
**Greater Accra Regional Spatial Development
Framework – Volume 3**

**Executive Summary – Programme of Action and
Investment Plan**

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Greater Accra Regional Spatial Development Framework – Volume 3
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Abbreviations / Acronyms / Definitions

ACARP	Accra Compost & Recycling Plant
AMA	Accra Metropolitan Area
BRT	Bus Rapid Transit
CBD	Central Business District
DA	District Assembly
DMTDP	District Medium Term Development Plan
du/ha	dwelling units per hectare
DUR	Department of Urban Roads
FDI	Foreign Direct Investment
GAMA	Greater Accra Metropolitan Area
GAR	Greater Accra Region
GARSDF	Greater Accra Region Spatial Development Framework
GDP	Gross Domestic Product
GIBB	GIBB PTY (Ltd)
GIS	Geographic Information System
GLSS	Ghana Living Standard Survey
ha	Hectares
KIA	Kotoka International Airport
LAP	Land Administration Project
LUPMP	Land Use Planning and Management Project
MA	Municipal Assembly
MAB	Man and the Biosphere
MTDP	Medium-Term National Development Plan
MTDP	Medium Term Development Plan

NDPC	National Development Planning Commission
NMT	Non-Motorised Transport
NSDF	National Spatial Development Framework, 2015-2035
p/du	people per dwelling unit
p/ha	people per hectare
RFP	Request for Proposals
RSDF	Regional Spatial Development Framework
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SIP	Strategic Investment Plan
SoW	Scope of Work
TAH	Trans African Highway
TCPD	Town and Country Planning Department
TMP	Transport Master Plan
TSM	Transportation System Management
UDB	Urban Development Boundary
UPT	Urban Passenger Transport

Acknowledgements

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Regional Coordinating Director
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Regional Directorate of Education
Regional Directorate of Agriculture
Regional Statistical Officer
MLGRD Representative
MESTI Representative
National TCPD Director
NDPC
Head Office TCPD
Regional TCPD
District TCPD Directors
District Development Planning Officers
PCU/LAP
NDPC Regional Representative

Electricity Company of Ghana (Accra West & Accra East)
Regional Head, Environmental Protection Agency
Regional Head, Department of Urban Roads
Regional Head, Department of Feeder Roads
Regional Head, Ghana Highways Authority
Regional Head, Water Resources Commission
Regional Head, Ghana National Fire Service
Regional Head, Forestry Commission
Ghana Water Company
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Regional Head, NADMO
Hydrological Services Department
Regional Lands Officer – Lands Commission
Regional House of Chiefs
GIBB Consultants
Ministry of Energy Representative
Ministry of Transport Representative
Ministry of Trade and Industry Representative
Ministry of Water Resources, Works and Housing Representative
Rep. Chamber of Telecoms
Ghana Tourism Authority

1 Project Background and Brief

1.1 Background

The RSDF finds its origin in what is known as LAP-2. LAP-1 also known as Land Administration Project 1 was successfully completed some years ago and has now been superseded by LAP-2, which is a second series of projects being undertaken by the Government. The Land Use Planning and Management Project (LUPMP), a sub-component of LAP-2, is presently being implemented by the Town and Country Planning Department (TCPD) and it comprises various activities spread across four town planning components. The most prominent of these activities entails the “preparation of improved maps and spatial data for land administration” which includes the preparation of Regional Spatial Development Frameworks for some selected regions in Ghana, including the Greater Accra Region (GAR). Accordingly, funds were sourced to compile the GAR SDF which would guide development and direct public and private investment.

1.2 Project Brief

As per the Request for Proposal a Regional Spatial Development Framework has to be prepared for the Greater Accra Region. Such should span 20 years and provide perspectives and proposals for what kinds of development should take place, how it should occur, and where and how it should happen. It is to include a spatial strategy for achieving defined social, economic and environmental policies as they relate to the region. Four broad objectives guided the project:

- Assessment of the current situation and framework conditions for spatial development;
- Analysis of data and modelling of options for preparation of the RSDF;
- Formulation of the RSDF and appropriate programmes of action; and
- Stakeholder consultation.

1.3 Project Approach

An integrated and holistic approach formed the basis of the project to ensure an all-encompassing assessment from which to gain a comprehensive understanding of the study area, its functioning, role and future. To this end an integrated and diverse team of specialists was assembled to obtain the necessary sectoral inputs and proposals to cover the natural, social, economic, built and institutional environments. These sectors informed one another to produce integrated and strategic proposals for GAR’s future.



Figure 1.1: Comprehensive Approach - Five Planning Environments

2 The Study Area

The Greater Accra Region (the study area) is located on the south coast of Ghana. Ghana itself is located on the West Coast of Africa, on the Gulf of Guinea between Ivory Coast (west) and Togo (east).

All of Ghana is divided into ten regions which represent the first level of sub-national government administration. The regions as they exist today were officially established in 1987. GAR is situated among Central, Eastern and Volta Regions. It houses the capital city of Ghana, the seat of Government and the country's most prominent seaport, which suggest that the GAR is an important international gateway for Ghana and West Africa.



Figure 2.1: GAR in Context

GAR covers an area of 4 354km² in which an approximate 4.3 million people live. While it is the smallest region in Ghana, a mere 1.4% of the country's land area, it is the second most populated region, yet has the highest population density in Ghana at roughly 1 000 people per square kilometre. Internationally the region compares to cities such as Calgary

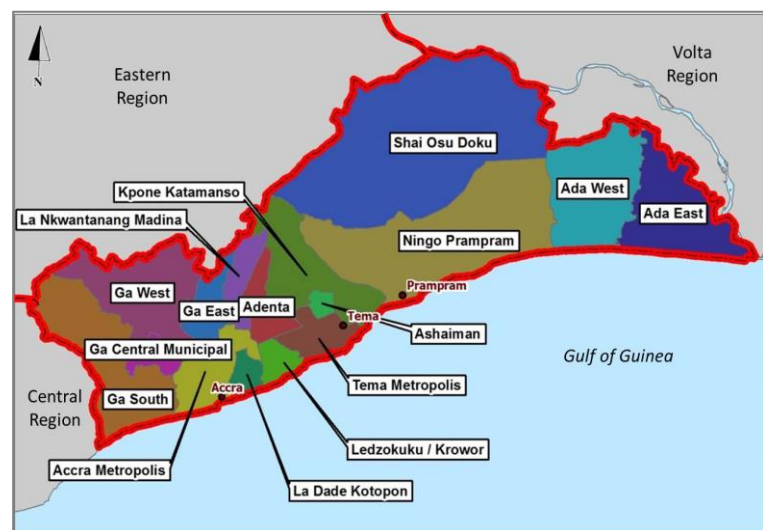


Figure 2.2: Study Area / Greater Accra Region

(Canada), San Antonio (USA) and Vereeniging (RSA). Not only is the density high but the population continues to grow naturally and because of rapid in-migration at a rate of 3.3% per annum.

The study area stretches along 130km of coastline from Langma to Ada Foah and is most well-endowed in terms climate and natural resources. Being the administrative and commercial capital of Ghana, GAR accounts for 25% of the national gross domestic product (GDP) and leads, or is second to lead, in almost all non-primary sectors except education. It is a magnet for investment and a gateway for international trade. Recent off-shore oil and gas explorations have increased the demand for land, raised pressure on already overstretched infrastructure and led to vast in-migration, all of which have had further multiplier effects.

The region is roughly at the centre of the West African regional economic corridor also known as the West African Mega-region, which spans approximately 600 km across four countries (viz. Côte d'Ivoire, Ghana, Benin, Togo and Nigeria). Being inter-connected by good air, sea, rail and highway links, running from Abidjan to Lagos, GAR is ideally located to become an economic powerhouse. To tap into these opportunities and increase the region's attractiveness for economic development the government has planned the Trans West Africa Highway and the proposed railway network along the coast.

The study area comprises 16 administrative zones. The zones vary in size, composition and population density (as shown in the table below).

Table 2.1: Regions of Ghana

Region	Capital	Area (km ²)	Population (in million) (2012/2013)*
Ashanti	Kumasi	24 889	5.2
Brong-Ahafo	Sunyani	39 557	2.6
Greater Accra	Accra	4 354	4.3
Central	Cape Coast	9 826	2.3
Eastern	Koforidua	19 323	2.7
Northern	Tamale	70 384	2.6
Western	Sekondi-Takoradi	23 921	2.4
Upper East	Bolgatanga	8 842	1.1
Upper West	Wa	18 476	0.8
Volta	Ho	20 570	2.3
Ghana			26.3

* This is a projected estimated figure from 2012/2013 GLSS 6

Source: GLSS, Round 6, 2014.

GAR's spatial development centres on Accra and Tema, which are the administrative and economic cornerstones. Though, approximately 25km apart, urban growth has consumed the space in between the two cities to the extent that the area is completely built-up. Since both are located on the coast development radiates out from each at 180° northwards with the main arterial roads being the conduits of development. A radial road pattern with some interlaced grid is generally evident across the region. Urban development is prominent around these two centres filling in the area up to the region's northern delineation.

However, given the study area's elongated shape and the absence of an economic anchor, town or city to the far-east, urban growth is not pulled to the east. Consequently, the eastern part of the region has remained undeveloped and rural. It is typified by agricultural land, villages, mining, forestry and environmental conservation areas. Even so it is essential for the livelihood of a large portion of the population.

3 Main Findings from the Baseline Assessment

A thorough status quo analysis / baseline assessment involving all sectors i.e. physical, built, social, economic and institutional environments was undertaken. It is contained in Volume 1 of the RSDF and is supported by plans, figures, graphs and charts. The analysis is important for several reasons:

- It was the first regional status quo review since the 1991 Strategic Plan, which meant there was a time lapse of 25 years and much has changed since then;
- It reviewed the status quo within the new jurisdictional areas;
- The status quo pertains to the entire GAR, thus not having a bias to either the rural or urban areas but considering both in unison; and
- It was undertaken in an integrated manner; with the different environments synchronising with one another to attain a clear understanding of the region, its composition and dynamics.

