STRUCTURE PLAN FOR GREATER ACCRA METROPOLITAN AREA

STRATEGIC ENVIRONMENTAL ASSESSMENT

GAMA PLAN 2040

COWI

in association with

MAPLE CONSULT
MANAGEMENT PLANNING & ENVIRONMENT

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FOREWORD

The Strategic Environmental Assessment (SEA) Report is the outcome of conduct of the SEA of the Greater Accra Metropolitan Area (GAMA) Structure Plan. The Report details out a summary of the entire process, findings, recommendations, advisory notes, and a monitoring plan.

The broad purpose of the SEA is to have a holistic view of the environmental opportunities and risks that may arise resulting from the implementation of the GAMA Structure Plan, which is to be considered in the critical decisions at the earliest stage to ensure sustainable development.

The GAMA has sustainable development potential for the benefit of the entire nation regarding contributing to increase in national GDP, absorbing more than 80 percent of Ghana's FDI projects and being economic powerhouse in Ghana and Africa as a whole. Conscious effort should therefore be made to improve the urban living conditions and guiding the city towards a sustainable development trajectory, which requires a coherent spatial development strategy that ensures a win-win situation for natural resources, and socio-cultural, economic, and institutional development.

The SEA process was participatory involving stakeholders who participated in social media surveys, review of District Medium-Term Development Plans, stakeholder workshop in addition to desktop survey, who contributed to identifying and determining the key issues warranting attention in relation to effective coordination and collaboration in implementing the GAMA Structural Plan.

It is expected that the content of the Report including the recommendation and advisory notes is integrated into the GAMA Structure Plan and effective implemented to improve living conditions of the people of GAMA recommendations and advisory will be integrated in the GAMA.

We appreciate the participation and contributions of stakeholders for the successful preparation of the SEA Report of the GAMA Structure Plan, especially Messrs. Planner Kwaku Adjei-Fosu (GHRAMBOLL) and Evans Dark Mensah (Recast Consult) for putting the SEA Report together.

LIST OF ACRONYMS

	Description
AfDB	African Development Bank
CERGIS	Centre for Remote Sensing and Geographical Information Systems
DMTDP	District Medium-Term Development Plan
DUR	The Department of Urban Roads
FDI	Foreign Direct Investment
GAMA	Greater Accra Metropolitan Area
GAMA SP	GAMA Structure Plan
GAR	Greater Accra Region
GAMA	Accra Metropolitan Area Structure Plan
GARID	Greater Accra Resilient and Integrated Development
GARSDF	Greater Accra Region Spatial Development Framework
GIP	Ghana Infrastructure Programme
GIPC	Ghana Investment Promotion Centre
GIS	Geographical Information Systems
GLSS	Ghana Living Standard Survey
GoG	The Government of the Republic of Ghana
GSA	Ghana Standard Authority
GSS	Ghana Statistical Service
GWCL	Ghana Water Company Limited
LAP	Land Administration Project
LI	Legislative Instrument
LUSPA	Land Use and Spatial Planning Authority
MDA	Ministries, Departments, and Agencies
MESTI	Ministry of Environment, science, Technology, and Innovation
MINT	Ministry of Interior
MLGDRD	Ministry of Local Government, Decentralisation and Rural Development
MMDA	Metropolitan, Municipal and District Assembly
MoF	The Ministry of Finance
MoGCSP	Ministry of Gender, Children and Social Protection
MRH	The Ministry of Roads and Highways
MTDP	Medium-Term Development Plan
NDPC	National Development Planning Commission
NITA	National Information Technology Agency
NMT	Non-Motorised Transportation
NSDF	National Spatial Development Framework
NTP	National Transport Policy 2020
NUP	National Urban Policy
PPP	Policies, Plans and Programmes
RCC	Regional Coordinating Council
SDF	Spatial Development Framework
SEA	Strategic Environmental Impact Assessment
SP	Structure Plan
Tor	Terms of Reference for the GAMA Structure Plan
VALCO	Volta Aluminium Company

Introduction

Cities in Ghana have been undergoing a massive socio-economic, spatial, and environmental transformation. This is the result of an interaction between a growing population, rapid urbanization, and continuous economic growth, which have affected the capital city region and for that matter the Greater Accra Metropolitan Area (GAMA).

The GAMA covers parts of three (3) administrative regions of Ghana, namely, Central, Eastern, and Greater Accra region and their corresponding 32 Metropolitan, Municipal and District Assemblies (MMDAs) such as Ga Central, Accra Metropolis, Ablekuma, Tema, Kpone-Katamanso, Nsawam Adoagyiri, Awutu Senya respectively.

The GAMA has sustainable development potential for the benefit of the entire nation. For example, between 2000 and 2015, GAMA accounted for a fifth of the increase in national GDP. It is one of Africa's leading hubs for Foreign Direct Investment (FDI) and absorbs more than 80 percent of Ghana's FDI projects. GAMA is an economic powerhouse not only in Ghana and West Africa but also across Africa. Improving urban living conditions and guiding the city towards a sustainable development trajectory requires a coherent spatial development strategy that ensures a win-win situation for natural resources, and socio-cultural, economic, and institutional development.

It is in the light of foregone that in 2020, the Government of the Republic of Ghana (GoG) represented by the Department of Urban Roads of the Ministry of Roads and Highways received funds from the African Development Bank (AfDB) to prepare a comprehensive Structure Plan for the Greater Accra Metropolitan Area (GAMA SP). The plan will outline priority projects as catalysts for the achievement of the goals of the structural plan, guide the development or redevelopment of urban areas, towns/cities, and their peripheries within the GAMA over the next 15 years and promote integrated natural resources, socio-cultural, economic, and institutional development.

The project includes the preparation of a Strategic Environmental Assessment (SEA), an Implementation Strategy or Action Plan, an Investment Plan for a five-year pilot period, and five local plans for selected areas. These are in addition to mentoring and capacity building of key stakeholder staff, specifically spatial planners from LUPSA and Regional Coordinating Councils within the GAMA.

The GAMA Structure Plan falls under the Land Use and Spatial Planning Act, 206 (Act 925) and its preparation and implementation follow guidelines established in manuals developed under the Land Administration Project (LAP) in 2011.

Generally, structure plans are prepared after the preparation of a Spatial Development Framework (SDF), and they are identified in the SDF as areas that are experiencing massive socio-economic development or sensitive areas that require immediate attention. The GAMA SP is following the preparation of the Greater Accra Regional Spatial Development Framework (GARSDF). Normally, a Structure Plan is intended to last for a period of 15 years spread over 3 phases of five years each.

Legal framework for the SEA

The development of the GAMA Structure Plan is likely to be associated with potential environmental[1] risks and opportunities. The Strategic Environmental Assessment (SEA) process, therefore, aims at determining these and recommending plausible measures to mitigate them appropriately. The conduction of the GAMA Structure Plan SEA is in line with existing legal frameworks for Environmental Assessment in Ghana. These include the Environmental Protection Agency Act, 1994 (Act 490); National Development Planning System Act, 1994 Act 480, Land Use and Spatial Planning Act, 2016 (Act 925), Environmental Assessment Regulations, 1999 (LI 1652);

[1] The term *environment* is multi-dimensional. In the Ghana SEA context, a broad definition of environment has been adopted which covers the bio-physical environment as well as the social, cultural, economic and institutional conditions that constitute the human habitat

National Development Planning System Regulations, 2016 (LI 2232) as well as guidelines and manuals relating to the Land Administration Project (2011). The relevant details of the institutional, policy and legal frameworks concerning the SEA are captured in the subsequence section of this report

Definitions and concepts of SEA

Various definitions of SEA have evolved over the years, these include "… *formalized, systematic, and comprehensive process of evaluating the environmental effects of a Policy, Plan or Programme (PPP) and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making*".[2] Currently the definition used in the Ghanaian context is *"a system by which the opportunities and risks of a policy, plan or programme (PPPs) in relation to the environment are considered at the conceptual stage of decision making to ensure that the sustainability dimensions i.e., natural resources, economic, socio-cultural and institutional are at par resulting in the documentation of the process and translating into implementation results".*[3] The SEA Report is therefore a critical document generated from the whole assessment process including the findings and recommendations.

SEA broadly covers Policies, Plans and Programs (PPPs) and is most effective when applied during the conception and formulation of stages of PPPsin which different approaches or alternatives can be proposed (as is the case for the GAMA Structure Plan). Therefore, it serves as a tool to identify both obscure and hidden effects, taking into account their cumulative and induced impacts. The purpose of the SEA is to promote sustainability by considering various factors such as natural resources, socio-cultural aspects, economic considerations, and institutional issues related to public-private partnerships (PPPs) and decision-making processes at national, regional, and sub-regional levels.

The purpose of the SEA

The broad purpose of the SEA is to have a holistic view of the environmental opportunities and risks that may arise because of implementing the GAMA Structure Plan, which is to be considered in the critical decisions at the earliest stage to achieve the following:

i. Optimized socio-economic opportunities for all including the vulnerable, excluded, women and children
ii. Protected and enhanced natural resources (ecologically sensitive areas, etc.) on which communities depend for their livelihoods, as well as the survival of the entire ecosystem
iii. Reduced risks associated with the implementation of the GAMA Structure Plan, particularly concerning land use conflicts
iv. Improved health and well-being of inhabitants
v. Institutional systems that allow for greater participation in decision-making processes
vi. Progress in achieving the African Union (AU) Agenda 2063 targets and related Sustainable Development Goals (SDGs).

SPECIFIC OBJECTIVES OF THE SEA OF GAMA STRUCTURE PLAN

The specific objectives of the SEA are to:

i. Integrate environmental and social considerations into the preparation of the GAMA Structure Plan to ensure sustainable development
ii. Consider environmentally sensitive areas and provide guidance for protecting such resources within the GAMA Structure Plan

[2] Brown & Therivel et al., 1992
[3] Asare, 2017

iii. Identify the environmental opportunities and risks at the early stages of the development of the GAMA Structure Plan and provide recommendations that will enhance the opportunities and minimize the risks
iv. Provide mitigation measures and monitoring arrangements for effective management of the implementation of the GAMA Structure Plan
v. Analyse relevant baseline information on the natural resource, socio-cultural, economic, and institutional conditions of the communities that are likely to be affected
vi. Promote broad stakeholder participation and involvement in decision-making.

The findings of the SEA would feed into the key elements at the project phase of the implementation as well as the preparation of land use and spatial plans, among others. The SEA will also influence the Medium-Term Development Plans (DMTDPs) of the 32 Metropolitan, Municipal and District Assembly.

SEA in Ghana

The conduct of SEA in Ghana has developed over the years to include the Process and Content aspects. The SEA Process covers all the activities undertaken during the SEA. These activities are geared towards the involvement and participation of stakeholders with the objective of creating awareness, understanding and ownership of the outcomes of the SEA. All the activities end up in a document referred to as the Process Report of the SEA. The Content aspect of the SEA deals with assembling all the outcomes of the processes and activities of the SEA in a document known as the Content Report. The content of this report includes analyses of the information gathered at the various stages of the assessment as well as recommendations for a win-win situation for sustainable development which are then incorporated into the PPP.

In certain cases, a single report that combines both the Process and Content aspects may be issued. In the case of the SEA of the GAMA Structure Plan, both the process and content dimensions have been consolidated into one Report, the present document, as the SEA Report.

SEA methodology

The SEA in Ghana is guided by the report on the "Review of the Strategic Environmental Assessment in Ghana". In line with this guidance, the SEA of the GAMA Structure Plan followed the four steps presented below in Figure 1.

Figure 1: The four steps in the SEA methodology

Source: COWI A/S

PREPARATION/PRE-SCOPING PHASE

In 2020, the Government of the Republic of Ghana (GoG) through the Ministry of Roads and Highways/Department of Urban Roads (Client) recruited COWI A/S (Denmark) in association with Maple Consult (Ghana) as consultants to prepare a Structure Plan for GAMA. The consultants subsequently developed various tools for the identification of stakeholders and for collecting relevant views and other inputs for the Structure Plan and the SEA process.

SCOPING

The Scoping Phase of the SEA process was used to identify the possible risks and opportunities likely to be associated with the development of the GAMA Structure Plan with the active participation of stakeholders. The main activities therefore undertaken were as follows.

Social Media Survey

A 5-minute/15 questions survey was sent to 700 participants through social media - Facebook, Twitter, and WhatsApp over a two-month period to solicit views on GAMA's places, infrastructure, amenities, and services, as well as development priorities in relation to environmental risks and opportunities.

Review of Medium-Term Development Plans (2022-2025) of Metropolitan, Municipal and District Assemblies

All the 32 Metropolitan, Municipal and District Assemblies (MMDAs) within the GAMA have prepared Medium Term Development Plans (MTDP) covering the period 2022 to 2025 through popular participation of the citizenry. These MTDPs have goals and issues, which were reviewed, taking sustainability principles into consideration. There were also one-on-one discussions with Seven MMDAs which included Kolley Klottey, Ga West, Ga North, Adentan, Ashaiman, Krowor Municipal Assemblies and Accra Metropolitan Assembly respectively.

Stakeholder workshop

A workshop was organised for 73 participants comprising representatives from 25 MMDAs; 22 staff from LUSPA, and 24 representatives from Ministries, Departments and Agencies (MDAs) to discuss the findings of the interim report and emerging ideas for the GAMA Structure Plan on 20 October 2022. The MDAs include DUR; Ministry of Works and Housing; Ministry of Environment, Science Technology, and Innovation; Coastal Development Authority; Forestry Commission; Ghana Education Service; Environmental Protection Agency; Ministry of Food and Agriculture, Ghana Ports and Harbours Authority; Ministry of Local Government, Decentralisation and Rural Development; NDPC; and the Geography Department of the University of Ghana. An online interactive application called "Slido" was used to capture the responses of stakeholders to the questions posed. In addition, there were extensive informal discussions with individual residents of GAMA.

Desktop survey

A comprehensive desktop study was conducted to assess the risks and opportunities associated with the natural resources within the GAMA Structure Plan footprint. This study included a thorough literature review, focusing on identifying and examining the potential impacts related to the area's natural resources. Information collected during the development of the GARSDF was also updated, gaps filled, and the scope expanded to include the whole of the GAMA footprint. Relevant existing datasets and documentation, such as Ghana Strategic Investment Framework (GSIF) for Sustainable Land Management were also reviewed accordingly.

ASSESSMENT PHASE

All the issues and concerns gathered from the online survey, views from the MMDAs, workshops and desktop surveys relating to both risks and opportunities that could arise from the development of the GAMA were consolidated and analysed. The consolidation and analysis were guided by the following:

i. The frequency of occurrence of the issue or concern i.e., the number of times the issue was raised during the various stakeholder engagements
ii. Relevance of the issue to the SEA, either being high or low. High issues are of strategic importance, while Low relevance issues are project related and can be handled through the Environmental Impact Assessment (EIA).

Overview of the GAMA Structure Plan

This chapter presents a general description of a Structure Plan and Local Plans; a brief narrative of the coverage of the GAMA Structure Plan in the regions of Ghana as well as the justification, goals, and objectives of the Plan.

Description of structure and local plans

STRUCTURE PLAN

A Structure Plan is a dimensionally accurate spatial plan used to guide the development or redevelopment of an urban area and its peripheries. Specifically, a Structure Plan includes policy goals, objectives, strategies as well as actions required for the growth of new and the change of existing communities. It guides the major changes to land use, built form and public spaces that together can achieve economic, social, and environmental objectives for the area. It is an effective means to achieve sustainable management of natural and physical resources, particularly in an urban context.

A Structure Plan also defines broad land uses and delineates major infrastructure needs including transportation, water supply, wastewater, sewerage, power, and ICT networks, usually on maps and identifying which parts of the network need upgrading, adding on to the existing network as well as areas requiring major overhaul.

It provides an institutional framework for the Ministries, Departments, and Agencies (MDAs), Regional Coordinating Councils (RCCs), Metropolitan, Municipal and District Assembles (MMDAs), the development community, business owners, and residents to shape the growth and development of GAMA. These are in addition to ensuring that patterns, and intensities of existing, proposed development and redevelopment are coordinated, including permitting, to enable efficient use of resources, services, and facilities to prevent land use conflicts.

LOCAL PLAN

A Local Plan designates land use by function and purpose to meet the present and future needs of the community, within a specified planning period, usually not more than five years. It is prepared when needed and must be informed by a Structure Plan. The Local Plan would show individual land parcels and their proposed uses. It is a physical planning document that translates the policy and strategic planning of the structure plan in the form of a detailed land use proposal map for the local authority.

A Local Plan deals with residential density, subdivision, and the coordination of infrastructure on a neighbourhood or smaller scale, setting out what the opportunities are for development in the area and indicating the types of development that will and will not be permitted in locations. All other sections of the plan are intended as a guide and only for planning purposes. One of the most important planning elements is the future land use planning map. This map helps guide MMDAs and others on land use decisions relating to streets, transportation, transit, public investments in infrastructure, public spaces, and incentives in housing, neighbourhoods etc. Indeed, it is at the heart of the planning system and is the main consideration in deciding planning applications. Once the plan is approved, all land use decisions by MMDA staff, commissions, elected officials, developers, designers, builders, residents, non-governmental organizations, and business owners must be consistent with the provisions of the Structure Plan.

Coverage of the GAMA structure plan in the regions of Ghana

The intervention Area for the GAMA Structure Plan overlaps with three regions, namely, Greater Accra, Central and Eastern Regions respectively. The corresponding regional coordinating councils are the

- Central Regional Coordinating Council[4]

[4] https://crcc.gov.gh/

- Eastern Regional Coordinating Council[5] and
- Greater Accra Regional Coordinating Council[6] as indicated in Figure 2.

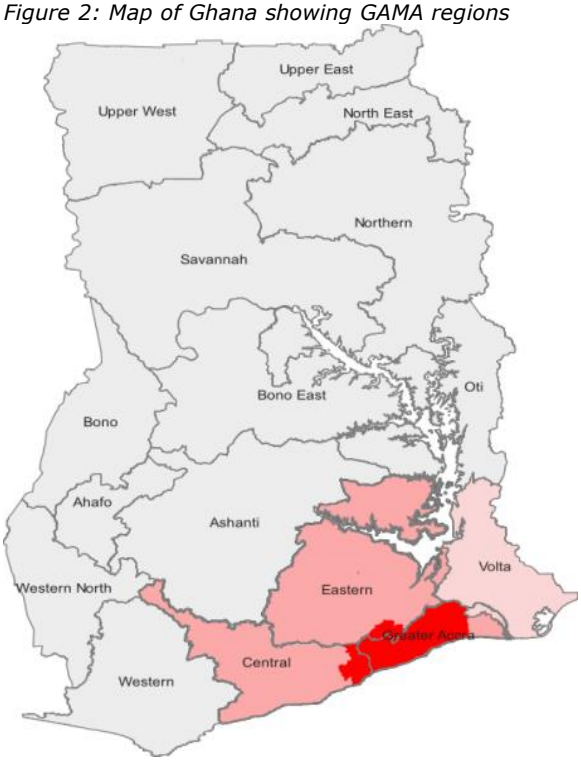
The Regional Coordinating Councils in each region serve as intermediates between national and local governments. They are also responsible for coordinating, harmonising, monitoring, and evaluating development programmes, plans and projects of the District Assemblies and for that matter the GAMA Structure Plan among others.

