

1.0 INTRODUCTION

Climate change is having a growing impact on cities around the world, including cities in the Kumasi Metropolitan Assembly (KMA). KMA is experiencing more extreme weather patterns, such as heavy rainfall, and higher temperatures. These changes are causing problems for people's health, agriculture, and the overall environment. The Kumasi Metropolitan Assembly (KMA) is particularly vulnerable to flooding, especially during the rainy season. This is partly due to poor urbanization. As the city grows, the increase in concrete and asphalt surfaces is making certain areas hotter, leading to the urban heat island effect, where temperatures are higher than in surrounding rural areas.

The city's agriculture, which is crucial to its economy, is also under threat because of unpredictable rainfall and extreme temperatures that affect crop growth. To tackle these challenges, the Kumasi Metropolitan Assembly (KMA) needs to focus on both preventing further damage and adapting to the changing climate. This includes improving the city's infrastructure, such as upgrading drainage systems, promoting clean energy, reducing pollution, and managing water resources more effectively. A strong climate action plan is essential to make KMA a more resilient area, where people can live safely and sustainably, despite the challenges posed by climate change

2.0 CLIMATE CHANGE ACTION PLAN

KUMASI METROPOLITAN ASSEMBLY 2026 CLIMATE ACTION PLAN								
NO.	ACTIVITY	LOCATION	2026				IMPLEMENTING INSTITUTION	
			Q1	Q2	Q3	Q4	Lead	Collaborating
1	Empower 20 female head porters (kayayei) as climate action agents through public awareness campaigns on tree planting, equipping them to promote mitigation and adaptation strategies in markets and slums.	Metro wide					Environmental Health	Social Welfare/PRO
2	Plant 100,000 trees along suitable locations in the Kumasi Metropolis	Metro wide					Parks & Gardens Dept.	Environmental Health
3	Create a competition amongst selected (4) senior high schools on source separation of waste and composting of organic waste for use in school farms	Metro wide					Environmental Health/Waste management	Metro Education/Planning Unit
4	Organize Competitions amongst youth clubs (4) /CSOs/NGOs in selected communities to plant and nurture to growth fruit trees using tax waivers as incentives	Metro wide					Environmental Health	Social Welfare/Planning Unit
5	Install rainwater harvesting systems in flood prone communities and 4 SHS	Metro wide					Works Depart.	Planning/ Environmental Health
6	Promoting of solar energy Energy efficient appliances Public transport electrification	Metro wide					Works Depart	Transport
7	Improve waste collection and recycling infrastructure in high-density areas	Metro wide					Waste Management Depart.	KMA, Environmental Health
8	Implement eco-friendly waste disposal systems in all Kumasi markets	Metro wide					Waste Management Depart.	KMA, Environmental Health

9	Strengthen disaster preparedness and early warning systems	Metro wide					National Disaster Management Organization (NADMO), Environmental Health	Planning Unit, Works Depart.
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3.0 IMPACT OF CLIMATE CHANGE ON CITIES IN KUMASI METROPOLITAN ASSEMBLY

The communities within the Kumasi Metropolitan Area (KMA) are facing significant impacts from climate change, which affect a wide range of sectors including infrastructure, health, economy, and the environment. As climate change leads to unpredictable weather patterns, rising temperatures, and other environmental changes, the city is grappling with challenges that threaten its growth and sustainability. Below are some of the key effects of climate change on the cities within KMA:

1. Rising Temperatures and Urban Heat Island Effect

Kumasi, often referred to as the "Garden City of West Africa," has seen rising temperatures over the past few years. This increase in heat is largely driven by deforestation and urbanization. As the city expands, large areas of natural vegetation are replaced by concrete structures, roads, and buildings, which absorb and retain more heat. This phenomenon, known as the urban heat island effect, makes Kumasi significantly hotter than surrounding rural areas. The rising temperatures can cause discomfort for residents, increase the demand for energy for cooling, and exacerbate heat-related illnesses. These rising temperatures also affect the natural ecosystems in the area, further challenging biodiversity.

2. Increased Flooding and Drainage Issues

One of the most visible impacts of climate change in Kumasi and its surrounding communities is the increase in flooding. Unpredictable rainfall patterns, with heavier and more concentrated downpours, have become more common. This is particularly evident in low-lying areas such as **Adum** and **Asafo**, where inadequate drainage systems are overwhelmed during heavy rains. Flooding leads to extensive damage to homes, roads, and businesses, causing financial losses and disrupting daily life. Poor drainage systems, which are unable to cope with the increased volume of water, exacerbate these challenges, leading to waterlogging and infrastructural damage.



Flood at Adum

3. Water Scarcity and Pollution

Climate change has also affected the availability of water in the KMA. Shifts in rainfall patterns have reduced the consistency of rainfall, affecting the natural water sources such as rivers and groundwater that the city relies on. The scarcity of water during dry seasons puts pressure on the population, particularly as demand for water continues to rise with urbanization. In addition to water scarcity, pollution is a major issue. Industrial waste, as well as household and agricultural runoff, pollutes rivers and water bodies, further degrading water quality. This results in higher risks of waterborne diseases, posing a threat to public health and increasing the burden on the city's healthcare system.