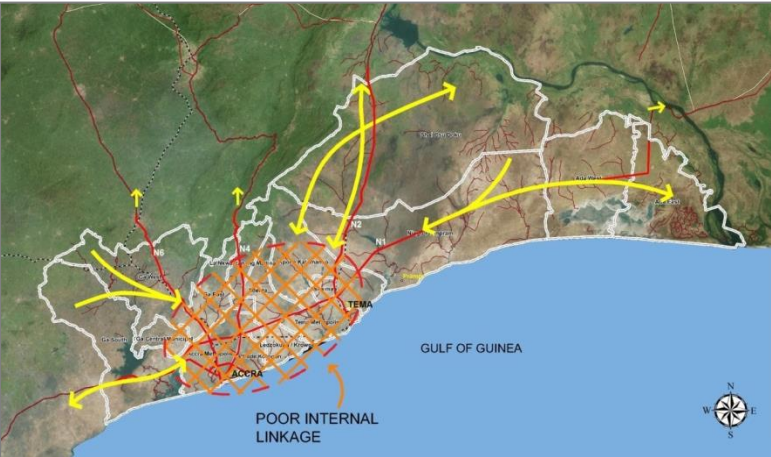
The output of the status quo analysis is the findings and though a myriad of findings can be extracted from Volume 1, such would serve no purpose for the RSDF. And so to focus the RSDF only the most critical findings that will most profoundly direct the future of GAR were extracted. These are contained in the table that follows. Furthermore the findings are supported by potential remedial mechanisms as they relate to each of the findings. Often remedial mechanisms apply to more than one element as one mechanism can counter more than one problem area. Such remedies are therefore a priority for inclusion in the RSDF.

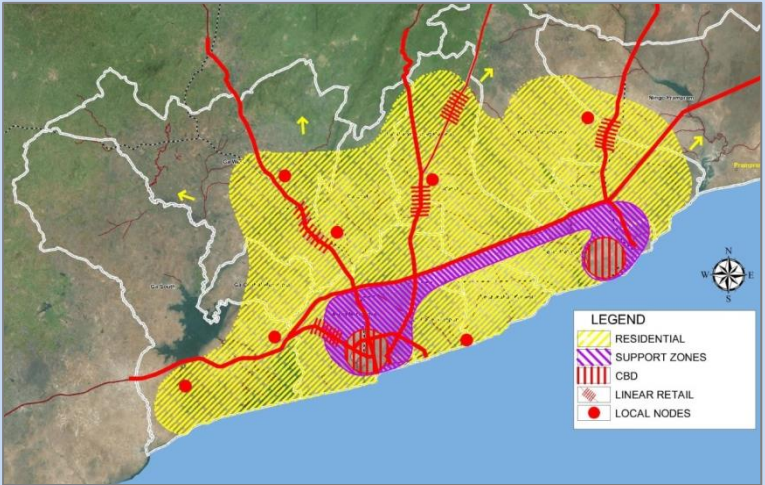

Table 3.1: Main Findings and Remedial Mechanisms


Main Findings	Problem Description	Remedial Mechanism
(a) Population growth	<ul style="list-style-type: none"> • The region's population continues to grow at a remarkable rate of 3.8% per annum / 72 557 persons per annum which is the result of natural population growth and in-migrating from the rural hinterland and other regions. • This means that in the next 20 year the total population will have doubled from 5 055 348 (2017) to 9 887 131 (2037). 	<ul style="list-style-type: none"> • Quantify and intently plan for the projected growth. • Create clearly demarcated development areas in order to protect other areas where there should not be growth and to coordinate and focus service delivery. • Promote appropriate densification, which means appropriate densities in appropriate locations.

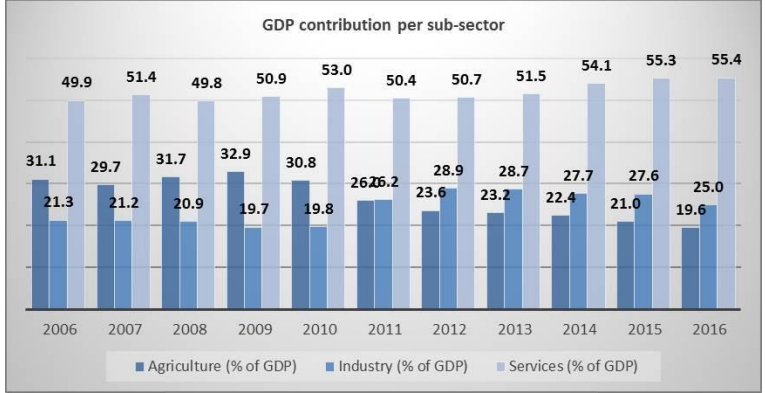
Main Findings	Problem Description	Remedial Mechanism
	<p>Graph 3.1: 20-Year Population Projection Source: Demacon, 2016</p> <ul style="list-style-type: none"> • These people will have to be accommodated in the urban, since growth in the urban area far outstrips growth in the rural areas and urbanising is a common global trend with 90.4% of the region’s population already being regarded as urban. • They will need: houses, transportation, water, electricity, jobs, schools, health services, etc. and they will generate waste, sewage and pollution. • The RSDF MUST plan for this profound growth. 	<ul style="list-style-type: none"> • Adjusted urban planning standards to suite a high density city, which means to build facilities so that land is used more effectively and height options are explored, thus working towards vertical and not only horizontal construction. • Note the proximity of Kasoa and Nsawam to GAR, which will certainly have an impact in the future. Population growth is not limited to jurisdictional boundaries, hence growth in Kasoa and Nsawam will in all likelihood spill-over into the GAR in due course and for that the GAR will have to plan.
(b) Urban sprawl	<ul style="list-style-type: none"> • Growth is uncontained and un-prohibited. • There are no stringent guidelines that define where growth may and may not occur. • Growth is not deterred by the absence of engineering 	<ul style="list-style-type: none"> • Define and demarcate an urban boundary / edge so as to contain urban growth, direct service investments and protect rural areas. • Apply sensible guidelines for the edge so that its alignment can be enforced / controlled. The guidelines should include

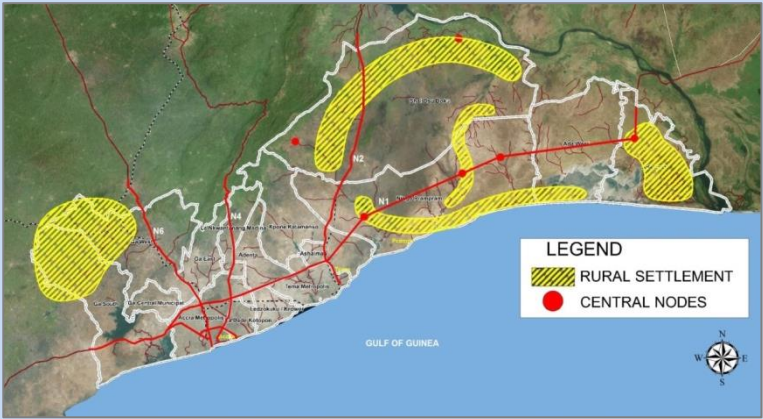
Main Findings	Problem Description	Remedial Mechanism
	<p>services or infrastructure.</p> <ul style="list-style-type: none"> • Growth encroaches onto vulnerable natural areas and is destroying valuable hinterland and livelihoods of the rural populace. • Uncontained and unplanned growth makes retrofitting engineering services near impossible as well as urban management and land use control. • Current urban growth has a horizontal profile (rather than vertical). 	<p>using:</p> <ul style="list-style-type: none"> - Natural features - Administrative boundaries - Existing urban form - Growth direction - Bulk infrastructure - Existing planning proposals - Future growth direction • Adopt a densification model <ul style="list-style-type: none"> - Spatially define where densification should occur (nodes, public transport corridors, TODs, etc.) - Define the guidelines of densification (height, coverage, typology, etc.) - The density model to be an integral part of the urban hierarchy. • Focus service delivery towards the planned growth areas • Institutionally direct resources to manage and control growth in the right areas and away from unwanted areas.
(c) Traffic congestion	<ul style="list-style-type: none"> • All roads, and in particularly the trunk roads, are so overburdened that traffic is often brought to a standstill with unacceptable service levels of 15km/hr. • Roads sustain the economy enabling the movement of people, goods and services. On this premise GAR is suffocating. • 62% of all morning trips lead to Accra which means there are no decentralised economic nodes to counter balance Accra. • All transport is affected – private, public and freight. • Transportation infrastructure has not kept up with urban growth as demand far outstrips supply. • The road hierarchy has been compromised and regional / 	<ul style="list-style-type: none"> • Public transport <ul style="list-style-type: none"> - Can there be deviation from current system and network - Start with BRT - BRT to compliment rail service - Trotos, taxis still remain important - NMTs are a nice to have but will be concentrated in walkable nodes • Build new and more roads • Establish and enforce a road hierarchy • Alternative modes (NMT, rail, etc.) • Transport and land use integration is essential to alleviate

Main Findings	Problem Description	Remedial Mechanism
	<p>trunk routes now act as local distributors.</p> <ul style="list-style-type: none"> The rail operates under capacity and is inefficient. The entire existing public transport system must be improved and expanded.  <p>Figure 3.1: Linkages</p> <ul style="list-style-type: none"> There is no integrated planning between land use and transportation, though they are highly reliant on one another. 	<p>congestion and spatial problems.</p> <ul style="list-style-type: none"> Dedicated truck routes and truck parks to support the movement of goods which is essential for the economy and GAR being an international gateway. Decentralised nodes to counter balance Accra and decentralise the economy over the entire urban area. Mixed land use Improve existing public transport systems TODs (Transit-Oriented Development)
<p>(d) Centralised urban structure</p>	<ul style="list-style-type: none"> For a region of this size there is very little urban differentiation. Spatially the economy is highly centralised with most activity concentrated on Accra and some on Tema. This is a primary cause for the severe traffic congestion. The level of concentration on Accra could very well lead to the city's demise as it cannot function properly. Accra city's land use mix is also deficient of a proportional 	<ul style="list-style-type: none"> Decentralisation is a necessity. A hierarchy of nodes must be implemented. Accra and Tema must be supported by different level nodes with defined content and activities. The residential component in existing nodes must be increased to achieve functional balance. Transit Oriented Developments (TODs) must be identified Public transport must be improved to de-clog the roads.

Main Findings	Problem Description	Remedial Mechanism
	<p>residential component.</p>  <p>LEGEND RESIDENTIAL SUPPORT ZONES CBD LINEAR RETAIL LOCAL NODES</p> <p>Figure 3.2: Centralised Structure</p>	<ul style="list-style-type: none"> • Create both transport corridors and development corridors in support of the nodal hierarchy and functional urban form. • Create new and supportive nodes throughout the urban region.
<p>(e) Encumbered engineering services (urban and rural)</p>	<ul style="list-style-type: none"> • All engineering services (water, sanitation, stormwater, electricity, waste disposal, are insufficient, underperforming and poorly maintained. • There is no integration of land use and engineering services planning. • Unmanaged urban growth has made retrofitting engineering services in built up areas near  <p>Figure 3.3: Odwa Channel, Accra choked with garbage</p>	<ul style="list-style-type: none"> • A priority is the compilation of Integrated Development Plans for the delivery of ALL engineering services. • Focus service delivery in the short and medium term on the nodal hierarchy and designated urban growth areas so that all new developments are fully serviced and to standard. • Service delivery standards must be defined for ALL new developments ensuring that from this point forward, formal services will be rendered and the Region will become serviced one development at a time. • Investigate new technologies which could assist individual developments to handle their own services. • Explore job creation and economic opportunities associated with engineering service delivery. E.g. decentralise waste collection to locals / individuals.