The GAMA Structure Plan also covers 32 MMDAs. The names and locations of the involved MMDAs in the GAMA Structure Plan are presented in Figure 3.

As stated above, the GAMA intervention area[7] is divided among the Central, Eastern, and Greater Accra regions. Each of these regions have a specific number of MMDAs and corresponding land areas. Specifically, the Central region has 3 MMDAs and an area of 666 km^2, the Eastern region has 2 MMDAs and an area of 405 km^2, while the Greater Accra region has 27 MMDAs and an area of 3062 km^2. These figures represent approximately 7%, 2%, and 83% of each region's total area, respectively.

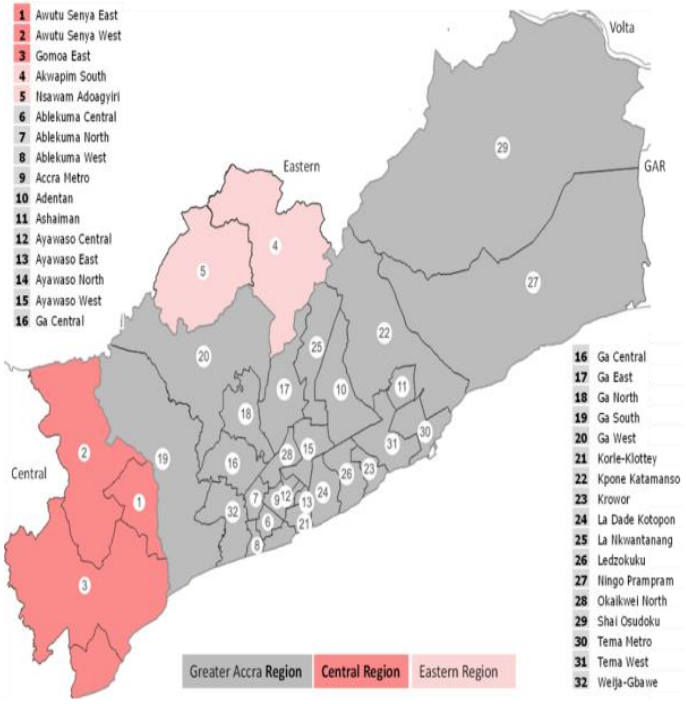
MMDAs can be roughly classified into three groups by population size:
- Metropolitan Assemblies with populations of 250,000 or more
- Municipal Assemblies with populations of 75,000-250,000
- District Assemblies with populations less than 75,000.

Figure 2: Map of Ghana showing GAMA regions



Source: MMDA boundaries, LUSPA

Figure 3: Names and locations of the 32 MMDAs involved in the GAMA interventions



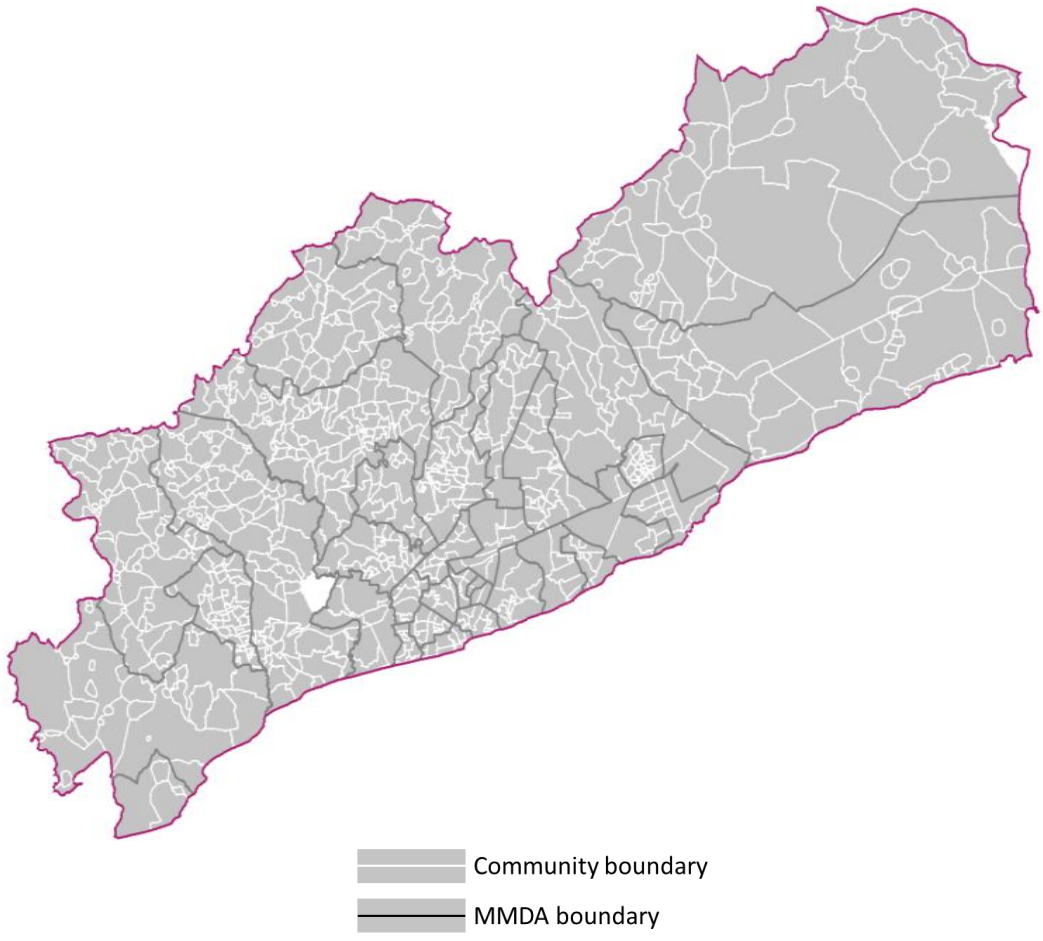
Source: MMDAs Boundaries, LUSPA

[5] https://www.easternregion.gov.gh/
[6] https://www.gtarcc.gov.gh/
[7] Based on MMDA geometries in coordinate projection WGS 84 / UTM zone 30N (EPSG:32630).

The MMDAs encompass various communities and localities. To create a comprehensive map, data from the 2021 Population and Housing Census provided by the Ghana Statistical Service (GSS), along with survey responses, were utilized. This resulted in the identification and mapping of a total of 888 communities and localities within the MMDAs, as shown in Figure 4.

The communities provide a good understanding of the places in which the people live. In addition, each community is divided into geographical enumeration areas (EAs), based on a population of 600 to 800. The EAs provide a grasp of a wide range of characteristics of the areas. These include population, gender, age, education level, employment, the number of houses and use of structures/buildings, health and educational facilities, and available energy for lights/cooking. The availability of data aggregated at the enumeration area is critical for the development of the GAMA Structure Plan.

Figure 4: GAMA communities within MMDA boundaries



Source: COWI based on GSS and 2021 Enumeration Areas

Greater Accra spatial development framework

In 2017, the Land Administration Project (LAP) sponsored the preparation of spatial development frameworks for Greater Accra and the Ashanti Region, signifying the importance of the two regions. Gibb Engineering and Architecture prepared the Greater Accra Spatial Development Framework (GARSDF), which was funded by the World Bank. The GARSDF's four key principles are:

i. Concentrated urban development

ii. Conserved arable agricultural land
iii. Good links between urban areas
iv. Sustainability and balance between sectors driving development.

The defining features of the GARSDF include separate urban and rural areas; an urban development boundary (green belt); a polycentric structure with a hierarchy of urban nodes and rural centres; and an extended transport network. The framework allocates future residential populations into different centres/zones by density including two Central Business Districts, tertiary and secondary nodes greenfield sites, brownfield sites, and corridors.

The GARDSF's proposed several projects including the completion of the national trunk road network and the railway network, developing factories in every district, completing the balance of the 25 roads identified major road construction and interchange improvements, developing coastal-based tourism and recreation, and investing in financial services, telecommunications, manufacturing, and ICT.

PERFORMANCE OF PREVIOUS SPATIAL PLANS

Generally, previous spatial plans of the GAMA suffered from non-extensive implementation with the exception of the 1954 Tema Master Plan. These include the 1944 Accra Master Plan up to the GARSDF prepared in 2017. The 1944 Accra Master Plan was never implemented but was revised in 1958. However, it was 'kept in wait' during the implementation of the Tema Master Plan, which had political backing because of industrialisation and exports.

After the change of government in 1966, all spatial plans were shelved, and Accra and its environs grew without any composite plan for almost 25 years. Spatial plans prepared by the Town and Country Planning Departments during this period were basically land use plans for communities and neighbourhoods, to control development.

In 1991, the strategic plan for the Greater Accra Metropolitan Area (GAMA) was prepared to address the compounded land use problems of GAMA because of the continuous rapid urbanization. Although, some interventions like the development of Airport City I, densification of Cantonments, Ridge, Osu and Roman Ridge as well as the formation of the Department of Urban Roads took their roots from the plan, other proposals were not implemented.

Twenty-five years after the preparation of the 1991 GAMA strategic plan, the LAP launched and completed the GARSDF in 2017. To date, while some of the proposals in the plan have been implemented, others have not, due to low public awareness, defective, unrealistic, or deficient (lack of implementation guidance), and lack of buy-in from stakeholders, including politicians, planners, and the public. For instance, the proposed green belt in the 1991 plan did not work because residential development had already started before the proposed green belt was designated rendering the concept and proposal unrealistic. Thus, creating a situation where plans are made after development has already happened.

Moreover, the previous spatial plans were not implemented due to a lack of political will and commitment from stakeholders, beneficiaries, and planners. Beneficiaries and target groups of the plans are always detached from its preparation and therefore such plans lack ownership and are conveniently forgotten.

Justification for GAMA structure plan

Despite the challenges relating to the implementation of GAMA spatial plans, there is socio-economic potential for GAMA Structure Plan to chart a more sustainable development path. In 2015, GAMA's GDP[8] was estimated at 19.02 billion cedis accounting for close to 20 percent of the national GDP. It is one of Africa's leading hubs for Foreign Direct Investment (FDI) and absorbs more than 80 percent of Ghana's FDI projects[9]. GAMA is an economic

8 Purchasing Power Parity in constant 2011 US Dollars
[9] NSDF

powerhouse not only in Ghana and West Africa but also across Africa. It is increasingly becoming an attractive place for both international workers and businesses on account of being well-linked to international trade and information networks.

Currently, GAMA is the home to six million people, — one out of six Ghanaians. It is over 90 percent urbanized and Ghana's largest metropolitan area with a diverse ethnicity. It holds 800,000 more people than Greater Accra Region and twice that of Central and Eastern Regions combined. GAMA's population density is 1510 persons per square kilometre (persons/km^2), slightly less than GAR's (1664), five times Central Region's (291) and ten times Eastern Region's (151). Academic institutions within the GAMA are well respected and attract international students. Health care is one of the best in the country and is increasingly attracting health tourists from abroad.

Improving urban living conditions and guiding the area towards a sustainable development trajectory requires a coherent spatial development strategy that maximizes the opportunities relating to the socio-economic potentials of the area while minimizing the risks regarding the negative externalities. For this reason, the development of the GAMA Structure Plan is justifiable.

GOALS, OBJECTIVES AND ACTIONS OF THE GAMA STRUCTURE PLAN

The vision of the GAMA Structure Plan is a sustainable, prosperous, accessible, and well-served region that provides opportunity for all. GAMA Structure Plan emphasizes these elements to ensure that growth, sustainability, land development, transportation, and opportunity impact the future of GAMA positively. The GAMA Structure Plan has 20 goals organized around five perspectives, thus Land use; Accessibility, Connectivity, and mobility; Economic Development, Investment, Opportunity and Equity; Environment and Climate Change; as well as Infrastructure and Services - all geared towards realization of the vision. In the SEA, these five perspectives translate into the previously mentioned four sustainability dimensions, thus the natural resources, economic, socio-cultural and institutional dimensions.

The goals describe the future condition of GAMA and objectives provide more detail with measurable desired outcomes. Each objective is supported by a series of recommended actions to be considered in the short, medium, or long term. These actions are to be specified in the final plan document, relating to regulatory changes, investment, partnerships, etc.

The goals and objectives of the GAMA Structure Plan are presented in Table 1.

Table 1: Goals and objectives of the GAMA Structure Plan

S/N	GOAL	OBJECTIVES
	NATURAL RESOURCES	
1.	Green GAMA Grid	Develop a GREEN GAMA GRID Protect and expand urban forests, trees and vegetation Redevelop river basins and wetlands Significantly reduce flooding throughout GAMA, targeting affected areas Manage and protect surface water sources
2.	Interconnected green, public spaces and routes	Invest in public space improvements that provide multiple community and environmental benefits Revitalise existing parks, squares, and open spaces Make our streets green Increase and improve public toilets
3.	Sustainable and Resilient Environments and Neighbourhoods	Increase and improve public toilets Protect life, property, infrastructure, and environment from disaster events Plan for the mitigation and redevelopment of brownfields for productive use Keep GAMA cool
4.	Clean and continuous water supply	Restore all rivers and streams to healthy ecosystems Reduce water consumption Improve water supply plant production Increase green stormwater infrastructure Improve water distribution to dwellings
5.	Improved wastewater infrastructure and management	Extend and improve the wastewater infrastructure and management, including sewer networks Improve solid waste management throughout GAMA Improve e-waste management throughout GAMA
6.	Access to sufficient sources of energy, migrating to solar, wind and more hydro	Prioritize energy efficiency and clean, renewable energy resources Increase electricity Generation Support renewable energy initiatives Improve electricity transmission
	ECONOMIC	
7.	Integrated land use and transportation planning	Increase the number of residents and jobs in centres and along corridors in a pattern that prioritizes multi-modal transportation options Promote TOD in centres, facilitated by a High-Capacity Bus system and network

8.	High-performing transport infrastructure network and systems	Promote parking strategies that manage supply and demand efficiently Promote safe movement of people and vehicles across all travel modes Improve key corridors that connect people to existing and new centres through frequent public transport service and shared mobility Promote and support existing road capacity to service new development and density Improve existing road infrastructure Support the success of the existing operational 'commuter rail' network and reactivate the segments that are not operating Remove operational barriers to the use of mass-transit transport modes Redesign and improve the freight transport network and management system Redevelop existing international airport and access routes Improve and integrate maritime transport into the mobility network Develop an accessible, multimodal, and integrated transportation network, with PT as a core component Strengthen high-capacity and rapid transit bus systems, networks and infrastructure Complete the existing road system Promote roadway and streetscape design based on the surrounding context Expand the existing Pedestrian and Cycle infrastructure and network
9.	GAMA's manufacturing sector as an engine of economic growth	Support and strengthen existing industrial zones Fill existing and increase the number of industrial zones Increase workforce capacity by upgrading technical skills
10.	GAMA as a Trade Hub For West Africa	Enhance GAMAs connectivity to benefit the economy Integrate GAMA into the Global Value Chain
11.	Equitable opportunities	Support, regularise and integrate the informal economy Support the growth and expansion of businesses owned by locals, women and youth Plan for workforce diversity and development Support economic competitiveness by improving the quality of life in Neighbourhoods Increase equitable access to education, quality jobs, and living wages for all residents Maximize local job creation and household earnings through job retention, business attraction and business expansion Support the emerging digital economy Support agriculture and urban food production Encourage and support international and domestic tourism
	SOCIO-CULTURAL	

12.	Decent, inclusive and affordable housing	Construct new/upgraded affordable dwelling units Address Homelessness and Street Children Provide special housing for seniors, special health needs and others Address Homelessness and Street Children
13	Affordable and prosperous neighbourhoods	Promote, protect and build affordable and healthy housing Increase support and resources for community-based developers and businesses Ensure that all neighbourhoods benefit from growth, improvement and development
14.	A region of diverse and integrated centres and corridors	Focus on future growth and density in and around centres. Promote inclusive, mixed-income neighbourhoods. Promote infill on vacant plots and reduce blight and stagnation. Address slums, informal settlements, and poor neighbourhoods. Promote good building design in new and infill development. Strengthen neighbourhoods' commercial areas. Increase access to quality fresh foods and wellness opportunities Establish sub-regional identities and centres Promote infill or productive use of vacant and underused plots and reduce blight and stagnation
15.	Improved access to health services for specific groups: women, children, seniors and other vulnerable people	Improve access to health services for women, seniors, children, and disabled people
16.	Improved access to education, knowledge, and culture	Provide more accessible and affordable educational facilities Ensure access to quality educational facilities at all levels Ensure access to sports and recreation facilities Improve access to cultural and learning facilities
	INSTITUTIONAL	
17.	Engaged communities	Build a culture and system of effective citizen planning and cross-functional partnerships that include marginalized populations Improve public information sharing and communications for a responsive government and informed citizen base
18.	Increased investments in Information Communication Technologies	Increase equitable access to ICT
19.	Improved health equity, high-quality, accessible, efficiently managed, and properly funded facilities	Provide accessible and equitable social development infrastructure Ensure adequate numbers and locations of police and fire safety facilities

20.	Accessible, high-quality public services, targeting low-income and vulnerable populations	Guarantee access to public services to all, including vulnerable populations

Institutional, Legal, Regulatory and Policy Framework

This chapter identifies the relevant institutional, legal, regulatory and policy frameworks relating to the scope within which the SEA of the GAMA Structure Plan was conducted. It outlines the institutions responsible for either oversight, policy formulation, coordination, monitoring and evaluation, or regulation, standards and guidelines for development including spatial planning as well as domestic and international laws and treaties that Ghana is a signatory to and applicable to the GAMA Structure Plan.

Institutional framework

The Ministry of Roads and Highways has oversight responsibility of the GAMA Structure Plan. Other ministries that play a key collaborative role in the achievement of the goals and objectives of the GAMA Structure Plan include the Ministry of Transport; Ministry of Local Government, Decentralisation and Rural Development; Ministry of Environment, Science Technology and Innovation; Ministry of Aviation; Ministry of Railways Development etc.

Relevant departments and agencies that will contribute to the effective implementation and success of the GAMA Structure Plan include Department of Urban Roads, National Road Safety Authority, Driver and Vehicle Licensing Authority, Motor Traffic and Transportation Division of the Ghana Police Service, National Ambulance Service, Ghana Highway Authority, Department of Urban Roads, Ghana National Fire Service, St Johns Ambulance Service, National Disaster Management Organisation and the Ghana Private Road Transport Union, Ghana Airports Company Limited, Ghana Civil Aviation Authority and Ghana Ports and Harbours Authority, etc.

The main agencies with regulatory responsibilities for the GAMA Structure Plan include the National Development Planning Commission, Environmental Protection Agency, (EPA), Ghana Ports and Harbours Authority (GPHA), Ghana Maritime Authority (GMA), Ghana National Fire Services (GNFS), Land Use and Spatial Planning Authority (LUSPA), Lands Commission, Ghana Standards Authority (GSA), Department of Factories Inspectorate (DFI), Ghana Investment Promotion Centre (GIPC), Metropolitan, Municipal and District Assemblies within the GAMA Structure Plan An overview of relevant Ministries, Departments and Agencies (MDAs) with responsibilities relating to the GAMA Structure Plan is presented in Table 2.