4. Health Challenges

The effects of climate change in Kumasi are also seen in public health. Rising temperatures and the stagnation of floodwaters provide ideal breeding grounds for mosquitoes, which increases the incidence of malaria and other vector-borne diseases. In addition to malaria, diseases like dengue fever are also on the rise due to changing weather patterns that favor mosquito reproduction. The

urban heat island effect and poor air quality from industrial emissions and vehicular pollution also contribute to respiratory diseases and heat stress. These health issues place a greater strain on healthcare resources, affecting the general well-being of the population.

5. Economic Consequences

The economic impact of climate change in KMA is felt in several ways, particularly in relation to flooding and infrastructure damage. Roads, bridges, and other vital infrastructure often suffer significant damage during extreme weather events such as heavy rainstorms. The repair costs can be substantial, diverting resources away from other essential services. The informal sector, which plays a major role in Kumasi's economy, is particularly vulnerable to these disruptions. Small businesses, street vendors, and local traders often face losses due to flood damage and the interruption of services, making it harder for them to recover and thrive. Additionally, the rise in food prices linked to agricultural disruptions also leads to economic hardships for many residents.

4.0 CLIMATE CHANGE SUSTAINABILITY PLAN FOR GREATER KUMASI

4.1 Vision

The goal of the Climate Change Sustainability Plan for Greater Kumasi is to create a strong, sustainable community that can handle the effects of climate change. The plan imagines a city where protecting the environment and growing the economy happen together. Along with addressing climate change, the plan aims to make society fairer by making sure all residents can enjoy the benefits of building a better, more sustainable future.

4.2 Goals

To guide the transformation of Greater Kumasi into a more sustainable city, the plan has outlined several key goals:

- 1. Reduce Greenhouse Gas Emissions by 30% by 2030**

The goal is to lower the city's carbon footprint and help fight climate change worldwide. This will be done by using less energy, using more clean energy like solar and wind, and encouraging green practices in everyday life, like how we get around, manage waste, and build things. By making these changes in homes, businesses, and public services, the plan hopes to make the city more sustainable and help protect the environment for the future.

- 2. Increase Green Spaces by 20% by 2030**

Green spaces such as parks, community gardens, and trees play a critical role in improving

the quality of life in urban areas. They provide cooling, improve air quality, and create spaces for recreation. This goal will focus on expanding and improving the availability of green spaces throughout the city.

3. Create a Fully Integrated Public Transit System by 2030

A reliable and sustainable public transport system will reduce reliance on private cars, which are a major source of pollution. By transitioning to low-emission vehicles, the city can drastically reduce its carbon emissions while providing residents with better transport options.

4. Reduce Waste Sent to Landfills by 20% by 2030

Effective waste management is critical for a cleaner, healthier environment. This goal seeks to reduce the amount of waste that ends up in landfills by promoting recycling, composting, and other waste-reduction strategies.

5. Improve Community Resilience to Climate Disasters

Climate change brings about extreme weather events like floods, storms, and heatwaves. This goal focuses on ensuring that Greater Kumasi is better prepared to handle these disasters, minimizing their impact on people and infrastructure.

4.3 Key Focus Areas

To achieve the goals outlined in the sustainability plan, the following focus areas have been identified:

- 1. Sustainable Transportation:** A key part of the plan is to make transportation more sustainable. This includes developing an integrated public transit system with low-emission vehicles, as well as promoting walking and cycling. By improving infrastructure for pedestrians and cyclists, the city will encourage more sustainable ways of getting around.
- 2. Urban Planning and Green Spaces:** Climate change considerations will be integrated into urban planning. This means designing neighborhoods and city spaces that support sustainability, such as creating more green areas and tree-planting initiatives. These green spaces will provide benefits like cleaner air, better mental health for residents, and cooling effects during hot weather.
- 3. Waste Management:** To reduce waste going to landfills, the city will introduce recycling and composting programs, alongside educating residents about how to reduce waste in their

homes and businesses. By focusing on waste reduction and resource reuse, the plan aims to minimize the city's environmental impact.

4. **Energy Efficiency and Renewable Energy:** Energy efficiency plays a major role in the sustainability of Greater Kumasi. Public buildings will be fitted with solar panels, and residential areas will be encouraged to adopt solar energy. Energy-efficient technologies, such as LED streetlights, will be used throughout the city. Energy audits will also be promoted to help businesses and homes save energy.
5. **Green Infrastructure and Biodiversity:** To protect and improve the local environment, the plan focuses on planting trees in the city, protecting local ecosystems, and restoring natural habitats. Creating community gardens and supporting local food production will help increase biodiversity and make the city more self-sufficient and sustainable. This will help reduce the city's environmental impact and make it a greener place to live.
6. **Community Engagement and Education:** A successful sustainability plan depends on everyone in the community getting involved. To help with this, workshops and educational programs will be set up to teach people about climate change and how to live more sustainably. Schools will include sustainability lessons in their classes, and events like "Sustainability Fairs" will highlight new green technologies. There will also be an online platform where residents can see how the city is doing in reaching its sustainability goals.