Main Findings	Problem Description	Remedial Mechanism
	<p>impossible.</p> <ul style="list-style-type: none"> • Immense new infrastructure and installations are required to plan for the projected population growth, over and above fixing the existing supply shortages. 	 <p>Figure 3.4: Accra Recycling Plant (ACARP)</p>
<p>(f) Poorly developed rural service centres</p>	<ul style="list-style-type: none"> • There are many settlements in the rural area. They are very dispersed complicating service delivery. • Rural service delivery is ad hoc because there is no hierarchy of rural settlements to balance the provision of primary and secondary social services. • The rural economic base is poorly defined and is very much left to its own devices. • Regional connectivity is cumbersome owing to the design of villages around and onto the roads. 	<ul style="list-style-type: none"> • A rural settlement / service centre hierarchy must be implemented. • Social and engineering standards must be assigned to the hierarchy to have clear guidelines for implementation. • Efforts should be made to extend and encourage some formalisation of the rural economic base – tourism, recreation, food production, fisheries, etc. • Explore tourism opportunities. • Regional connectivity through the rural hinterland must be revisited to achieve improvements and greater safety.
<p>(g) Services-sector economic growth</p>	<ul style="list-style-type: none"> • The service-sector is the largest contributor to GDP (at 55.4% in 2016) and has the second largest growth rate. This is positive and should be embraced. • Opportunities should be explored to encourage service-sector growth making spatial provision for its development. • Economic growth and employment provision (formal and informal) are important in improving quality of life. 	<ul style="list-style-type: none"> • There is a multitude of spatial mechanisms to spatially accommodate the service-sector and facilitate economic growth. • Where applicable the RSDF should make provision for strategic opportunity areas or catalytic interventions such as: <ul style="list-style-type: none"> - New dedicated / specialised / niche nodes; - Mixed land use nodes; - Specific strategic opportunity zones, e.g. CBD, beach / waterfront, universities, airport, harbour, etc.

Main Findings	Problem Description	Remedial Mechanism																																																
	<p>Graph 3.2: Contribution per Sub-sector to Ghana GDP, 2006-2016</p>  <table border="1" data-bbox="465 300 1227 694"> <caption>GDP contribution per sub-sector (2006-2016)</caption> <thead> <tr> <th>Year</th> <th>Agriculture (% of GDP)</th> <th>Industry (% of GDP)</th> <th>Services (% of GDP)</th> </tr> </thead> <tbody> <tr><td>2006</td><td>21.3</td><td>29.7</td><td>49.9</td></tr> <tr><td>2007</td><td>21.2</td><td>31.7</td><td>51.4</td></tr> <tr><td>2008</td><td>20.9</td><td>32.9</td><td>49.8</td></tr> <tr><td>2009</td><td>19.7</td><td>30.8</td><td>50.9</td></tr> <tr><td>2010</td><td>19.8</td><td>26.2</td><td>53.0</td></tr> <tr><td>2011</td><td>26.2</td><td>23.6</td><td>50.4</td></tr> <tr><td>2012</td><td>23.6</td><td>28.9</td><td>50.7</td></tr> <tr><td>2013</td><td>23.2</td><td>28.7</td><td>51.5</td></tr> <tr><td>2014</td><td>22.4</td><td>27.7</td><td>54.1</td></tr> <tr><td>2015</td><td>21.0</td><td>27.6</td><td>55.3</td></tr> <tr><td>2016</td><td>19.6</td><td>25.0</td><td>55.4</td></tr> </tbody> </table> <p>Source: Demacon ex Economic Intelligence Unit, 2016</p>	Year	Agriculture (% of GDP)	Industry (% of GDP)	Services (% of GDP)	2006	21.3	29.7	49.9	2007	21.2	31.7	51.4	2008	20.9	32.9	49.8	2009	19.7	30.8	50.9	2010	19.8	26.2	53.0	2011	26.2	23.6	50.4	2012	23.6	28.9	50.7	2013	23.2	28.7	51.5	2014	22.4	27.7	54.1	2015	21.0	27.6	55.3	2016	19.6	25.0	55.4	<ul style="list-style-type: none"> - Transport corridors; - Development corridors; - Recommendations for aerodrome development - Focused informal trade areas, new markets, and maintaining and upgrading existing markets; - Trans African Highway; - Growing tourism - Creative food production; - Hierarchy of nodes (urban and rural)
Year	Agriculture (% of GDP)	Industry (% of GDP)	Services (% of GDP)																																															
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<p>(h) Management pressure</p>	<ul style="list-style-type: none"> • While there is a good institutional framework and relevant legislation, there is limited institutional capacity and enforcement. • Strong regional leadership is required to redirect GAR's growth as proposed in the RSDF. • There are many mechanisms that can effect change, but they must be implemented. For that leadership is essential. 	<ul style="list-style-type: none"> • Adopt and implement the RSDF. • Compile integrated land use and transportation plans. • Compile integrated land use and engineering services plans. • Maintain all infrastructure. • Control unwanted growth. • Focus all development initiatives on the new growth areas. 																																																
<p>(i) Open space degradation</p>	<ul style="list-style-type: none"> • There are many open spaces which have specific roles and functions for the region, local populace and economy. • Sensitive areas should be protected for many are being encroached upon and as a consequence being degraded. • Uncontrolled urban growth is a main contributor to the problem. • The fact that the open spaces cannot be rigidly conserved because they serve the livelihoods of the rural populace 	<ul style="list-style-type: none"> • Define and implement an urban boundary / edge delimiting urban growth and thereby curbing unmanaged and unplanned encroachment • Officially demarcate the protected natural areas / open spaces and provide conservation guidelines that will see to their protection and retention. • Ensure that the Strategic Environmental Assessment (SEA) provides guidelines on the protection of the natural 																																																

Main Findings	Problem Description	Remedial Mechanism
	complicates the conservation mechanisms.	sensitive areas.
<p>(j) Quantity of rural centres</p>	<ul style="list-style-type: none"> There is a vast amount of rural centres dispersed over the rural hinterland and their expansion, the establishment of new ones and their placement must be managed. The purpose of rural centres is to preserve the rural environment and to provide rudimentary services to the residents.  <p>Figure 3.5: Dispersed Rural Settlement</p> <ul style="list-style-type: none"> However, this is not managed and so rural encroachment becomes a problem. 	<ul style="list-style-type: none"> A hierarchy of rural service centres / towns should be established and implemented. An approach in respect of existing villages should be adopted whereby no new villages will be established and only certain ones may be expanded. Service delivery will be determined by the hierarchical model to provide appropriate-level facilities only. Access and regional linkages must be better planned.

In general the findings reveal that GAR is facing several problems and many of these will continue to have a negative impact on the region, affecting the quality of life, sustainability, urban efficiency, livelihood, economic potential and service delivery of the region. It is also clear that the Region can do better and it need not be held captive by its present situation. Though the problems are real they are not without solutions and options, and these are not foreign to the planning community. Many cities and regions have had similar problems, constraints and concerns and so, tried and tested remedial mechanisms have been devised to turn the tide.

The success of the remedies is globally evident. Therefore, where suitable they have been applied in the RSDF and where they are encountered in the detail discussion, it is evident that the main finding which triggered the remedy is being addressed to provide a solution for the present problem.

How the remedial mechanism will be applied will be influenced by the Region's vision. The vision sets the tone and indicates where the emphasis for future spatial planning and development for the Region should be.

4 Vision and Concept

4.1 Vision

A draft vision, underpinned by the NSDF, Six Pillars of the Spatial Strategy and the 1991 Strategic Plan for GAMA, was formulated to provide a united view on the broad principles which should guide all development in the region over the short, medium and long terms.

The following Vision has been formulated:

VISION

The vision for Greater Accra Region is to be a sustainable, liveable and safe region with improved connectivity and engineering services to enable better efficiency and management of the social, natural, built, economic and institutional spheres to lead the region into a prosperous future for all.

4.2 Development Models

As part of the process three development models were considered, these being:

- **Business as Usual**, wherein there is little to no intervention and the status quo as far as urban sprawl, congestion, poor spatial management and control, and lack of structure planned and coordinated service delivery continues. The outcome would surely be an unsustainable region and poor economic growth.
- **Edge City Development** wherein the complete congestion of the core cause leap-frog development to the outer edge beyond the region strengthening growth in Kasoa and Nsawam depriving GAR of much economic potential but burdening it with sprawl.
- **Polycentric / Nodal Regional Structure** wherein a multi-nodal approach and planned compact urban form is proposed not only in the urban core but across the entire region thereby improving the structure and functioning of the rural hinterland.

4.2.1 Preferred Model

The Polycentric / Nodal Regional Structure proved to be the preferred model. It is defined by the following guiding principles for the GAR to function in a sustainable manner:

- Demarcated urban area
- Extended transport network
- Protected environmental resources and areas
- Hierarchy of urban nodes and rural centres

- Improved connectivity and mobility

And so the spatial development model provides the following:

- A green, open space system in order to protect the region's natural resources;
- An effective transport system, comprising different modes of transport, promoting public and non-motorised transport;
- A mix of land uses to create zones where transport and land use are integrated so that transit oriented nodes can more easily develop and in doing so, support the compactness and efficiency of the region;

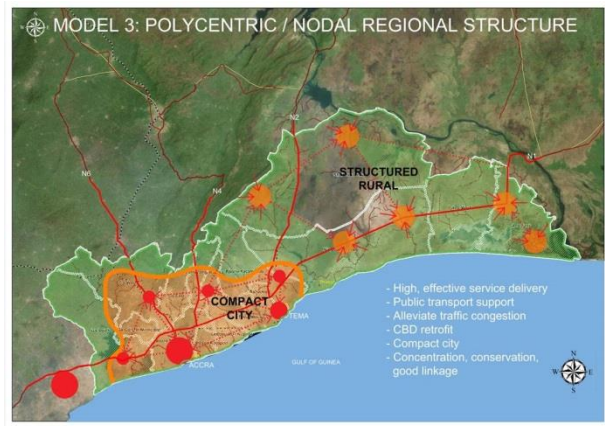


Figure 4.1: Model 3 - Polycentric / Nodal Regional Structure

- Appropriate densification at locations where the areas will not suffocate and the functionality of nodes and corridors will not be debilitated;
- Access to opportunities with equality and ease of access in mind;
- Connectivity within and between the urban and rural areas of the region by means of corridors, nodes and functional activity.
- Development of the rural area of the region at a rural scale, protecting the resources, improving its structure and enabling regional connectivity.