Table 2: Overview of ministries, departments and agencies relevant to the GAMA Structure Plan

S/N	MINISTRY	RESPONSIBILITIES	DEPARTMENT/AGENCY
1.	Ministry of Roads and Highways	Policy formulation, sector performance coordination, monitoring and evaluation of road infrastructure development, maintenance and road maintenance financing. It offers oversight on the preparation of the GAMA Structure Plan. It also contributes to the achievement of the goal of High performing transport infrastructure network and systems of the GAMA Structure Plan	Ghana Highway Authority Department of Urban Roads Department of Feeder Roads Ghana Road Fund Secretariat Koforidua Training Centre
2.	Ministry of Environment, Science, Technology, and Innovation (MESTI)	Formulating sound policies, coordinating, monitoring and evaluating environment, science, technology, and innovation initiatives for accelerated socio-economic development as well as providing a regulatory framework to promote the use of appropriate environmentally friendly scientific, and technological practices. The Ministry will contribute to the achievement of GAMA Structure Plan goals of GREEN•GAMA•GRID, Interconnected green, public spaces and routes, Sustainable and Resilient Environments and Neighbourhoods	Environmental Protection Agency Land Use and Spatial Planning Authority Council for Scientific and Industrial Research (CSIR) Ghana Atomic Energy Commission National Biosafety Authority Nuclear Regulatory Authority, Ghana
3.	Ministry of Local Government, Decentralization, and Rural Development	Policy formulation, coordination, monitoring and evaluation to promote a decentralised and good local governance system. It also facilitates the delivery of quality municipal services in order to contribute to sustainable and balanced socio-economic and spatial development. Of Metropolitan, Municipal and District Assemblies in Ghana. The ministry will contribute to the achievement of all the 20 goals of the GAMA Structure Plan.	Regional Services (Central Regional Coordinating Council, Eastern Regional Coordinating Council[10], Greater Accra Regional Coordinating Council) 32 Metropolitan, Municipal and District Assemblies in the GAMA Structure Plan Department of Parks and Gardens Local Government Service Institute of Local Government Studies Birth and Death Registry Department of Community Development
4.	Ministry of Transport	Policy formulation, coordination, monitoring and evaluation of transport industry infrastructural development and service delivery. It will contribute to the achievement of the goals of integrated land use and transportation planning, High performing transport infrastructure network and systems of the GAMA Structure Plan	Ghana Maritime Authority Ghana Ports and Harbours Authority Ghana Shippers Authority Ghana Civil Aviation Authority Aircraft Accident & Incident Investigation and Prevention Bureau Ghana Airports Company Ltd Driver & Vehicle Licensing Authority Government Technical Training Centre
5.	Ministry of Food and	Policy formulation, coordination, monitoring and evaluation of the agriculture sector for national socio-economic growth and development.	Ghana Irrigation Development Authority Ghana Seed Company

[10] https://www.easternregion.gov.gh/

	Agriculture	The ministry will contribute to achieving the GAMA Structure Plan goals of A region of diverse and integrated centres and corridors; and Equitable opportunities,	Ghana National Buffer Stock Company Plant Production and Regulatory Services Animal Production Directorate Crop Services Directorate Agricultural Engineering Services
6.	Ministry of Fisheries and Aquaculture Development	Policy formulation coordination, monitoring and evaluation of the fisheries sector and industry for the overall development of the economy. It will contribute to the achievement of the goal of *Equitable opportunities.*	Fisheries Commission
7.	Ministry of Sanitation and Water Resources	Sanitation and Water Resources policy formulation, monitoring and evaluation to contribute to improving living standards through increased access to and use of safe water, sanitation and hygiene practices and sustainable management of water resources It will contribute to the achievement of the GAMA Structure Plan goals relating to Interconnected green, public spaces and routes; Clean and continuous water supply; and Improved wastewater infrastructure and management.	Water Resources Commission Ghana Water Company Community Water and Sanitation Agency
8.	Ministry of Works and Housing	Works and Housing policy formulation, coordination, monitoring and evaluation for systematic growth of the country's infrastructure It will contribute to the achievement of GAMA Structure Plan goals of A region of diverse and integrated centres and corridors; decent, inclusive and affordable housing and Affordable and prosperous neighbourhoods	Hydrological Services Division Architectural and Engineering Services Limited (AESL) State Housing Corporation Tema Development Corporation
9.	Ministry of Lands and Natural Resources	Policy formulation, monitoring, and evaluation to ensure sustainable and efficient management and utilisation of the nation's lands, forests, wildlife and mineral resources for socio-economic growth and development. It will contribute to achieving GAMA Structure Plan goals of GREEN-GAMA•GRID, Interconnected green, public spaces and routes as well as Sustainable and Resilient Environments and Neighbourhoods	Ghana Geological Survey Authority Forestry Commission Lands Commission Office of the Administrator of Stool Lands
10.	Ministry of Communication and Digitalization	Initiating and developing national policies, monitoring and evaluation aimed at achieving cost-effective information and communications infrastructure and services, for the enhancement and promotion of economic competitiveness. It will contribute to the achievement of the goal of Increased investments in Information communication Technologies	National Communications Authority National Information and Technology Agency National Digitization Centre
11.	Ministry of Health	Health policy formulation, monitoring, and evaluation It will contribute to achieving the goals of Improved health equity, high-quality, accessible, efficiently managed, and properly funded facilities; and Improved access to health services for specific groups: women, children, seniors and other vulnerable people	Ghana Health Service Food and Drug Authority Centre for Plant Medicine Research All Teaching Hospitals

12.	Ministry of Energy	Energy policy formulation, monitoring, evaluation, supervision and coordination of activities of energy sector agencies. The Ministry will contribute to achieving the goal of Access to sufficient sources of energy, migrating to solar, wind and hydro.	National Petroleum Authority Petroleum Commission Ghana National Petroleum Corporation Tema Oil Refinery Ghana National Gas Company Bulk Oil Storage and Transportation Company Ghana Cylinder Manufacturing Company Electricity Company of Ghana Volta River Authority Ghana Grid Company Limited Bui Power Authority Volta River Authority Volta River Authority Trust Fund VALCO Trust Fund Northern Electricity Distribution Company Energy Commission
13.	Ministry of Trade and Industry	Trade and Industry policy formulation, monitoring, and evaluation to promote international trade and investment; pursue flagship industrial development initiatives, enhance the business enabling environment, support entrepreneurs and SME development enhance domestic trade, ensure consumer protection and promote Public-Private Sector Dialogue It will contribute to the achievement of the goals of the GAMA's manufacturing sector as an engine of economic growth, GAMA as a Trade Hub For West Africa; and Equitable opportunities	Ghana Free Zones Authority Ghana Standards Authority Ghana Export Promotion Authority Ghana Enterprise Agency Ghana Trade Fair Company Limited Ghana National Procurement Agency Limited Ghana Heavy Equipment Limited Export Development and Investment Fund.
14.	Ministry of Education	Formulate and coordinate education policies, set standards and monitor and evaluate their implementation. It works to ensure that quality education is accessible for all Ghanaians to support human capital and national development It will contribute to the achievement of the goals of Equitable opportunities; and Improved access to education, knowledge and culture,	Ghana Education Service Centre for National Distance Learning and Open Schooling Council for Technical and Vocational Educational Training Ghana Academy of Arts and Sciences Ghana Library Authority National Council for curriculum and Assessment National Board for Polytechnics and Technical Examination National School Inspectorate Authority Non-Formal Education Ghana Tertiary Education Council National Service Secretariat

			National Teaching Council Student Loan Trust Fund Scholarship Secretariat Ghana Commission for UNESCO West African Examination Council Ghana Book Development Corporation Ghana Education Trust Fund
15.	Ministry of Interior	Internal security policy formulation, coordination, monitoring, and evaluation Maintenance of law and order in Ghana to Contribute to achieving the goal of Improved health equity, high-quality, accessible, efficiently managed, and properly funded facilities	Ghana Police Service Ghana Prisons Service Ghana National Fire Service Ghana Immigration Service Narcotic Control Commission National Disaster Management Organisation Gaming Commission of Ghana National Commission on Small Arms and Light Weapons National Peace Council Ghana Refugee Board

Legal and regulatory framework

This section describes the relevant laws and regulations relating to the development of the GAMA Structure Plan.

1992 CONSTITUTION OF THE REPUBLIC OF GHANA

Article 35 (c) of the 1992 Constitution, enjoins the State to provide adequate facilities for, and encourage, free mobility of people, goods, and services throughout Ghana. Similarly, Article 36 (2d) of the Constitution requires the State to take all necessary steps to establish a sound and healthy economy whose underlying principles include undertaking even and balanced development of all regions and every part of each region of Ghana and improving the conditions of life in the rural areas, and generally, redressing any imbalance in development between the rural and the urban areas.

On environmental protection, the Constitution, in Article 36(9) requires the State to take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek cooperation with other states and bodies for purposes of protecting the wider international environment for mankind. Article 41 (k) enjoins every citizen to protect and safeguard the environment. The GAMA Structure Plan reflects the provisions of the Constitution.

LAND USE AND SPATIAL PLANNING ACT, 2016 ACT 925

The Act provides for sustainable development of land and human settlements through a decentralised planning system, ensures judicious use of land to improve quality of life, promotes health and safety in respect of human settlements and regulates national, regional, district and local spatial planning, and generally to provide for spatial aspects of socio-economic development and related matters.

Section 4 (a) and (b) of Act 925 stipulate that for the purpose of achieving its object of the Land Use and Spatial Planning Authority (LUSPA), it shall perform the spatial, land use and human settlements planning functions of the national development planning system in support of the National Development Planning Commission.

The procedure for the issuance of development permits by the District Assemblies is regulated by the Land Use and Spatial Planning Regulations, 2019 (L.I 2384).

In terms of the environment, Section 4 (h) and (i) of Act 925 enjoin LUSPA to ensure the control of physical development in uncontrolled or less controlled but sensitive areas such as forest reserves, nature reserves, wildlife sanctuaries, green belts, coastal wetlands, water bodies, water catchment areas, mining areas, open spaces and public parks. These are in addition to ensuring that the exploitative use of natural resources for agriculture, mining, industry and other related activities do not adversely impact human settlements. The above is embedded in the GAMA Structure Plan.

ENVIRONMENTAL PROTECTION AGENCY ACT, 1994 (ACT 490)

The Environmental Protection Agency Act, 1994 (Act 490) established the Environmental Protection Agency (EPA) as the leading public body responsible for the protection and improvement of the environment in Ghana. Act 490 mandates the EPA to implement environmental policies, issue environmental permits and pollution abatement notices for controlling waste discharges, emissions, deposits or other sources of pollutants and issue directives, procedures, or warnings to control noise. It is responsible for ensuring compliance with Environmental Impact Assessment (EIA) procedures and is the lead EIA decision-maker.

The Environmental Assessment Regulations, 1999 (LI 1652) legislates the Environmental Impact Assessment (EIA) process. The process requires that all activities likely to harm the environment must be subject to environmental assessment and issuance of a permit before the commencement of that activity. The development of the GAMA Structure Plan is one such undertaking contemplated by the LI 1652.

NATIONAL DEVELOPMENT PLANNING COMMISSION LEGISLATION

The National Development Planning Commission (NDPC) was established under Article 86, whiles its functions are prescribed under Article 87 of the 1992 Constitution as part of the Executive Arm of Government. The National Development Planning Commission Act, 1994 (Act 479) and the National Development Planning (System) Act, 1994 (Act 480), provide the enabling legal framework for the establishment of the Commission and the performance of its functions.

Section 2 (2g and h) of the National Development Planning Commission (NDPC) Act 1994 Act 479 requires NDPC to formulate comprehensive national development planning strategies and ensure that the strategies including consequential policies and programmes are effectively carried out'. These are in addition to preparing broad national development plans.

Moreover, Section 11 (c) of Act 480 mandates NDPC to integrate economic, spatial and sectoral plans of ministries and sector agencies including the GAMA Structure Plan and ensure that these plans are compatible with national development objectives. This is in addition to collaborating with relevant agencies, to monitor physical development to ensure that any proposed development conforms to the approved development plan for the respective area.

On the environment, Section 2 (2c) of Act 479 requires NDPC to make proposals for the protection of the natural and physical environment to ensure that development strategies and programmes conform with sound environmental principles. This provision applies to the GAMA Structure Plan

WATER RESOURCES COMMISSION ACT, 1996 (ACT 522)

The Water Resources Commission Act, 1996 (Act 522) established the Water Resources Commission to regulate and manage the water resources of the Republic of Ghana. The Commission is tasked to develop comprehensive plans for the use, conservation, Protection, development and improvement of Ghana's water resources and to grant rights for the exploitation of water resources.

Act 522 prohibits all persons from abstracting water (surface or ground) without obtaining a water rights permit from the Commission. It lays out the requirements and process for the application and subsequent transfer of such rights. The impact of the GAMA Structure Plan on water resources would be regulated through stringent compliance with Act 522.

GHANA PORTS AND HARBOURS AUTHORITY ACT, 1986 (P.N.D.C.L 160)

The GPHA is responsible for planning, managing, building, and operating Ghana's seaports. It manages the two seaports of Ghana (Takoradi and Tema) and has the following functions regarding their operation, maintenance, and control: (i). regulate the use of ports and port facilities, (ii). provide, maintain, extend, and enlarge port facilities as required for the efficient and proper operation of the port, (iii). maintain and deepen the approaches to, and the navigable waters within and outside the limits of any port, (iv). maintain lighthouses and beacons and other navigational services, and aids as necessary, (provide facilities for the transport, storage, warehousing, loading, unloading, and sorting of goods passing through the ports, and operate or provide access to road haulage service providers; and (v). provide stevedoring and porterage services. The GAMA Structure Plan will impact ports and harbours.

GHANA MARITIME AUTHORITY ACT 2002, (ACT 630)

The Maritime Authority Act, 2002 (Act 630) established the Ghana Maritime Authority (GMA) to be responsible for monitoring, regulating and coordinating all maritime activities for the Republic of Ghana. The purpose of the

GMA is to ensure the provision of safe, secure, and efficient shipping operations, The GMA Act will facilitate the integration of maritime transport into the mobility network.

FORESTRY COMMISSION ACT, 1999 (ACT 571)

The Forestry Commission Act established the Forestry Commission under the provisions of Article 269(1) of the 1992 Constitution. The Commission is responsible for the regulation of the utilization of forest and wildlife resources, the conservation and management of those resources and the coordination of policies related to them. The Commission has two divisions (Wildlife, and Forestry Services) whose works relate to the protection of wildlife and forest reserves. The development of the GAMA Structure Plan will impact wildlife and other forest resources but will align with the Commission Act.

LAND ACT, 2020 (ACT 1036)

Ghana's Land Act, 2020 (Act 1036) is to revise, harmonise and consolidate the laws on the land to ensure sustainable land administration and management, effective and efficient land tenure and to provide for related matters. The implementation of the GAMA Structure Plan should comply with the administrative framework of land registration, security, and governance in Ghana. The Law provides for the compulsory acquisition of land and prompt payment of fair and adequate compensation, which will apply to the GAMA Structure Plan implementation.

LANDS COMMISSION ACT, 2008 (ACT 767)

The Lands Commission Act, 2008 (Act 767) established the Lands Commission (LC) under Articles 258 and 265 of the 1992 Constitution. The main Divisions of the Land Commission are the Land Valuation Division, Land Registration Division, Survey and Mapping Division and the Public and Vested Land Management Division.

The LC is to ensure effective and efficient land administration and to provide for related matters. It is also to ensure guaranteed tenure, property valuation, surveying and mapping through teamwork and modern technology to stakeholders. The commission will play a role in the surveying and mapping, acquisition of land (Publication of the Executive Instrument, and Assessment of compensation to landowners), and registration of interests to Lands within the GAMA Structure Plan.

GHANA CIVIL AVIATION ACT, 2004 (ACT 678)

The Ghana Civil Aviation Act, 2004 (Act 678) established the Ghana Civil Aviation Authority as a body corporate to develop opportunities for domestic and international travel and trade and provide facilities to improve access to remote regions, enhance mobility and develop opportunities for travel within the Republic etc.

The core functions of the Authority are to regulate aviation safety and security; provide Air Navigation Services; regulate air transport and advise the government on aviation-related matters. The Civil Aviation Authority was restructured into the Ghana Civil Aviation Authority (GCAA) and the Ghana Airports Company Limited (GACL) in 2007.

Other functions of GCAA include licensing and certification of air transport operators and the construction and operation of aerodromes; maintenance and management of navigation sites; provision of air navigation services (air space management) within the Accra flight information region; regulation of air transport services; promoting the development of civil air transport industry in Ghana; advising the government on all matters concerning civil aviation, provision of oversight for all activities related to civil aviation etc. The GCAA will be expected to redevelop existing international airport and access routes as well as ensure the operational safety of flights in relation to the GAMA Structure Plan.

Policies and plans relating to the GAMA Structure Plan

Development and implementation of the GAMA Structure Plan is in line with the following national development policies and strategies.

GHANA BEYOND AID

Ghana Beyond Aid is a national blueprint comprising a vision of the Ghana we want and the mind-set and behavioural changes that are geared towards unleashing the embedded potential of the nation and the people in transforming the country from mainly production and exports of raw materials to one based on manufacturing and high-value services. It outlines an economy that provides opportunities, jobs, and prosperity to all Ghanaians.

It is inspired by a prosperous and self-confident Ghana that takes charge of her economic destiny; a transformed Ghana that is prosperous enough to be beyond needing aid, and that engages competitively with the rest of the world through trade and investment.

Ghana Beyond Aid has six Strategic Pillars comprising (1) Agricultural Modernization; (2) Industrialization; (3) Infrastructure; (4) Private Sector and Entrepreneurship Development; (5) Social Interventions; and (6) Domestic Resource Mobilization and Protecting the Public Purse. The GAMA Structure Plan relates to Industrialization, Infrastructure, Private Sector and Entrepreneurship Development and Social Interventions Pillars respectively.

GHANA AT 100 FRAMEWORK (GHANA@ 100)

Ghana@100 a nationally owned long-term perspective expected to be achieved when the country celebrates its centenary in 2057. It has four key pillars, which are Economic, Social, Environment, as well as Governance, Peace and Security respectively. It seeks to promote national social and economic transformation with an approach that blends continuity and change based on a common vision of national development in a multi-party democracy.

The Plan has 10 drivers for the sustainable transformation of the country. The GAMA Structure Plan is in line with six of these pillars, which are Efficient public services and institutional strengthening, Human capital development and efficient productivity, Science, technology and innovation, Land reforms, Infrastructure development and Clean and affordable energy.

MEDIUM-TERM NATIONAL DEVELOPMENT POLICY FRAMEWORK (MTNDPF, 2018-2021)

The medium-term national development policy framework for 2018-2021, Agenda for Jobs: Creating Prosperity and Equal Opportunity for All is one of the series of development policy frameworks prepared over the past two decades. The framework builds on the successes and addresses the challenges of its immediate predecessor, the Ghana Shared Growth and Development Agenda (GSGDA II), which was implemented over the period 2014-2017. The Medium-Term National Development Policy Framework is now obsolete and has been replaced by the Coordinated Program for Economic and Social Development Policies (2017 – 2024).

