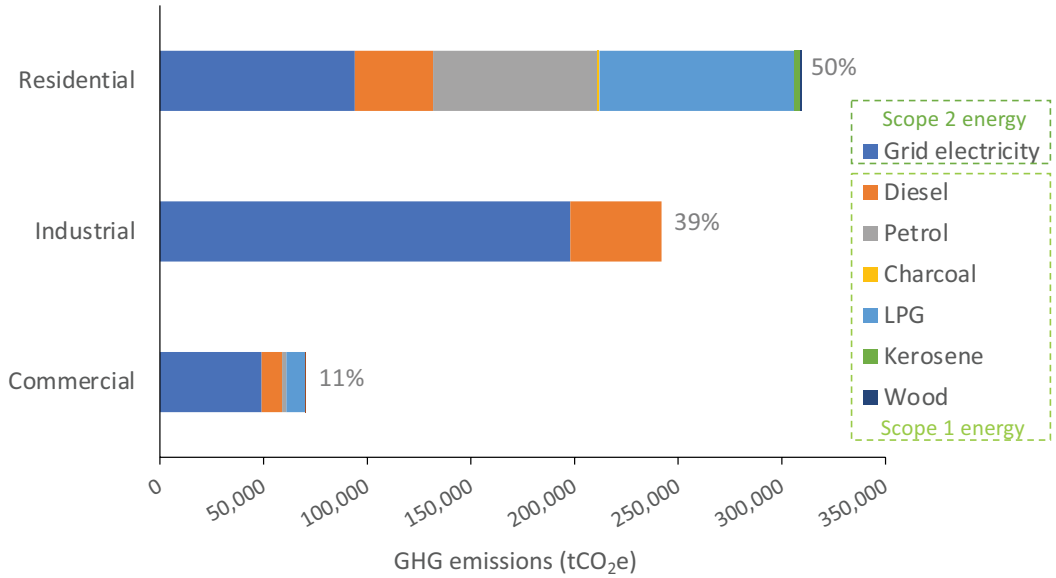


Figure 15: Stationary energy emissions by user group and fuel type

1 CO_2 (carbon dioxide) stays in the atmosphere for up to 200 years. CH_4 (methane) stays in the atmosphere for approximately 12 years, but 1 tonne of CH_4 has a global warming impact equivalent to 28 tonnes of CO_2. Source: IPCC.

Greenhouse gas emissions from transportation in Accra

Transportation emissions, which accounted for 30% of total emissions, are almost exclusively from on-road transportation (Figure 16). A very small proportion of emissions was generated from waterborne transport, calculated using premix sales.

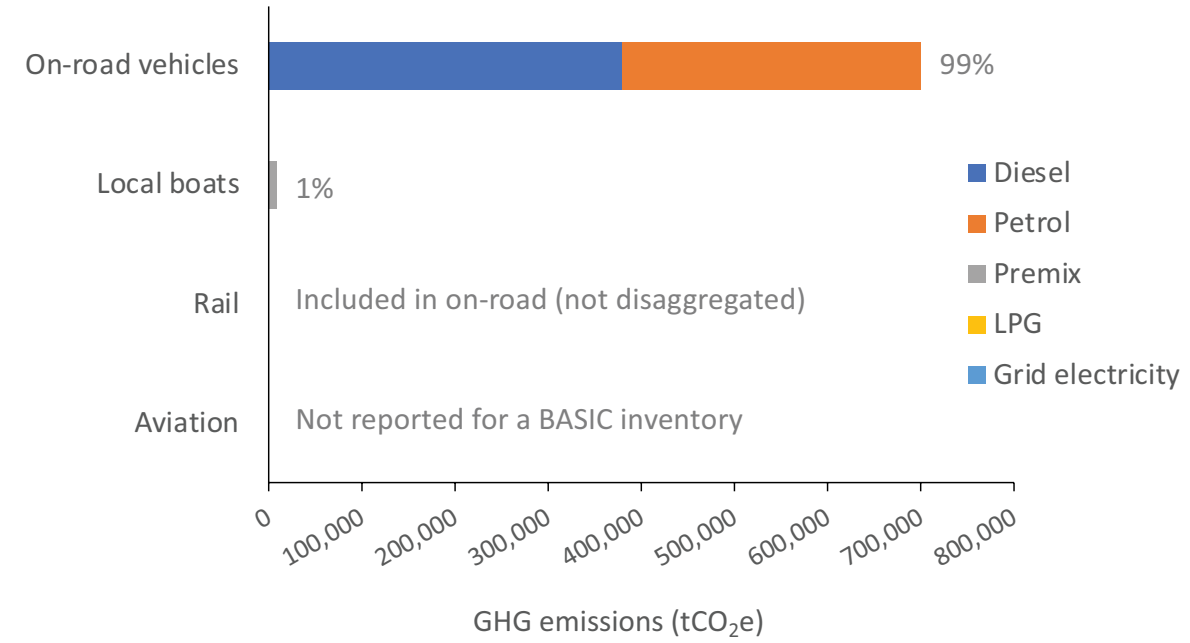


Figure 16: Transport emissions in Accra by end user and fuel type (2015)

Benchmarking Accra's emissions

When comparing Accra's emissions profile to national emissions[1], some trends and opportunities are evident. When national emissions are scaled to the same year (2015), Accra is responsible for approximately 36% of national solid waste emissions, 31% of biological treatment emissions, 15% residential combustion, 12% road transport and 9% of wastewater treatment emissions[2]. This suggests that achieving a low emissions pathway in Accra will be critical for the national government to achieve its climate mitigation goals[3].

When compared with capital cities in Europe, such as Copenhagen (2.5 tCO_2e), London (3.9 tCO_2e) and Washington DC (11 tCO_2e); Accra's per capita emissions (1.2 tCO_2e) are very low.

Per capita city emissions are comparable with other capital cities in Africa, such as Lagos (1.4 tCO_2e), Dar Es Salaam (1.4 tCO_2e) and Addis Ababa (1.6 tCO_2e).

2.7 Projecting emissions and setting reduction targets to 2050

The 2015 baseline inventory has been modelled to project emissions growth to 2050 using projected changes in population and economic growth – termed the business-as-usual (BAU) scenario. Modelling was conducting using the Pathways Scenario Planning Tool.

The BAU scenario indicates that if no climate actions are taken, Accra's emissions will triple by 2050. Table 1 presents Accra's total emissions from the 2015 inventory data and boundary, projected emissions to 2030, 2040 and 2050, and set emissions reduction targets. The targets represent the percentage of the expected emissions reduced below the BAU scenario (Table 1). Achieving the proposed emission reduction targets will require ambitious action in all sectors, and by non-AMA actors, in particular the national government.

1 Ghana's Fourth National Greenhouse Gas Inventory Report: https://unfccc.int/sites/default/files/resource/gh_nir4-1.pdf

2 C40 Cities, 2011. National Context for City Climate Action Planning: Ghana. Report prepared by Ricardo Energy & Environment

3 AMA, 2019. Accra's 2015 GHG emissions inventory.

Table 1: Accra's greenhouse gas BAU and mitigation targets for 2030, 2040 & 2050

Year	Projected emissions without intervention (BAU) (tonnes CO2e/year)	Emissions reduction targets (% emissions reduced below BAU)	Total GHG emissions if targets are achieved (tonnes CO2e/year)
2015	2,405,522	Current emissions level	Current emissions level
2030	4,350,472	↓ 27%	3,156,675
2040	6,309,550	↓ 46%	3,390,393
2050	9,184,537	↓ 73%	2,498,545

Represented graphically, Accra's mitigation targets are shown in Figure 17 and target a 27% reduction in emissions below the BAU projection by 2030, a 46% reduction in emissions by 2040 and a 73% reduction in emissions below business-as-usual by 2050.

These mitigation targets were set by reviewing national, regional and city-level policies and plans relating to climate, development and waste/energy/ transport plans. National climate targets were viewed as a guideline, however national targets were not quantitatively decomposed to the AMA scale. Climate-relevant targets and actions were extracted from the variety of documents and analyzed against indicators in the excel-based Pathways Scenario Planning Tool. Two workshops were held in August 2018 and July 2019 to collect data, review and validate results and identify priority action areas.

Accra aims to reduce emissions 30% below the business-as-usual scenario by 2030

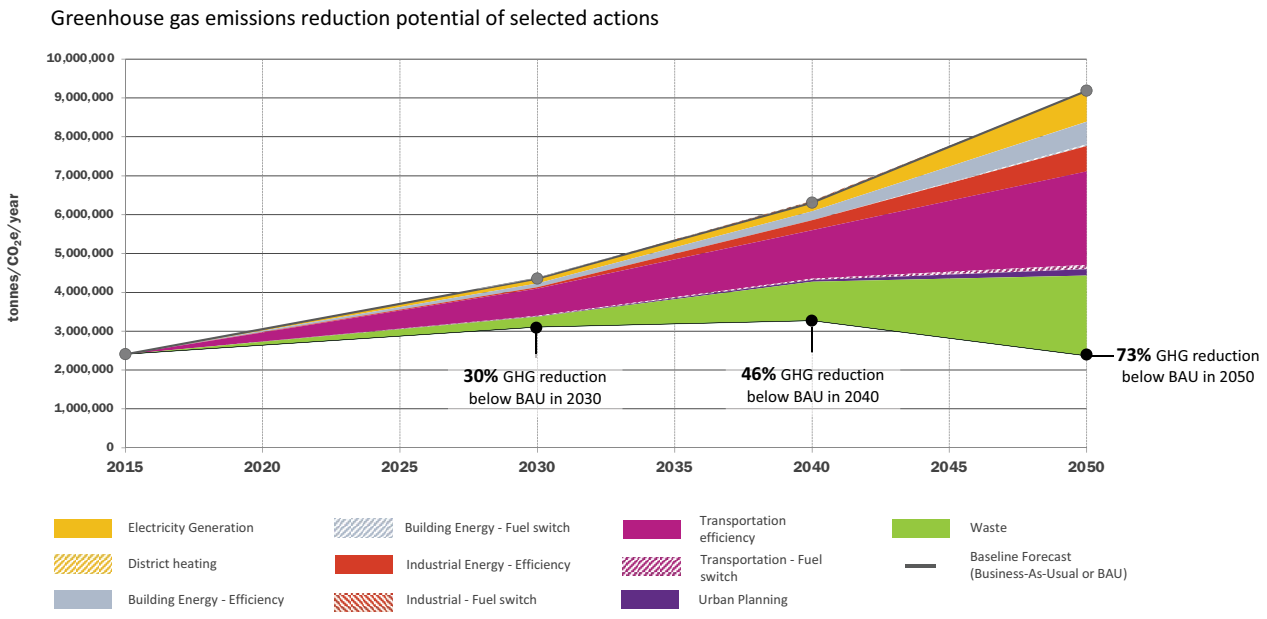


Figure 17: Summary of Accra's emission reduction targets in 2030, 2040 and 2050

According to this scenario, the most transformational shifts to reduce emissions in the city by 2030 would be achieved by shifting to public transit and non-motorized modes, increasing the share of renewable energy on the grid, improved sewage treatment coverage and capturing landfill gas (Figure 18).

Top 10 focus areas that will reduce Accra's emissions by 2030

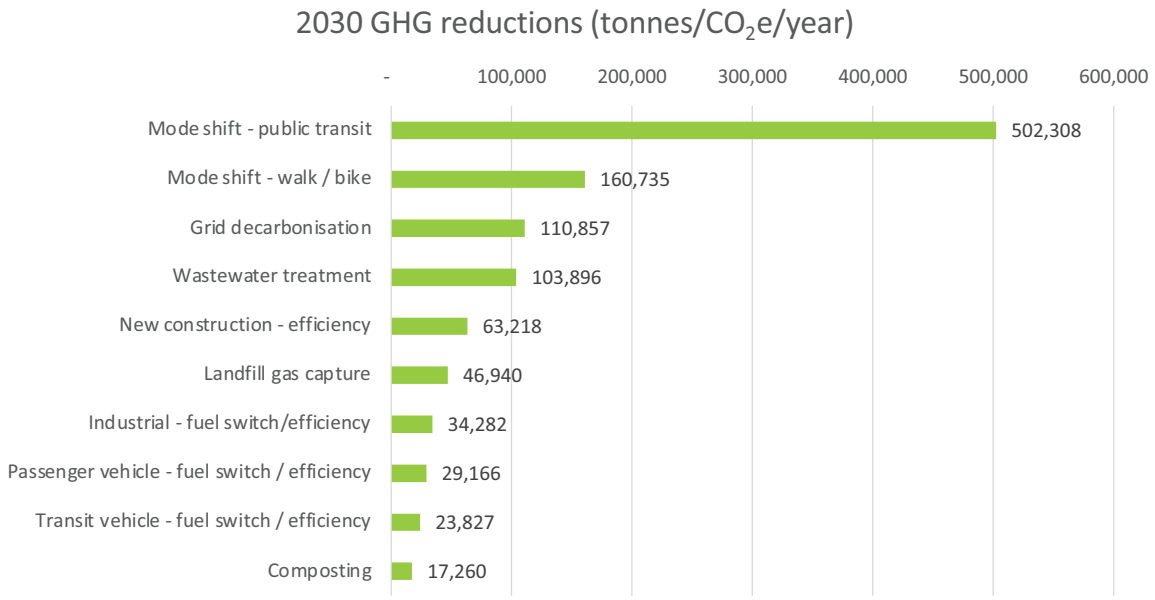


Figure 18: Estimated tonnes of emissions reduced (tCO2e/year), by focus area

It's estimated that these top 10 most impactful action areas can achieve an emissions reduction of approximately 1.2 million tCO_2e by 2030.