4.3 Concept

The spatial development concept for the GAR is based on the building blocks underlying the preferred development option of a polycentric compact region.

The concept will guide the development of the Regional Spatial Development Framework in which the same principles will be adhered to so that a sustainable and liveable region can be achieved.

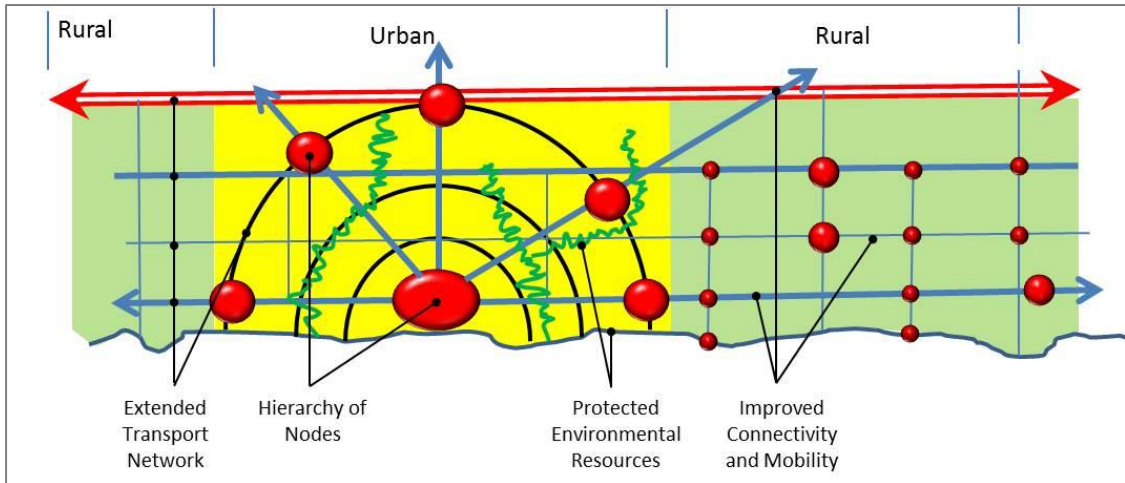


Figure 4.2: Spatial Development Concept

- Demarcated urban area.
- Extended transport network.
- Protected environmental resources and areas.
- Hierarchy of urban nodes and rural centres.
- Improved connectivity and mobility.

5 RSDF Plan and Primary Proposals

The GAR is unique in that it comprises an evident divide between the urban and rural areas, which is supported by the open space form, population figures and economic composition.

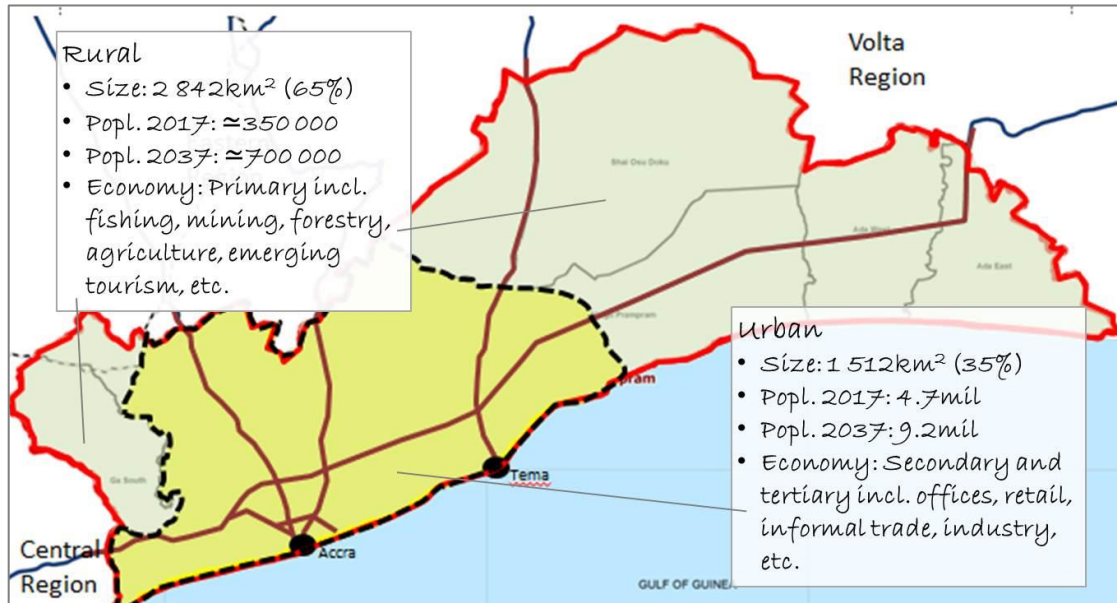


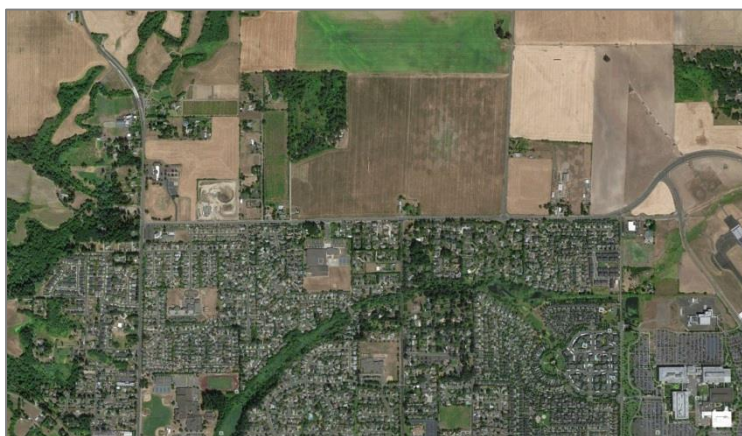
Figure 5.1: Regional Components

The RSDF shown on **Plan 5.1** exhibits the divide and for this reason the RSDF was compiled in terms of a Rural Spatial Development Component and an Urban Spatial Development Component.

Plan 5.1: Regional Spatial Development Framework

The primary planning proposals contained in the RSDF (collectively for the urban and rural areas) include the following:

1. Delineate an **urban development boundary** to establish a line between the urban and rural area thereby separating spatial and management functions for the two areas.



- Confine urban growth
- Limit sprawl
- Protect natural areas
- Protect rural livelihoods
- Encourage higher densities

Figure 5.2: Aerial Impression of a Managed and Defined Urban Boundary

2. Strengthen **Accra and Tema CBDs** by land use diversification and high density residential inclusion.
3. Develop a metropolitan **expressway and a supporting hierarchy of roads** to alleviate pressure on the N1 and in support of the main arterial road in the urban and rural areas.



Figure 5.3: Examples of Expressway

- Fast moving corridor
- Compliment / supplementary to the N1

4. Develop **mixed use and high density secondary activity nodes** along the main transportation routes to achieve a balanced metropolitan urban structure.



Figure 5.4: Impression and Character of Mixed Use Development along Transport Routes

5. Develop **market towns** in the rural sub-areas of the region to achieve higher levels of service delivery and economies of scale in the rural environment.

- Administrative centre
- Planned settlement form
- Formal internal roads
- urban-level engineering services
- Rural growth centre
- Compliment / supplementary to the N1



Figure 5.5: Impression of a Market Town

6. **Protect the natural resources** of the region for economic as well as recreational and aesthetic reasons.



Figure 5.6: Economic Role of Natural Resources

7. Implement **BRT and commuter rail services** as public transport modes, as a matter of urgency to support the existing systems.

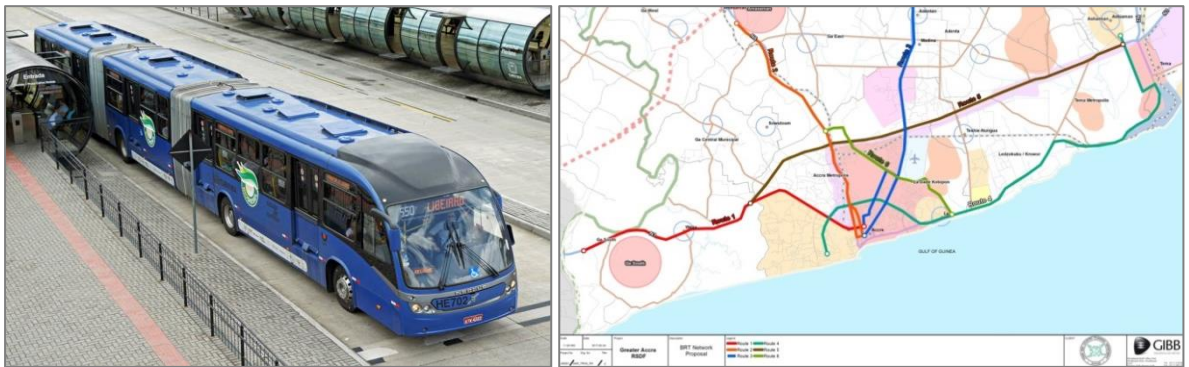


Figure 5.7: BRT Plan Proposals and Impression

8. Embark on **engineering services** (water, sewer, solid waste, stormwater and electricity) development and improvement strategies urgently.
9. Develop tertiary nodes as focus points for **social services development** within walking distance of all residents.

- Create social service centres
- Safe zones
- Multi-purpose use / shared facilities

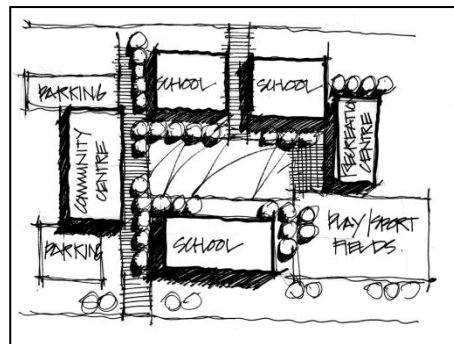


Figure 5.8: Sharing Space

10. **Housing development** can be an important economic driver in the development of the area and should be located so that it supports a compact and denser city. The figure below shows the locational pattern for housing development as per the included table.