The Four main goals, derived from the vision of the MTNDPF are: (i). Create opportunities for all Ghanaians; (ii). Safeguard the natural environment and ensure a resilient built environment; (iii). Maintain a stable, united and safe society; and (iv). Build a prosperous society.

The purpose of the policy framework is to operationalise the vision, policies and programmes outlined in the President's Coordinated Programme of Economic and Social Development Policies (CPESDP, 2017-2024) presented to Parliament in fulfilment of Article 36, Clause 5 of the Constitution. It becomes the implementation framework to guide the overall sustainable development of the country. The MTNDPF, 2018-2021 serves as the

basis for the preparation of medium-term development plans by the MMDAs and the Sectors MDAs, Moreover, the Private sector uses the MTNDPF as a source of reference in preparing strategic plans. The GAMA Structure Plan is in line with the MTNDPF.

NATIONAL SPATIAL DEVELOPMENT FRAMEWORK (NSDF)

The National Spatial Development Framework (NSDF) is a long-term, 20-year strategy for the spatial development of Ghana, prepared in 2015. It is at the apex of the spatial planning system in Ghana as stipulated by Act 925.

The main objectives of the NSDF are (i). Strengthen national development planning, by articulating the spatial dimensions of social, economic, environmental, and other policies at the national level in the medium to long term; (ii). Establish a national spatial framework that gives policy direction to land use planning and management at the national level, to guide the preparation of other lower hierarchy plans, such as regional, sub-regional and district spatial development frameworks, structure plans and local plans, (iii). Make explicit the spatial information from sectoral agencies including their plans, projects, resources, and assets to enable coordinated decisions and aligned policies as well as reduced duplications, conflicts, and overlaps, (iv). Provide spatial policies to help ensure sustainable development as well as mitigate and adapt the natural environment and human settlements to climate change.

Each part of the country is expected to use its strengths to build a prosperous, healthy, and sustainable future with optimal impact on the livelihoods of people and their surroundings. The NSDF seeks to harness these strengths, foster collaboration, and ensure spatially integrated development throughout Ghana. The GAMA Structure Plan is, therefore, aligned with existing development policies and trajectories of the NSDF.

NATIONAL URBAN POLICY AND ACTION PLAN 2021-2037

The National Urban Policy and Action Plan (NUP), first published in 2012, was revised in 2021. The NUP is an attempt to approach urban development comprehensively, to "*promote a sustainable, spatially integrated and orderly development of urban settlements with adequate housing and services, efficient institutions, sound living and working environment for all people to support rapid socio-economic development of Ghana*".
Specific NUP objectives are: (i). Redistribution of the urban population, (ii). Spatially integrated hierarchy of urban centres, (iii). Urban economic development, (iv). Environmental quality of urban life, (v). Planning and management of urban growth and sprawl, (vi). Infrastructure and services, (vii). Adequate and affordable housing, (viii). Urban security and safety, (ix). Strong urban governance, (x). Climate change and adaptation, (xi). Research in urban and regional development and (xii). Urban Development finance.

The policy is implemented progressively through Ghana National Urban Policy Action Plan. This Action Plan defines key activities that need to be pursued in order to achieve policy objectives and related initiatives, which are defined in the National Urban Policy. The Action Plan presents every initiative and related activities as well as responsible agencies within a given five-year time frame that may be rolled over, in addition to responsible agencies. The GAMA Structure Plan is in line with the NUP.

NATIONAL TRANSPORT POLICY 2020

The vision of the National Transport Policy 2020 (NTP) for the transport sector is "*an integrated, efficient, cost effective and sustainable transportation system responsive to the needs of society, supporting growth and poverty reduction and capable of establishing and maintaining Ghana as transportation hub of West Africa"*.
The NTP calls for safe and reliable transport services and the development and operation of the transport system. It also aims to reduce transport costs for the internal distribution of goods and services as well as keep the country's exports competitive in the world market. The GAMA Structure Plan reflects the National Transport Policy

NATIONAL GENDER POLICY FRAMEWORK

Ghana is a signatory to international and regional conventions on gender equality and social protection. It signed on to the 17 SDGs, aimed at alleviating poverty and ensuring sustainable development for all by the year 2030. Ghana's developmental strategies are also guided by African Union's Agenda 2063, a 50-year developmental plan convention.

At the national level, National Gender Policy, for instance, focuses on mainstreaming gender equality, women empowerment and social protection concerns by strongly concentrating on the implementation of the following five policy objectives: (i). Women's Empowerment and Livelihood; (ii). Women's Rights and Access to Justice (iii). Women's Leadership and Accountable Governance, (iv). Economic Opportunities for Women (v). Gender Roles and Relations

The Gender Policy Framework is in support of the GAMA Structure Plan goals of Equitable opportunities, Increased investments in Information communication Technologies; Improved access to health services for specific groups: women, children, seniors and other vulnerable people.

NATIONAL ENERGY POLICY, 2020

The National Energy Policy is intended to guide the development of Ghana's energy sector including the emerging oil and gas sector. It provides Policy direction for energy production and utilization in an environmentally sound manner. This National Energy Policy outlines the energy sector goals, objectives, and issues and their respective policy directions.

The Policy covers the broad spectrum of issues relating to the following areas: Power Generation, Transmission and Distribution; Renewable Energy; Nuclear Power; Coal Power; Petroleum Upstream; Petroleum Downstream; and Cross-Cutting Areas (Health Safety Security and Environment, Gender, Local Content and Local Participation, Security, and Research and Development). The Energy Policy is in line with the GAMA Structure Plan goal of *Access to sufficient sources of energy, migrating to solar, wind and more hydro.*

NATIONAL ENVIRONMENT POLICY, 2014.

The National Environment Policy translates the constitutional mandate of protecting and safeguarding the environment. The Policy details, among others, various strategic goals and objectives on sustainable resource use and impact management and holistic integrated planning. T

The Policy sets out the National Environmental Action Plan (NEAP) which seeks to redirect national development into more environmentally sustainable programmes and practices through: the protection and preservation of the resource base; prior assessment of the potential environmental impacts of development projects; alternative or multi-purpose uses of land and water resources; and the promotion of popular participation in planning, evaluation, and implementation of environmental and development strategies. The goals of the GAMA Structure Plan reflect the National Environmental Policy.

GHANA NATIONAL CLIMATE CHANGE POLICY, 2012

The National Climate Change Policy is Ghana's integrated response to climate change. The Policy aims to ensure a climate-resilient and climate-compatible economy while achieving sustainable development through equitable low-carbon economic growth for Ghana. The Policy provides strategic direction and coordinates issues of climate change in three Policy objectives, which are (1) effective adaptation, (2) social development and (3) mitigation.

To address the adaptation issues in Ghana, for instance, four thematic areas have been identified. These are (1) energy and infrastructure, (2) natural resources management, (3) agriculture and food security and (4) disaster preparedness and response. The policy objectives are in sync with the GAMA Structure Plan goals relating to

Access to sufficient sources of energy, migrating to solar, wind and more hydro', GREEN•GAMA•GRID etc. Equitable opportunities; and Sustainable and Resilient Environments and Neighbourhoods.

NATIONAL LAND POLICY, 1999

This policy seeks to promote the judicious use of the nation's land and its natural resources by all sectors of Ghanaian society. This is in support of various socio-economic activities undertaken following sustainable resource use and maintenance of viable ecosystems. The policy supports the GAMA Structure Plan.

FOREST AND WILDLIFE CONSERVATION POLICY, 2012

This policy aims at conserving and sustaining the development of the nation's forest and wildlife resources for the maintenance of environmental quality and the perpetual flow of optimum benefits to all segments of society. The policy provides for an additional basis to develop a national forest estate and a timber industry that provides the full range of benefits required by society in a manner that is ecologically sustainable and that conserves the environmental and cultural heritage.

One of the strategic goals of this policy is collaborative resource management. The Ministry of Lands and Natural Resources is operationalizing this strategic goal through one of the Forest Investment Programmes "Enhancing Natural Forest and Agroforestry Landscape". Under this project, the Government of Ghana is piloting the Community Resource Management Area (CREMA) concept as a strategy to devolve management powers of natural resources to groups of communities who come together with a common goal and objective.

The GAMA Structure Plan goals of GREEN•GAMA•GRID, interconnected green, public spaces and routes and Sustainable and Resilient Environments and Neighbourhoods are in tandem with the above policy.

RIPARIAN BUFFER ZONE POLICY, 2011

The Buffer Zone Policy is intended to protect, regenerate and maintain the native and established vegetation in riparian buffer zones to improve water quality by instituting proper procedures for managing and controlling the above activities along riverbanks and generally in catchments of surface water bodies. The policy, among others, serves to clarify the requirements for water quality and quantity and outline a national policy on buffer zones as part of managing Ghana's river basins in river basins in an integrated manner and to harmonize traditional and existing public institutional standards on buffer zones in Ghana.

NATIONAL WETLANDS POLICY, 1993

The policy promotes the conservation of wetlands included on the Ramsar List and the use of wetlands for the sustainable benefit of humankind in a way compatible with the maintenance of natural properties of the ecosystem. The policy recognizes wetlands as environmental conservation areas and precludes certain activities within its boundaries (e.g., mining, waste disposal and infrastructure development). The policy is in line with the GAMA goal of GREEN•GAMA•GRID.

WATER POLICY, 2007

The overall goal of the National Water Policy is to achieve sustainable development, management and use of Ghana's water resources to improve health and livelihood and reduce vulnerability while assuring good governance for present and future generations This will be achieved by addressing relevant issues of underwater resources management, urban water supply and community water and sanitation which is the GAMA Structure Plan goal of *Clean and continuous water supply.*

GHANA INFRASTRUCTURE DEVELOPMENT PLAN

The Ghana Infrastructure Plan is a companion document of the long-term national development plan and provides the physical expression of the social and economic aspirations outlined in the long-term plan. The objective of the GIP is to chart a new vision and strategic direction for Ghana's infrastructure in a coordinated and integrated

manner and develop a financing plan for implementation to attain a high-income status within 40 years. The plan covers energy, transport water, Information Communication Technology (ICT) infrastructure, human settlements and housing, social, civic, and commercial Infrastructure, human resource, and skills planning, among other sectors. The GAMA Structure Plan reflects the Ghana Infrastructure Plan.

PETROLEUM INFRASTRUCTURE MASTER PLAN 2018

The Cabinet approved the Petroleum Infrastructure Master Plan in 2018 for the development of Ghana into a Petroleum Hub. The Master Plan covers the establishment of major infrastructure for refining and processing, discharge, storage, distribution, transportation, and trading of petroleum products using Ghana as a hub for the West African sub-region and the world at large. The establishment of a Petroleum Hub is one of the Government's strategic anchor initiatives that would serve as a new growth pillar in the Ghanaian economy.

The project will accelerate the growth of Ghana's petroleum downstream sub-sector and make it a major player in the economy. The Petroleum Hub project will increase the presence of major international oil trading and storage companies, create regional trading champions, and encourage joint ventures between local and international companies for knowledge transfer and wealth creation, etc. It will also provide the country with LNG facilities for power production and drive the growth of various industries including petrochemicals, including developments in the GAMA.

THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, 2018

Ghana signed (1992) and ratified (1994) the Convention on Biological Diversity and developed a National Biodiversity Strategy and action plan in 2002 (which is being revised) for the sustainable use of its biological resources. Forest reserves, national parks and other wildlife reserves including various traditional forms of conservation have been established to protect biological conservation. The GAMA Structure Plan relates to the Strategy and Action Plan.

OTHER RELEVANT PLANS

1. The Coastal Zone Management Indicative Plan (1990)
2. The National Environmental Action Plan (1994)
3. The Integrated Tourism Development Plan (1996-2010)
4. The Draft Integrated Coastal Zone Plan (1998)
5. The National Oil Spill Contingency Plan (2002, Revised Draft 2009)
6. National Disaster Management Plan 2010.

Sustainable development goals (SDGs)

In September 2015, the General Assembly of the United Nations adopted the 2030 Agenda for Sustainable Development which includes 17 Sustainable Development Goals (SDGs). The SDGs are built on the principle of "leaving no one behind" which emphasises a holistic approach to achieving sustainable development for all.

The goals are geared towards ending poverty, and hunger, achieving food security and improved nutrition, and promoting well-being and quality education. Other goals include gender equality, clean water and sanitation, affordable and clean energy, decent work, and economic growth. The rest are industry, innovation and infrastructure, reduced inequality, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace and Justice strong institutions and partnerships to achieve the goals. The GAMA Structure Plan will contribute to the achievement of these 17 Sustainable Development Goals.

Environmental assessment guidelines and standards

The EPA has issued several guidelines and standards on the EIA process and the protection of the environment. These include Environmental Assessment in Ghana, a Guide (1996). The Environmental Impact Assessment Procedures (1995) is an EPA guidance document, which outlines procedures to be adhered to when undertaking an EIA. Projects in the GAMA Structure Plan would be subjected to EIA where required.

Existing Conditions

Creating well-designed and secure communities while safeguarding the environment is absolutely essential. This involves establishing carefully organized human settlements with appropriate zoning for socio-economic activities, addressing emerging challenges related to urbanization, fulfilling infrastructure needs, and securing financing for energy, transportation, water, sanitation, drainage, flood control, climate change mitigation, adaptation, and the construction sector. Furthermore, strategic measures are required to ensure the sustainable utilization and preservation of land, forests, water bodies, and other natural resources.

Up until now, government action has focused on developing appropriate spatial development frameworks, spatial planning models and standards; supporting MMDAs to apply Geographic Information Systems (GIS) methodology in spatial planning; and strengthening the institutional and human capacity for effective planning and enforcement of planning and building regulations.

Significant accomplishments include the completion of the National Spatial Development Framework (NSDF), the Spatial Development Framework for the Northern Savannah Ecological Zone and associated master plans, and the establishment of the Land Use and Spatial Planning Authority (LUSPA). The Greater Accra and Ashanti Regional Spatial Development Frameworks (RSDF) respectively were also prepared. All these are geared towards addressing comprehensively the complex issues in human settlements including haphazard land use, physical developments and informal settlements throughout the country.

It is therefore imperative to prepare the GAMA Structure Plan to guide and direct the future development and land use patterns, conservation of protected areas, natural drainage system, the layout of trunk infrastructure and main transportation networks etc.

Objectives of baseline study and survey

The study and survey generally assessed the baseline conditions of the GAMA and the objectives are to:

i. Assess the ecological importance of the elements of biodiversity
ii. Provide information on the current status in terms of demographics, social amenities and infrastructure, climate characteristics, economic conditions, security, and the services sector amongst others
iii. Determine the current state of aspects of flora and fauna within the proposed area
iv. Assess the current land use and land cover status within the proposed area.

Topography and relief

The GAMA footprint includes a series of gentle and undulating reliefs. The topography consists of a succession of ridges and valleys which are ideal for agrarian activities. The relief of the GAMA consists of many coastal plains with the plains lying towards the Southeast being narrow and flat with a small number of isolated hills. While the coastal plains along the West of Accra are undulating and consist of many hills, small bays and highlands.

Geology and soils

The soils found in the GAMA are influenced by the climate, vegetation and formed from the weathered parent material. Leaching, over a prolonged period has resulted in soils containing low organic matter. This coupled with bad agricultural practices and excessive use of input has decreased the agricultural potential in the GAMA. Thus, areas containing high agricultural potential are regarded as important.

Soil types found in the GAMA vary to a large extent. The Northeast, Central to Southern regions of GAMA contains Black clay, which is elastic in nature when wet and hard when dry. This makes agriculture productivity difficult,

as the nutrients contained in these soils are low. Soils found in the Eastern parts of GAMA are a mix of sandy clay loams, which are red to brown in colour. These types of soil are suitable for farming tropical crops. Soils found towards the western parts of GAMA range between sandy, clay and rocky. Sandy soils are nutrient-rich and are suitable for agriculture, while the clay and rocky soil types are suitable for quarrying, sand winning and mining etc.

Climate and climate change

The climate experienced in the GAMA is a savannah type of climate. The hottest months in the GAMA are February and March, with the coolest being July or August alongside the coast. GAMA is susceptible to climate changes, which negatively impact the social, economic, and environmental spheres. Climate change vulnerability in the GAMA is also influenced by high levels of poverty, low environmental education and adaptability, and the geographical spread of ecological zones.

Climate change predictions for the GAMA indicate that average annual temperatures have risen at a rate of 0.21°C per decade. By 2060, average annual temperatures are predicted to increase by 1.0-3.0°C. While annual precipitation is predicted to decrease between 8% and 9%. The effects of climate change on the region are evident and predictions show the situation will only become more critical.

Impacts of climate change in the area include, but are not limited to:

- Sea-level rise, which is one of the biggest threats to the shorelines of the GAMA. Sea level rise of 5cm to 42cm is predicted for the GAMA, increasing the threats to the region. Threats include storm surges, coastal erosion, destruction of coastal habitats, loss of resources and biodiversity due to physically changing coastline. Climate scenarios have predicted that the shoreline of the GAMA will retreat approximately 90m and 109m by 2100
- Increased frequency and intensity of natural disasters such as floods and droughts. Perennial flooding is a common phenomenon in the GAMA, which has, in the past, resulted in many locals being displaced, property damaged, agricultural damage and lives lost
- Increased land degradation.

Therefore, climate change adaptation and mitigation must be considered in all aspects to ensure sustainable development.

Biodiversity

Biodiversity in Ghana consists of an array of amphibian, reptile, bird and mammalian species. Some residents depend on the natural resource base for the sustenance of their livelihoods, resulting in high exploitation rates and unsustainable use of resources. Programmes such as the Man and the Biosphere (MAB) were introduced and aimed to bridge the gap between biodiversity and man.

The GAMA region consists of a variety of fauna and flora species, which support the livelihood of the local communities. The biodiversity of ecological importance in the GAMA includes coastal scrubs, grasslands, and mangroves. The GAMA falls within the coastal savannah zone and consists of grassland interspersed with dense short thickets. Coastal thickets consist of small trees and shrubs.

There are protected areas consisting of five wetlands, and Ramsar sites, which are of high importance in the GAMA. Some of these include the Shai Hills Resource Reserve, Songor Lagoon, Sakumo Lagoon, and the Densu Delta. The risk associated with the exploitation of these resources for both domestic and international trade is their depletion resulting in biodiversity loss.

To minimise the threats and ensure the conservation and protection of biodiversity in the area, green spaces have been recommended in the GAMA. These green spaces will act as an environmental barrier minimising sprawling from the Accra-Tema area and ensuring that planning and sustainable use of resources is undertaken, focusing on maintenance of the rural landscape.

Important features, within the ecological infrastructure, that are vital for both the services and products that they provide, as well as the biodiversity that they protect, include, but are not limited to:

i. Protected/Ramsar wetland areas such as Densu Delta, Sakumo Lagoon and Songor Lagoon
ii. Forest reserves such as the Shai Hills and Achimota
iii. River, drainage lines and wetlands (hydrological system) within the region
iv. Sensitive vegetation that provides critical products and services, such as mangroves along lagoons and riverine vegetation.