In 2050, remaining emissions in Accra according to the climate action scenario would largely be from stationary energy (residential energy, industrial energy), with 1.5 million tCO_2e being emitted per year, after implementing the climate actions. Wastewater treatment and solid waste are also a source of remaining emissions, with 806,217 tCO_2e emitted in 2050 according to the scenario. The remaining emissions analysis highlights opportunities to increase ambition in these areas over time. Given the long-term planning horizon, the climate action plan will be periodically reviewed and updated, with the aim of closing the ambition gap through new mitigation methods and technologies, aiming to achieve net zero emissions in 2050.

AMA will also explore collaborating with the Ghana Forestry Commission to reduce the rates at which forests and trees are being lost to deforestation and degradation as a result of city-induced demand for forest products. Supporting reforestation efforts would positively impact Accra's net emissions profile.

3 PLAN OF ACTION

This chapter presents AMA's 5-year climate change plan to implement priority actions in solid waste and wastewater, energy, buildings and industry, transportation, land use and spatial planning and mainstreaming the climate change threat in development processes.

AMA selected short- to medium-term priority actions through a consultative process. We reviewed national government, regional and AMA's existing policies and plans, and catalogued actions relating to reducing emissions or adapting to climate impacts. AMA hosted workshops attended by key sector experts, community representatives and stakeholders from the private sector, during which attendees were asked to prepare a multi-criteria analysis (MCA) of the long list of actions in order to prioritize the biggest climate opportunities. Criteria included:

GHG abatement potential – whether the action was considered critical to achieving zero emissions by 2050

Adaptation / resilience potential – whether the action would offer a benefit for climate change adaptation / resilience

Level of city power and capacity – whether the action aligns with AMA policies and plans

Alignment with existing national policies and plans – whether the action aligns with Government of Ghana policies and plans

Social acceptability – whether the action would result in negative or positive societal impacts

Political acceptability – whether the action was expected to receive political support

Ease of implementation – whether the action involves tried and tested processes and technologies that can be implemented immediately

Cost – the level of investment required to implement the action and whether it can be met by AMA

Co-benefits – whether the action will have significant co-benefits, including air quality, health, employment, among others, for the people of Accra

Participants were asked to assign relative weightings to the criteria, to reflect their own perspectives on priority areas.

The highest scoring actions were discussed amongst participants, and further actions were added, before agreeing on a short-list of priority actions. A road mapping exercise was conducted to further define the scope of the priority actions, before being submitted to the CAP Steering Committee for further consideration and finalisation.

From 100+ actions, 20 were prioritized through a participatory process

Actions were prioritsed if they:

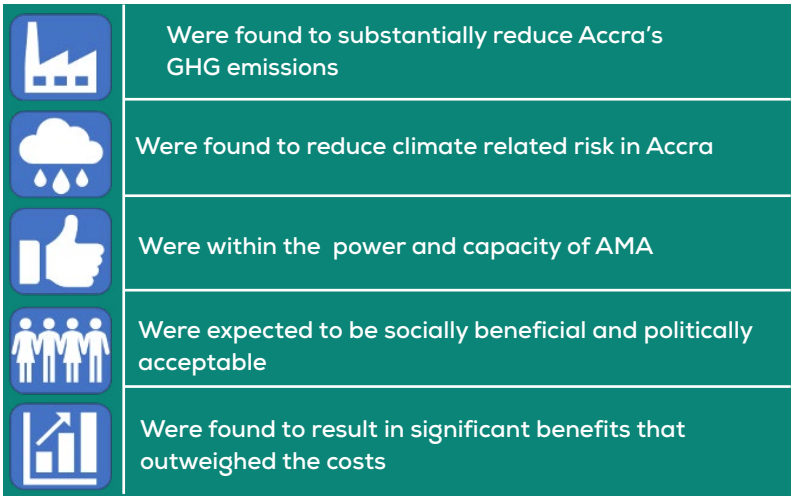


Figure 19: Criteria used to prioritize climate actions for the next five years

Accra Climate Action Plan

Rather than spreading the effort over 100+ potential actions, this approach is designed to focus implementation on a small number of feasible and high-value opportunities, in this case 20 adaptation and mitigation actions across waste, energy, transportation, physical planning and mainstreaming climate change into development processes.

Figure 20 shows the relationship between the 20 priority CAP actions and Accra's vision for 2050. The actions outlined for implementation within the first 5 years will set the course for achieving carbon neutrality and climate resilience by 2050, but in order to realise this change, it will be necessary for the city to achieve interim targets for emission reduction, undertake a process of review and assessment, to identify new actions and sources of funding. Several revised Action Plans will be developed over this period, reflecting changes in the baseline and the availability of new technologies and opportunities for climate action.

Actions taken in the next 5 years will put the city on a path toward low emission climate resilient development by 2050

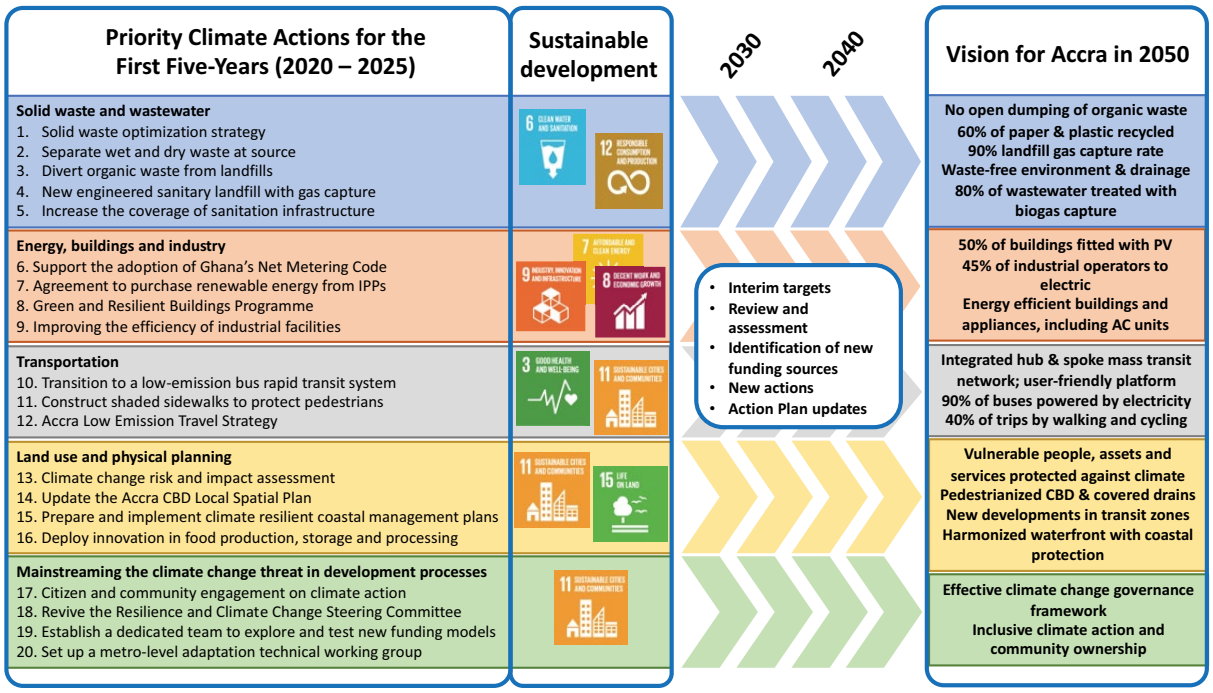


Figure 20. Priority climate actions for the next 5 years and Accra's vision for 2050

*Registered Informal Waste Collector in Accra

3.1 Solid waste and wastewater

Accra is seeking to achieve a waste management system that would deliver zero GHG emissions from waste sources by the year 2050.

Waste, when managed improperly, presents several environmental hazards, including air and water pollution, flooding and poses significant risks to human health. Accra is seeking to make improvements to its waste management processes and facilities to limit environmental impacts and achieve significant reductions in GHG emissions from waste and its management and handling.

Service delivery priorities for waste management in Accra are:

a. ***Universal waste collection*** – to achieve 100% waste collection, which will eliminate indiscriminate waste disposal and eradicate open burning in the long term. Source separation of municipal solid waste will reduce the collection of mixed waste to the barest minimum.

b. ***Develop efficient and effective waste treatment and processing systems (such as recycling and composting)*** – to divert waste from final disposal sites, which will extend the life of landfills. Diverting organic waste (such as food waste, paper and cardboard) from landfills will reduce greenhouse gas emissions.

c. ***Providing safe waste disposal infrastructure*** (for solid waste and wastewater) – to ensure Accra has adequate capacity for the disposal and treatment of all waste streams, and to facilitate progression up the waste hierarchy.

To reduce emissions and address climate impacts, Accra's priority actions on waste in the CAP are grouped by the three themes outlined above.

Current situation

Solid waste management infrastructure and operations in Accra are the responsibility of the AMA Waste Management Department, which retains the ability and capacity to implement waste minimisation, re-use and recycling schemes by the Assembly or in collaboration with the private sector. Furthermore, the private sector plays a key role in effectively managing Accra's solid waste. In 2011, Accra implemented a Public Private Partnership Programme that contracted private operators to collect solid waste on a franchise basis, where beneficiaries of waste collection services pay directly to the accredited contractor with an aim to improve efficiency and reduce the burden of waste management on city's finances.

Even with the introduction of the private sector operators and introduction of the polluter pays principle in waste management, Accra is yet to achieve universal waste collection. Currently, Accra generates about 3,000 tonnes of solid waste per day, of which 2,500 tonnes (or approximately 80%) is collected through the combined capacities of the AMA Waste Management Department, private sector contractors (service providers) and informal service providers. Many waste generators especially households indulge in open burning and indiscriminate dumping of waste in the environment. In some areas, drainage facilities are choked with solid waste, which exacerbates flooding.

Close to 99% of households in Accra do not practice waste segregation at source. Solid waste source separation has been introduced on a pilot basis at select institutions and businesses. A couple of the private waste collection companies are also piloting source segregation in a few collection areas. Collection of mixed waste has, to a very large extent affected mid and downstream activities such as material recovery, recycling, composting and increased the quantity of residual waste disposed at landfills.

Accra Climate Action Plan

Currently, recycling and material recovery processes are largely informal, with limited capacity, and are sensitive to changes in the prices of recycled materials. Hence, the low recycling and recovery rates in the city – approximately 1%. Informal recyclers do not currently receive structured support from municipal and central government.

There are two open landfills currently available to receive solid waste collected from Accra and the round trip to these sites are in excess of 70 kilometers. The long distances present a challenge to waste collectors, especially informal waste collectors who use smaller and slow-moving vehicles. To address this challenge, a transfer station with a capacity of 500 tonnes a day has been constructed at Achimota, on the northern corridor of Accra, where most informal waste collectors in the city dispose of their waste. There is also space nearby for selling and buying of salvaged materials from waste collected.

Final disposal facilities are not operated according to best practices and therefore serve as a major opportunity to reduce GHG emissions. The AMA, in collaboration with a private partner, Waste Landfills Limited, has commenced processes to develop an engineered landfill with gas capture and utilization system among other amenities. A little over a hundred-acre plot has initially been acquired at Adepa, near Nsawam for the purpose.

Climate Action in the Waste Sector

This sector covers waste generated by homes, businesses, markets, restaurants, industrial, construction and demolition sites and agricultural activities.

Solid waste refers to things like food scraps, plastics, paper, metal, glass and electronic waste.

Waste water is the liquid waste (sewage and liquid by-products of industrial processes).

In Accra, 30% of houses have flushing toilets and 1 in 5 houses have functioning indoor plumbing. Public latrines have been built to accommodate these disparities between the growing population and a lag in the sanitary facilities; however, these are often overused. There is also a large 'off-grid' sewage market that has grown to fill the gaps, but these are typically poorly managed and contribute to localised pollution and GHG emissions problems.

Existing policies and plans

National Policies: There are a number of national goals targeting climate action in solid waste, in both the NDC Guidance Report and Ghana's plan to tackle Short-lived Climate Pollutants (SLCPs). National targets for solid waste include:

- doubling the composting capacity to 190,000 tonnes/annum by 2030
- capturing 65% of landfill gas by 2030
- reducing openly burnt waste by 80% by 2040, and
- increasing urban solid waste collection to 90% by 2030

The National Climate Change Master Plan includes an objective to reduce the environmental impact of solid waste through waste reduction, recycling and recovery.

Climate policies in Ghana align with and reinforce sanitation and health directives. The National Environmental Sanitation Policy (2010) and the associated Action Plan (NESAP), developed by Ghana's Ministry of Local Government and Rural Development, sets a requirement for the introduction of the waste hierarchy.