4.4 Monitoring and Evaluation

To make sure the goals of the Climate Change Sustainability Plan are being achieved, a Sustainability Task Force will be set up to manage its progress. The task force will review progress every quarter and give updates. Digital dashboards will collect data on important factors like energy use, emissions, and waste reduction. Each year, a sustainability report will be released to show what has been achieved, what challenges remain, and the next steps for the plan.

5.0 POLICY RECOMMENDATIONS FOR CLIMATE ADAPTATION IN KUMASI

The increasing challenges of climate change in Kumasi require a broad and multi-level approach to adapt. The city's rapid growth, urbanization, and environmental pressures need specific policies to reduce risks and improve the city's ability to cope. Below are policy suggestions to tackle the main climate issues Kumasi faces, focusing on areas like drainage systems, water and waste management, agriculture and food security, public health, and transportation.

B. Improved Drainage Systems

Effective drainage systems are critical in preventing the frequent flooding that plagues Kumasi, especially during heavy rainfall.

- **Upgrade and expand drainage networks:** The city should prioritize the expansion and modernization of drainage infrastructure to ensure that it can handle increased rainfall. This includes both primary drainage networks and local systems within neighborhoods.
- **Enforce regulations against blocking waterways:** Buildings, waste, and other debris often obstruct waterways, worsening flooding. Local authorities should strictly enforce regulations to prevent construction that blocks or redirects water flows, ensuring that natural drainage routes remain clear.
- **Green Infrastructure:** Increasing green spaces can help manage stormwater naturally. Tree planting, the creation of parks, and green roofs can absorb rainwater and reduce the amount of runoff that overwhelms drainage systems. These measures also help combat the urban heat island effect, mitigating rising temperatures in the city.

C. Water and Waste Management

Addressing water scarcity and waste management is crucial in the face of climate change, especially given Kumasi's fluctuating rainfall patterns and growing population.

- **Rainwater harvesting and storage:** To reduce reliance on unreliable external water sources, the city should promote the collection and storage of rainwater at both household and institutional levels. This can be achieved by providing incentives, technical support, and public education to encourage the installation of rainwater harvesting systems in homes, schools, and businesses.
- **Sustainable waste disposal:** Effective waste management systems should be expanded to promote waste segregation and recycling. This can help reduce the amount of waste sent to landfills and reduce pollution of water bodies. The local government should also strengthen enforcement against illegal dumping, particularly in rivers and streams, to ensure that water quality is not compromised.

D. Agriculture and Food Security

Kumasi relies heavily on its agricultural hinterland, and climate change impacts on agriculture threaten food security and local economies.

- **Climate-smart agriculture:** Farmers should be trained in climate-resilient farming practices, including the use of drought-resistant crops and efficient irrigation techniques.

These practices can help mitigate the impacts of changing rainfall patterns and temperature fluctuations, ensuring more reliable crop yields.

- **Encourage urban farming:** To address food insecurity, the local government should encourage urban farming initiatives, such as rooftop gardens and community farms. This can reduce dependence on imported food and reduce the carbon footprint associated with food transportation.

E. Public Health and Disaster Preparedness

With climate change leading to more frequent extreme weather events, there is an urgent need to strengthen public health and disaster preparedness in Kumasi.

- **Early warning systems:** The city should enhance weather forecasting capabilities and establish comprehensive early warning systems for floods, heatwaves, and other extreme events. This will help communities prepare for and respond to these risks, potentially saving lives and reducing property damage.
- **Health programs for climate-related diseases:** Increased temperatures and flooding create favorable conditions for the spread of diseases like malaria and cholera. The city should improve malaria prevention efforts, including mosquito net distribution, and expand public health campaigns focused on the risks of heat-related illnesses and waterborne diseases. These efforts can help build community resilience against health threats exacerbated by climate change.

F. Renewable Energy and Transportation

Transportation and energy consumption are significant contributors to Kumasi's environmental impact. Transitioning to renewable energy sources and promoting sustainable transport options can reduce emissions and improve air quality.

- **Promote public transport and non-motorized mobility:** The city should invest in an efficient and affordable public transportation system, such as buses and trains, to reduce reliance on private vehicles. Encouraging the use of public transport will reduce traffic congestion, lower emissions, and improve overall air quality in the city.
- **Invest in pedestrian-friendly infrastructure:** Developing pedestrian walkways and cycling lanes will not only encourage healthy lifestyles but also reduce traffic congestion and emissions. This can also make the city more accessible for those who rely on walking or cycling for daily commutes.

- **Encourage solar energy use:** As part of efforts to transition to renewable energy, Kumasi should encourage the installation of solar panels on both residential and commercial buildings. This can reduce the city's reliance on conventional energy sources and improve energy security, while also providing residents with access to affordable and sustainable power.