The products and services supplied by the ecological infrastructure of the region, which are vital aspects of the livelihoods of the communities include, but are not limited to:

i. Firewood for energy, as approximately 20% of the population still utilizes firewood as the main source of energy
ii. Fish products, such as artesian fishing, are the largest type of fishing within the Ghana industry
iii. Forest and wildlife reserves, which provide various products
iv. The hydrological systems, which do not only provide water but are vital for natural flood prevention.

Hydrology

The GAMA contains many hydrological features such as rivers, wetlands and lagoons, which many locals depend on. These are vital hydrological features, providing a habitat for an array of fauna and flora species in the region. The GAMA consists of three coastal wetlands which are Ramsar sites. These three wetlands are the Densu, Sakumono and Songor wetlands, which contain multiple fish, birds and marine species. The risk associated with these wetlands include:

i. Population growth leads to an increase in sewerage and domestic waste deposited into wetlands
ii. Pollution resulting from improper waste management and inadequate sanitation facilities regarding discharge of effluent and human waste into wetlands
iii. Agricultural activities lead to degradation of the land, as well as pesticide and fertiliser runoff entering the water systems
iv. Deforestation of mangrove forests due to land use pressure, increased needs for fuel wood, and salt winning
v. Encroachment due to settlement development along the wetlands causes wetland drainage, overfishing, removal of vegetation cover and degradation of the ecosystem resulting in loss of biodiversity in the wetlands
vi. Salt mining and winning leads to the salinization of the soil.

Many local communities depend on the river systems for their livelihoods. Threats to these river systems include pollution from an adjacent landfill site, domestic activities and overfishing. Groundwater resources in the GAMA are mostly saline in nature and are therefore not advisable for consumption. Threats to groundwater resources consist of:

- Pollution from domestic waste as wastewater is disposed of directly into the environment
- Agricultural activities result in pesticides and fertiliser seeping through the ground and causing contamination of groundwater resources.

Many settlements are found in flood-prone areas, especially low-lying areas. Flooding occurs as a result of improper drainage systems leading to blocked drains.

Coastal areas

The coastal zone of Ghana consists of an array of resources and ecosystems such as mangroves, beaches, deltas, wetlands, coral reefs and estuaries, which provide habitats for a wide variety of fauna and flora and are significantly utilised for fishing. Coastal environments in Ghana and the GAMA support the livelihoods of many locals through fishing and aquaculture, as well as contribute to the country's tourism and economy.

The risk associated with the coastal zones include:

- Climatic changes and anthropogenic activities such as unsustainable use of coastal resources, and poor waste management result in industrial and agricultural waste being discharged into coastal resources, resulting in pollution
- Pollution and depletion of resources will have a major effect through the degradation of fisheries and especially artisanal fisheries
- These threats and pressures result in the loss of marine resources and species, which is a major concern for the livelihoods of communities living within the coastal areas.

Socio-demography

POPULATION

MMDAs, population density ranges from 112 persons/km^2 to over 29,000 persons/km^2. At a finer grain, across enumeration areas, it ranged from zero to over 18,000 persons/km^2. Density differences in MMDAs reveal an historic core area that is densely populated and a newer periphery that is less densely populated with respective average densities of 6,000 and 700 persons/km^2. Between 2010 and 2021, the population of GAMA grew at about 3.6 percent per year. It grew faster than in the previous 2000-2010 decade (3.4 percent), faster than the national population, and faster than its contributing regions of Greater Accra (3 percent), Central (2.8 percent) and Eastern Regions (1.1 percent). During the same period, GAMA's urban population grew by 3.1 percent while the rural population fell by 1.4 percent annually.

In the last two census decades, the urban population increased by 1.1 and 1.5 million people, respectively. Between 2010 and 2021, the population distribution also changed[11]. Kasoa, Amasaman, Nsawam, Madina, Oyarifa and Ashaiman gained more population during the period under review. Today, it holds 6.2 million people corresponding to 20 percent of Ghana's population.

AGE-SEX STRUCTURE

GAMA has a high share of young people. Some 23 percent of the population is under ten, and 40 percent is under twenty. Seniors over 65 years of age account for only three percent of the population. If the pattern in the first four five-year age cohorts persists, there may be a decline in the fertility rate. If there is a decline in the mortality rate and if people live longer due to healthier lifestyles and improved access to better health care, it is expected that the share of seniors will increase by 2040.

SETTLEMENTS DISTRIBUTION

The National Urban Policy seeks to promote a sustainable, spatially integrated and orderly development of urban settlements with adequate housing, infrastructure and services, efficient institutions, and a sound living and working environment for all people to support the rapid socio-economic development of Ghana and for that matter, the GAMA. According to UN HABITA Country Brief, 2023, Ghana's urban settlements have tripled in population from 4 million in 1984 to nearly14 million in 2020.

[11] For the 2010 population, we relied on WorldPop's 2010 UN-Adjusted unconstrained data

Nevertheless, urban settlements are not without their challenges. These challenges encompass various aspects such as a scarcity of adequate and affordable housing, resulting in overcrowding and the emergence of slums and informal settlements. Additionally, there is often inadequate management of sanitation and solid waste collection, which further compounds the problems. Moreover, the development of settlements in wetland areas leads to detrimental effects such as wetland drainage, overfishing, deforestation, and degradation of the ecosystem. Furthermore, the issue of flooding exacerbates the difficulties faced by urban areas.

Economy

GAMA is an economic powerhouse not only in Ghana and West Africa but also across Africa. It is one of Africa's leading hubs for Foreign Direct Investment (FDI) and absorbs more than 80 percent of Ghana's FDI projects[12]. In 2015, GAMA's GDP[13] was estimated at 19.02 billion cedis accounting for close to 20 percent of the national GDP.

A study, supported by the United Nations Economic Commission for Africa (UNECA) and produced in collaboration with the Accra Metropolitan Assembly, reveals that Accra generates about one-third of Ghana's annual GDP.[14] According to the findings from the report, Accra produced between 34 to 39 percent of Ghana's economic output from 2015 and 2020. In terms of GDP per capita, Accra's economic output per person was three times that of Ghana's national average.[15] The port of Tema in Greater Accra plays a central role in this predominance by generating 70 percent of the country's trade value.[16]

FISHING AND AGRICULTURE

As stated previously, many Ghanaians depend on agricultural activities as a source of their income to sustain their livelihoods. In the GAMA, 10% of the population depends on agriculture. The agricultural activities predominantly practised in the region include livestock and poultry, fishing, maize, cassava, vegetables and fruit crops. The three main crop types grown in the GAMA are cassava, maize and rice. The risk associated with agriculture includes climatic changes resulting in drought spells, flooding, diseases and pests. The GAMA falls within the coastal savannah, which receives minimal rainfall and is therefore prone to drought.

Fishing activities in the GAMA are the source of income for many locals. Tilapia species is the most common fish caught within the coastal wetlands. Threats to the fishing industry include

- Unsustainable fishing practices such as the use of poisonous substances to capture fish result partly in diminishing fish stocks
- Other threats include waste and pollution deposited into the coastal environments, resulting in a decline in fish species.

SAND WINNING AND QUARRYING

The need for sand for construction and development has warranted the need for sand winning in the GAMA. Sand-winning activities occur within some of the wetlands in the GAMA. The increase in these activities has resulted in increased land degradation in the area. The risks include:

- Increased land degradation threatens food security as the land decreases in nutrients and becomes infertile
- Decreased ecosystem services of wetlands, such as flood protect and water purification
- Air pollution and hazardous waste, which contaminate water resources. Air pollution results in increased respiratory diseases.

[12] NSDF

13 Purchasing Power Parity in constant 2011 US Dollars

[14] New study shows Accra generates one-third of Ghana's GDP | United Nations Economic Commission for Africa (uneca.org)

[15] Estimation of GDP for city of Accra (uneca.org)

[16] Tema Port Expansion, Phase 1 (aecom.com)

ANALYSIS OF THE COASTLINE OF GAMA

Natural and anthropogenic impact on the dynamic shoreline position has resulted in accelerated migration of the shoreline inland in several coastal nations Ghana's coast is sensitive to increases in sea surface temperature, ocean acidification, saltwater intrusion, rising water tables and altered runoff patterns. This is further worsened by the effect of natural disasters and the effects of climate change on the coast.

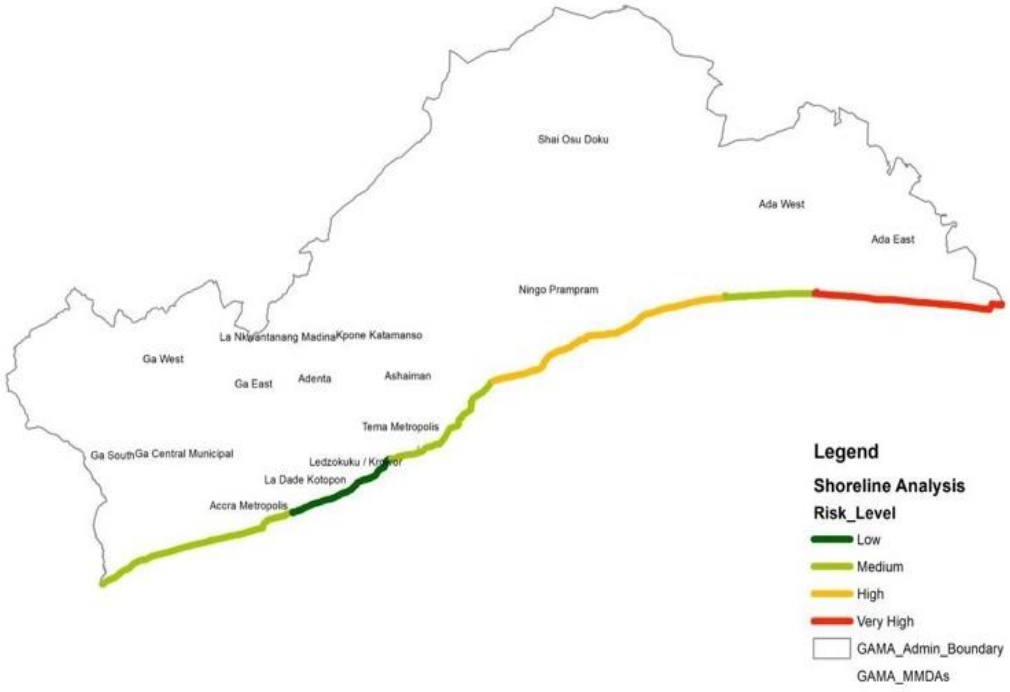
Predicted accelerated global sea-level rise has generated a need to determine the response of coastlines to sea-level rise. These responses could come in the form of increased intensity, frequency of tidal waves, and storms and potentially cause inundation of the low-lying coastal areas.

Climate change and associated impacts of rising sea levels increase storms and torrential rainfall and flooding have already affected coastal habitat, biodiversity and socio-economic activities in Ghana. These impacts have already manifested in various areas within the GAMA as coastal erosion (eastern end of GAMA- Prampram, Ada, etc.) and flooding (Dzorwulu, Lashibi, Alajo, Kotobabi, etc.).

While there are various degrees of vulnerability on the coast of Ghana, the GAMA has the highest vulnerability within the Greater Accra Region, see Figure 5. This is the case because of the very low relief with sandy barrier lagoons to backshore; high rates of erosion (especially along the eastern portions of GAMA) coupled with high population concentrations in these areas. These very high-risk factors make the coastal population and properties at the backshore very vulnerable to future storms and sea level rise. The high erosion rates threaten coastal infrastructure, cultural resources and the coastal environment. Coastal communities are losing their sources of livelihood as the sea destroys the local fishing and salt industries - the major source of income for most coastal dwellers.

The construction of the 8,502-square-kilometre Akosombo dam on the Volta River in 1965, and the recent expansion of the Tema port have impacted sediment flow. This has contributed significantly to increased erosion along the eastern coast. Sand mining, an illegal practice that continues because of a lack of law enforcement, has also been identified as a major cause of erosion on the Ghana coast.

Figure 5: GAMA Coastline Sensitivity to sea erosion and sea level rise



Source: https:/www.researchgate.net/publication/310459710_Mapping_Vulnerability_and_Risk_of_Ghana's_coastline_to_Sea_Level_Rise

IMPACT ON THE SOCIO-ECONOMIC SPHERE

Ghana's economic success over the last decade has come at a price, particularly for the country's coastline. About 80 percent of its industrial activities such as oil and gas production, port operations, and the generation of thermal and hydroelectric power, are concentrated along the coast, in addition to coastal agriculture and fishing. Within the GAMA, the coast has supported many economic activities chiefly, among them are fishing, salt production, and tourism. The information available suggests that the continuous vulnerability of the coast to the impacts of climate change and unrelated human activities will greatly accelerate in the future.

IMPACT ON INFRASTRUCTURE

There are several infrastructures of national importance located along the coast that are at risk of being destroyed as a result of the continuous vulnerability of the coast of GAMA. Towards the western end of GAMA, the Panbros salt production site has been inundated by excessive water from the sea and most of the time from the overrun of the Densu River. It is projected that with the continuous influx of water, the potential of salt production in the area will greatly reduce. Another incident is the Sakumono-Tema Beach Road (Figure 6) which continues to receive some degrees of erosion and instability because of sediment movement along the coast even though it has been reinforced in recent years.

In addition to these, several government buildings have been abandoned because of threats from sea level rise and coastal erosion. These include the relocation of the seat of government from the historic Christianborg Castle (Osu) to the current Jubilee House and the relocation of various Ministry of Agriculture offices along the coast to more inland areas.

Figure 6: An aerial view of the Sakumono-Tema Beach Road

Source: COWI A/S

IMPACT ON TOURISM AND MONUMENTS

The low-lying nature of the coast of Ghana attracts many tourists supporting the livelihoods of many youths along the coast who are engaged in providing escort services, selling artefacts, operating restaurants, and other economic activities. This continues to be viable when these beaches are friendly and usable.

Many forts and castles built by the Europeans are currently not usable and face the threat of being washed off because of coastal erosion. Many other national landmarks, including the Independence Square and the Kwame Nkrumah Mausoleum, and UNESCO World Heritage sites, forts and castles in the remains of fortified trading posts during the colonial era (1482 and 1786) are in danger of being claimed by the encroaching sea in the next century. Cultural heritage sites such as Fort Kongensten – a historic Danish Fort constructed at Ada in 1783 – have been completely washed away.

INTERNAL MIGRATION DUE TO DISPLACEMENT

The estimated average historic rate of coastal erosion in Ghana is about 1.13 m/yr while that for the western section of GAMA is 1.86 m/yr. Future shoreline positions show that Panbros, Glefe and Gbegbeyise coastal communities are at risk of total inundation. Densu Delta wetlands, natural fishing landing sites for small-scale fishing, saltpans and the newly renovated link road between Weija and Dansoman will be completely eroded. Displaced people due to coastal erosion will create internal migration problems. The entire coastal zone of Accra can be classified as a medium-risk area. Given this flood risk, it is important to identify and pursue a development trajectory that reduces the general risks identified here by building resilience through policy, planning, and development.

The GAMA Structure Plan becomes a starting point for streamlining planning, policies and development in a manner that does not put in place artificial protection in the future. Present settlements and developments that are located in areas with the risk of flooding, coastal erosion and potential cliff instability might consider accommodation policies or perhaps retreat, depending on the level of risk. In order to assess the potential risk of sea level rise to the shoreline and integrate an appropriate adaptive response to the very highly vulnerable areas, there is a need for Ghana to develop a holistic management plan.

ANALYSIS OF THE ECOLOGICAL INFRASTRUCTURE OF GAMA

As part of the GARSDF a Greater Accra Region (GAR) open space system was suggested. The purpose of this system is to identify specific areas that possess valuable natural resources and fulfil significant roles within the broader regional context. These areas should be protected from high-impact development, such as dense housing or industrial projects. These areas essentially form an integral part of the ecological infrastructure and the socio-ecological system. This approach was taken to ensure that the natural resources in the GAMA are able to sustain life, reduce biodiversity loss, improve livelihoods and enhance social and economic and cultural conditions for environmental sustainability, through the concept that biodiversity and communities should support the relationship between humans and biodiversity. Table 3 holds an overview of environmental criteria for the definition of the open space system.

Table 3: Description of environmental criteria for the definition of open space system

Environmental Criteria	Rationale	Source
Protected Areas/ Sensitive Habitat	These areas provide essential goods and services to support the livelihoods and well-being of people living in this area. Sustainable use of the goods and protection of the function of these areas will ensure the long-term supply of these goods and services.	CERGIS/ RMSC of Forestry Commission/ Ghana EPA
Flood Prone Areas	In terms of hydrology and climate change, flooding is a major issue for areas within the GAMA. Therefore, flooding-prone areas are seen as a priority.	Ghana EPA
Drainage Lines / Wetlands / Water body / Salt flats	Pollution in the hydrological system is of concern. Additional development may result in further pollution affecting livelihoods that rely on this natural resource In terms of hydrology and climate change, flooding is a major issue for most areas within the GAMA. Therefore, drainage lines, wetlands, water bodies, rivers and saltpans should be avoided to reduce increased run-off and siltation. Extreme weather conditions (temperature and humidity) have negative impacts on water availability in these areas.	CERGIS Land cover 2002, TCPD
Proposed Greenbelt	To serve as an environmental area in which planning, natural resources, socio-economic and other relevant issues are addressed for long-term solutions. To impose a barrier consisting of selected physical features reinforced by planning controls to check the outward sprawl of the Accra-Tema conurbation. To ensure that land use within the greenbelt is consistent with the maintenance of a predominantly rural landscape, and the conservation of soils, water sources, vegetation and scenic and historical areas.	EPA, 2006
Highly Suitable Agricultural Zones	Agricultural and food security is vital for the livelihoods of communities.	EPA, 2011
Riverine vegetation / Riverine vegetation with/without scattered farms	Riverine vegetation is vital for maintaining slope stability and preventing erosion (ecosystem services). These also create habitats for various species.	CERGIS Land cover 2002
Reserved shrub-thicket / Reserved mosaic of thickets and grassland	These areas are integral in the livelihoods of communities as they provide products and services. These areas are also harvested sustainably which allows for a degree of Conservation.	CERGIS Land cover 2002
Coastline	Habitat for a variety of species and an important landscape feature. Also closely connected to the livelihoods of more than 5 million people.	CERGIS Land cover 2002

A consolidated and defined open space system is a significant and essential part of the Spatial Development Concept, which consists of sensitive and strategic environmental features such as the hydrological system (wetlands, rivers and lagoons), nature and forest reserves, vegetation of strategic importance (Mangroves), a green space area, high potential agricultural areas and the coastline.

The objectives of the open space system are as follows:

i. Meet the open space needs of the population of GAMA in a way that will ensure adequate access to a variety of types of open spaces in Greater Accra that will fulfil the physical and psychological needs of the community
ii. Meet the biodiversity conservation needs in the area in an appropriate manner that focuses on attainable priorities
iii. Ensure that the Man and Biosphere approach is taken, in order to ensure sustainable utilisation of the open space system by the community
iv. Consider and take land needed for development into account in an objective and equitable manner
v. Contribute as an integrated element in the proper functioning of GAMA.