Local Policies and Plans: At the city level, several actions and policies have been initiated to improve waste collection, locate sites for landfill including with methane gas capture and encourage recycling through waste separation in collaboration with private sector operators.

The city has embarked on a programme of education, and enforcement of regulations and by-laws, to improve waste management. AMA also recently commissioned a new waste transfer station at Achimota, plans to secure 200-acres of land for the construction of a sanitary landfill site and is in the first phase of remediation work at the ICGC dumpsite.

Existing policies and plans set out national actions on climate change mitigation and adaptation. However, these policies do not set targets for individual metro areas. Metro-level plans, such as the Accra Metropolitan Assembly Byelaws, do not include specific details with respect to emissions reduction and climate resilience policies.

Priority climate actions

In selecting priority actions in solid waste and wastewater for the next five (5) years, the city of Accra recognizes the need to ensure its large informal sector and vulnerable populations benefit from climate action. This can be achieved by providing job security to informal operators, and by improving waste collection and disposal for all populations, in particular those living in flood-prone and low-income areas. Accra's priority climate actions are:

Action 01 — Solid waste optimization strategy
Action 02 — Separate wet and dry waste at source
Action 03 — Divert organic waste from landfills (double composting capacity)
Action 04 — New engineered sanitary landfill with gas capture
Action 05 — Increase the coverage of sanitation infrastructure

Lead agency	AMA Waste Management Department
Collaborating agency(s) and stakeholders	• Ministry of Sanitation and Water Resources • Ministry of Local Government and Rural Development • Ministry of Works & Housing • GAMA Sanitation & Water Project • People's Dialogue
Reducing emissions from:	
Adapting to:	

Exhibition 2: Preserving the value of materials by separating waste types at source

*Illegal Dumpsite near Agbogbloshie, Accra

How would YOU rather dispose of waste?
Separating wet and dry waste in homes/businesses makes each waste stream much more valuable

*Launch of Mayoral Waste Segregation Initiative

3.1.1 Solid waste optimization strategy

This action will underpin the aim of achieving universal waste collection by increasing recycling rates and optimising material re-use. Source separation and material recovery will reduce the amount of residual waste, thereby easing pressure on waste infrastructure and extend services to places that previously did not have waste reliably collected. Supporting local businesses to reuse and recycle waste products will also reduce the total volume of residual (leftover) waste that is disposed of at landfills. This action is aligned with the GAMA Spatial Development Framework (p. 46).

Action 01	**Solid waste optimisation strategy**
Sub-actions	• Collect and update quantitative and qualitative data on waste (2021) • Develop digital maps of waste generation, collection, transfer, processing and disposal points in Accra (2021) • Identify priority infrastructure and service gaps (2021) • Identify and engage stakeholders (2022) • Develop Terms of Reference for a Working Group and constitute the Waste Optimisation Strategy Working Group (2022) • Evaluate the performance of the Public Private Partnership (PPP) waste collection program (2022) • Validate strategy and publish the Waste Optimisation Strategy (2023) • Pilot introducing recycling into existing or new PPP contracts with the private sector (2023)
Output	Waste optimisation strategy developed and under implementation by 2023
Sustainable development benefits	• Increased transparency and policy predict ability of waste management in Accra • Identified opportunities for enhancing the waste economy
Resourcing plan	IGF, Donor, Private sector

3.1.2 Separate wet and dry waste at source

This action aims to increase recycling and material recovery in the waste value chain by separating wet (organic) waste from dry (plastics, paper and metals) waste at the source (e.g. households and businesses).

Separation of wet and dry waste at source will ensure availability of quality recyclables and therefore reduce the cost of recycling. When plastic and metal waste is contaminated by organic waste, waste pickers must separate and wash valuable waste before recycling it, exposing them to risk of injury and accidents, and higher labour and water operational costs. Compost produced from organic waste separated at source will contain less contaminants, such as heavy metals, than compost produced from contaminated mixed waste. Separated waste streams will support the efficient reuse and recycling of Accra's waste.

This climate action will build on AMA's waste separation pilot programme in several basic schools in 2017. As part of AMA's ongoing activities, the waste separation pilot will be scaled-up to three communities (James Town, Korle Gonno and Mamprobi) and two markets (Agbogbloshie and Kaneshie). The private sector (both formal and informal) are key stakeholders in the provision of waste services and infrastructure, currently rendering over 80% of sanitation services, and are key stakeholders for the successful implementation of this climate action.

Action 02	Separate wet and dry waste at source
Sub-actions	• Evaluate the results of pilot source separation programs at household, school and community levels (2021) • Develop bylaws for wet and dry waste separation (2022) • Engage Public Private Partnership (PPP) contractors to determine the most cost-effective options for keeping wet and dry waste separated in collection (2022) • Launch a public education and awareness campaign (2022) • Mobilize stakeholders including waste pickers and informal recyclers to comply with waste separation bylaws, and facilitate innovative start-ups (2023)
Output	Wet and dry waste separated at source and in collection systems by 2023
Sustainable development benefits	• Improve sanitary conditions in communities, especially in communities that do not yet have adequate door-to-door collection • Job creation for formal and informal waste businesses through collection, sale and local manufacturing of recyclable materials • Waste management cost savings for AMA and the Government of Ghana by diverting solid waste from landfills/dumps, thereby extending their life • Promotion of a sustainable waste economy
Resourcing plan	IGF, Donor, Private sector

3.1.3 Divert organic waste from landfills (double composting capacity)

This action aims to divert organic (wet) waste such as food scraps to productive uses, in accordance with the national NDC goal to double composting capacity by 2030. Composting is typically the most common use for wet waste, but other routes are becoming more technologically and economically viable – for example, mixing food waste with sewage to generate biogas. A key stakeholder for this action is the commercial sector, including food markets and hospitality industries, which generate large amounts of organic waste. This action is aligned with Ghana's Nationally Determined Contribution to double waste to compost installed capacity by 2030 (p. 14).

Action 03	Divert organic waste from landfills (double composting capacity)
Sub-actions	• Conduct research into the safe use of food waste (e.g. processing waste food into animal feed) (2022) • Prepare an Accra wet waste (composting) plan (2023) • Provision of infrastructure to incentivize composting and processing food waste into valuable commodities (2024) • Stimulate local markets and business opportunities for organic waste processing (e.g. establishing community compost programme, construction of small-scale biogas facilities) (2025) • Implement sustainable waste pickers/informal sector programs and facilitate innovative start-ups (2025)
Output	Increased quantity of organic waste composting by 2025
Sustainable development benefits	• Job creation in organic waste industries • Improved soil from composting/organic fertilizers
Resourcing plan	Government of Ghana, IGF, Donor, Private sector

3.1.4 New engineered sanitary landfill with gas capture

This action will retrofit the existing unmanaged dump at Adepa, Nsawam into an engineered sanitary landfill with gas capture, in line with Ghana's Nationally Determined Contribution to dispose waste in engineered landfills (p. 14). The action is already underway with preliminary geophysical and geotechnical feasibility studies.

Action 04	New engineered sanitary landfill with gas capture
Sub-actions	• Assess the feasibility of landfill gas capture, including environmental, social and climate risks, and develop risk management plans (2023) • Commission engineering drawings for the landfill (2023) • Secure financial investment (2025) • Construct and commission the landfill with gas capture (beyond 2025)
Output	New engineered sanitary landfill with gas capture (2025 –2030)
Sustainable development benefits	• Improved air quality as a result of less waste burned • Improved resilience of water channels to cope with flooding by minimizing/eliminating solid waste in water ways • Energy generation potential from landfill gas • Promotion of the waste economy and waste service delivery
Resourcing plan	Government of Ghana, IGF, Donor, Private sector

3.1.5 Increase the coverage of sanitation infrastructure

This action complements the Accra Sewerage Improvement Project (ASIP), financed by the African Development Bank (AfDB), which is expanding the central sewage network in Accra. To increase the impact of this action, sanitation infrastructure expansion could target communities currently using latrines, and upgrade latrines with connections to centralized sewage systems[1].

Through this action, AMA will provide an enabling environment for ongoing investments into the central wastewater treatment expansion project. The action is aligned with the GAMA Spatial Development Framework to promote the uptake of best available technologies in waste recycling and waste-to-energy (p. 43).

Action 05	Increase the coverage of sanitation infrastructure
Sub-actions	• Enforce sanitation bylaws (2021) • Improve customer enumeration through geo-referenced data (2021) • Take samples and analyse effluent quality at waste water facilities (2021) • Enforce effluent discharge standards at wastewater facilities (2022) • Encourage treatment facilities to collect and use methane from anaerobic treatment (beyond 2025)
Output	Gas capture at wastewater treatment facilities by 2025
Sustainable development benefits	• Improved groundwater quality through proper treatment of sewage • Improved wastewater services
Resourcing plan	IGF, Donor

Barriers and challenges

The actions identified in the waste sector are likely to face several barriers, including a lack of a developed market for compost, reluctance from citizens to introduce changes to the processes for collecting and sorting waste, a lack of political will and government support, poor coordination between authorities, limited resources for enforcement and a lack of available space.

1 According to the 2015 Accra greenhouse gas emissions inventory, latrines accounted for 30% of use but 60% of wastewater emissions.

*Solar PV Installation at Ministry of Energy, Accra

3.2 Energy, buildings and industry

The national grid that supplies electricity to Accra already has a high level of renewables due to the relatively large proportion of hydroelectric power generation in Ghana – the city will aim to ensure the mix of renewables remains high and seek opportunities to supplement the existing supply with alternative renewable sources, including solar energy and biogas.

Service delivery priorities for energy, buildings and industry are:

a. ***Affordable electricity*** – reducing the cost of electricity and ensuring sustainable access for all citizens, including by increasing investments in renewable generation

b. ***Building permitting*** – an efficient building permitting process that incentivizes energy efficient and resilient buildings, in new developments as well as retrofitting old buildings

c. ***Energy efficient appliances*** – transition to energy efficient appliances in residential and commercial buildings, and improve efficiency in industrial processes

The city does not have direct control over the means for generating electricity. Therefore, Accra's climate actions aim to promote efficiency improvements in buildings and industrial facilities and distributed solar energy on rooftops.

Current situation

Grid-supplied electricity is generated at the national level and occurs outside the jurisdiction of AMA. Data for the year 2019 from the Ghana Grid Company (GRIDCo) shows that the generation mix constitutes ~58% thermal energy from fossil fuels, 40% from hydro-powered dams and the remainder from small scale solar. Recently, the energy system in Ghana has seen a degree of transition towards the use of natural gas – the Karpowership plant switched from heavy fuel oil (HFO) to indigenous natural gas in 2019 (470 MW).

Climate Action in Stationary Energy

This sector covers energy supply and consumer demand.

Energy supply refers to electricity supplied by the national grid, as well as solid and liquid fuels (petrol, diesel, LPG, firewood, charcoal, and kerosene).

Consumer demand refers to the energy efficiency in buildings and industrial processes.

Ghana's Net Metering Policy reduces the cost of solar PV, but solar PV uptake still requires subsidies

Key Decisions in Ghana's Net Metering Code

Condition	Decision in Ghana's Net Metering Code
Compensation for net excess generation	Retail rate
Monthly excess generation rollover arrangement	Rolled over to following month
Annual excess generation rollover arrangement	Excess at end of the calendar year expires
Individual net-metered installation capacity cap	500kWp
Aggregate net-metered capacity limit	To be defined later
Eligible renewable technologies	All
Customer classes that can participate	All
Utilities that must offer net metering	All
Grid connection & net meter cost borne by:	Net-metered customer
Standby charges and fees for participants	All statutory levies and taxes still apply to consumption from grid (cannot be delayed with exports to grid)
Number of meters per system	One bi-directional meter
Electrical system phase allowed	Single and three phase systems

Attractiveness of Rooftop Solar PV v. Grid Electricity Costs

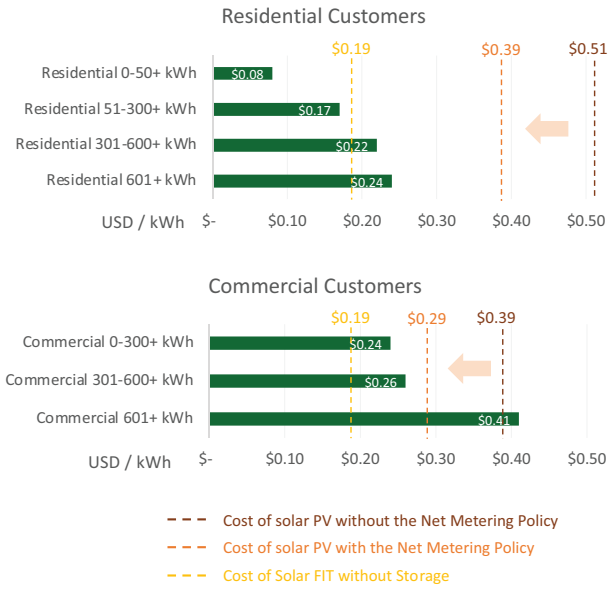


Figure 21: Snapshot of the draft Ghana Net Metering Policy

Investments in renewable energy have faced opposition from the national electricity company and power suppliers, which could lose their market share under the current business model.