Residential Land Use Allocation Guidelines:

①	CBDs:	30 000 du (3.1)
②	Greenfields Infill:	150 000 du (17.1%)
③	Brownfields Infill:	170 250 du (19.3%)
④	Corridors / Tertiary Nodes:	170 250 du (19.3%)
⑤	Secondary Nodes:	360 000 du (40.8%)
	TOTAL:	880 500 du (100%)
	Oversupply:	≈30 000 du

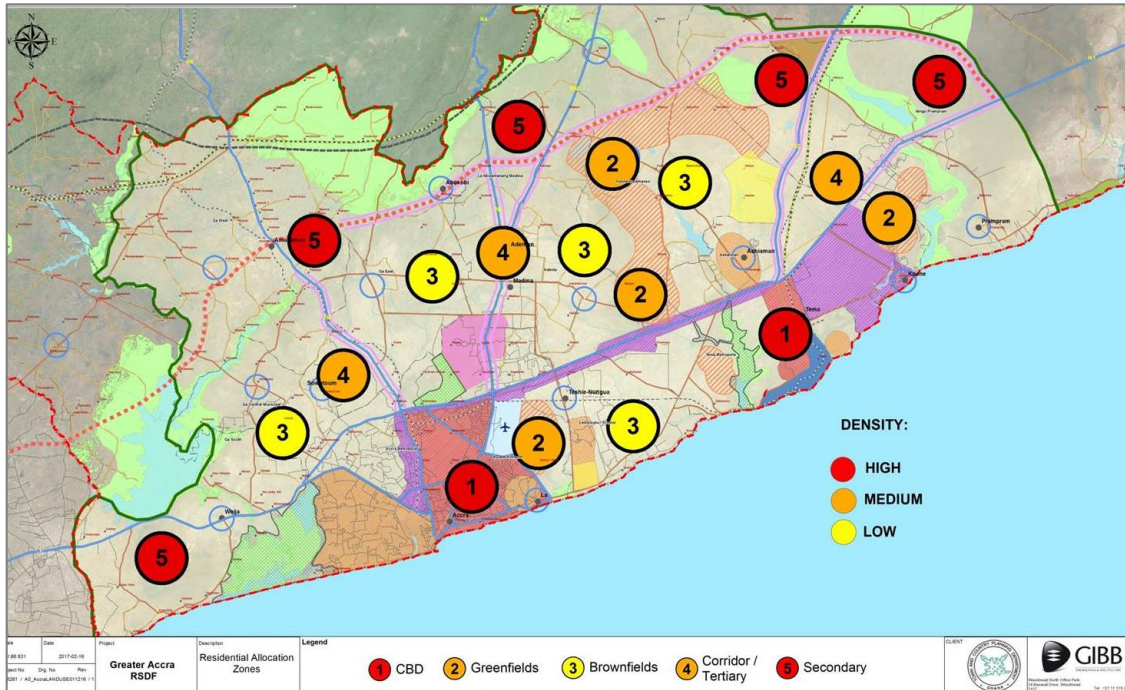


Figure 5.9: Residential Allocation Zone

11. **De-clutter the Tema harbour** area since it is a strategic development area for the region but is overburdened by concentration of uses and activities, and to do so develop a new inland port.



Figure 5.10: Possible Inland Port to de-clutter Tema Harbour

12. **360° Airport development** to maximise the benefit offered by the airport as a strategic development zone. Optimising development necessitates developing all around the airport.



Figure 5.11: 360° Development around Airport

-
13. Provide the **enabling environment** required to manage and develop this important region of Ghana through upgrading office and equipment as well as appropriate training. It is believed that the officials in the different tiers of government who are responsible for the management, control and project implementation for GAR should be suitably equipped to undertake their work. Thus, all their work-execution needs should be met so that they are enabled to plan for and develop the region effectively, this includes office infrastructure, specialisation and appropriate training.

These elements are the cornerstone for GAR's way forward.

6 *RSDF Link to the NSDF and National Urban Policy*

Testing the applicability of the RSDF it was measured against the key elements of the NSDF and the National Urban Policy.

6.1 GAR in terms of the NSDF

The National Spatial Development Framework (NSDF) 2015-2035 advocates that Ghana must be integrated into the West African Economy and must do everything it can to attract investment. Hence the country should plan for population growth and in-migration, high urban populations, yet limit sprawl and fragmentation, strengthen the two largest urban areas (Accra and Kumasi) and create better rural linkages.

As for the hinterland the NSDF recognizes fragmentation of agricultural land and proposes it should be limited since Ghana has less than half of the people/cropland ratio that experts recommend for sustainability. Stimulating rural productivity means providing better trading markets for agricultural produce, better market infrastructure and improved linkages and mobility between the urban areas and hinterland.

The NSDF identifies six pillars of spatial strategy which very briefly are:

- Emphasize balanced polycentric development;
- Improve regional, national and international connectivity;
- Strengthen the metropolitan city regions of Accra and Kumasi, and focus on Accra as the engine of growth, magnet of investment and gateway to international trade;
- Promote development in networks and secondary cities; and
- Ensure sustainable development and protection of ecological assets.

With particular reference to Accra and its region the NSDF proposes to:

- Promote Accra Capital Region as a world class city and ensure that it can compete with places such as Lagos and Abidjan by establishing its role as a regional business, trade and investment hub (a role no other city can play);
- Promote existing urban settlements and discourage new ones;
- Promote larger and discourage smaller settlements;
- Improve connectivity to international markets through new and upgraded air, rail, expressway and marine infrastructure;
- Promote urban settlements along major transport corridors;
- Integrate rural settlements into expanding urban areas;
- Protect agricultural land and forests; and
- Maintain and improve efficiency of main expressway network.

Clearly GAR fulfils a multitude of roles and is important for the nation and the man on the street. The NSDF provides a clear framework of what it regards as the development focus for GAR which serves as critical input into the RSDF process. In many instances the GAR RSDF has embraced these principles and in others have provided improved spatial alternatives that apply to the Region’s unique composition and conditions.

6.2 National Urban Policy – Framework and Action Plan, May 2012

The following thematic areas of concern as contained in the National Urban Policy 2012 have been addressed through the proposals of this RSDF.

Table 6.1: National Urban Policy – Action Areas

Action Areas	Policy Initiative
Action Area 1: Balanced redistribution of urban population	1.1 Create and develop new growth points as counter magnets for fast growing cities such as Accra and Kumasi (identify potential growth points within the urban hierarchy). 1.2 Promote accelerated growth of small and medium sized towns.
Action Area 2: Spatially integrated hierarchy of urban centres	2.1 Undertake a study and establish a hierarchy of urban centres for defined functions and levels of services. 2.2 Spatially integrate regional and district capitals by transportation and communications facilities and other relevant services. 2.3 Minimize the travel time between service centres of all sizes and their hinterlands. 2.4 Establish rural service centres and strengthen rural-urban linkages to promote agriculture and the development of agro-based industries.
Action Area 3: Urban economic development	3.1 Promote local economic development (LED). 3.2 Improve urban services and infrastructure to support and advance industrial investments and production. 3.3 Target growth centres as choice destinations for infrastructural development and economic activities. 3.4 Enhance the competitiveness of Ghanaian cities in regional and international context. 3.6 Ensure that urban planning provides for the activities of the informal economy.
Action Area 4: Environmental Quality	4.1 Develop and manage infrastructure systems with appropriate technology to provide basic hygienic conditions in towns and cities. 4.2 Prepare and implement sanitation action plans for all leading urban centres, including related statutory regulations and by-laws ensuring effective collection, disposal and treatment of solid, liquid and toxic waste.

	<p>4.5 Protect open spaces, greenbelts, forest reserves, water bodies, wetlands, water catchment areas and other ecologically sensitive areas from physical development and urban encroachment.</p> <p>4.6 Develop and implement a systematic programme of flood control measures in urban communities.</p> <p>4.9 Prepare and implement coastal management plans to effect coastal re-vegetation and erosion control of denuded and neglected coastal towns.</p>
Action Area 5: Planning and management of urban growth and sprawl	<p>5.1 Ensure that investments and development will consistently and increasingly be directed towards targeted counter magnet growth areas.</p> <p>5.2 Probe and establish an effective integrated planning system for greater metropolitan areas which embraced different political districts.</p> <p>5.3 Ensure adoption and implementation of the recommendations of the LUPMP regarding planning legislation and development guidelines.</p>
Action Area 6: Urban infrastructure and services	<p>6.1 Assess infrastructure needs of urban areas and mobilise resources to support infrastructural development.</p> <p>6.2 Improve delivery and management of urban services, social and economic infrastructure and services (including health, education, water, sanitation, energy, transport).</p> <p>6.3 Guide and manage investments in all relevant transport modes for efficient and effective intra and inter-city transport development.</p> <p>6.4 Promote efficient and effective public transport systems.</p> <p>6.7 Provide infrastructure and services on the basis of national, regional and district spatial development frameworks and urban structure plans.</p>
Action Area 7: Adequate and affordable housing	<p>7.1 Provide a congenial environment for private sector delivery of affordable housing.</p> <p>7.4 Upgrade slums and dilapidated housing stock especially in urban areas selected as growth poles.</p>
Action Area 11: Research urban and regional development	<p>11.1 Strengthen the capacity of research institutions and other bodies concerned with urban and regional development.</p> <p>11.2 Encourage urban research that has immediate bearing on urban development problems and needs.</p>

7 *Implementation Focus*

Due to the long time lapse since the 1991 Plan there is a substantial shortfall in plans, strategies and projects. The implementation focus is therefore on closing the gap by further generating plans, strategies, development proposals, identifying projects and investigating those projects for implementation. Though there are several outputs from the RSDF most of these cannot be implemented without further detailed investigations that would define the required parameters.

Planning, control and project implementation is always governed by a hierarchy of plans and this is lacking in the case of the GAR. More plans, studies and detailed work are required for specific areas, projects and critical elements. These will be informed by the RSDF but from detailed analyses will provide detailed outputs that will improve local level implementation. The RSDF has managed to provide an overarching plan / framework / strategy to direct how and where regional development should take place, but it is not in a position to direct local-level control and implementation. Such will be done by local-level plans.

Of all the projects the single most important project is the development of the Metropolitan Expressway and along with it the implementation of a BRT system to support and improve transportation across the entire region. Following this is the necessity to upgrade, improve and expand all engineering services so as to create safe, healthy and liveable settlement areas. Infrastructural development in GAR is of utmost importance.