Various measures were put in place including policies (Greening Ghana Initiative, Accra Urban Green Infrastructure Project amongst others), education and awareness creation on the need to plant trees and keep surroundings clean of filth and many more. Unfortunately, these initiatives have not been successful due to a number of reasons including lack of control over all lands by authorities, poor education and awareness creation on green spaces and their importance, non-prioritization of spatial planning, poor development planning, inadequate commitment to support technology development and transfer, and the cost of green technologies.

The creation of green spaces and their importance in promoting the health and well-being of people cannot be overemphasized. It is therefore essential for strategies to be developed to take advantage of the current state of affairs to prioritize green infrastructures in GAMA as part of our development trajectory.

SERVICES SECTOR

The business service sector in GAMA is the heart of the economy of Ghana. More than 111,000 establishments are employing around 870,000 people, which represents 38 percent of the people engaged in the service sector. The majority of establishments representing 61,000 establishments are in wholesaling and retailing trade of motor vehicles and motorcycles and engaging around 247,000 people. The second largest sub-sector in service is the financial and insurance businesses, which have around 3,000 establishments and engage more than 179,000, representing 80 percent of the people. This sector is servicing the mining, oil-producing and manufacturing sectors all over the country.

The service sector was an engine of economic growth between 2006 and 2016, with a significant increase in higher-value activity in the information and communications, finance, and insurance subsectors. The development of these subsectors indicates strong prospects for digital services, banking and media, which is attracting continuing investment in telecommunications networks.[17] The sector in the GAMA is now the largest contributor to value-added exports. Still, a large share of the increase in services exports relates to services that are embedded in commodity exports, relating to the oil value chain.

SOCIAL SECTOR

The social sector of the GAMA contributes to the development of a good quality of life for the people. It includes provision services regarding health, education, community development, play, youth,

[17] The_Finance_Landscape_in_Ghana_final.pdf (urbantransitions.global)

early years, recreation, sports, faith, criminal justice etc. The overall benefits of the social sector are strong and inclusive communities, bringing different groups of people together, contributing to social integration, and the desirability of a place.

Successive governments have, since Ghana's independence, explored major healthcare reforms for instance, with the view to improving accessibility, and efficiency and reducing health inequalities. The level of health is determined by the built environment, access to healthcare, education, social and community context, and economic stability. When one or more of these determinants is reduced or missing, it can lead to inequity and social disadvantages and higher risks of poor health. The design of GAMA can be changed in ways that can make it easier to make healthy choices.

Trends of change and mapping of additional and future trends

Table 4 holds an overview of trends of change and mapping of additional and future trends.

Table 4: Trends of change and mapping of additional and future trends

Feature	Changes (since 2017)	Trends
Water infrastructure	Water infrastructure capacity (sewer and potable water supply is below the demand Ineffective sewerage infrastructure impacts negatively on natural resources. Electricity supply lags demand Doubling population growth over the next 20 years will exacerbate existing challenges and impacts	Continual pressure on water and water resources to support populations in GAMA. Cost of treatment of water to increase significantly as illegal mining activities continue to pollute water bodies.
Built-up areas	Expansion of built-up areas to accommodate an increased population of urban centres Expansion of built-up areas to sensitive habitats	This map modelled predicted potential expansion of built-up areas over the specified period. The predicted potential expansion of built-up areas over the specified period.
Shoreline changes	Loss of natural shoreline attributes caused by various aspects, including natural shoreline erosion, and human settlement encroachment (through Built-up areas' expansion on the shoreline	Shoreline changes will be further exacerbated by increased climate change effects.
Flood prone areas	Expansion of areas prone to flooding in the capital city, Accra	Several factors are increasing flood-prone areas. The combined effect of these factors requires a holistic approach to determine the contribution of each of the factors.
Land degradation	Significant changes in land structure and use resulting in the degradation of land	This map modelled predicted potential expansion of degraded land over the specified period.

Issues Register

This section presents information on issues mainly identified from the stakeholder consultations, the social media survey, review of the Medium-Term Development Plan, stakeholder workshop/desktop review and scenario analysis. These are categorized in relation to the sustainability pillars namely, Natural Resources, Socio-cultural, Economic and Institutional respectively.

Stakeholder engagements

Stakeholder engagements on the GAMA Structure Plan led to the generation of critical issues necessitating consideration to ensure sustainable development. These are presented in the following tables Table 5, Table 6 and Table 7.

SOCIAL MEDIA

Table 5: Social media survey - views from the online public

S/N	PILLARS OF SUSTAINABILITY			
	NATURAL RESOURCES	SOCIO-CULTURAL	ECONOMIC	INSTITUTIONAL
1.	Very poor water supply	Poor neighbourhood	Poor bike paths and walkways	Poor waste collection and management
2.	Poor fire protection	Expensive housing	Choked drains	Poor security and safety
3.	Flooding			
4.	Poor parks			
5.	Poor streets			

REVIEW OF MEDIUM_TERM DEVELOPMENT PLAN

Table 6: Views from the Metropolitan, Municipal and District Assemblies

S/N	PILLARS OF SUSTAINABILITY			
	NATURAL RESOURCE	SOCIO-CULTURAL	ECONOMIC	INSTITUTIONAL
1.	Climate and disaster resilience	Opportunities for all	Prosperous economy	Poor waste collection and management
2.	Poor fire protection	Good quality of life	Improved infrastructure	Poor security and safety
3.	Very poor water supply	Social inclusion and protection	Enable environment for business	Good Governance
4.	Poor parks	Good Schools, hospitals -and polyclinics	Thriving Private Sector	
5.	Water for all	Strong workforce	Improved transport	Food security
6.	Improved natural environment	Innovation and alternative learning	Technology and Innovation	Decentralisation
7.	Good environmental sanitation	Healthy people	Electricity for all	Public safety
8.	Improved slums	Educated people	Improved fiscal performance	Public discipline

9.	Improved wastewater system	Inclusive opportunities	Congestion	Strong tourism
10.	Urban sprawl	Improved population management		Participation and knowledge sharing
11.		Affordable housing		
12.		Poor street and neighbourhood		

STAKEHOLDER WORKSHOP

Table 7: Views from Stakeholder Workshop/Desktop Study

S/N	PILLARS OF SUSTAINABILITY			
	NATURAL RESOURCES	**SOCIO-CULTURAL**	**ECONOMIC**	**INSTITUTIONAL**
1.	Susceptibility to climate change	High poverty	Poor street and neighbour	Lack of enforcement
2.	Poor drainage	Overpopulation	Poor traffic conditions	High political influence or interference in planning
3.	Disaster hazard risk	Infectious disease	Poor infrastructure	Poor institutional coordination and collaboration,
4.	Susceptibility to climate	A large part of the population with no skills	Poor road network	Poor implementation
5.	Disaster hazard risk	Availability of human resources,	Frequent accidents,	Traditional authority interference
6.	Poor drainage system	Youthful population	Lack of funds to complete programs	Individual land ownership
7.	Flooding	Availability of social amenities,	High inflation	Delayed approval of permits,
8.	Indiscriminate plastic waste disposal	Rapid population growth	High cost of doing business,	Delay in data from institutions
9.	Deforestation	Infectious disease	Ongoing congestion	Land tenure
10.	Land resources	A large part of the population with no skills	Business hubs	Relaxed laws and regulations
11.	Landscape	Exclusion of informal sector workers	Focus on investments	Strong interagency communications,
12.	Space for development	Exclusion of the urban poor e.g., evictions, slums, and immigration	High cost of doing business	Easy access to data
13.	Severe floods	Exclusion of the urban poor e.g., evictions, slums, and immigration	High inflation	Under-funded planning

S/N	PILLARS OF SUSTAINABILITY			
	NATURAL RESOURCES	SOCIO-CULTURAL	ECONOMIC	INSTITUTIONAL
14.	Severe floods	Exclusion of informal sector workers		High political influence or interference in planning
15.	Poor sanitation			Delay in data from institutions
16.	Indiscriminate plastic waste disposal			Disaster response and backup
17.	Deforestation			Security issues
18.	Poor sanitation			Political interference in decisions,
19.	Ongoing congestion			Lack of funds to complete programs,
20.				Land tenure
21.				Relaxed laws and regulations,
22.				Corruption

Scenario development

Five scenarios were developed to give possible directions as to how GAMA authorities, private firms and the public can make smarter land use decisions, promote better access and connectivity, and work to achieve greater prosperity and opportunity. These are: (i). Trend (business as usual), (ii). Guided trend (centres at the edge), (iii). Concentration (in areas with best development potential), (iv). Polycentric (grow the centres) and (v). Invest in high density and surrounding area, Scenario comparison and preferred concept. A summary of the scenarios is presented as follows:

SCENARIO 1 - TREND (BUSINESS AS USUAL)

If GAMA continues to expand the way it has over decades, with no fundamental change in land use and spatial development laws and their implementation, urban services and conditions will deteriorate and the city will become less liveable. The unguided dispersion will rapidly deplete land and natural resources, impede the mobility of people and accessibility of neighbourhoods, create urban food insecurity, render more people and properties vulnerable to flooding, increase environmental pollution, deteriorate urban health, and accelerate climate change and global warming. Dispersion will increase the cost of doing business in GAMA, which will make the city less attractive for economic investment, rendering many GAMA residents jobless and poor.

The choices and behaviours of key actors about where they plan, invest, build, and live were therefore, modelled using the computer model TI-City to predict the likely urban footprint in 2040, assuming 'Business-as-usual' which means no change in the government policy framework, no change in development control effectiveness, and therefore no change in the locational choices of households, estate agents and developers. Factors such as development control; population projection; share of households by income class; developer plot demand; developer product mix; land prices; and the sensitivity of development to slope were also considered.

Implications of scenario 1 are presented as follows.

NATURAL RESOURCES

i. New growth will largely take place on greenfield sites at the urban fringe
ii. GAMA's urban footprint will expand by about 45 percent, most growth will take place in the periphery
iii. Most MMDAs will see their urban areas expand but to varying degrees. Core MMDAs as a group will expand by only two percent or 90 km^2
iv. Dispersion will consume about 14 percent of forest land, 12 percent of cropland, four percent of water, and 18 percent of shrubland.
v. The consumption of open spaces, parks, wildlife habitats and farmland will disturb the ecological balance and reduce biological diversity, rainwater infiltration and groundwater replenishment.

SOCIO-CULTURAL

i. Small, scattered neighbourhoods will emerge, mostly without improved infrastructure
ii. Dispersion will reduce mobility and accessibility, particularly for poor households without cars and low commute budgets
iii. Households will be less likely to engage with and benefit from public amenities such as schools and hospitals
iv. Households will be less likely to engage with each other or do so less frequently
v. Dispersion will lead to poorer health outcomes since increased car use is linked to obesity, traffic injuries and fatalities, respiratory illnesses, and financial stress.

ECONOMIC

i. The cost of doing business will increase with higher transport costs to reach dispersed populations
ii. GAMA will become less attractive for economic investment and existing businesses will move away as operational costs increase
iii. Low densities will not justify public transport services, congestion will increase, and commutes will be slow and costly
iv. Dispersion will make alternative transport modes — walking, cycling and public transit — more expensive and so less attractive and viable.

INSTITUTIONAL

i. Dispersed populations will need new infrastructure and services, but dispersion translates into higher planning, building, operating and maintenance costs.

SCENARIO 2 - GUIDED TREND (CENTRES AT EDGE)

Expansion can be guided into new and emerging centres located close by. This would reduce sprawl and conserve open space and farmland while creating compact neighbourhoods and investment opportunities at GAMA's edge. The guided expansion would require significant changes in land use and spatial development laws and their enforcement. But because this scenario responds to the trend forces, the required land use and spatial development changes will not be as drastic as those for other scenarios.

To identify reasonable locations for the centres, the predicted future expansion was mapped and existing nodes as centres were identified. The centres are located at the GAMA edge, where future expansion is mostly predicted to occur. Centres will have high-level infrastructure, services, and amenities to attract and serve residential, commercial, and industrial development within the centres. This scenario promotes compact development at the edge instead of densification in the urban core.

The implications of Scenario 2 are presented as follows.

NATURAL RESOURCES

i. GAMA's edge will absorb most of the new population growth and physical development, mostly in greenfield sites, but guided expansion will minimize the depletion of buildable lands, farmlands, forests, wildlife habitats, water, and other natural resources. Compared to the trend scenario, there will be less disturbance of ecological balance and biological diversity.

SOCIO-CULTURAL

i. Guided expansion will make the urban fringe more viable for social and recreational infrastructure including schools, hospitals, sports, entertainment centres and recreational parks
ii. Living conditions in MMDAs at the periphery will improve as more people will have access to better infrastructural services and amenities
iii. The ability to reach more people within shorter distances and lower transport costs will improve mobility, facilitating more integrated and cohesive neighbourhoods at the urban fringe
iv. Most MMDAs at the periphery will experience rapid population growth. Growth in the core MMDAs will be extremely minimal
v. Locating future populations predominantly at the urban fringe could underutilize the resources, services, amenities, and infrastructure at the urban core.

ECONOMIC

i. As new growth occurs in urban fringe centres in higher densities, MMDAs at the periphery will become more attractive for economic investment, leading to the creation of jobs. There will likely be a decline in poverty in the urban fringe
ii. More places and jobs at the periphery will be reached via shorter distances, minimizing transport, and the general cost of doing business
iii. MMDAs at the periphery will attain the critical mass of people needed to finance and sustain massive economic and transport infrastructure
iv. Investment in the centre/core could stagnate as businesses relocate to the attractive periphery, leading to economic decline and shrinkage in the core MMDAs. Many people at the centre/core will lose their jobs if there is a sustained economic decline, increasing poverty levels.

INSTITUTIONAL

i. Infrastructural services and amenities in the centre may deteriorate owing to underutilization and neglect
ii. Services at the urban fringe will improve significantly, which will minimize commuting between the periphery and urban core, and subsequently reduce traffic congestion
iii. A sustained period of disinvestment and deterioration of urban services in the centre could lead to run-down and crime-infested neighbourhoods.

SCENARIO 3 - CONCENTRATION (IN AREAS WITH THE BEST DEVELOPMENT POTENTIAL)

Best development potential (BDP) areas are areas best served by existing infrastructural services and amenities such as roads, schools, libraries, hospitals, etc. Concentrating development in BDP areas means GAMA can leverage existing infrastructure to serve the needs of its future population while ensuring that resources are utilized optimally. Contrary to dispersion, prioritizing investments in areas with the best development potential promotes densification and compact urban morphology, minimizes the cost of meeting future population needs, creates economic investment opportunities, reduces commuting time, facilitates cohesive neighbourhoods, and slows the depletion of land and other natural resources.

The Principal Component Analysis (PCA) technique was used to compute a composite development potential index for each block. The composite index incorporated 35 indicators, capturing the characteristics of blocks and their neighbourhoods. The block-specific indicators constituted road density and proximity to various amenities and services, while the neighbourhood indicators captured the number of amenities and services within a 500m radius of each block. The resulting index was classified into three levels in order of development priority with level 1 interpreted as the best development potential area.

The best development potential areas are concentrated in the urban core in three clusters. The largest cluster stretches from Osu, the historical core, to Weija to the West, Madina to the North, and Nungua to the East. The second cluster extends from Tema to Ashaiman, while the third is concentrated around Kasoa. There are opportunities for planned corridor development on several routes, including between Weija and Kasoa, and from Madina to Oyarifa.

The implications of concentrating development in BDP areas are as follows.

NATURAL RESOURCES

i. Concentrating development in areas with good infrastructure promotes infilling, densification, and compact urban form
ii. Concentrating development in BDP areas means people can access infrastructure, employment centres and neighbourhoods within shorter distances, thereby reducing commuting time
iii. Contrary to dispersion, concentrating investment in BDP areas consumes less open space, farmlands, wildlife habitats, trees, and other natural resources
iv. The dense and compact pattern from concentration reduces the emission of CO2 and other greenhouse gasses, which slows down global warming and climate change.

SOCIO-CULTURAL

i. Locating GAMA's future population in areas with good infrastructure will generally improve living conditions as more people will have access to urban services and amenities
ii. The ability to reach more people within shorter distances and lower transport costs will improve mobility, facilitating more integrated and cohesive neighbourhoods
iii. Concentration does not only create a critical mass to finance economic investment, but also provides the threshold to sustain social and recreational infrastructure like schools, hospitals, sports and entertainment centres, and recreational parks
iv. Concentrating future population around existing amenities and services could also cause overcrowding
v. Locating future populations in BDP areas facilitates efficient utilization of resources, as existing infrastructure and amenities are put to optimum use.

ECONOMIC

i. Concentrating development in areas with good infrastructure will help provide the services needed to sustain GAMA's future population at a lesser cost
ii. The concentration of development creates external agglomeration economies, and consequently, economic investment opportunities. As GAMA increases its investment attraction, more jobs will be created, which can benefit people across different income groups
iii. The densification from the concentration means businesses can reach more people within shorter distances and lower transport costs
iv. Concentrating development and population creates the critical mass required to economically sustain massive infrastructure projects that would have otherwise been unfeasible. This means, in addition to serving future populations with existing infrastructure, additional and advanced infrastructure services, for example, underground rail, become economically viable
v. Concentration has its downsides though since, for instance, unprioritized areas might become unattractive for investment and could suffer economic decline.

SCENARIO 4 - POLYCENTRIC (GROW THE CENTRES)

The Polycentric (grow the centres) scenario focuses on growth and investment in many delineated centres to achieve high-quality places and neighbourhoods, enhance economic opportunity and ensure sustainable infrastructure. It encourages the redevelopment of brownfield and greenfield sites and sites

that are near to and can use existing infrastructure. It aims to create greater economic opportunities through place-making. It aims to provide a wide range of housing and transportation opportunities and to supply infrastructure more cost-effectively. Importantly, it shows where growth is discouraged and or prohibited to protect and restore the natural environment.

The polycentric strategy aims to develop centres to absorb the bulk of the residential and commercial growth, and a large share of its industrial growth. In order of priority, the strategy aims to: (i) strengthen and revitalize existing centres and (ii) create a limited number of new centres or satellites.

The implications of the Polycentric scenario are presented as follows:

NATURAL RESOURCES

i. The physical expansion will be limited
ii. The development will favour the redevelopment of brownfield sites, previously developed land, and infill development on vacant and underused plots
iii. The development will be mostly mixed-use with single-use commercial, institutional and industrial areas where justified
iv. Energy consumption and greenhouse gas emissions are reduced; non-motorized and public transport options are more viable and encouraged; private vehicle use is discouraged
v. Traffic congestion and kilometres travelled are reduced; public transport ridership is increased
vi. Natural resources are preserved because expansive growth is reduced
vii. Mixed-use development reduces the need to drive leading to improved air quality.

SOCIO-CULTURAL

i. The mobility within compact polycentric centres will facilitate more integrated and cohesive neighbourhoods
ii. The form and scale of development will vary according to the location, with a focus on multi-story, attached and semi-detached structures
iii. As centres provide diverse socio-economic opportunities, there will be a significant reduction in poverty
iv. This option provides a full range of housing types, from single-family detached to multi-storey towers, in a wide variety of locations and price options. The range of housing types in each centre is determined by the type of centre: for example, larger and denser centres will have more multi-storey units.

