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The emergence of city-regions and their implications for contemporary spatial governance: Evidence from Ghana

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Abstract

Over the years, urbanization has triggered complex spatial processes, such as the evolution of city-regions that defy traditional administrative regional boundaries. However, despite the growing body of research on city-regions, the evolution of this phenomenon and its implications for contemporary spatial governance remains a huge gap in urban planning literature, while approaches to their delineation have largely been restricted to commuting patterns data and approximations. This research examines the emergence of city-regions and their implications for contemporary spatial governance using Ghana as an illustrative case. In the process, inspired by Tobler's first law of geography and the concept of distance decay, the study engages a unique methodological approach that uses spatial mapping of rural-urban population continuum, transportation network, built-up patterns and GIS techniques for the delineation of city-region. The research finds a gap between the rapidly emerging spatial structure of Accra and the operational governance framework, as there is no provision in the latter for the planning and management of the evolving city-region which, territorially, spans multiple administrative regions. At the local context, while making the lagging spatial governance system more responsive to the dynamically evolving spatial structure, it is imperative that urban policy recognises city-regions, such as the Accra City Region (ACR), and their diverse opportunities; plan for them through joint development planning boards; and foster natural coordination even among local planning authorities across different administrative regions. At the global scale, the research practically illustrates that alternative methodologies based on spatial mapping and GIS techniques could provide useful insights into the study of city-regions.

Key words: city-region; governance; urbanisation; urban management; Ghana

Introduction

There has been a huge upsurge in the world's urban population over the past few decades, a trend that is still prevailing, particularly in the Global South. The proportion of the world's urban dwellers increased from about 30 percent to more than half between 1950 and 2014, and it is further projected to reach two-thirds by the mid-twenty-first century. In nominal terms, an additional 2.5 billion urban inhabitants are expected by 2050 (UN, 2014). Whilst urbanization is generally skewed to the South, the phenomenon has been exceptionally swift in Africa and Asia (Pacione, 2009) as the two are likely to account for 9 out of every 10 of the forecasted urban population increase (UN, 2014).

The ongoing urbanization is replete with both positive and negative externalities. On the one side, it presents wide-ranging opportunities for socio-economic development, largely in the form of the creation of economies of scale, both internal and external, as well providing the requisite climate for the maximization of the micro-economies of agglomeration—sharing, matching and learning (Duranton and Puga, 2004). On the flip side, it presents many challenges, including stress on infrastructure, congestion, urban poverty, environmental degradation, food insecurity, and a host of other urban planning and management problems (Ravallion et al., 2007; Chen, 2007; Watson, 2009; Eigenbrod et al., 2011; Baloye and Palamuleni, 2015).

In spatial terms, the phenomenon is occasioned by migration from rural areas to urban centres as well as natural processes of population growth manifesting in the expansion of existing cities and the formation of new ones (Cohen, 2006; UN-Habitat, 2010; Potts, 2012). Thus, urbanization triggers complex spatial processes that significantly alter spatial configurations in the form of their organization, relationships and flows. For instance, with no recourse to administrative planning boundaries, cities grow into one another to form conurbations, new spatial markets and city-regions.

On the global stage, especially in the United States, Europe and Asia, there has been a resurgence of the concept of city-region over the past few years, marking a shift from prior concentration on inner cities (Scott et al., 2001; Parr, 2008; Zhao and Zhang, 2007). By providing a platform for exploring interactions between urban centres and their outlying areas of dominant influence, city-regions have not only become the focal

unit of urban and regional planning research but also are deemed to be a strategic unit for policy intervention (Parr, 2005; Davoudi, 2008). Thus, the surge in emphasis on city-regions is as much political as analytical (Rodríguez-Pose, 2008).

However, in recent decades, urbanization has been particularly imposing in sub-Saharan Africa. Although there is an array of research on the phenomenon, one grey area remains how the phenomenon triggers the evolution of spatial processes, such as city-regions and their implications on spatial governance, in various parts of the sub-region. Most of the research on urbanization in the continent has been city-centric, which in many instances explores urban expansion in analytical or descriptive terms. For instance, existing studies on urbanization in Ghana largely focus on: the elucidation of challenges (Yankson and Bertrand, 2012); examination of its transition (Songsore, 2009); management of physical development in peri-urban areas (Amoateng and Cobbinah, 2013); analysis of driving forces (Oduro et al., 2014); and exploration of patterns (Acheampong et al., 2016; Cobbinah and Erdiaw-Kwasie, 2016), among others.