Existing policies and plans

National Policies: The National Climate Change Master Plan includes an objective to increase the proportion of zero-carbon sources (renewable energy including hydro-sources) in the national energy supply, and the Ghanaian Low Carbon Development Strategy and Action Plan to Mitigate Short Lived Climate Pollutants (SLCP) aims to transition from fuel oil to natural gas for grid electricity generation.

The Renewable Energy Master Plan (REMP) aims to fulfil its commitment to move away from reliance on fossil fuels by scaling up renewable energy penetration in the grid by 10% by 2030, primarily through the establishment of solar energy installations. The RE Master Plan also proposes to increase the proportion of renewable energy to 1,363 MW (with grid connected systems totaling 1,094 MW) by 2030.

The Government of Ghana's Energy Commission has been spearheading the development of a Net Metering Code; however, this has not yet been adopted. The new system would enable residential and commercial buildings to invest in solar panels up to 500 kWp and sell excess electricity to the grid.

Existing policies aim to improve energy efficiency in homes by increasing the use of LPG – the policy sets a 2030 target for 50% of households to use LPG for cooking. These measures are designed primarily to achieve improvements in air quality and health, as LPG would reduce short-lived climate pollutants such as black carbon, rather than GHG emissions. A fuel switch from biomass fuels to natural gas may increase total GHG emissions. The national government aims to tackle the use of fluorinated gases in air-conditioning units and refrigerators, which will reduce national GHG emissions[1], although this is not included in Accra's inventory, as it is a BASIC+ emissions source.

Mainstreaming Ghana's Nationally Determined Contributions into National Development Plans (2017) sets out a target for doubling energy efficiency improvements in powerplants to 20% by replacing light crude oil with indigenous natural gas in power generation. Additionally, there is a plan to scale up capacitor bank installation in 1,000 commercial and industrial facilities.

Local Policies and Plans: The city's mandate does not extend to some of the actions that would be required to achieve net zero emissions in the energy sector – namely, decarbonizing the electricity grid. The city can however influence consumer demand as it enforces energy efficiency compliance in new buildings through the building permitting process, especially after the introduction of a new Ghana Building Code (GS1207 of 2018) that includes energy efficiency standards.

Accra Metro Assembly is leading by example through a pilot Energy Efficient Project where building energy audits were carried out for select municipal schools and hospitals.

A pilot for the AMA old office building and the Accra Girls' Senior High School identified opportunities and supported facility owners/operators to implement the recommendations.

3.2.1 Support the adoption of Ghana's Net Metering Code

This action is a policy mechanism that would enable households or businesses that generate renewable energy to sell surplus electricity back to the national grid. The Net Metering Code would serve as a feed-in tariff that can unlock private sector investments (depending on how favorable the rates are) and can increase penetration of solar PV in residential and commercial buildings. This action is aligned with Ghana's Scaling up Renewable Energy Programme.

Priority climate actions

The following actions aim to achieve significant improvements in Accra's energy sector, which will ensure the city is on a path to fulfilling the aims of the Paris Climate Agreement:

- **Action 06** — Support the adoption of Ghana's Net Metering Code
- **Action 07** — Agreement to Purchase Renewable Energy from IPPs
- **Action 08** — Green and Resilient Buildings Programme
- **Action 09** — Improving the efficiency of industrial facilities

Lead agency	**AMA Works Department**
Collaborating agency(s) and stakeholders	• Ministry of Works & Housing • Energy Commission • Ministry of Energy • Electricity Company of Ghana • PURC • GRIDCo
Reducing emissions from:	
Adapting to:	

1 Success Story of the Ghana Refrigerator Efficiency Project implemented by the Energy Commission http://www.energycom.gov.gh/files/The%20Success%20story%20of%20the%20Energy%20Efficient%20Refrigerator%20Project.pdf

Action 06	Support the adoption of Ghana's Net Metering Code
Sub-actions	• Collaborate with national government to ensure the finalisation of the Net Metering Code policy (2021) • Introduce a program to encourage both residential and industrial users to use renewables with the advantage of feeding into the grid (2023) • Establish a framework within AMA for renewable installation, a cost evaluation, the development of a payment system (2024) • Identify pilot neighbourhoods for rollout of initial phase (2025) • Implement a bylaw requiring all commercial properties and residential homeowners to install renewable energy systems to meet a percentage of the energy demand by 2050 (beyond 2025)
Output	Residential and commercial distributed solar investments and a neighbourhood pilot project by 2025
Sustainable development benefits	• Energy resilience through more diverse energy generation sources, with little burden on the Government's budget • Economic benefits through the creation of jobs and domestic manufacturing in the renewable energy sector
Resourcing plan	GoG,IGF

3.2.2 Agreement to Purchase Renewable Energy from IPPs

This action aims to increase renewable energy supplied to the national grid. Subject to approval from the regulator, AMA will seek to purchase renewable energy from independent power producers (IPPs) in accordance with the city's energy demand.

Action 07	Agreement to Purchase Renewable Energy from IPPs
Sub-actions	• Prepare a procurement plan, setting out the options and timeframes for implementation (2023) • Lobby national government to allow municipalities to secure renewable energy from IPPs (2025) • Upon approval from government, enter discussions with bulk energy users and renewable energy suppliers (beyond 2025)
Output	Renewable energy purchase agreement by 2025
Sustainable development benefits	• Improved air quality • Stimulate the local market for renewable energy IPPs
Resourcing plan	IGF, Donor, Private sector

3.2.3 Green and Resilient Buildings Programme

The Green and Resilient Building Programme will promote energy efficiency and climate resilience rating for existing and new residential and commercial/ institutional buildings in the city.

Action 08	Green and Resilient Buildings Programme
Sub-actions	• Build capacity of AMA to enforce the Ghana Building Code of 2018 (2022) • Enforce guidance for new developments to meet energy efficiency requirements in the national building code (2022) • Conduct education programmes (schools and communities) to educate the public on energy efficiency and its human-related behaviours (2023) • Form an AMA working group to develop the Green Buildings Programme in collaboration with the Ministry of Works and Housing, Energy Commission and key stakeholders (2023) • Identify neighbourhoods for residential pilot schemes (2023) • Implement a bylaw requiring old buildings to be retrofitted with energy efficient technologies (2025) • Enforce requirements for renewable energy technologies in the AMA bylaws (2025) • Develop innovative finance mechanisms to encourage electricity users to adopt energy efficiency measures (beyond 2025)
Output	Green building rating system by 2023 Pilot schemes for existing and new buildings by 2023
Sustainable development benefits	• Increase training and professional opportunities in energy audits and energy efficiency retrofits • Savings on electricity for building owners/users
Resourcing plan	IGF, Donor

3.2.4 Improving the efficiency of industrial facilities

This action will improve the energy efficiency of industrial facilities operating in Accra, and is aligned with Ghana's Nationally Determined Contribution, to double energy efficiency improvement to 20% in industrial facilities by 2030 (p. 12).

*Greater Accra Regional Hospital (Ridge), Accra

Action 09	**Improving the efficiency of industrial facilities**
Sub-actions	• Develop a work plan for conducting energy audits (2021) • Establish a team of officers for conducting audits and providing support to industrial facilities (2022) • Identify facilities to review and audit (industrial sites and commercial buildings) (2022) • Engage banks on industrial energy efficiency investment opportunities (2022) • Introduce voluntary targets and incentives, such as reduced property rates (2023) • Consider the implementation of mandatory targets(beyond 2025)
Output	Guidelines on voluntary targets and incentives for industrial energy efficiency by 2023
Sustainable development benefits	• Improved air quality, especially around industrial areas • Improved access to finance for energy efficiency investments in industry and manufacturing • Increased competitiveness of local industrial and manufacturing sectors
Resourcing plan	IGF, Private sector

Barriers and challenges

The actions identified in the energy sector are heavily dependent on national government leadership. Energy sector climate actions may face several challenges, including opposition from existing energy suppliers and difficulties in securing funding.

*BRT Bus Stop in Accra

3.3 Transportation

Transport sector service delivery priorities in Accra are to:

a. ***Urgently reduce rush hour congestion*** by making public transport options attractive to commuters

b. ***Establish a non-motorized transit network,*** in particular to connect public transport hubs and commercial/institutional facilities (e.g. schools)

c. ***Improve the quality of sidewalks*** including tree-planting for shade

d. ***Prepare for a transition from fuel to electric vehicles*** (to absorb excess electricity generation capacity in Ghana)

Climate Action in Transportation

This sector covers actions related to city mobility.

Mass transit refers to all public transport systems (rail, regular bus, BRT).

Motorized transport refers to private cars, trotros and other small-scale vehicles with engines.

Non-motorized transport refers to walking and cycling.

Current situation

Roads are highly congested in and around Accra, with 37% operating at unacceptable service levels of less than 15km/h and only 24% of roads above acceptable levels, at more than 30km/h throughout the day[1].

Road-based public transport is operated largely by informal or quasi-regulated transport service operators with a mix of vehicles. Minibus trotros, with capacities ranging from 15-23 passengers, account for the largest modal share (over 62%). Taxis provide a feeder service to trotro terminals. Motorcycle taxis are banned in Accra. The formal Metro Mass Transit Limited (MMT) bus service carries less than 10% of all road-based passengers. Around 20% of the roads currently have sidewalks, and walking also counts for a large modal share.

Train lines are in place, but service coverage is limited. The Ghana Railway Company Limited (GRC) operates commuter rail services on two routes, forming an Eastern Line. The lines are the Accra-Tema (2 trains each making 2 trips per day) and Accra-Nsawam Lines (1 train making 4 trips per day).

Transport actions under current institutional arrangements will not explicitly build resilience except where there is concerted effort to coordinate the delivery on infrastructure for climate adaptation for all institutions involved (institutional mechanisms). This is because existing financing for the provision of social and economic infrastructure are executed by different agencies on indicators without definable resilience considerations mainstreamed in the transport sector.

1 Greater Accra, 2017. Vol 1: Regional Spatial Development Framework, p. 164.

For example, emergency response activities where flooding situations disrupt transport services have no direct institutional bearing on transport service agencies i.e., Ministry of Transport at the national level or Department of Transport at the local level. The National Disaster Management Organisation, Ministry of Roads and Highways, Ministry of Works and Housing or the Security Agencies would be the front-line role players to build resilience in transport systems, supported by the Ministry of Finance.

In effect, planning for resilient infrastructure is yet to be facilitated through existing national and local planning systems, since climate adaptation and mitigation issues are a relatively recent phenomenon subsequent to the National Planning Systems Act of 2004. At the local level, the city's climate actions in transportation seek to promote collaboration to ensure wider co-benefits and building resilience in infrastructure development, which will not only reduce GHG but provide better services and opportunities for vulnerable groups.

Existing policies and plans

National Policies: The National Transport Policy (NTP) prepared by the Government of Ghana in 2008, and currently under revision, presents the sector's vision and goals, user-oriented transport indicators, public sector-oriented indicators, and aims to better align transport and land use spatial planning and service provision.

A major implementation milestone for the NTP was the Ghana Urban Transport Project (2008 – 2016), which aimed to introduce mass transit BRT on major road corridors in Accra.

A progressive "hub and spoke" type system was envisioned, aimed at developing a formal mass transit arterial bus network operating between the hubs and integrated with the informal trotro operators, feeding the hubs from surrounding communities.This hub and spoke vision is still being realized in Accra. The Road Map for the Promotion of Cleaner Buses in Accra (2017) aims to convert existing transit buses to run on CNG, as an air quality improvement measure.

The national and regional plans provide a basis for integrated transportation and spatial planning to achieve emissions reduction and resilience objectives in Accra. However, AMA will need to downscale these plans to the local level and work collaboratively with national agencies to improve mass transit in the city center.

Local Policies and Plans: Even though the intended BRT project (Ghana Urban Transport Project) was not effectively realised, there were important institutional gains. Local capacity was built after diagnosing the challenges that the national Department of Urban Roads faced with maintaining transport infrastructure post-construction. The AMA Transport Unit was created in 2017 through Urban Passenger Transport bye-laws, empowering the city to regulate transport operators, register routes, issue and enforce permits (retaining 50% of fines) and managing a database.[1] The creation of the Transport Unit provides an important basis for developing local capacity to meet local needs.

Aside from a local regulatory and enforcement role, the power to implement transport and spatial planning interventions generally rest with national government agencies and regional stakeholders.

Lead agency	**AMA Transport Department**
Collaborating agency(s) and stakeholders	• Ministry of Transport • Department of Urban Roads (DUR) • Ministry of Local Government and Rural Development
Reducing emissions from:	
Adapting to:	

3.3.1 Transition to a low emission bus rapid transit system

This action aims to reduce transport emissions by encouraging a modal shift from private cars to high occupancy and sustainable public mass modes, such as the bus rapid transit (BRT) with dedicated bus lanes.