ECONOMIC

i. The multiple centres/nodes offer diverse economic investment opportunities as businesses can specialize and develop market niches
ii. The compactness and interconnectedness of the centres mean more customers can be reached within shorter distances, reducing transport and the general cost of doing business
iii. The economic investment opportunities offered by centres will help create jobs for different income groups thereby reducing unemployment
iv. Growing the centres and making them functional offers a good platform for achieving sustained economic growth
v. As multiple centres become compact and denser, the per capita cost of infrastructure provision significantly reduces.

INSTITUTIONAL

i. The centres will provide the critical mass for delivering high-level infrastructural amenities and services, which will improve the general living conditions and well-being of GAMA residents.

SCENARIO 5 - INVEST IN HIGH-DENSITY AND SURROUNDING AREAS

Investing in the high-density scenario aims to regenerate GAMA's high-density population clusters and redevelop their surrounding areas to provide mixed-income opportunities. GAMA's high-density population clusters are mainly slums located in prime locations and areas with high land values.

Regenerating such clusters will improve the living conditions of a majority of people and optimize the use of prime lands. Redeveloping the surrounding areas of the clusters for middle and high-end markets could provide mixed-income opportunities, create diverse social networks, minimize the spatial concentration of poverty, and improve the economic well-being of many GAMA residents. This scenario would require major capital investments and policies to enable major growth in already dense areas, and aggressive policies to expand planned affordable housing within the clusters and limit displacement of the poor.

The Spatial Planning Manual of Ghana was used to classify blocks into low, medium, and high population densities. Clusters of high-density blocks mostly located in the core and a few major satellite centres were subsequently identified. In carving out mixed-income opportunity areas, a 10-minute walking distance approximating 0.6 km was used to create a buffer around the clusters.

High-density clusters in the core of Accra and Tema, and major satellite centres such as Kasoa, Madina, and Ashaiman will be redesigned to absorb most of GAMA's future job and population growth. The walkable surroundings of these clusters will be redeveloped as high- and middle-income residential communities.

The implications of scenario 5 are presented as follows:

NATURAL RESOURCES

i. The development will comprise infill development on vacant plots, redevelopment of existing plots at higher floor-to-area ratios, higher plot coverage, and limited expansion into greenfield sites. This will reduce the depletion of farmlands, forests, water, and natural resources
ii. The three greatest advantages of this scenario are preserved land, compact development, and higher densities. Land preserved could remain in agricultural production, be safeguarded to ensure viable ecosystem services or be developed for recreational uses
iii. This scenario concentrates more people around nodes, considerably reduces travel distances and therefore cuts down on transport emissions and energy inefficiency.

SOCIO-CULTURAL

i. The development of mixed-income communities around high-density clusters, -which are predominantly slum areas- could diversify the social network and capital of many poor people
ii. The ability to reach more people within shorter distances and lower transport costs will improve mobility, facilitating more integrated and cohesive neighbourhoods.
iii. New residents and jobs would be highly concentrated in clusters in the two cores, Accra and Tema, as well as in public transport-accessible satellite centres.

ECONOMIC

i. The high-density clusters offer huge market potential, hence there will be an increased economic investment in the core, leading to the creation of more jobs and a reduction in poverty
ii. The cost of doing business in the clusters will be minimized as more customers and labour can be reached within shorter distances
iii. Concentrating development in the high-density clusters offers lower capital and operational expenditure for public infrastructure and services such as roads, water, stormwater management, sewage treatment, solid waste management, etc.

iv. More diverse and efficient mobility options, particularly public transport, walking and cycling, can be promoted in the clusters.

INSTITUTIONAL

i. Supporting high-density clusters in the core with infrastructural services and amenities will reduce spatial inequalities and deprivation of education, health, and other social development outcomes.

IMPLICATION OF SCENARIOS

The scenarios for GAMA are compared using wide-ranging indicators on natural resources, socio-cultural, economic and institutional pillars of sustainability. The trend scenario is the least desirable as it performs worst under all the indicators. Despite being slightly better than the trend, the guided trend scenario, which attempts to guide predicted expansion into peripheral centres, also performs abysmally on most of the indicators.

This means GAMA will be exposed to risk and opportunities relating to natural resources, socio-culturally, economically and institutionally, if it either follows the trend or only makes minimal changes to its land use policies and laws as well as their implementation. In other words, if a better future is expected for GAMA, the trend is not an option.

Three scenarios score well — polycentric, high density and best development potential — and each has its strong points. The polycentric scenario performs well on more indicators. However, GAMA could benefit from a combination of the advantages of the three top scenarios. In combining the three, a polycentric spatial framework with high-density centres that are prioritized by best development potential is proposed. A comparison of the scenarios is presented in the table below.

Table 8: Comparison of scenarios

SUSTAINABILITY IMPLICATION	SCENARIO				
	Trend	Guided Trend	Best Development Potential	Polycentric	High Density
Natural Resources					
Optimal use of land	1	2	4	5	5
Minimal depletion of forest	1	2	4	4	4
Minimal depletion of farmlands	1	2	4	4	4
Minimal depletion of water resources	1	2	4	4	4
Minimal disturbance of biodiversity and ecological balance	1	2	4	4	4
Reduced transport carbon emissions	1	2	4	4	4
Socio-Cultural					
Compact urban structure	1	3	3	5	4

Integrated and cohesive neighbourhoods	1	3	3	5	3
Improved provision of amenities and social services	1	2	4	4	4
Improved social capital and networks	1	2	4	4	5
Reduction in poverty	1	2	4	4	4
Improved living conditions	1	2	4	4	4
Economic					
The attraction of economic investment	1	3	4	5	4
Creation of jobs for diverse income groups	1	2	4	4	4
Reduction in unemployment	1	2	4	4	4
Sustained economic growth	1	2	4	5	4
Reduced cost of mobility	1	3	4	4	3
Reduced per capita cost of infrastructure provision	1	2	5	4	4
Institutional					
Improved Security and Public Safety	1	2	4	4	4
Improved Communication	1	2	4	4	4
Improved Waste Management Services	1	2	4	4	4
Shorter travel times	1	3	4	4	4
Opportunities for Women, Children, Vulnerable and Excluded	1	2	4	4	4

Legend

Poor	Medium	Good

Compilation of issues register

Critical examination of the numerous issues identified from the various stakeholder engagements, desktop studies as well as scenarios development and analysis revealed similarities in relation to the four pillars of sustainability. These issues were evaluated, consolidated and organized into the Issues Register. In all, a summary of Seventy-five (75) issues was captured in relation to the four pillars of sustainability as presented in Table 9.

Table 9: Summary of issues

No.	SUSTAINABILITY PILLARS	NUMBER OF ISSUES
1.	Natural Resources	15
2.	Socio-Cultural	18
3.	Economic	19

4.	Institutional	23
	Total	75

The main consolidated issues per sustainability pillar are presented in Table 10, Table 11, Table 12 and Table 13.

Table 10: Natural resources issues

No.	Natural Resources Issues
1.	Poor water quality
2.	Weak fire protection
3.	Poor parks
4.	Flooding
5.	Climate and disaster resilience
6.	Poor sanitation
7.	Improved wastewater management
8.	Improved natural environment
9.	Indiscriminate plastic waste disposal
10.	Improved slums
11.	Urban sprawl
12.	Poor drainage
13.	Disaster hazard
14.	Deforestation
15.	Land issues

Table 11: Socio-cultural issues

No.	Socio-Cultural Issues
1.	Poor street
2.	Poor neighbourhoods
3.	Expensive housing
4.	Good quality of life
5.	Social inclusion and protection
6.	Exclusion of informal sector workers
7.	Good schools and polyclinics
8.	Strong workforce
9.	Innovation and alternative learning
10.	Healthy people
11.	Infectious disease
12.	Educated people
13.	Rapid population growth
14.	Population issues
15.	Affordable housing
16.	Availability of social amenities
17.	High poverty
18.	Lack of skills
19.	Exclusion of the urban poor e.g., evictions, slums, and immigration

Table 12: Economic issues

No.	Economic Issues
1.	Poor street condition
2.	Poor bike paths and walkways
3.	Poor traffic conditions
4.	Insufficient and choked drains
5.	High inflation
6.	Prosperous economy
7.	Infrastructure Issues e.g. road
8.	Frequent accidents
9.	Improved transport
10.	Technology and Innovation
11.	Electricity for all
12.	Enabling environment for business
13.	Thriving Private Sector
14.	Congestion
15.	Improved fiscal performance
16.	Lack of funds to complete programmes
17.	Poor road network
18.	High cost of doing business
19.	Focus on investments

Table 13: Institutional issues

No.	Institutional Issues
1.	Poor waste collection and management
2.	Poor security and safety
3.	Land tenure
4.	Food Security
5.	Opportunity for all
6.	Good Governance
7.	Decentralization
8.	Public discipline
9.	Strong tourism
10.	Participation and knowledge sharing
11.	Lack of enforcement
12.	High political influence or interference in planning
13.	Poor institutional coordination and collaboration
14.	Poor implementation
15.	Individual land ownership
16.	Delayed approval of permits
17.	Delay in data from institutions
18.	Relaxed laws and regulations
19.	Strong interagency communications
20.	Access to data issues
21.	Under-funded planning

22.	Disaster response and backup
23.	Corruption

Determination of Key Issues and Level of Significance

This section deals with the determination of the key issues from the 75 issues compiled under the previous chapter that require attention in developing the GAMA Structure Plan. The Issues Register comprises the 75 issues, generated from the social media survey, Metropolitan, Municipal and District Assemblies (MMDAs), and stakeholder consultations including desktop studies and scenarios. These were categorized under the natural resources, socio-cultural, economic and institutional pillars of sustainability in line with Ghana SEA, from which the key issues will be identified regarding their level of significance.

Determination of the level of significance

To determine the level of significance, the following criteria were used:

i. Frequency of occurrence (FoC), which refers to the number of times the issue was raised
ii. Relevance to the SEA (RTS) refers to the strategic importance of the issue (High relevance issues are strategic, whereas Low relevance issues are project-related and can be handled by EIA)
iii. Impact Evaluation refers to the perceived magnitude (intensity, severity, etc.) of the impact, which is classified as high, medium, or low
iv. Regulatory regime (RR) refers to the priority of the issue to conventions, laws, customary laws (taboos, values, and norms) and regulations.

Table 14 demonstrates the application of the criteria to the issues under the sustainability pillars to determine their levels of significance. The results are categorized as High (Red), Medium (Yellow), or Low (Green).

Table 14: Determination of the Level of Significance (LS) of the issue

SUSTAIN ABILITY PILLARS	S/N	ISSUE	SOURCE OF ISSUE				FoC	RTS	Impact Evaluation			RR	LS
			Social Media Survey	MMDAs	Stakeholder/ Desktop	Scenario			H	M	L		
NATURAL RESOURCES	1	Poor water quality	√	√		√	3	√	√			√	High
	2	Weak fire protection	√	√			2	√	√			√	High
	3	Poor parks	√	√			2	√	√			√	High
	4	Flooding	√		√		2	√	√			√	High
	5	Climate and disaster resilience		√	√	√	3	√		√		√	Medium
	6	Poor sanitation		√	√		2	√	√			√	High
	7	Improved wastewater management						√		√		√	Medium
	8	Improved natural environment		√		√	2	√		√		√	Medium
	9	Indiscriminate plastic waste disposal			√		1	√	√			√	High
	10	Slums issues		√			1	√			√	√	High
	11	Urban sprawl		√			1	√	√			√	High
	12	Poor drainage			√		1	√	√			√	High
	13	Disaster hazard			√		1	√	√			√	High
	14	Deforestation			√	√	2	√	√			√	High
	15	Land issues			√	√	2	√	√			√	High
SOCIO-CULTURAL	1	Poor streets and neighbourhoods	√	√		√	3	√	√			√	High
	2	Expensive housing	√				1	√		√		√	Medium
	3	Good quality of life		√		√	2	√			√	√	Low
	4	Social inclusion and protection		√			1	√			√	√	Low

SUSTAIN ABILITY PILLARS	S/N	ISSUE	SOURCE OF ISSUE				FoC	RTS	Impact Evaluation			RR	LS
			Social Media Survey	MMDAs	Stakeholder/ Desktop	Scenario			H	M	L		
	5	Exclusion of informal sector workers			√		1	√		√		√	Medium
	6	Good schools and polyclinics		√			1	√			√	√	Low
	7	Strong workforce		√	√	√	3	√			√	√	Low
	8	Innovation and alternative learning		√			1	√			√	√	Low
	9	Healthy people		√			1	√			√	√	Low
	10	Infectious disease			√		1	√		√		√	Medium
	11	Educated people		√			1	√			√	√	Low
	12	Rapid population growth			√		1	√		√		√	Medium
	13	Population issues		√	√		2	√		√		√	Medium
	14	Affordable housing		√		√	2	√			√	√	Low
	15	Availability of social amenities			√	√	2	√			√	√	Low
	16	High poverty			√	√	2	√	√			√	High
	17	Lack of skills			√		1	√		√		√	Medium
	18	Exclusion of the urban poor e.g., evictions, slums, and immigration			√	√	2	√	√			√	High
		Poor street condition			√		1	√		√		√	Medium
ECONOMIC	1	Poor bike paths and walkways	√				1	√		√		√	Medium
	3	Poor traffic conditions			√	√	2	√	√	√		√	High
	4	Insufficient and choked drains	√				1	√	√			√	High
	5	High inflation			√		1	√		√		√	Medium

SUSTAIN ABILITY PILLARS	S/N	ISSUE	SOURCE OF ISSUE				FoC	RTS	Impact Evaluation			RR	LS
			Social Media Survey	MMDAs	Stakeholder/ Desktop	Scenario			H	M	L		
	6	Prosperous economy		√		√	2	√			√	√	Low
	7	Infrastructure Issues e.g. road		√	√	√	3	√	√			√	High
	8	Frequent accidents			√		1	√		√		√	Medium
	9	Improved transport		√			1	√			√	√	Low
	10	Technology and Innovation		√			1	√		.	√	√	Low
	11	Electricity for all		√			1	√			√	√	Low
	12	Enabling environment for business		√	√	√	3	√		√		√	Medium
	13	Thriving Private Sector		√			1	√		√		√	Medium
	14	Congestion		√	√		2	√	√			√	High
	15	Improved fiscal performance		√			1	√			√	√	Low
	16	Lack of funds to complete programmes			√		1	√		√		√	High
	17	Poor road network			√		1	√	√			√	High
	18	High cost of doing business			√		1	√		√		√	Medium
	19	Focus on investments			√		1	√		√			Medium
INSTITUTIONAL	1	Poor waste collection and management	√	√		√	3	√	√			√	High
	2	Poor security and safety	√	√	√	√	4	√		√		√	Medium
	3	Land tenure issues			√		1	√	√			√	High
	4	Food Security		√			1	√		√		√	Medium
	5	Opportunity for all		√		√	2	√			√	√	Low
	6	Good Governance		√			1	√			√	√	Low
	7	Decentralisation		√			1	√			√	√	Low
	8	Public discipline		√			1	√			√	√	Low

SUSTAIN ABILITY PILLARS	S/N	ISSUE	SOURCE OF ISSUE				FoC	RTS	Impact Evaluation			RR	LS
			Social Media Survey	MMDAs	Stakeholder/ Desktop	Scenario			H	M	L		
	9	Strong tourism					1	√		√		√	Medium
	10	Participation and knowledge sharing		√			1	√			√	√	Low
	11	Lack of enforcement			√		1	√	√			√	High
	12	High political influence or interference in planning			√		1	√		√		√	High
	13	Poor institutional coordination and collaboration			√		1	√		√		√	High
	14	Poor implementation			√		1	√		√		√	High
	15	Individual land ownership			√		1	√		√		√	High
	16	Delayed approval of permits			√		1	√	√			√	High
	17	Delay in data from institutions			√		1	√		√		√	Medium
	18	Relaxed laws and regulations			√		1	√		√		√	Medium
	19	Strong interagency communications			√	√	2	√			√	√	Low
	20	Access to data issues			√		1	√		√		√	Medium
	21	Under-funded planning			√		1	√		√		√	Medium
	22	Disaster response and backup			√		1	√		√		√	Medium
	23	Corruption			√		1	√		√		√	High

Identified key issues

From Table 14 a total of **30** out of the 75 issues were determined to be of **high level of significance**. These represent the **key issues**. The Medium level of significance was 25, while that of the Low was 20. Table 15 presents the summary of significant issues, while the details of the identified issues are in Table 16.

Table 15: Summary of significant issues

NO.	SUSTAINABILITY PILLAR	LOW	MEDIUM	HIGH	TOTAL ISSUES
1.	NATURAL RESOURCE	0	3	12	15
2.	SOCIO-CULTURAL	9	6	3	18
3.	ECONOMIC	5	8	6	19
4.	INSTITUTIONAL	6	8	9	23
	TOTAL	20	25	30	75

Table 16: Identified key issues

SUSTAINABILITY PILLARS	S/N	KEY ISSUES
NATURAL RESOURCES	1	Poor water quality
	2	Weak fire protection
	3	Poor parks
	4	Flooding
	5	Indiscriminate plastic waste disposal
	6	Slums issues
	7	Urban sprawl
	8	Poor drainage
	9	Disaster hazard
	10	Deforestation
	11	Land issues
	12	Poor streets and neighbourhoods
SOCIO-CULTURAL	1	Poor streets and neighbourhoods
	2	High poverty
	3	Exclusion of the urban poor e.g., evictions, slums, and immigration
ECONOMIC	1	Poor traffic conditions
	2	Insufficient and choked drains
	3	Infrastructure Issues e.g. road
	4	Congestion
	5	Lack of funds to complete programmes
	6	Poor road network
INSTITUTIONAL	1	Poor waste collection and management
	2	Land tenure issues
	3	Lack of enforcement
	4	High political influence or interference in planning
	5	Poor institutional coordination and collaboration
	6	Poor implementation

	7	Individual land ownership
	8	Delayed approval of permits
	9	Corruption

Recommendations and Advisory Notes

A set of thirty key issues under the sustainability pillars namely natural resources, socio-cultural, economic and institutional respectively were identified, which needed to be addressed. This section, therefore, details recommendations and implementing agencies in relation to the issues as per the pillars of sustainability and presented in Table 17.

In addition, Advisory Notes have been provided to deal with specific issues that are critical to the successful implementation of the GAMA Structure Plan.

Recommendations

Table 17: Sustainability pillars, key issues, recommendations and implementing agencies

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	IMPLEMENTING AGENCIES
NATURAL RESOURCES	Poor water quality	Study and eliminate water pollution	Ministry of Sanitation and Water Resources, Water Resources Commission. Ghana Water Company Limited (GWCL), Community Water and Sanitation Agency (CWSA),
	Weak fire protection	Ensure adequate numbers and locations of fire safety facilities	Ministry of Interior, Ghana National Fire Service, Metropolitan, Municipal and District Assemblies (MMDAs), National Disaster Management Organisation (NADMO)
	Poor parks	Develop a prioritised program to revitalise all existing parks and open spaces Collaborate with private and neighbourhood organizations to help maintain and beautify parks and spaces	Ministry of Local Government, Decentralisation and Rural Development (MLGDRD) MMDAs, Department of Parks and Gardens
	Flooding	Significantly reduce flooding throughout GAMA, targeting affected areas Adopt floodplain development regulations.	Ministry of Roads and Highways (MRH), Ghana Highways Authority (GHA), MLGDRD, MMDAs,
	Indiscriminate plastic waste disposal	Increase public education programmes around indiscriminate plastic waste disposal, separation, recycling and reuses.	Ministry of Environment, Science, Technology and Innovation (MESTI.), Environmental Protection Agency (EPA), National Commission on Civic Education, MMDAs
	Slums issues	Develop strategies, programmes, and projects to address slums that include upgrading, de-densification, adjacent gentrification and voluntary relocation.	MESTI, Ministry of Works and Housing (MWH), MLGDRD, MMDAs, Land Use and Spatial Planning Authority (LUSPA) Environmental Protection Agency (EPA).