7.1 Land Use

Table 7.1: Land Use Implementation Projects

Implementation Plan – Land Use				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Establish a Metropolitan Agency	<ul style="list-style-type: none"> Investigate metropolitan management agency alternatives. Prepare a strategy to establish an agency. Obtain buy-in for the establishment of a metropolitan agency. Prepare an implementation plan. 	<ul style="list-style-type: none"> Regional Coordinating Council MMDAs 	1-5	2.5 million
Establish Market Town Municipalities	<ul style="list-style-type: none"> Investigate feasibility to establish 8 market town municipalities. Prepare a strategy to establish municipalities. Obtain buy-in for the establishment of municipalities. Prepare implementation plan. 	<ul style="list-style-type: none"> MMDAs 	1-5	4 million
Planning offices upgrade	Upgrade all regional, district and municipal planning offices to achieve high levels of competency and service delivery, i.e. GIS systems, printing facilities, etc.	<ul style="list-style-type: none"> Regional Coordinating Council LUSPA MMDAs 	1-3	To be determined
Information Bureau	Establish comprehensive and integrated information bureaus at Accra and Sege	<ul style="list-style-type: none"> Regional Coordinating Council MMDAs 	1-5	10 million
Large-scale topo-cadastral mapping	Obtain high quality topo-cadastral mapping for the total region to include 2 meter contour intervals, registered cadastral information on ortho photo basis. (1:2500 scale to 1:10 00)	<ul style="list-style-type: none"> MMDAs 	1-5	
Special Local Plans	Prepare Special Local Plans for the following: <ul style="list-style-type: none"> Jamestown Usshertown 	<ul style="list-style-type: none"> Affected MMDAs 	3-6	2 million

Implementation Plan – Land Use				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
	<ul style="list-style-type: none"> • Ashaiman • Airport precinct • Ga-South secondary node • Madina secondary node • Accra CBD retro fit • Tema CBD retro fit • Ashaiman secondary node 			
Structure Plans	Prepare structure plans for each metropolitan, municipal and district assembly in terms of the Manual for the Preparation of Spatial Plans, 2011	<ul style="list-style-type: none"> - Regional Coordinating Council - MMDAs - LUSPA 	2-6	1.5 million per plan
Growth Management System	Develop a metropolitan and rural growth management system.	<ul style="list-style-type: none"> - District Assemblies - 	2-3	3 million
Special local plans	<ul style="list-style-type: none"> • La • Area defined by Ring Road West / Winneba Road/ Samaneala / Coast • Tema New Town • Mobole Secondary Node • New Prampram North Secondary Node • Katamanso. Mokola and Kaneshie market precincts 	<ul style="list-style-type: none"> - Affected MMDAs 	3-6	1.5 million
Structure Plans of the proposed Airport	Prepare Structure Plan for the proposed airport in order to reserve bulk services and transport routes and manage premature settlement	<ul style="list-style-type: none"> - Regional Coordinating Council - MMDAs - LUSPA 	4	3 million

Implementation Plan – Land Use				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Review of the 2017 RSDF	Review RSDF to determine levels of implementation and to improve and broaden data basis	- Regional Coordinating Council - MMDAs - LUSPA	6	
Structure Plans – Market Towns	Prepare structure plans for each metropolitan, municipal and district assembly in terms of the Manual for the Preparation of Spatial Plans, 2011	- Regional Coordinating Council - MMDAs - LUSPA	10-15	
Update and Review Structure Plans (Spatial Local Plans)	Review Structure Plans (Metropolitan, municipal and district) to determine levels of implementation and to improve and broaden data basis	- Regional Coordinating Council - MMDAs - LUSPA	11-14	

MMDAs: Metropolitan, Municipal and District Authorities

LUSPA: Land Use and Spatial Planning Agency

7.2 Environmental Sector

Table 7.2: Environmental Implementation Projects

Implementation Plan – Environmental				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
District Natural Resource Inventory	A programme to map all natural resource in GAR, with associated value in terms of ecological services and community utilisation requirements is needed at district level in order to adequately manage and monitor resource depletion.	- MMDAs	1-5	6 Million
Centralised Water Quality Monitoring	A centralised water quality monitoring programme / committee needs to be establish as these resources cross boundaries. All districts and other regions should provide information into this programme / committee to improve the ability to identify sources of pollution and take necessary steps to address these.	- Water Resources Commission and the Ministry of Water Resources, Works and Housing.	1-5	1 Million
Open Drain Policy Reform	Policy / by-laws either at district or regional level needs to be developed for the prohibition of developing new open drains in urban areas	- MMDAs	1-3	N/A
Sustainable Fishing and Farming Practices	The hosting of programmes for fisherman and farmer education and small business development on how to reduce exploitation and destructive practices.	- MMDAs	1-3	300 000
Floodplain Prevention, Relocation and Rehabilitation	A programme must be developed in order to prevent new development and to quantify the cost and effects of the relocation of housing located in floodplains (to reduce flooding impacts) as well as the rehabilitation of floodplains (to increase flood attenuation)	- MMDAs	1-5	500 000
Sustainable Harvesting Programme	A programme should be established to assist communities to undertake sustainable practises such sustainable firewood harvesting	- MMDAs	1-3	200 000

Implementation Plan – Environmental				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
	plans, biomass cultivation, natural herbal medications etc.			
Seismic Resilience Policy Development	Areas of high and low seismic activity to be integrated into policy and legislation to ensure that these areas are considered during development and the appropriate mitigations are undertaken	- National Legislature	5-20	N/A
Climate Resilient Infrastructure Programme	Developing climate resilient infrastructures and taking into consideration climate –risk in design stage of roads etc., infrastructure improvements for correct drainage and improvement of water supply systems to ensure potable water supply during a flood or drought	- Infrastructure development entities (e.g. GWC)	5-20	N/A (as part of infrastructure budget)
Sustainable Farming Programme	A programme should be established to assist communities to undertake sustainable practises such as Climate Smart Agriculture.	- Regional Coordinating Council - MMDAs	1-3	200 000
Formalise Artesian Fishing	Potential programme to include artesian fishing into the formal fishing economy	- Regional Coordinating Council - MMDAs	1-5	250 000
Improve Fishing Facilities	Development of a plan to formalise fish landing sites and improve required fishing facilities	- Regional Coordinating Council - MMDAs	5-20	500 000
Water Tourism	Develop a plan to rehabilitate the hydrological system and develop water activity tourism such as bird and other wildlife watching; fishing, water sport and recreation	- Regional Coordinating Council - MMDAs	5-20	100 000
Beach Clean Up Programme	Beach clean-up will provide the opportunity to develop the GAR coastline into a possible tourist attraction, increasing tourism growth in the area	- Regional Coordinating Council	1-5	500 000

Implementation Plan – Environmental				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
		- MMDAs		
Shoreline Stabilization Plan	A plan to stabilise the shoreline in areas that are prone to erosion will prevent further erosion and possibly protect infrastructure	- Regional Coordinating Council - MMDAs	1-5	2 Million
Eco-tourism Development	A programme to identify and plan for the rehabilitation of unique ecological features, such as sacred groves, to increase eco-tourism potential of the GAR	- Regional Coordinating Council - Ministry of Culture and Creative Arts	5-20	200 000
Agriculture Best Practice Guidelines	Development of guidelines to ensure application of appropriate agricultural practices	- MOFA	5-20	150 000
Promotion of Existing Programmes	Programmes such as the Reduced Emissions from Deforestation and Forest Degradation plus (REDD+) and Man and Biosphere (MAB) should be utilise to improve the natural environment and the potential benefits within the GAR. Knowledge on these programmes can be developed through training and involvement in such programmes.	- MMDAs	1-3	100 000
District Climate Change Mitigation and Adaptation	District level climate change mitigation and adaption strategies must be developed in order to plan for and implement requirements for climate change	- Ministry of Local Government and Rural Development - MMDAs	5-20	1 Million
Heritage Preservation Plan	Development of a heritage preservation plan which: <ul style="list-style-type: none"> Records all cultural heritage resources; Evaluates resources form either preservation or development; and 	- Ministry of Tourism, Culture and Creative Arts	1-5	2 Million

Implementation Plan – Environmental				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
	<ul style="list-style-type: none"> Development of a District level Heritage Framework which sets norms and standards for the identification, protection, conservation and promotion of heritage resources within the district. 			

MMDAs: Metropolitan, Municipal and District Authorities

MOFA: Ministry of Food and Agriculture

7.3 Economic Environment

Table 7.3: Economic Implementation Projects

Implementation Plan – Economic Sector				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
GAR Economic Growth and Development Strategy	A comprehensive economic growth and development strategy is required to provide a detailed knowledge base, supplemented by appropriately sophisticated analytical instruments that would provide a framework for sustained, effective and facilitative economic interventions by various organs of state. Detailed sectoral and sub-sectoral analyses are required to inform such a plan. Extensive primary research would have to be conducted to yield the required level of detail.	<ul style="list-style-type: none"> - Regional Coordinating Council - Ministry of Local Government and Rural Development - National Development Planning Commission 	1-3	1.5 million GHC
GAR Regional Tourism Market Plan	A regional tourism market plan is needed, including the development of tourism and associated infrastructure across the spectrum of opportunities identified as part of the tourism cluster.	<ul style="list-style-type: none"> - Regional Coordinating Council - Ministry of Tourism, Culture and Creative Arts 	1-3	500 000 GHC
GAR Industrial Development Strategy	An industrial development strategy needs to be compiled, similarly founded on comprehensively detailed sectoral and sub-sectoral analyses, supplemented with: <ul style="list-style-type: none"> • Industrial cluster, and • Associated value chain analyses. 	<ul style="list-style-type: none"> - Regional Coordinating Council 	3-5	500 000 GHC
Informal Sector Plan	Appropriate plans need to be put in place to ensure an increased	<ul style="list-style-type: none"> - Regional 	2-5	500 000 GHC

Implementation Plan – Economic Sector				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
	conversion rate of informal localised business and micro-survivalist enterprises into formal, small and medium sized mainstream business enterprises.	Coordinating Council - National Government		