The BRT buses for the city of Accra will use cleaner fuel engine technology, including compressed natural gas (CNG) and electric buses. This policy approach is being promoted by the Ministry of Transport and the Environmental Protection Agency in Government of Ghana and has been outlined with specific policy objectives such as adopting soot-free bus engine technology. The shift to cleaner buses is also supported by the Ministry of Energy, which is currently facilitating private initiatives for the introduction of electric vehicles.

Priority climate actions

Priority climate actions in the transport sector over the next five (5) years are to:

Action 10 — Transition to a low-emission bus rapid transit system
Action 11 — Construct shaded sidewalks to protect pedestrians
Action 12 — Accra Low Emission Travel Strategy

1 Accra Metropolitan Assembly (Urban Passenger Transport Services) Byelaws, 2017. Accessed 1 June 2020 https://ama.gov.gh/doc/bye-laws.pdf

Action 10	Transition to a low emission bus rapid transit (BRT) system
Sub-actions	• Assess the BRT system's state of play in Accra and prepare a BRT Improvement Strategy (2022) • Develop, disseminate and enforce public transport service quality standards (2023) • Introduce integrated ticketing system and cross-jurisdictional enforcement through registration and permitting (2023) • Expand operational infrastructure, including priority lanes and electric charging at depots (beyond 2025) • Develop and connect Public transport feeder network to BRT interchange facilities (beyond 2025) • Lobby national government to upgrade all buses to electric/biogas by 2050 (beyond 2025) • Renew all trotro fleet by 2040 (beyond 2025) • Develop performance indicators for transport systems for quality and quantity licensing regulation (beyond 2025)
Output	Low emission BRT transit system (primarily CNG and electric) running in Accra by 2030
Sustainable development benefits	• Better quality of life through less time spent in traffic/congestion and reduced road injury and fatality • Improved air quality from less pollution due to traffic • Reduce noise with electric vehicle operations • Affordable transportation • Increased economic productivity
Resourcing plan	GoG, Donor, IGF

Road space required by 50 people riding bicycles (left), cars (middle) and a bus (right)

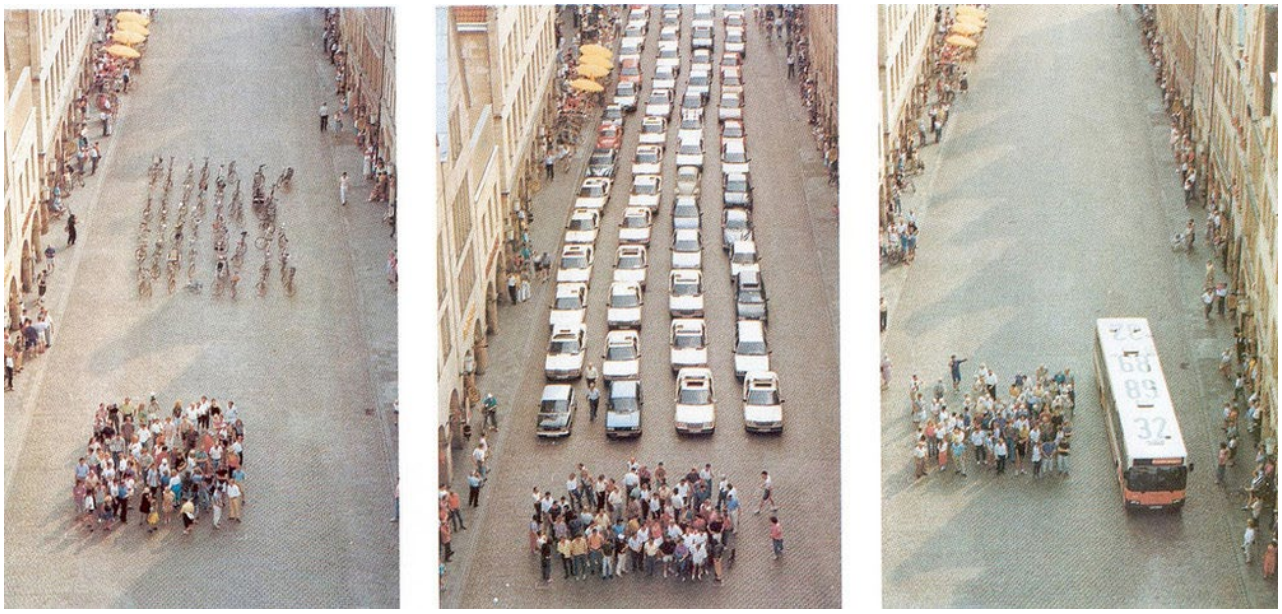


Figure 22: Transport modes and congestion impacts in the city of Accra

3.3.2 Construct shaded sidewalks to protect pedestrians

Accra will aim to nurture an urban environment that prioritizes pedestrians, implementing the AMA Pedestrian Road Safety Action Plan (2018 – 2022)[1].

This CAP action will construct safe and shaded sidewalks, building on the work of the Cities4Forest & Urban Forestry Commission. A key resilience goal is to couple sidewalks with construction of improved covered drains to cope with more extreme rainfall events. The action is aligned with Ghana's Non-Motorized Transport Strategy (2018 – 2028).

Action 11	**Construct shaded sidewalks to protect pedestrians**
Sub-actions	• Prepare a Walking and Cycling Infrastructure Strategy for Accra (2021) • Identify priority routes within the city for the construction of foot and cycle paths (2021) • Plan for and construct new pedestrian walk way facilities with green infrastructure (2023) • Implement supplementary measures, including bicycle rental and engagement campaigns to promote the benefits of cycling (2025) • Encourage institutions to provide trip-end shower facilities (2025)
Output	Improved pedestrian infrastructure and closed drainage systems by 2025
Sustainable development benefits	• Safer walking environments to improve quality of life • Improved air quality from non-motorized transport options • Improved urban drainage systems and covered drains
Resourcing plan	GoG, IGF, Donor

3.3.3 Accra Low Emission Travel Strategy

This action aims at reducing the carbon footprint of transport by minimizing trips by single occupancy vehicles, encouraging compact urban development and introducing cleaner fuel technology.

Action 12	**Accra Low Emission Travel Strategy**
Sub-actions	• Form a technical working group, including environmental, planning, health and transport departments (2021) • Develop and implement urban and transport planning indicators (2022) • Create Transport Analysis Zones (TAZs) to serve as spatial units for transport modelling, and incorporate climate risks to build resilience to flood and heat (2022) • Commission an assessment to identify a short-list of priority measures for low emission transport (2023) • Evaluate to understand the social, environmental and economic impacts of identified priority measures (2023) • Undertake stakeholder engagement on the preferred option (2024) • Seek approval from the Assembly and Cabinet on the implementation of the preferred package of measures (2025) • Establish low emission zones by restricting access to fossil fuel vehicles (beyond 2025) • Introduce schemes to promote ride sharing, the use of public transport and low emission vehicles(beyond 2025)
Output	Low emission strategy under implementation for Accra CBD by 2025
Sustainable development benefits	• Improved health • Improved environment
Resourcing plan	IGF, Private sector

1 Pedestrian Road Safety Action Plan (2018 – 2022) https://tinyurl.com/ycvtz7gf

Barriers and challenges

A challenge to building resilience in the transport sector relates to data challenges for land-use systems and the organisation of the informal sector for the purpose. About 98% of transport services are provided by informal private operators; however, industry regulation by public agencies requires meeting revenue objectives and financial sustainability, which puts the interests at odds with the informal operators that are currently driving service quality and systems performance.

The actions identified in the transport sector may face public opposition to large scale infrastructure projects and schemes that impact the cost of travel, a lack of political support and limitations relating to the availability of technology and skills. The high cost of electricity, and the high upfront cost of electric buses, is a barrier to EV uptake.

*Metro Mass Bus Terminal Accra.

3.4 Land use and physical planning

The level of governance for land use and physical planning is in three levels: national, regional and district. Each of these planning levels has a distinct role, responsibility and function. The Land Use and Spatial Planning Act (Act 925), introduced in 2016, aims to enhance the decentralization process by creating an enabling environment for metropolitan / municipal / district authorities and agencies to better perform their land use and human settlement functions.

Land use and physical planning at the local level are designed to ensure orderly physical development by facilitating the approvals of development applications and to create opportunities for the preparation of spatial plans.

Land use and physical planning priorities for Accra's CBD are to:

a. ***Enhance service delivery*** within Accra Metropolitan Assembly, in particular to protect environmentally sensitive areas and to better serve socio-economically deprived communities

b. ***Contribute to raising*** Ghana's ranking on the World Bank Ease of Doing Business Index by expediting development planning and building permitting from the current 90 day-cycle to an improved 30-day cycle

c. ***Improve the efficiency of revenue collected*** from property rates through an electronic billing system

d. ***Improve spatial planning awareness*** and capacity development for staff of the Physical Planning Department

Climate Action in Physical Planning

This sector covers the physical or spatial layout of human settlements – how land is used.

Central Business Districts have the highest residential and commercial densities and the greatest variety of services.

Informal areas (slums) often lack formal land deeds and have no (or very little) social and municipal infrastructure.

Current situation

Accra city is characterized by good infrastructure development, service provision, economic provisions and high human resource development in comparison with other cities in the country. The city's institutions have met the high demands for public services over the years, through the use of ad-hoc assistance approaches. However, the challenges faced by the city of Accra are daunting, including a rapidly growing population and inadequate data to forecast land use change.

Unfortunately, the city is unable to provide adequate formal housing and employment for the majority of the residents. This has resulted in a rise in informal settlements, which are the largest centers of housing, employment and other socio-economic opportunities in Accra. Land use planning has failed to adequately deal with informal housing and unregulated development.

Existing policies and plans

National/Regional Policies: The Greater Accra Regional Spatial Development Framework (RSDF) is a strategic spatial plan, which includes measures to address climate change. Accra falls within the urban development boundary, beyond which no further development is allowed in order to achieve a sustainable, compact urban region in the interest of all citizens[1]. Based on recent trends, the density of areas within the urban boundary should accommodate at least a doubling of population and a doubling of demand for housing, in particular affordable accommodation, in the next 20 years.

The RSDF identified the CBD of Accra as the metropolitan core (primary node) for the Greater Accra region. The RSDF set out guidelines for Accra[2]:

a. Accra could easily accommodate 20,000 additional residential units; low-income housing developments are needed, especially in derelict buildings

b. In areas earmarked as 'precinct upgrade' or 'informal housing' the focus should be on the provision of social and municipal infrastructure as well as the aesthetic upgrade of the area

c. Medium and high-income areas should be allowed to densify

City Policies and Plans: The Accra Metropolitan Area is guided by several policies and plans. The city of Accra has been guided by the Accra City Plan of 1958 and Accra Strategic Plan of 1992. In recognition of the risks posed by climate change, the city developed a Resilence Strategy to offer a roadmap towards mitigating and responding to the challenges faced by Accra Metropolis. In 2017, the region developed its first Regional Spatial Development Framework, allocating broad proposals for the next 20 years. The metropolitan area is guided by seventeen local plans that give details on zoning, zoning heights, setbacks, and determination of environmentally sensitive areas.

The Physical Planning Department of AMA, as part of its obligation in the Medium-Term Development Plan, is updating and preparing redevelopment planning schemes for the Accra Central Business District to reflect the current land use designations.

1 Greater Accra, 2017. Vol 1: Regional Spatial Development Framework, p. 136.

2 Greater Accra, 2017. Vol 1: Regional Spatial Development Framework, p. 145 and 153.

Lead agency	AMA Physical Planning Department
Collaborating agency(s) and stakeholders	• Metro Parks and Gardens • Metro Social Welfare and Community Development • Forestry Commission • Ministry of Environment, Science & Technology • National Disaster Management Organisation
Reducing emissions from:	
Adapting to:	

Priority climate actions

Priority climate actions in land use and spatial planning for the next five (5) years are:

Action 13 — Climate change risk & impact assessment

Action 14 — Update the Accra CBD Local Spatial Plan

Action 15 — Prepare and implement climate resilient coastal management plans

Action 16 — Deploy innovation in food production, storage and processing

*Bible House, Jamestown, British Accra

This includes community consultation, and the collection and processing of socio-economic spatial data to generate spatial plans, which will guide the development of land use and building regulations. Environmentally sensitive areas and socio-economically deprived areas will be mapped and analyzed to better track sustainable development indicators.

The Physical Planning Department is also completing street names and property addresses under the National Digital Property Address System. After implementation, the AMA will be in a position to implement an electronic property rate billing system to improve revenue collection for the Internal Generation Fund, which will in turn finance development projects.

3.4.1 Climate change risk & impact assessment

A climate change risk assessment will provide data on climate hazards, and the scale of impacts that such events will have on sectors, assets, and services. This action will support development practices that reduce the climate risks to people, investments and public and private assets.