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	IMPLEMENTING AGENCIES
	Urban sprawl	Encourage compact and infill development to reduce sprawl.	MESTI, MWH, MLGDRD, MRH, Department of Urban Roads (DUR), MMDAs, LUPSA, EPA,
	Poor drainage	Improve drainage Use natural drainage swales as Opposed to piping.	MRH, GHA, MLGDRD, MMDAs
	Disaster hazard	Protect life, property, infrastructure, and environment from disaster events.	Ministry of Interior, MESTI, MWH, , MLGDRD, MMDAs, EPA, NADMO, Ghana Police Service
	Deforestation	Enhance forest coverage with new tree planting in areas of no or low forest cover	Ministry of Lands and Natural Resources (MLNR), MLGDRD, MMDAs, Forestry Commission (FC)
	Land issues	Use the GAMA land-use plan to guide development patterns and decisions to determine consistency with zoning and land use decisions	MESTI, MLNR , MLGDRD, MMDAs, Lands Commission, Traditional Authorities, LUSPA
	Poor street	Develop and integrate street plan with a street typology into DUR and LUSPA's guidance or manuals.	MLGDRD, MESTI, MWH, MRH, DUR, MMDAs, LUSPA, EPA,
SOCIO-CULTURAL	Poor neighbourhoods	Use incremental development projects to engage citizens in neighbourhood improvement	MLGDRD, MESTI, MWH, MRH, DUR, MMDAs, LUSPA, EPA,
	High poverty	Prepare and implement sustainable proven urban poverty reduction plan.	National Development Planning Commission (NDPC), Ministries Department and Agencies (MDAs), MMDAs
	Exclusion of the urban poor	Expand community membership on decision-making boards to promote greater inclusion.	MLGDRD, MMDAs, Non-Governmental Organisations (NGOs), Civil Society Organisations (CSOs)Private Sector
	Poor traffic conditions	Improve traffic efficiency	MRH, Ministry of Transport,, MoT, MESTI, MMDAs

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	IMPLEMENTING AGENCIES
ECONOMIC	Insufficient and choked drains	Ensure reliable drainage infrastructure.	MRH, GHA, MLGDRD, MMDAs
	Infrastructure Issues	Focus on infrastructure improvement Invest in infrastructure to support the land use plan and preferred future growth areas.	MMDAs, MMDAs, NGOs , Private Sector
	Congestion	Install new interchanges on major routes to reduce congestion	MRH, MoT, DUR, MMDAs
	Lack of funds to complete programmes	Seek partnership to establish funding sources to support completion of programmes.	MoF, MLGDRD, BOG, MMDAs, NGOs, Private Sector
	Poor road network	Consolidate current road network with both more circular and radial roads to serve GAMA better	MRH, MoT, DUR, MMDAs
INSTITUTIONAL	Poor waste collection and management	Collaborate with MMDAs to develop and implement a long-term waste collection and management plan.	MLGDRD. MESTI, MMDAs, EPA, Private Sector
	Land tenure issues	Address the critical challenges of secure land tenure.	MLNR, Lands Commission, Traditional Authorities
	Lack of enforcement	Ensure greater compliance and enforcement of codes.	MDAs, MMDAs, LUSPA
	High political influence or interference in planning	Maximise citizen participation in the planning process	MLGDRD, MMDAs, NGOs, CSOs
	Poor institutional coordination and collaboration	Encourage coordination and collaboration between the general planning/land use departments and community development agencies	MLGDRD, MESTI, MMDAs, LUSPA
	Poor implementation	Enhance collaboration with community members and agencies in implementation of plans.	MLGDRD, MESTI, MMDAs, LUSPA

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	IMPLEMENTING AGENCIES
	Individual land ownership	Use land banking policies to support local and community-based ownership of land and housing stock	MLNR, MLGDRD, MWH, Lands Commission, MMDAs
	Delayed approval of permits	Create One Stop Shops to facilitate permitting process.	MLGDRD, MLNR, Lands Commission, MMDAs,
	Corruption	Promote transparency and accountability	MDAs, EOCO, CHRAJ, Ministry of Justice & Attorney General Department, Auditor General Department, Office of the Special Prosecuter

Advisory notes

In addition to the recommendations, Advisory Notes have been provided to deal with specific issues that are critical to successful implementation of the GAMA Structure Plan

JOINT DEVELOPMENT PLANNING AREA

The coverage of the GAMA is a contiguous area. It, therefore, qualifies to be considered as a Joint Development Planning Area due to its special or socio-economic characteristics, necessitating the area be considered as a single unit for the purpose of development planning. This is re-emphasised by Section 43 of the LUSPA Act 2016 Act 925.

A Joint Development Planning Area will require an Executive Instrument provided by the President, which will prescribe:

i. the composition of the Joint Development Planning Board
ii. the functions of the Joint Development Planning Board
iii. the area of authority of the Joint Development Planning Board
iv. modification of the powers of the District Planning Authorities and the Regional Co-ordinating Councils wholly or in part within the designated area as may be necessary to provide for the effective functioning of the Joint Development Planning Board.

In this respect, it is recommended that the NDPC, in consultation with the Minister responsible for Local Government should propose to the President to designate the GAMA as a Joint Development Planning Area in accordance with Sections 12 (1), (2) and 13 of Act 480 and LI 2232.

Schedule 11 of LI 2232 prescribes the composition and functions of such a Board as follows:
The Board shall comprises:

i. the regional Ministers of the GAMA
ii. the District Chief Executives of the GAMA
iii. the regional representative of the National Development Planning Commission of the GAMA;
iv. the chairpersons of the Development Planning Sub-Committees of the Executive Committees of the districts of the GAMA;
v. the District planning officers of the GAMA;
vi. the District Directors of the Departments of Physical Planning of the District Assemblies of the GAMA;
vii. representatives of the Regional Houses of Chiefs of the GAMA and
viii. a representative of the Ministry of Local Government.
ix. the representatives of non-decentralised agencies and civil society organisations in the GAMA that the Board may co-opt.

The chairperson of the Board shall be a regional representative of the Commission elected by the Board who shall serve as chairperson for a period of two years but is eligible for re-election.

The functions of the Board are to

i. determine the economic, social, spatial and sectoral policies of the designated Area;
ii. mobilise human, physical and financial resources for the development of the designated Area;
iii. perform the planning functions of district planning co-ordinating units specified in Section 85 of the Local Governance Act. 2016 Act 936 in relation to the GAMA to the extent that they are consistent with the broad objectives for the GAMA and
iv. prepare a draft development plan for the GAMA for the approval of NDPC.

Lead Agency: MLGDRD
Collaborators Agency: NDPC, RCCs, MMDAs, Regional House of Chiefs, NGOs

SUSTAINABLE WASTE MANAGEMENT SYSTEMS AND SERVICES

The GAMA Structure Plan identifies poor waste management services and facilities (both solid and liquid wastes) as a major concern and proposes a number of interventions such as decentralized sewer systems and waste-to-energy conversion systems. It is advised that these essential facilities and services are given high-priority attention during the implementation of the GAMA Structure Plan to achieve the key objectives of improved health and a clean environment in the GAMA.

Lead Agencies: MSWR
Collaborators: MESTI, MLGDRD, MMDAs, EPA, Waste Management Service Providers

FUTURE LAND USE, CONTROLLED DEVELOPMENT AND PERMITTING

It is important to ensure that the developments envisaged in the GAMA Structure Plan are well implemented within the approved permitting processes and other development controls including project-specific Environmental Impact Assessment where required. A significant output of the GAMA Structure Plan is the Future Land Use Planning Map (FLUMP). This map will guide MMDAs and others on land use decisions, streets, transportation, transit, public investments in infrastructure, and public spaces, as well as investments and incentives in housing, neighbourhoods and more.

Actions are intended as guidance for MDAs and MMDAs over the short, medium and long term and should be evaluated appropriately prior to implementation. Once the plan is approved, all land use decisions must be consistent with the provisions of the structure plan. It is advised that a comprehensive manual should be developed to guide the procedures for complying with all the statutory requirements, permitting, zoning etc. to ensure controlled and sustainable implementation of the GAMA Structure Plan.

Lead Agency: MESTI
Collaborators: LUSPA EPA, MMDAs.

Implementation and Monitoring Arrangements

This section details the implementation and monitoring arrangements of the SEA recommendations. It presents how the SEA recommendations will be implemented. A table showing the sustainability pillars, key issues, recommendations, indicators and implementing agencies is presented as well.

Implementation of SEA recommendations

The SEA recommendations should inform the preparation of the GAMA Structure Plan. Implementation of the GAMA Structure Plan requires broad neighbourhood support, fund-targeted investments, and established partnerships that will initiate transformative, GAMA-wide change as well as incremental systematic change at the local level. The GAMA Structure Plan will serve as a guide for the type, intensity, and concentration of growth and development and should guide future public and private investment.

It is proposed that a Joint Development Planning Board[18] be established to lead the implementation of the GAMA Structure Plan with technical support from LUSPA. LUSPA will use its expertise to work with MDAs, RCCs, and MMDAs and other external partners to ensure that the Plan remains responsive to the direction of the neighbourhood and inclusive of diverse voices across the GAMA. The implementation of the GAMA Structure Plan is to be achieved in three primary ways: actions, investments, and partnerships, which are expected to guide future developments through 2037 and beyond.

Monitoring arrangement

The GAMA Structure Plan elements and district priorities contain implementation recommendations and guidance to achieve the vision and framework for change. The GAMA Structure Plan will be executed through actions, investments, and partnerships. LUSPA will demonstrate the success of the GAMA Structure Plan through annual reporting on the progress of completing recommended policies and investments contained in the plan. Annual updates report should be on activities and action steps taken in the MMDAs MTDPS in addition to capital improvements made or funded, local area plans developed, or new investments identified.

GAMA Structure Plan will be reviewed and updated annually to ensure progress, changes in the development landscape or infrastructure, and emerging neighbourhood priorities can be integrated into the plan in a flexible, responsive manner. The Joint Development Planning Board with technical support by LUSPA will continue its work by producing annual plan updates, leading local area planning, promoting GAMA Structure Plan's recommended actions, and leveraging funds for investment and district priorities. The Joint Development Planning Board with technical support by LUSPA will track the outcomes of the GAMA Structure Plan based on key performance indicators identified in the future growth scenario planning process. These key performance indicators were identified by the planning team and verified by MMDAs. **Error! Reference source not found.** illustrates sustainability pillars, issues, recommendations, indicators and implementing agencies.

[18] See Advisory Notes

Table 18: Monitoring plan

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
NATURAL RESOURCES	Poor water quality	Study and eliminate water pollution	The proportion of bodies of water with good ambient water quality (%).	Ministry of Sanitation and Water Resources, Water Resources Commission. Ghana Water Company Limited (GWCL), Community Water and Sanitation Agency (CWSA),
	Weak fire protection	Ensure adequate numbers and locations of fire safety facilities	Number of fire safety facilities Number of locations of fire safety facilities	Ministry of Interior, Ministry of Local Government, Decentralisation and Rural Development (MLGDRD), Fire Service, Metropolitan, Municipal and District Assemblies (MMDAs), National Disaster Management Organisation (NADMO)
	Poor parks	Develop a prioritised program to revitalise all existing parks and open spaces Collaborate with private and neighbourhood organizations to help maintain and beautify parks and spaces	Number of existing parks and open spaces considered in prioritised program Number of parks and spaces with facelift	MLGDRD, MMDAs, Department of Parks and Gardens
	Flooding	Significantly reduce flooding throughout GAMA, targeting affected areas	Number of people affected	Ministry of Roads and Highways (MRH), MLGDRD, Ghana

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
		Adopt floodplain development regulations.	Change in risk of storm water flooding in most affected neighbourhoods Level of compliance with regulations	Highways Authority (GHA), MMDAs,
	Indiscriminate plastic waste disposal	Increase public education programmes around indiscriminate plastic waste disposal, separation, recycling and reuses.	Change in plastic waste generation Volume of plastic waste recycled and used GAMA waste diversion rate Proportion of people who participated in public education programmes	Ministry of Environment, Science, Technology and Innovation (MESTI.), MLGDRD, Environmental Protection Agency (EPA), National Commission on Civic Education, MMDAs
	Slums issues	Develop strategies, programmes, and projects to address slums	Strategies, programmes, and projects to addressing households with formal title deeds, access to improved water sources and sanitation Number of people impacted by improved slums	MLGDRD, Ministry of Works and Housing (MWH), MMDAs, Land Use and Spatial Planning Authority (LUSPA) Environmental Protection Agency (EPA).
	Urban sprawl	Encourage compact and infill development to reduce sprawl.	Rate of urban densities Quality of buildings Percentage change in infill	MLGDRD MWH, MRH, Department of Urban Roads (DUR), MMDAs, LUPSA, EPA,

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
	Poor drainage	Improve drainage Use natural drainage swales as Opposed to piping.	Kilometres of drains constructed (Primary and Secondary) Hectares of swales	MRH, GHA, MLGDRD, MMDAs
	Disaster hazard	Protect life, property, infrastructure, and environment from disaster events.	Number of recorded occurrence of disaster across the country	Ministry of Interior, MWH, , MLGDRD, MMDAs, EPA, NADMO, Ghana Police Service
	Deforestation	Enhance forest coverage with new tree planting in areas of no or low forest cover,	State of forest (Rate of deforestation) Hectares of degraded forest restored/ rehabilitated Hectares of tree coverage	Ministry of Lands and Natural Resources (MLNR), MLGDRD, MMDAs, Forestry Commission (FC)
	Land issues	Use the GAMA land-use plan to guide development patterns and decisions to determine consistency with zoning and land use decisions	Extent of compliance	…,,,,. MLNR , MLGDRD, MMDAs, Lands Commission, Traditional Authorities, LUSPA
	Poor street	Develop and integrate street plan with a street typology into DUR and LUSPA's guidance or manuals.	Date of completion of street plan Extent of integration of street plan with a street typology into DUR and LUSPA's guidance or manuals	MLGDRD, MESTI, MWH, MRH, DUR, MMDAs, LUSPA, EPA,
	Poor neighbourhoods	Use incremental development projects to engage citizens in neighbourhood improvement	Number of development projects in the neighbourhood	MLGDRD, MESTI, MWH, MRH, DUR, MMDAs, LUSPA, EPA,

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
SOCIO-CULTURAL			Level of engagement of citizens in neighbourhood improvement	
	High poverty	Prepare and implement sustainable proven urban poverty reduction plan.	Incidence of urban poverty Change in household poverty Number of healthcare facilities in underserved and/or high-poverty neighbourhoods	National Development Planning Commission (NDPC), Ministries Department and Agencies (MDAs), MMDAs
	Exclusion of the urban poor	Expand community membership on decision-making boards to promote greater inclusion.	Number of community members on decision-making boards	MLGDRD, MMDAs, Non-Governmental Organisations (NGOs), Civil Society Organisations (CSOs)Private Sector
ECONOMIC	Poor traffic conditions	Improve traffic efficiency	Change in crashes and road fatalities Extent of traffic control at intersections for all modes	MRH, Ministry of Transport,, MoT, MESTI, MMDAs
	Insufficient and choked drains	Ensure reliable drainage infrastructure.	Kilometres of drains covered	MRH, GHA, MLGDRD, MMDAs, DUR
	Infrastructure Issues	Focus on infrastructure improvement	Number of future urban and economic growth priorities reflecting road	MRH, MWH, MLGDRD , MMDAs, DUR, NGOs , Private Sector

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
		Invest in infrastructure to support the land use plan and preferred future growth areas. .	infrastructure maintenance and upgrade Change in infrastructure maintenance cost Quantum of fund	
	Congestion	Install new interchanges on major routes to reduce congestion	Number of interchanges on major routes to reduce congestion	MRH, MoT, MLGDRD DUR, MMDAs, Private sector
	Lack of funds to complete programmes	Seek partnership to establish funding sources to support completion of programmes.	Number of partnership Quantum of fund	MoF, MLGDRD, BOG, MMDAs, NGOs, Private Sector, Financial Institutions
	Poor road network	Consolidate current road network with both more circular and radial roads to serve GAMA better	Road traffic fatalities Kilometres of road network with both more circular and radial roads	MRH, MoT, MLGDRD DUR, MMDAs, Department of Feeder Roads (DFR)
INSTITUTIONAL	Poor waste collection and management	Collaborate with MMDAs to develop and implement a long-term waste collection and management plan.	Date of completion of Long-term GAMA solid and liquid waste management plan that moves to a vision of zero waste Change in volume of waste collected	MLGDRD. MESTI, MMDAs, EPA, Private Sector
	Land tenure issues	Address the critical challenges of secure land tenure.	Change in real time land titling Proportion of women and girls with access to	MLNR, Lands Commission, Traditional Authorities

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
			security of tenure relative to men.	
	Lack of enforcement	Ensure greater compliance and enforcement of codes.	Number of codes complied and enforced Number of applications and zoning reflecting land use plan and local area planning process	MLGDRD , MMDAs, LUSPA
	High political influence or interference in planning	Maximise citizen participation in the planning process	Proportion of community members participating in formulation and implementation of plans	MLGDRD, MMDAs, NGOs, CSOs, Faith-Based Organisation
	Poor institutional coordination and collaboration	Encourage coordination and collaboration between the general planning/land use departments and community development agencies	Number of agencies engaged Level of coordination and collaboration	MLGDRD, MMDAs, LUSPA, Non decentralised departments, Traditional Authorities, CSOs, Private sector
	Poor implementation	Enhance collaboration with community members and agencies in implementation of plans.	Proportion of community members and agencies participating in implementation of plans	MLGDRD, MMDAs, LUSPA, Non decentralised departments, Traditional Authorities, CSOs, Private sector
	Individual land ownership	Use land banking policies to support local and community-based ownership of land and housing stock	Number of community-based ownership of land and housing stock supported by land bank policies	MLNR, MLGDRD, MWH, Lands Commission, MMDAs, Traditional Authorities
	Delayed approval of permits	Create One Stop Shops to facilitate permitting process.	Number of One Stop Shops Real time approval of permits	MLGDRD, MLNR, Lands Commission, MMDAs,

SUSTAINABILITY PILLARS	KEY ISSUES	RECOMMENDATIONS	INDICATORS	IMPLEMENTING AGENCIES
	Corruption	Promote transparency and accountability	Proportion of the population in GAMA reporting improved level of transparency and accountability	MDAs, EOCO, CHRAJ, Ministry of Justice & Attorney General Department, Auditor General Department, Office of the Special Prosecutor