7.4 Transportation

Table 7.4: Transportation Implementation Projects

Implementation Plan – Transportation				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Mobility Improvements on existing Major Road Network	Mobility improvement studies for: <ul style="list-style-type: none"> • Road N1; • Road N2; • Road N4; and • Road N6 	- Ghana Highway Authority	2 and 3	1,8 Million per year for 2 years
Mobility Improvement Projects	Mobility Improvement Projects: Annual allowance for implementation projects which includes design and construction implementation	- Ghana Highway Authority	4, 5, 6, 7 and 8	35 Million per year for 5 years
R40: Determine and Secure Road reserve	Preliminary Design for Road R40 to be a Class 2 road to determine Road reserve and access requirements to be secured and protected	- Ghana Highway Authority	2	2 Million
Primary Rural Road Network: Determine and secure Road reserves	Primary Rural Road Network Programme : <ul style="list-style-type: none"> • Route alignment determination and Preliminary design 	- Department of Feeder Roads	Continuous from year2	1,5 Million per year for 4 years; thereafter: 1 Million per year
Primary Rural Road Network: Detail Design and Implementation	Primary Rural Road Network programme: <ul style="list-style-type: none"> • Detail Design and Implementation 	- Department of Feeder Roads	Continuous from year2	30 Million Per year (10km per year) for 4 years; thereafter: 15 Million per year
New East-West Metropolitan Express Way:	New East-West Metropolitan Express Way: <ul style="list-style-type: none"> • Route Determination and Preliminary Design 	- Ghana Highway Authority	2 and 3	2 Million

Implementation Plan – Transportation				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CD\$)
Route Determination, and Preliminary Design				
New East-West Metropolitan Express Way: Detail Design and Implementation	New East-West Metropolitan Express Way: <ul style="list-style-type: none"> Detail Design and Implementation 	- Ghana Highway Authority	5, 6 and 7	850 Million
New East West Outer Mobility route: Route Determination	New East West Outer Mobility route: <ul style="list-style-type: none"> Route Determination and Preliminary Design 	- Ghana Highway Authority	4	2 Million
New East West Outer Mobility route: Detail Design	New East West Outer Mobility route: <ul style="list-style-type: none"> Detail Design 	- Ghana Highway Authority	8	3 Million
New East West Outer Mobility route: Construction Implementation	New East West Outer Mobility route: <ul style="list-style-type: none"> Construction Implementation 	- Ghana Highway Authority	10, 11 and 12	1,2 Billion
Commuter Rail: Accra-Amasaman Upgrade: Preliminary Design	Commuter Rail: Accra-Amasaman Upgrade: Upgrade to double line and Station upgrades: Preliminary Design	- Ministry of Transport	2	2 Million
Commuter Rail: Accra-Amasaman Upgrade: Detail Design and Implementation	Commuter Rail: Accra-Amasaman Upgrade: Upgrade to double line and Station upgrades: Detail Design and Implementation	- Ministry of Transport	3, 4 and 5	100 Million
Commuter Rail: Tema-Achmitota Upgrade: Preliminary Design	Commuter Rail: Tema-Achmitota Upgrade: Upgrade to double line and Station upgrades: Preliminary Design	- Ministry of Transport	3	2 Million
Commuter Rail: Tema-	Commuter Rail: Tema-Achmitota Upgrade:	- Ministry of	4,5 and 6	110 Million

Implementation Plan – Transportation				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Achmitota Upgrade: Detail Design and Implementation	Upgrade to double line and Station upgrades Detail Design and Implementation	Transport		
Trans-Ecowas Rail Line including Tema Link: Route determination and Preliminary Design	Trans-Ecowas Rail Line including Tema Link: <ul style="list-style-type: none"> • Single Line • Route determination and Preliminary Design 	- Ministry of Transport	4	1.5 Million
Trans-Ecowas Rail Line Including Tema Link: Detail Design and Implementation	Trans-Ecowas Rail Line: Only Tema Link to Inland Dry Port: <ul style="list-style-type: none"> • Single Line • Detail Design and Construction Implementation 	- Ministry of Transport	6 and 7	54 Million
BRT: Route 3: Adenta to CBD	BRT Implementation: <ul style="list-style-type: none"> • Route 3: Adenta to CBD • Design and Construction 	- Ministry of Transport	2, 3 and 4	125 Million
BRT: Route 4: Ashaiman to Ring Road	BRT Implementation: <ul style="list-style-type: none"> • Route 4: Ashaiman to Ring Road • Design and Construction 	- Ministry of Transport	3, 4, 5 and 6	185 Million
BRT: Route 6: Achimota to Labadi	BRT Implementation: <ul style="list-style-type: none"> • Route 6: Achimota to Labadi • Design and Construction 	- Ministry of Transport	4 and 5	60 Million
Rural Bus Service	Planning and Operational Plan for a Rural Bus service	- Ministry of Transport	2	1,2 Million
BRT: Route 1: Kasoa to CBD	BRT Implementation: <ul style="list-style-type: none"> • Route 1: Kasoa to CBD • Design and Construction 	- Ministry of Transport	2, 3 and 4	115 Million
Maritime Infrastructure	Provision of landing beaches/fishing harbours Provision of cooling Facilities at landing sites	- Ministry of Fisheries and	4, 5, 6 and 7	30 Million per year for 4 years

Implementation Plan – Transportation				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
	Facilities for processing of fishing products	Aquaculture		
Freight Transport	Inland Dry Port at Modol node: <ul style="list-style-type: none"> Planning and securing of land for the establishment of the Inland Dry Port 	- Greater Accra Regional Council	2	1,2 Million
Aviation	Provision of High Speed Rail link to new Planned International Airport: <ul style="list-style-type: none"> Route Determination and securing of land 	- Ministry of Transport	5	1,2 Million
Aviation	Provision of High Speed Rail link to new Planned International Airport: <ul style="list-style-type: none"> Design and construction implementation 	- Ministry of Transport	17, 18 and 19	120 Million

7.5 Engineering Services

The costing, or even estimating the cost, of infrastructure is impossible until such time that the detailed Master Plans have been developed. Without the Master Plans in place the scope and extent of work is unknown and therefore the cost of projects cannot be predicted.

7.5.1 Water Services

Table 7.5: Water Services Implementation Projects

Implementation Plan – Water Services				
Action	Description	Implementation Agents	Timing (Years)	Est. Cost (Ghana CDs)
Master Plan	Determine the status quo of the current bulk water infrastructure. This will highlight the supply capabilities of the existing networks and treatment plants. This in turn will assist in determining the upgrade required to support the current and future demands.	- GWCL / GWC - District Assemblies	1-3	
Improve Water Supply Systems	The upgrading and optimization of existing water supply schemes.	- CWSA - WRC - GWCL / GWC - District Assemblies	2-5, continuous process	
Upgrading of Existing Water Infrastructure	Increase capacity of water treatment facilities and water networks in order to accommodate the current and future water demands.	- District Assemblies	2-5, continuous process	
Desalination of Sea Water	The identification, investigation and establishment of additional water source to supply current and future water demands.	- CWSA - WRC - GWCL / GWC	1-5	
Identification Of Additional Surface Water Sources	The identification, investigation and establishment of additional water source to supply current and future water demands.	- GWCL / GWC	1-5	
Identification And Development Of Ground Water	The identification, investigation and establishment of additional water source to supply current and future water demands.	- WRC - GWCL / GWC	1-5	

Resources				
Optimisation of existing surface water resources	Re-evaluation of the current operations at existing water supply sources. This will aid in determining the schemes / practices which can optimize water extraction from these existing surface water sources.	- WRC - GWCL / GWC	1-5	
Operation and Maintenance	Introduce maintenance programs / protocols for existing and proposed water infrastructure.	- District Assemblies	5-7	
Public Awareness	Create public awareness on water conservation and the protection of water sources.	- District Assemblies - WRC	1-continuous	
Water Conservation and Demand Management	Establish water conservation management schemes / practices. Assess the current water demand management in order to highlights areas of concern.	- WRC - GWCL / GWC		

CWSA: Community Water & Sanitation Agency

GWCL / GWC: Ghana Water Company Limited

WRC: Water Resources Commission

7.5.2 Sanitation Services

Table 7.6: Sanitation Services Implementation Projects

Implementation Plan – Sanitation Services				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Development/ Revision of sanitation policies and management practices	Assessment of the current sanitation management schemes / practices and how these schemes / practices can be fully optimised /utilised to accommodate the projected sewer flows.	- MLGRD - MWRWH - District Assemblies	1-3	
Public Awareness	Create public awareness on both the negative effects of poor sanitation management , sanitation facilities that lack maintenance etc., through the implementation of educational programs etc.	- MMDAs	continuous	
Operation and Maintenance	Introduce maintenance programs / protocols for existing and proposed sewer infrastructure.	- MLGRD - MMDAs	5-7	
Sanitation Master plan	Determine the status quo of the current bulk sewer infrastructure. This will highlight the sewer system capabilities of the existing networks and treatment plants. This in turn will assist in determining the upgrade required to discharge the current and future sewage.	- MLGRD - MWRWH	1-3	
Increase the sanitation infrastructure coverage	Increase the coverage of the current sanitation infrastructure to discharge sewer flows generated from a greater number of people/activities (commercial, industrial and institutional).	- MMDAs	3-5	
Construction of Sewer treatment plants	The establishment of new sewage treatment plants to accommodate the current and projected sewer flows.	- MLGRD - MWRWH	2-7	
Construction Of Additional Sanitation Facilities	The installation of new sanitation facilities to cater for current and future sewer flows.	- MLGRD - MWRWH - MMDAs	3-7	

MWRWH: Ministry of Water Resources, Works and Housing

MLGRD: Ministry of Local Government and Rural Development

MMDAs: Metropolitan, Municipal and District Authorities

7.5.3 Stormwater Services

Table 7.7: Stormwater Services Implementation Projects

Implementation Plan – Stormwater Services				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Operation and Maintenance	Introduce maintenance programs and the establishment of stormwater infrastructure policies to allow for stormwater system to run efficiently and reduce the amount of waste in stormwater systems.	- MLGRD - MMDAs	5-7	
Public Awareness	Create public awareness on the status quo of the current stormwater facilities, the implication of a lack of maintenance and provide recommendation on how the stormwater system can be improved install educational programs etc.	- MLGRD - MMDAs	continuous	
Stormwater Master Plan	Determine the status quo of the current bulk stormwater infrastructure. This will highlight the stormwater system capabilities of the existing networks and stormwater infrastructure. This in turn will assist in determining the upgrade required to discharge the current and future stormwater runoff into receiving water bodies.	- MMDAs - MLGRD - MWRWH	continuous	
Sustainable Drainage Systems (SuDS) and the creation of greenfield spaces	Provide an alternative to conventional stormwater drainage systems.	- MLGRD - MWRWH - MMDAs	3-6	
Protection of undisturbed land	Protection of Green Belt areas, natural low lying wetlands, conservation areas and develop policies to enhance these natural landscapes to promote stormwater infiltration.	- Ministries	1-3	