Action 13	Climate change risk & impact assessment
Sub-actions	• Undertake a preliminary risk and impact review to develop the scope of the assessment (hazards,geographic extent, resolutions) (2021) • Secure funding (2022) • Collect and analysedata (2023) • Develop climate risk hazard maps for flooding, heat, water scarcity and other hazards (2024) • Integrate findings into physical planning processes (2025)
Output	Climate risk assessment by 2021 and climate risk hazard maps by 2024
Sustainable development benefits	• Reduced losses (human, economic) due to systems that are able to cope with more extreme climate variability
Resourcing plan	GoG, IGF, Donor

3.4.2 Update the Accra CBD Local Spatial Plan

The GAMA Spatial Development Framework (RSDF 2017) requires metro areas to develop or update Spatial Local Plans within GAMA, to implement the spatial regional guidelines. The regional framework identifies AMA as a central business district zone. Informal settlements and slum areas, per the mandate of the city authorities, should have access to improved basic services.

Action 14	Update and prepare a redevelopment scheme for Accra CBD Local Spatial Plan
Sub-actions	• Prepare a detailed inventory of Accra's Central Business District (2021) • Update the Spatial Local Plan for Accra which reflects its high-density designation under the RSDF (2023) • Introduce requirements for climate resilient, carbon neutral development (2023)
Output	Accra CBD updated and redevelopment local spatial plan by 2023
Sustainable development benefits	• Improved spatial development practices, embedded within the planning process • Improved regulation of new developments • Guidelines for sustainable development of the planned area • Involvement of the informal sector in the land use planning process • Outline various sectors of the CBD that need investment • Walkability and pedestrian access along main roads in the CBD to decongest the city center of vehicles and reduce traffic congestion
Resourcing plan	IGF, Donor

3.4.3 Prepare and implement climate resilient coastal management plans

This action aims to reverse coastal erosion and promote the full economic potential of AMA's coastal area and heritage sites. This action is aligned with the GAMA Spatial Development Framework (Vol 3, p. 27) to prepare coastal management plans that promote coastal re-vegetation and erosion control of denuded and neglected coastal towns. With many high density, largely informal settlements along the coast, it is important to develop plans that upgrade slums, for example by setting ratios for the private sector to construct affordable housing or incentives that promote occupancy.

*Jamestown Beach, Accra

Action 15	Prepare and implement climate resilient coastal management plans
Sub-actions	• Prepare a budget and secure funding (2022) • Undertake stakeholder consultation, data collection and preparation of the plans (2023) • Implement, monitor, supervise the coastal plans (2025) • Train Disaster Volunteer Groups (DVGs) in the coastal sub-metros on climate change (2025)
Output	Coastal management plans for AMA's coastal region by 2025
Sustainable development benefits	• Livelihood diversification opportunities for vulnerable coastal communities • Waterfront development guidelines to harmonise the haphazard development currently ongoing along the coast of AMA towards orderly development • Reclassification of zoning along the coast to check incompatible land uses
Resourcing plan	GoG

3.4.4 Deploy innovation in food production, storage and processing

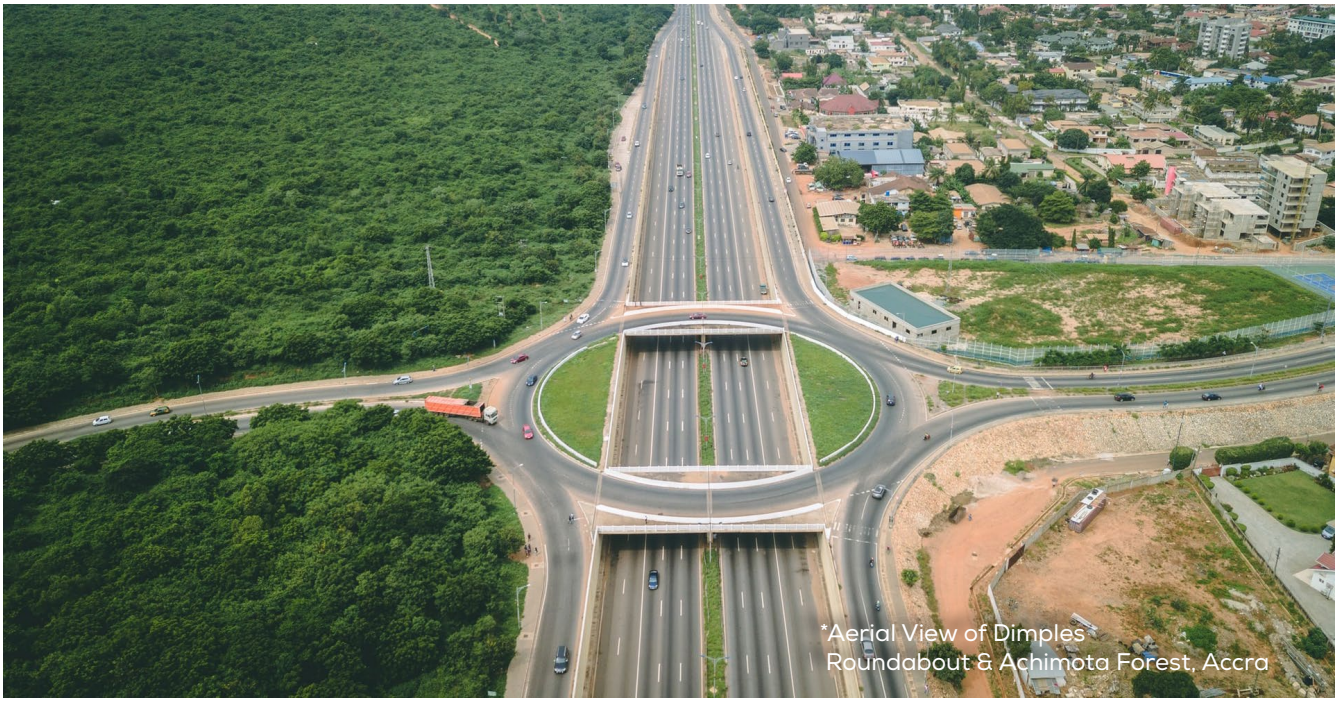
This action aims to support food security throughout Accra's food supply chain and is aligned with Ghana's Nationally Determined Contribution to deploy innovation in food storage and food processing (p. 14).

Whereas food was grown near Accra in the past, that land has been converted into sprawling development. Food is being grown farther away, which increases the cost of food and adds risk to food systems. In addition, hotter city environments mean that food, especially fresh produce, could spoil more quickly at markets, which could be mitigated by innovations in refrigeration.

Action 16	Deploy innovation in food production, storage and processing
Sub-actions	• Georeference critical food security infrastructure (2021) • Assess the feasibility of "urban food sheds" (e.g. solar-powered refrigeration hubs) (2022) • Assess the feasibility of urban gardening (2022) • Identify opportunities with food security and the waste economy (2023) • Protect remaining land use classification of agricultural lands (2025)
Output	Map of food security infrastructure by 2022
Sustainable development benefits	• Job creation through improved local food value chains and processing • Reduced food waste through better storage facilities • Improve nutrition through better availability of fresh produce
Resourcing plan	Donor

Barriers and challenges

The actions identified under land use and physical planning face a number of barriers, including lack of adequate data, limited funding and a reluctance to make progressive changes to existing policies. Some informal settlements have developed in high risk flood areas, such as Old Fadama, and this poses a challenge to retrofitting slums with public services while avoiding flood exposure.



*Aerial View of Dimples Roundabout & Achimota Forest, Accra

3.5 Mainstream the climate change threat in development processes

Service delivery priorities related to mainstreaming climate change in Accra's development processes are:

a. ***Transparent,*** responsive and accountable governance

b. ***Effective*** Local Government structures

c. ***Improved access*** to finance for Local Governments

d. ***Partnerships*** between Local Government, businesses and other actors

Current situation

The Assembly's Medium-Term Development Plan captures isolated activities which may have climate change mitigation functions but are not specifically targeting climate resilience or reduced emissions. With the NDPC guidelines now mandating all bodies to include specific climate change actions in plans, there is the opportunity to pursue strategic climate change mainstreaming.

The Assembly has sixteen (16) Departments whose heads report directly to the Metro Coordinating Director (MCD) and ultimately to the Metro Chief Executive (the Mayor).

The Accra Metro Assembly performs its functions through Sub-Committees, which deliberate and submit recommendations to the Executive Committee, which then submits onto the General Assembly for final decisions to be taken and implemented. The Sub-Committees include: Social Services, Finance & Administration, Development Planning, Revenue Mobilization, Justice & Security, Education, Works, Environmental Management, Youth & Sports, Culture & Trade and Industry, Disaster Management, Food & Agriculture, Health, Women & Children.

Existing policies and plans

Current policies on climate change mainstreaming are mostly at the national level. These include Ghana Climate Change Impacts, Vulnerability and Adaptation Assessments, Medium Term Development and Budgetary Processes at the National, Municipal and District level, National Climate Change Adaptation Strategy (NCCAS), Climate Change Policy Briefs, Economics of Climate Change Adaptation, the piloting of climate change interventions in some districts, reviews of low carbon growth issues, and sub-regional scale issues.

Lead agency	**AMA Metro Planning & Coordination Unit**
Collaborating agency(s) and stakeholders	• Office of the Mayor and the Resilience & Sustainability Unit • Ministry of Finance • MESTI • Ministry of Local Government & Rural Development

*Rawlings Park, CBD, Accra.

Mainstreaming Climate in Development

This section covers how to bring climate change into the way things are done – in other words, reducing emissions and adapting to climate change becomes a "normal thing".

Mainstreaming refers to thinking about climate change when making decisions on development planning, budgeting, implementation, monitoring and evaluation.

Priority climate actions

Priority actions for mainstreaming the climate change threat in development processes over the next five (5) years are:

Action 17	Citizen & community engagement on climate action
Action 18	Revive the Resilience and Climate Change Steering Committee
Action 19	Establish a dedicated team to explore and test new funding models
Action 20	Set up a metro-level adaptation technical working group

3.5.1 Citizen & community engagement on climate action

This is a cross-cutting CAP action that aims to continue educating people on climate change, the actions that they can take, and the actions that AMA is planning to take, as outlined in this CAP.

Action 17	Citizen & community engagement on climate action
Sub-actions	• Provide foundational knowledge and skills in climate change (2021) • Design messaging and awareness campaigns (2021) • Engage partners and provide training (2022) • Implement campaigns, track feedback and evaluate impact (2023)
Output	CAP citizen and community campaign completed by 2023
Sustainable development benefits	• Inclusive climate action and community ownership • Make climate opportunities available for all citizens • Transparency on decision-making
Resourcing plan	Donor

3.5.2 Revive the Resilience and Climate Change Steering Committee

The Steering Committee will comprise representatives from all the municipal assemblies within the jurisdiction of the CAP. They will be responsible for formulating and approving long-term strategies.

Action 18	Revive the Resilience and Climate Change Steering Committee
Sub-actions	• Define the roles and responsibilities of the Steering Committee in collaboration with national government stakeholders (2021) • Establish a clear institutional framework hierarchy with the R&S Unit as lead (2021) • Invest in staff expertise and provide the platform for relevant staff to participate in professional networks devoted to climate change mitigation and adaptation (2022)
Output	Resilience and Climate Change Steering Committee set up with TORs provided for members by 2022
Sustainable development benefits	• Improving cross departmental collaboration on climate actions • Developing long term actions for building climate resilience • Engaging core metropolitan and municipal staff in climate decision making
Resourcing plan	IGF

3.5.3 Establish a dedicated team to explore and test new funding models

A select group of officers are to be tasked with the responsibility of targeting ways to access financial resources for urban climate compatible development. They will address the need for recommendations on how to increase the institutional effectiveness of the assembly to attract financing that will catalyze more ambitious urban climate projects, including providing an enabling environmental for local private sector growth. As international climate finance is secured, AMA will report to the Ministry of Finance using their Climate Change Finance Tracking Tools.[1]

1 Climate Change Finance Tracking Tool and Operations Manual: https://www.mofep.gov.gh/divisions/rsd/climate-change

Action 19	Establish a dedicated team to explore and test new funding models
Sub-actions	• Train and build the capacity of technical staff to identify and develop bankable projects (2021) • Explore new models of cooperation and coordination across the multiple assemblies (2022) • Leverage the private sector to finance green projects (2024) • Develop a revolving fund to jointly finance local climate mitigation and adaptation actions (2024) • Devise special allocations for community led initiatives (2024) • Prepare climate finance tracking reports (2025)
Output	Team members identified and trained and a revolving fund to finance climate action is established by 2024
Sustainable development benefits	• Long term development financing • Reduction of emissions • Capacity building on climate resilience
Resourcing plan	IGF and External Funding

3.5.4 Set up a Metro-level adaptation technical working group

This action consists of periodic convening of technical experts across both public and private sectors to provide advice on how to achieve climate actions and build the capacity of relevant stakeholders. This working group will also be involved in the climate risk assessment.

Action 20	Set up a Metro-level adaptation technical working group
Sub-actions	• Identify a list of key sectoral and institutional stakeholders for inclusion in the technical working group (2021) • Establish regular meetings, communications and agree on targets for adaptation (2021) • Develop the capacity of departments, sub-metros and partner environmental CSOs (2022)
Output	Members of TWG appointed and terms identified for the working period by 2021
Sustainable development benefits	• Inclusive climate action • Transparency on decision-making
Resourcing plan	Donor

Barriers and challenges

The actions relating to mainstreaming the climate change threat in development processes will likely face several barriers, including maintaining political engagement, designing effective communication campaigns, sourcing adequate funding and access to the required skills and expertise.

4 DELIVERING RESULTS

4.1 Climate governance: institutional arrangements to drive impact

Accra's efforts in addressing climate change rely heavily on the improvement of climate governance capacities to ensure that key stakeholders across the board are able to drive implementation at various levels of the Assembly's work. Local governments play an important role in advancing climate commitments at the city level. Our sub-national actions will help in achieving the national emissions reductions outlined in the NDC. It is vital that local governments shape climate policies and support national climate action.

The leading departmental unit for driving climate action in the Assembly is the Resilience and Sustainability Unit, which is responsible for supporting the various local departments to achieve the Assembly's vision of building a Smart, Resilient and Sustainable City. This unit was institutionalized as a result of the gaps in addressing climate resilience in local planning[1]. Although there exist different climate-relevant activities in the Assembly's Medium-Term Development Plan, there are no specific targets to achieve the desired reduction in emissions and to adapt to the projected changes in climate (temperature, rainfall).

The Metro Planning Coordination Unit (MPCU) is responsible for collating and preparing the Assembly's Medium-Term Development Plan (MTDP). Together with the Resilience and Sustainability Unit, these two agencies will ensure that actions in this CAP are adequately captured for implementation in the development planning process. As summarized in Chapter 3, climate governance priorities are to:

- ***Revive the Resilience and Climate Change Steering Committee*** to oversee and highlight work being done at the Assembly. They will be responsible for engaging the departments that they represent and ensuring that information reaches all levels.
- ***Establish a clear institutional framework hierarchy with the R&S Unit as lead.*** The assembly will ensure coordinated governance by assigning clear departmental roles and ensuring the objectives among the different key actors are aligned.
- ***Build capacity of departments, sub-metros and partner environmental CSOs*** to understand and implement climate projects related to their fields of work.
- ***Set up a Metro-level adaptation technical working group*** to take charge of decision-making and coming up with new adaptive pathways (as recommended in the National Adaptation Plan implementation framework). The working group will comprise technical staff from the assemblies and experts from other agencies and institutions.

4.2 Human resources

Institutional strengthening is a key focus of the Assembly in ensuring effective implementation of our climate actions. AMA has a limited number of staff in departments/units to implement the CAP. We will develop our existing human resources through education, training and research to build the city's capacity. Sub-national ownership of capacity building efforts is key to long-term impact, just as networking, partnerships and experience-sharing are important contributors.

Capacity gaps at the Assembly pose a challenge for the mainstreaming of actions into the city's planning and budgeting. This is a result of technical gaps in areas such as research and observation, risk modelling, vulnerability assessments and development of investment-ready projects. In building the capacity of our local government and communities, priorities are to:

- ***Provide foundational knowledge and skills in climate change.*** This will include raising awareness about the impact of climate change within the assembly, reiterate the mission of the CAP and the opportunities it provides for the city.
- ***Develop education and communication plans*** to support the changes needed at the various levels of the assembly.
- ***Enlist the key people within the organization,*** as well as external people and organizations, whose involvement is essential for the successful implementation of the organization's climate change programs. Institutional roles will be clearly defined. Relevant staff will be provided with clear missions and an understanding of the level of action required to address the changes.

1 Accra Resilience Strategy, 2019. http://www.100resilientcities.org/strategies/accra/

- ***Provide the platform for relevant staff to participate in professional networks devoted to climate change mitigation and adaptation*** to enable them to learn the best practices and have access to optimal tools for successful implementation.

- ***Invest in staff expertise,*** including funding for short courses and other academic programmes. This will encourage technocrats to think through system-wide issues and take action according to their role and place in the organization. Key areas to focus on include climate resilience, sustainability, strategic planning, project management, climate financing and monitoring and evaluation.

These measures will be strengthened through partnerships with relevant agencies, implementing partners, NGOs and CSOs and will be ongoing during the CAP implementation.

4.3 Financial resources

The city will be taking actions to unlock investment for infrastructure to achieve its climate action targets. The Assembly has access to statutory funding sources, including the internally generated funds (IGF), Government of Ghana (GoG), and external donor climate finance, with occasional private partnerships for specific projects. However, the lack of sufficient internally generated funds and limited access to global climate finance for sub-national projects is currently a key barrier.

Prioritized climate actions will be embedded in the city's Medium-Term Development Plan (MTDP) from the sub-metropolitan level. This will be enforced as a requirement at the national level. Budgetary allocations are made to climate activities through the Assembly's Composite Budget process.

How the CAP will be financed

The CAP will be financed through four main sources:

- ***Internally generated funds (IGF):*** this is the most predictable funding, as it is generated internally by AMA's permits and fees and allocated to Units and Departments through the MTDP budget cycle; however, the total funding is very low and is mainly restricted to staff salaries.

- ***Government of Ghana***: projects are financed by the national government through the annual budget and multi-year project planning process. This includes the District Assemblies' Common Fund (DACF), a Development Fund created under Article 252 of the 1992 constitution. The DACF is capitalized with at least 5% of the national revenue set aside for all District Assemblies, using a sharing formula approved by Parliament.

- ***Donor funding***: the city will apply for global climate finance to implement priority CAP actions, with approval from the Government of Ghana.

- ***Private sector investments:*** local private sector actors are key partners for CAP actions. Several CAP actions would benefit from de-risking investments for the local private sector; transparency on return-on-investment of solar or energy efficiency investments might encourage banks to lend for such investments. Other CAP actions require more direct private sector engagement, such as waste sector contracts for service delivery.

*Students in Examination Hall, Ayalolo, Accra

Accra Climate Action Plan

To enable AMA to leverage the main sources of funding for CAP actions, priorities are to:

- ***Explore new models of cooperation and coordination across the multiple assemblies*** for actions in the CAP. AMA will work with municipalities to devise innovative funding measures for cross-cutting projects.
- ***Establish a dedicated team to explore and identify financial instruments and test new funding models.*** They will be responsible for developing a database of climate investment opportunities available, identify and pitch local financial institutions to develop climate finance solutions for Accra, and lead the process in developing project proposals to attract investment.
- ***Develop a revolving fund to jointly finance local climate mitigation and adaptation actions***. This fund will aim at reducing Accra's carbon footprint by financing both climate mitigation (energy efficiency, renewable energy) and adaptation investments in key areas such as energy efficiency in buildings and small-scale renewable energy production. Cost savings resulting from the implemented measures will be directly returned to the fund ensuring sustainability and boosting further investments for accelerating other climate change activities within the city.
- ***Train and build the capacity of technical staff to identify and develop bankable projects***. The issue of bankability of projects has been a long topic of discussion for the Assembly in an effort to attract private investment for city-level projects.
- ***The Assembly will seek technical support*** for training lead implementors and other relevant staff on how to transform the right climate actions into bankable, and investment-ready projects. As the assembly currently pursues more ambitious goals, we will put effort into raising the required funding whilst limiting potential risk.
- ***Leverage the private sector to finance green projects.*** The underlying investment potential in helping cities go green is significant. Cities like Johannesburg have engaged in partnerships that have yielded promising results. Accra will seek to leverage existing partnerships with private organisations.
- ***Devise special allocations for community led initiatives.*** The City will improve its track record of working with its citizens in the co-design of the city's infrastructure and services. An allocation of IGF will be dedicated to tactical innovative projects led by citizens with support of private organizations to sustain the engagement of citizens in proposing ideas for improving key adaptation measures.
- ***Prepare climate finance tracking reports*** to the national government to help manage budgets and keep track of commitments made to specific projects[1]. This will prepare the assembly for requirements which may be raised in accessing the Ghana Green Fund or other global funds.

Accra City Hall, Independence Avenue, Accra

1 Climate Change Finance Tracking Tool and Operations Manual: https://www.mofep.gov.gh/divisions/rsd/climate-change

4.5 5-year timeline for implementation

The following table (Table 2) presents the detailed sub-action implementation plan for the 20 priority CAP actions. This illustrates the plan for implementation within the first five years of the CAP.

Table 2. CAP 5-year implementation plan

In Progress	
Completed	

		2021	2022	2023	2024	2025	Beyond 2025
Action 1	Solid waste optimisation strategy						
Sub Action	Collect and update quantitative and qualitative data on waste						
	Develop digital maps of waste generation, collection, transfer, processing and disposal points in Accra						
	Identify priority infrastructure and service gaps						
	Identify and engage stakeholders						
	Develop Terms of Reference for a Working Group and constitute the Waste Optimisation Strategy Working Group						
	Evaluate the performance of the Public Private Partnership (PPP) waste collection program						
	Validate strategy and publish the Waste Optimisation Strategy						
	Pilot introducing recycling into existing or new PPP contracts with the private sector						
Action 2	Separate wet and dry waste at source						
Sub Action	Evaluate the results of pilot source separation programs at household, school and community levels						
	Develop bylaws for wet and dry waste separation						
	Engage Public Private Partnership (PPP) contractors to determine the most cost-effective options for keeping wet and dry waste separated in collection						
	Launch a public education and awareness campaign						
	Mobilize stakeholders including waste pickers and informal recyclers to comply with waste separation bylaws, and facilitate innovative start-ups						

		2021	2022	2023	2024	2025	Beyond 2025
Action 3	Divert organic waste from landfills (double composting capacity)						
Sub Action	Conduct research into the safe use of food waste (e.g. processing waste food into animal feed)						
	Prepare an Accra wet waste (composting) plan						
	Provision of infrastructure to incentivize composting and processing food waste into valuable commodities						
	Stimulate local markets and business opportunities for organic waste processing (e.g. establishing community compost programme, construction of small-scale biogas facilities)						
	Implement sustainable waste pickers/informal sector programs; facilitate innovative start ups						
Action 4	New engineered sanitary landfill with gas capture						
Sub Action	Assess the feasibility of landfill gas capture, including environmental, social and climate risks, and develop risk management plans						
	Commission engineering drawings for the landfill						
	Secure financial investment						
	Construct and commission the landfill with gas capture						
Action 5	Increase the coverage of sanitation infrastructure						
Sub Action	Enforce sanitation bylaws						
	Improve customer enumeration through georeferenced data						
	Take samples and analyse effluent quality at wastewater facilities						
	Enforce effluent discharge standards at wastewater facilities						
	Encourage treatment facilities to collect and use methane from anaerobic treatment						

		2021	2022	2023	2024	2025	Beyond 2025
Action 6	Support the adoption of Ghana's Net Metering Code						
Sub Action	Collaborate with national government to ensure the finalisation of the Net Metering Code policy						
	Introduce a program to encourage both residential and industrial users to use renewables with the advantage of feeding into the grid						
	Establish a framework within AMA for renewable installation, a cost evaluation, the development of a payment system						
	Implement a bylaw requiring all commercial properties and residential homeowners to install renewable energy systems to meet a percentage of the energy demand by 2050						
Action 7	Agreement to Purchase Renewable Energy from IPPs						
Sub Action	Prepare a procurement plan, setting out the options and timeframes for implementation						
	Lobby national government to allow municipalities to secure renewable energy from IPPs						
	Upon approval from government, enter discussions with bulk energy users and renewable energy suppliers						
Action 8	IGreen and Resilient Buildings Pro						
Sub Action	EBuild capacity of AMA to enforce the Ghana Building Code of 2018						
	Enforce guidance for new developments to meet energy efficiency requirements in the national building code						
	Conduct education programmes (schools and communities) to educate the public on energy efficiency and its human related behaviours						
	Form an AMA working group to develop the Green Buildings Programme in collaboration with the Ministry of Works and Housing, Energy Commission and key stakeholders						
	Identify neighbourhoods for residential pilot schemes						
	Implement a bylaw requiring old buildings to be retrofitted with energy efficient technologies						
	Enforce requirements for renewable energy technologies in the AMA bylaws						
	Develop innovative finance mechanisms to encourage electricity users to adopt energy efficiency measures						

		2021	2022	2023	2024	2025	Beyond 2025
Action 9	Improving the efficiency of industrial facilities						
Sub Action	Develop a work plan for conducting energy audits						
	Establish a team of officers for conducting audits and providing support to industrial facilities						
	Identify facilities to review and audit (industrial sites and commercial buildings)						
	Engage banks on industrial energy efficiency investment opportunities						
	Introduce voluntary targets and incentives, such as reduced property rates						
	Consider the implementation of mandatory targets						
Action 10	Transition to a low emission bus rapid transit (BRT) system						
Sub Action	Assess the BRT system's state of play in Accra and prepare a BRT Improvement Strategy						
	Develop, disseminate and enforce public transport service quality standards						
	Introduce integrated ticketing system and cross-jurisdictional enforcement through registration and permitting						
	Expand operational infrastructure, including priority lanes and electric charging at depots						
	Develop and connect Public transport feeder network to BRT interchange facilities						
	Lobby national government to upgrade all buses to electric/biogas by 2050						
	Renew all trotro fleet by 2040						
	Develop performance indicators for transport systems for quality and quantity licensing regulation						