MWRWH: Ministry of Water Resources, Works and Housing

MLGRD: Ministry of Local Government and Rural Development

MMDAs: Metropolitan, Municipal and District Authorities

7.5.4 Solid Waste Services

Table 7.8: Solid Waste Services Implementation Projects

Implementation Plan – Solid Waste Services				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Solid Waste Master Plan	The assessment of the status quo of the solid waste management in the GAR, so as to improve the development policies / practices that will accommodate current and future solid waste from the increased population and activity in the GAR.	- MMDAs - MLGRD - MWRWH	continuous	
Operation and Maintenance	Introduce maintenance programs / schedules for the removal of solid waste.	- MMDAs	continuous	
Public Awareness	Create public awareness on both the adverse effects of solid waste in civil infrastructure facilities; install educational programs, increased communication through media/telecommunications.	- MMDAs	1-3, continuous process	
New Solid Waste Management Schemes	The upgrading of current solid waste management practices and introduction of new solid waste management schemes /practices.	- MLGRD - MWRWH - MMDAs	1-5	
Environmental and Land-Use Policies	The creation of strict environmental policies to minimise the impact of solid waste on society and the environment.	- MLGRD	1-3	
Optimization of Solid waste (Hierarchy)	Optimization of solid waste before it is disposed. The aim first to eliminate waste, then to optimize solid waste material before is disposed of and lastly to dispose of unwanted waste in an cost efficient and environmentally friend way	- MLGRD	1-2	
Public-Private Participation	Further extend the PPP initiative to handle the solid waste management on a regional scale.	- Priv. companies like Zoomlion	1-4	
Construction of disposal sites	The installation of new solid waste disposal facilities to cater for current and future solid waste generation.	- MLGRD - MWRWH - MMDAs	3-7	

MWRWH: Ministry of Water Resources, Works and Housing

MLGRD: Ministry of Local Government and Rural Development

MMDAs: Metropolitan, Municipal and District Authorities

7.5.5 Telecommunication Services

Table 7.9: Telecommunication Services Implementation Projects

Implementation Plan – Telecommunication Services				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
Further Expansion Of The Fixed Line And Mobile Technology	Further enhancement and expansion of the fixed line telecommunication and mobile service providers.	- Service Providers	1-3, continuous process	

7.6 Energy

Table 7.10: Energy Implementation Projects

Implementation Plan – Energy				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CDs)
A different approach to distribution planning & demand forecasting	<ul style="list-style-type: none"> Change from current methodology of load forecast based on compound annual growth rates to detailed network development plan (NDP) based on (1) network modelling for each substation, (2) actual historical data and (3) forecasting based on inter alia, land use profiles. This allows for a more effective distribution planning and management. 	- ECG (close coordination with GRIDCO)	1-1.5	~1.5 million
	<ul style="list-style-type: none"> The above distribution planning strategy must be coupled with a strict policy for maximum demand allocation in areas based on land use zoning, historical data and ECG available capacity. That is an ADMD (After Diversity Maximum Demand) limit must be declared per stand or property to allow for a better planning of services per area. This ADMD will define a limit for services that can be allowed prior to major upgrade of substations. E.g. This has the implication that certain areas may have to be declared as no-slum zones. i.e. a maximum number of service connections per stands will have to be enforced. 	- ECG & Physical Planning Departments	As part of timeline above	As part of budget above
	<ul style="list-style-type: none"> Coordination of application process such that comments from ECG are obtained as a pre-requisite. i.e. Approvals (for developments, rezoning etc.) that come through the town planning / city development have to indicate clearly how each property will be serviced (whether ECG or privately) and the necessary ECG approvals submitted as part of the application. 	- ECG & Physical Planning Departments	As part of proposed Metropolitan Agency function	As part of proposed Metropolitan Agency function
Generation projects that affect entire region	<ul style="list-style-type: none"> 180 MW Sunon-Asogli (Phase 2 Stage 2) - This is the second phase of the 360 MW combined cycle project. 180 MW was assumed to be available in 2016 and the second 180 MW is assumed to be 	- Sunon-Asogli	As per project plan ~ 2017 online	Active project – no info supplied

Implementation Plan – Energy				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CD\$)
	online in 2017.			
	<ul style="list-style-type: none"> 340 MW Cenpower Project– Construction for this project has commenced and based on the project timeline, the plant should be commissioned by fourth quarter of 2017. However in this analysis the plant is assumed to be available from January 2018. 	- Cen Power	As per project plan ~ 2018 online	Active project – no info supplied
	<ul style="list-style-type: none"> The current 2016 National Electricity Plan (GRIDCO) indicates a shortage of 1200MW over 2017 -2021 for the country as a whole. Upon review of the ECG planned demand and taking the RSDF into account, the GAR deficit over this same period is 320 MW. Work should commence to ensure that the additional generation capacity required over the period 2017 - 2021 is added into the Ghana power system in a timely manner (2017, 2019, 2021) for reliable power supply. An additional 17% annual increase in demand applies over the period 2022-2037 as per the RSDF. 	- VRA, IPPs etc. under guidance of Energy Ministry	2017-2037 (ongoing)	2017-2021 = ~303 million (at a rate of 851k per MVA, assuming good power factor 0.9 and minimal losses) budget to increase by 17% annually until 2037
Transmission projects	<ul style="list-style-type: none"> 25.7km; 488MVA; 161kV double circuit Twin-Tern conductor upgrade of the Volta -Achimota lines: Upgrading of transmission lines in the Volta-Accra East Achimota corridor from 213 MVA to a 488 MVA. This would increase the evacuation capacity from Tema generation hub to the load centre of Accra. This is especially necessary to ensure the evacuation of generation from the new thermal power plants in Tema, namely Karpower (225 MW), Sunon-Asogli Phase-2 (180MW) and the Kpone Thermal Power Plant (KTPP - 200 MW). 	- GRIDCO	Estimation 4 to 5 pending expropriation, EIA's etc.	~24 million
	<ul style="list-style-type: none"> 12km; 488MVA; 161kV double circuit Twin-Tern conductor upgrade of the Achimota – Mallam lines: 	- GRIDCO	Estimation 4 to 5 pending	~11 million

Implementation Plan – Energy				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CD\$)
	<ul style="list-style-type: none"> Upgrade of Achimota–Mallam 161 kV transmission line conductor from 170 MVA to 488 MVA, to improve bus voltages at Achimota and adjacent substations. It would also reduce overall transmission losses and lines loading on the NITS. This project has already been awarded on contract. 		expropriation, EIA's etc.	
	<ul style="list-style-type: none"> 161 kV Collector Substation to be located in Tema. 	- GRIDCO	+/- 5	No MVA provide
	<ul style="list-style-type: none"> 161 kV Accra Central Gas Insulated Substation located in Accra. 	- GRIDCO	+/- 5	No MVA provide
	<ul style="list-style-type: none"> 330/161 kV Accra Fourth Bulk Supply Point (A4BSP) Substation located at Pokuase (364 MVA) 	- GRIDCO	+/- 5	~23 million
	<ul style="list-style-type: none"> 10km 161kV double circuit Mallam-A4BSP Transmission line. Construction of A4BSP 330kV substation with a 161kV, double circuit twin bundle (364x2 MVA) link to Mallam BSP. This would increase the reliability of supply to Accra and increase transfer capacity between the generation hub of Aboadze and Tema to the load Centre of Accra. 	- GRIDCO	Estimation 4 to 5 pending expropriation, EIA's, etc.	~9 million
	<ul style="list-style-type: none"> 330kV Dawa Collector Substation in Dawa. 	- GRIDCO		No MVA provided
Additional NEW projects RSDF node specific.	<ul style="list-style-type: none"> New 330kV Transmission line (+/-60km) linking the following nodes to GRID: New Airport node and Dawsa node areas, Lanaw nodes. Line to make provision for each node to have long term capacity of 20MVA for the target year. 	- GRIDCO	+/- 5 to 6 pending expropriation, EIA's, etc.	+/-55 million
	<ul style="list-style-type: none"> - 1x 330kV BSP to supply New airport node and the Dawsa node areas totalling a minimum of 40MVA firm capacity (10MVA to be reserved for industries in line with "one factory one district strategy") 	- GRIDCO & IPP	+/-5	+/-5 million
	<ul style="list-style-type: none"> - 1 x 303kV BSP to supply Lanaw node and surrounding areas with firm capacity of 20MVA. 5MVA to be reserved for 	- GRIDCO	+/-5	~3 million

Implementation Plan – Energy				
Action	Description	Implementation Agents	Timing (years)	Est. Cost (Ghana CD\$)
	industry.			
	<ul style="list-style-type: none"> Current GRID Plan 3330kV Transmission line (+/-100km) linking Volta substation in Tema going into Volta Region. The Grid Plan indicates that the line will pass Prampram, Old Nongu, through Big Ada into Volta Region. This route makes the line the ideal option in supplying City of Hope & surrounds, Prampram, Old Nongu and their surrounds. 1 x 330kV Substation linking the above transmission line with the current Grid Planned one - while also servicing Sege node and surrounds (minimum of 20MVA firm capacity) 1 x 330kV BSP supporting City of Hope and surrounds(20MVA), Prampram, Kpone and other settlements on the eastern Tema (20MVA) including Old Nongu (20MVA) - total firm capacity of 40MVA. 1 x 330kV BSP to service Ada Foah and Kesse nodes at 20 MVA firm capacity each, i.e. minimum total capacity of 40MVA with 10 MVA reserved for industry. <p><i>*capacities given above are minimum guideline values only. It expected that actual capacities shall be higher pending actual development and growth.</i></p>	<ul style="list-style-type: none"> - GRIDCO - GRIDCO - GRIDCO & IPP - GRIDCO 	<ul style="list-style-type: none"> Actual Project on Current Grid Plan (no timeline given)+/- 6 years +/-5 +/-5 +/-5 	<ul style="list-style-type: none"> +/- 93million +/-3 million +/-5 million +/-5 million

ECG: Electricity Company of Ghana

IPP: Independent Power Producers

VRA: Volta River Authority

GRIDCO: Ghana Grid Company Limited

8 *Conclusion*

This plan must be regarded as a first step in terms of the new role for planning in Ghana. The document needs to bridge the gap between the Strategic Plan for Greater Accra Metropolitan Area, 1991 and the new planning system adopted by the government. A period of 26 years has passed since the last regional plan was prepared and since then much has changed in the spatial composition of the area. The RSDF is the first regional plan for the GAR with its new demarcated jurisdictions, and therefore, provides a sound foundation for the future and future planning. It also provides a firm structure for both urban and rural development guiding all future planning towards supporting and facilitating long term sustainability.

9 *References*

1. Greater Accra Region Spatial Development Framework, Volume 1, Interim Status Quo Report, April 2017.
2. Greater Accra Region Spatial Development Framework, Volume 2, Draft Spatial Development Framework and Implementation Plan, April 2017.

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