		2021	2022	2023	2024	2025	Beyond 2025
Action 11	Construct shaded sidewalks to protect pedestrians						
Sub Action	Identify priority routes within the city for the construction of foot and cycle paths	■					
	Prepare a Walking and Cycling Infrastructure Strategy for Accra, in alignment with the Non-Motorized Transport Policy	■					
	Plan for and construct new pedestrian walkway facilities with green infrastructure, including covered drains	■	■	■			
	Implement supplementary measures, including bicycle rental and engagement campaigns to promote the benefits of cycling	■	■	■	■	■	
	Encourage institutions to provide trip-end shower facilities	■	■	■	■	■	
Action 12	Accra Low Emission Travel Strategy						
Sub Action	Form technical working group, including environmental, planning, health and transport departments	■					
	Develop and implement urban and transport planning indicators	■	■				
	Create Transport Analysis Zones (TAZs) to serve as spatial units for transport modelling	■	■				
	Commission an assessment to identify a short-list of priority measures for low emission transport	■	■	■			
	Evaluate to understand the social, environmental and economic impacts of identified priority measures	■	■	■			
	Undertake stakeholder engagement on the preferred option	■	■	■	■		
	Seek approval from the Assembly and Cabinet on the implementation of the preferred package of measures	■	■	■	■	■	
	Establish low emission zones by restricting access to fossil fuel vehicles	■	■	■	■	■	■
	Introduce schemes to promote ride sharing, the use of public transport and low emission vehicles	■	■	■	■	■	■
Action 13	Climate change risk & impact assessment						
Sub Action	Undertake a preliminary risk and impact review to develop the scope of the assessment (hazards, geographic extent, resolutions)	■					
	Secure funding	■					
	Collect and analyse data	■	■				
	Develop climate risk hazard maps for flooding, heat, water scarcity and other hazards	■	■	■			
	Integrate findings into physical planning processes	■	■	■	■	■	

		2021	2022	2023	2024	2025	Beyond 2025
Action 14	Update and prepare a redevelopment scheme for Accra CBD Local Spatial Plan						
Sub Action	Prepare a detailed inventory of Accra's Central Business District						
	Update the Spatial Local Plan for Accra which reflects its high-density designation under the RSDF						
	Introduce requirements for climate resilient, carbon neutral development of the CBD						
Action 15	Prepare and implement climate resilient coastal management plans						
Sub Action	Prepare a budget and secure funding						
	Undertake stakeholder consultation, data collection and preparation of the plans						
	Implement, monitor, supervise the coastal plans						
	Train Disaster Volunteer Groups (DVGs) in the coastal sub-metros on climate change						
Action 16	Deploy innovation in food production, storage and processing						
Sub Action	Georeference critical food security infrastructure						
	Assess the feasibility of "urban food sheds" (e.g. solar-powered refrigeration hubs)						
	Assess the feasibility of urban gardening						
	Protect remaining land use classification of agricultural lands						
Action 17	Citizen & community engagement on climate action						
	Provide foundational knowledge and skills in climate change						
	Design messaging and awareness campaigns						
	Engage partners and provide training						
	Implement campaigns, track feedback and evaluate impact						
Action 18	Revive the Resilience and Climate Change Steering Committee						
Sub Action	Define the roles and responsibilities of the Steering Committee in collaboration with national government stakeholders						
	Establish a clear institutional framework hierarchy with the R&S Unit as lead						
	Invest in staff expertise and provide the platform for relevant staff to participate in professional networks devoted to climate change mitigation and adaptation						

		2021	2022	2023	2024	2025	Beyond 2025
Action 19	Establish a dedicated team to explore and test new funding models						
Sub Action	Train and build the capacity of technical staff to identify and develop bankable projects						
	Explore new models of cooperation and coordination across the multiple assemblies						
	Leverage the private sector to finance green projects						
	Develop a revolving fund to jointly finance local climate mitigation and adaptation actions						
	Devise special allocations for community led initiatives						
	Prepare climate finance tracking reports						
Action 20	Set up a Metro-level adaptation technical working group						
Sub Action	Identify a list of key sectoral and institutional stakeholders for inclusion in the technical working group						
	Establish regular meetings, communications and agree targets for adaptation						
	Develop the capacity of departments, sub-metros and partner environmental CSOs						

5 EVALUATING IMPACT

5.1 Monitoring and reporting on implementation

Monitoring and reporting on the actions set out in the CAP will be the responsibility of AMA, specifically the Metro Planning and Coordination Unit (MPCU). The CAP will be submitted to the Regional Coordinating Council (RCC), who will send it to the National Development Planning Commission (NDPC). The RCC monitors the Metropolitan Area's respective Planning Units, who undertake monitoring and engagement. NDPC and RCC require monitoring reports, once a Plan is absorbed into AMA operations. The process of monitoring and reporting on the implementation of the actions will be documented through the existing framework under the Medium-term Development Plan (MTDP). This framework incorporates annual action plans, which outline the activities undertaken by different departments and agencies relating to specific development objectives. These annual action plans will be updated to align with the CAP, and the existing framework will be used to assess their performance. Processes to monitor their implementation will include:

- Quarterly review meetings, involving the extended metro planning coordinating team. These meetings are used to review activities listed in the annual action plan.
- Quarterly field visits, involving the monitoring of physical projects.
- The preparation of quarterly and annual progress reports.

The progress reports are reviewed on an annual basis by the extended metro planning coordinated team, and recommendations for improvements and budget allocations are identified. These plans are also subject to external review by the Ministry of Local Government and Rural Development (MLGRD).

At the National level, teams from the NDPC, MLGRD, and the Office of the Administrator of District Assemblies Common Fund (DACF) also conduct visits and inspections of the Municipality's projects. In addition, other stakeholders like the World Bank, Country Directors of particular projects and other development partners are likely to conduct their own monitoring.

Beyond standard development processes, AMA will continue to report annually to the CDP (Carbon Disclosure Project) on GHG emissions. Furthermore, as external (donor) funding is secured to finance CAP projects, AMA will report to the national government using the Ghana Climate Finance Tracking Tool[1].

Implementation of this CAP will contribute to the achievement of Ghana's Nationally Determined Contributions. National monitoring under the UNFCCC is the responsibility of the Ghana Environmental Protection Agency (EPA) monitoring unit.

Photo credit: Pressfoto/Freepik

1 Ghana Ministry of Finance, , https://www.mofep.gov.gh/divisions/rsd/climate-change

*Railway Lines Repairs, Accra

5.2 Learning and evaluating impact

The primary mechanism for evaluating the performance of the actions outlined in the CAP is the existing monitoring and reporting framework established in support of the MTDP. The responsibility for the preparation of the MTDP, including the completion of reviews and reporting, sits with the Metro Development Planning Coordinating Unit. Until recently, the MTDP did not require explicit consideration for climate impacts; however, with Ghana's national commitment to achieving the objectives of the Paris Climate Agreement, there is now a requirement to make climate a core consideration in development plans. Therefore, the monitoring and reporting framework creates a robust system for evaluation of the actions in the CAP.

The regular review meetings and progress reports will ensure that prioritized actions can be tracked, and where necessary, adjusted to ensure they remain on course to achieve their aims. It will also be important to align this process with the ongoing preparation and publication of the city's GHG emissions inventory, assessing climate risks, as well as the collection of other indicator data, to track the performance of the actions and to assess the broader impacts and potential co-benefits from their implementation. It will be important to engage with all stakeholder groups identified in Chapter 1 of this plan to understand the effects of implemented actions on local communities and environments, including Urban or Zonal Council members, the Assembly Members, Traditional Authorities, Women's Representatives, Youth Representatives, Religious Leaders, Teachers/ Civil Servants, Unit Committees and an NGO/CBO representatives.

5.3 Updating the Climate Action Plan

AMA's Medium-Term Development Plan (MTDP) will include 5-yearly CAP updates, to provide political/ administrative continuity. AMA will strive to link the CAP revisions and updates with the five-yearly cycle of the Government of Ghana's NDC updates, given that Accra's CAP and Ghana's revised NDC are both being published in 2020. Contingent on available funding, the second 5-year Climate Action Plan should be published in 2024/2025, with an action plan covering the period of 2025 – 2030, in line with Ghana's NDC. External support for AMA's CAP revision should be secured in the year 2022, and the review and updating of the CAP should start in 2023, given that climate action planning is a 1-2-year process.

The CAP is a 'living document' which will undergo periodic review and assessment; in particular, the next iteration of the CAP will benefit from a climate risk assessment to develop a more robust climate risk evidence basis and an updated greenhouse gas emissions inventory.

In the lead up to the target years of 2030, 2040 and 2050, the baselines, targets and trajectories will be updated to reflect the impacts of implemented actions and to account for new technologies and approaches to reducing climate impacts and greenhouse gas emissions, to provide the greatest opportunity of achieving climate resilient and carbon neutral development in 2050.

ACKNOWLEDGEMENTS

Few accomplishments are as important as those that meet milestones which set clear paths to sustainable futures. In the past few years, the science and facts of climate change and its impacts have been seen and felt in the City of Accra. Negatively impacting lives, destroying properties and threatening economic growth and livelihoods, especially of the vulnerable and large informal sectors of the city.

Developing this Climate Action Plan would not have been possible without the commitment of the Mayor of Accra, Honourable Mohammed Adjei Sowah and dedicated efforts of the Accra Metropolitan Assembly (AMA) sectoral leads – Alex Johnson (Head, Transport), Victor Kotey (Head, Solid Waste Management), Eric Baiden (Works Department), Eden Gbeckor-Kove (Head, Physical Planning), staff of Metro Planning & Coordination Unit and Resilience & Sustainability Unit.

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*Launch of "Adopt a Space" Program

ABBREVIATIONS

AMA	Accra Metropolitan Assembly
BRT	Bus rapid transit
CAP	Climate action plan
CBD	Central business district
CBO	Community-based organization
CNG	Compressed natural gas
DACF	District Assemblies Common Fund
DVG	Disaster volunteer groups
EPA	Environmental Protection Agency
GAMA	Greater Accra Metropolitan Area
GAR	Greater Accra region
GDP	Gross Domestic Product
GHG	Greenhouse gas
GoG	Government of Ghana
IGF	Internally generated funds
IPCC	Intergovernmental Panel on Climate Change
LPG	Liquefied petroleum gas
M&E	Monitoring and Evaluation
MESTI	Ministry of Environment, Science, Technology and Innovation
MLGRD	Ministry of Local Government and Rural Development
MMDA	Metropolitan, Municipal and District Assemblies
MPCU	Metro Plan Coordination Unit
MTDP	Medium Term Development Plan
NADMO	National Disaster Management Organisation
NDC	Nationally Determined Contribution
NGO	Non-governmental organization
RCC	Regional Coordinating Council
RSDF	Regional Spatial Development Framework

GLOSSARY

Adaptation. In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.[1]

Base year. A historical datum (e.g., year) against which a city's emissions are tracked over time.[2]

Climate change. Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.[a]

Climate-compatible development. A form of development building on climate strategies that embrace development goals and development strategies that integrate climate risk management, adaptation and mitigation.[a]

Governance. A comprehensive and inclusive concept of the full range of means for deciding, managing, implementing and monitoring policies and measures. Whereas government is defined strictly in terms of the nation-state, the more inclusive concept of governance recognizes the contributions of various levels of government (global, international, regional, sub-national and local) and the contributing roles of the private sector, of nongovernmental actors, and of civil society to addressing the many types of issues facing the global community.[a]

Mitigation (of climate change). A human intervention to reduce emissions or enhance the sinks of greenhouse gases.[a]

Mitigation scenario. A plausible description of the future that describes how the (studied) system responds to the implementation of mitigation policies and measures. See also Emission scenario, Pathways, Socio-economic scenario and Stabilization (of GHG or CO_2-equivalent concentration).[a]

Sustainability. A dynamic process that guarantees the persistence of natural and human systems in an equitable manner.[a]

Transformation. A change in the fundamental attributes of natural and human systems.[a]

*Independence Square, Accra

Endnotes

IPCC (2018). Annex I: Glossary. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf

World Resources Institute (2014). Global Protocol for Community-Scale Greenhouse Gas Emission Inventories: An Accounting and Reporting Standard for Cities https://ghgprotocol.org/sites/default/files/standards/GHGP_GPC_0.pdf

GA SYMBOLS AND THEIR MEANING AS USED IN THIS DOCUMENT

We would like to sincerely appreciate the approval from the Chiefs and Elders of the Ga Traditional Council for the use of these Ga symbols in this Climate Action Plan.

BEADS

A string of beads does not get lost when it falls in the presence of elders.

There is no misunderstanding that cannot be settled peacefully.

ATSWERE

Ladder - symbol of fairness.

Someone is not sent up a ladder only to have it snatched away.

You do not betray the confidence that others put in you.

APKA

Nielɔ eduu ɡbɛ

The one who know does not get lost. Symbol of knowledge

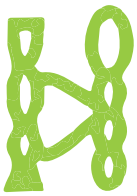
AWALE TƐ

The awale marble is symbolic of sacrifice through hardship to secure the future.

ALAKAA NYOMNO

God cannot be deceived.

You reap what you sow.



HAATSO

One does not play under the candle wood tree but rather the swamp ebony tree.

Meaning - every soul minded person prefers peace and restfulness to stress and hardship.

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