While the existing studies offer profound insights into understanding the urban context, the evolution of city-regions and their implications for contemporary spatial governance remains a huge gap in urban planning literature. Moreover, approaches to delineating the geographical extent of city-regions have largely been limited to data on travel-to-work patterns (De Goei et al., 2010; Burger et al., 2011) and approximations of convenient travelling time from the core (Davoudi, 2008). Presenting Ghana as a case—specifically focusing on Accra, the capital and largest urban centre, and its surrounding areas—this study examines the emergence of city-regions while exploring their implications on contemporary spatial governance. By juxtaposing the evolving urban spatial structure with the existing spatial governance system, the research examines the contemporary relevance of the latter and highlights critical spatial governance issues for policy consideration.

Contrary to previous dominant approaches to delineating the extent of city-regions, this study, inspired by Tobler's first law of geography and the concept of distance decay, engages a methodological approach that uses spatial mapping of rural-urban population continuum, transportation network, built-up patterns and Geographic Information Science (GIS) techniques for the delineation of city-regions. In addition to the availability of data, the choice of this approach offers new insights into the methodology

of studying city-regions. The study draws on multiple datasets including, but not limited to, the usage of remote sensing images, land use data, population census and statutory spatial planning documents.

The illustrative case, Ghana, like many countries in the sub-region, has experienced rapid urbanization since independence in 1957. The country recorded an urban population of about 12.5 million in 2010 and, for the first time, became more urban than rural with urbanization level of 51 percent (Ghana Statistical Service, 2013). Having collectively gained about 8.5 million additional urban dwellers between 1984 and 2010, Accra, the capital, and Ghana's other major cities have expanded considerably both in population and space. In response, through the planning system, the country has embarked on several planning actions, including: the introduction of the Land Use Planning and Management Project (LUPMP); the formulation of the Spatial Development Framework (SDF) for the nation and a plan to formulate one for each of the regions; and the preparation of sub-regional plans for major metropolitan areas like the Greater Accra Metropolitan Area (GAMA) and the Greater Kumasi sub-region. The efficacy of these planning actions and the overall spatial governance system situated within the context of the rapid evolution of the city-region is addressed by the subsequent sections. The conceptual and theoretical framework of the research are discussed within the next section.

The Concept and Rise of City-Regions

There has been a rise in the concept of the city-region in both academia and policy environs over the past couple of decades (Etherington and Jones, 2009). In some contexts, its resurgence is viewed as a consequence of globalization (Scott, 2001; Deas and Giordana, 2003; Zhao and Zhang, 2007) and a political shift towards new-regionalism (Allmendinger and Tewdwr-Jones, 2000; Rossi, 2004), whilst in others, it marks a move from the preoccupation with inner cities and suburbs to a broader perspective of exploring intricate and complex relationships that exist in space, principally, between cities and their outlying sphere of influence (Davoudi, 2008; Parr, 2005). Indeed, across many jurisdictions, largely in Europe and the United States, city-regions have emerged as the fulcrum of spatial development interventions (Neumann

and Hall, 2009; Healey, 2009). Among researchers, the principal unit of analysis is now city-regions, compared with decades ago, when it was largely cities.

Whilst the rejuvenation of city-regions and their growing global attraction is nascent, the origin of the concept dates back over a century (Davoudi, 2008). The term was coined in 1947 by Robert Dickinson, though the usage of the concept is traceable to the early years of the twenty-first century (Dickinson, 1947). Geddes (1915) echoed similar conceptions albeit through the notion of conurbation, which required that planning consider the resources of not only the core city but its region. Relatedly, McKenzie's (1933) idea of the metropolitan community reflected one that integrates the broader area where the city exerts dominant socio-economic influence, a perspective shared by Bogue (1949).

In exploring the meaning of the concept, it is important to highlight that it has been conceptualized in diverse ways and there is no commonly agreed definition (Parr, 2005). Dickinson (1964) advanced that the concept is more of a mental construct and less of a fine spatially delineated area. Over the years, researchers have used the term in multiple contexts to reference varied spatial scales, often mixed up with other terminologies such as global cities, world cities and region states, among others (Hall, 2001; Sassen, 2001). In an attempt at its definition, Ache (2000, pp. 704–705) argues that: “The city-region transcends the local level (as the basic administrative unit) and goes beyond the city level. In a spatial sense, the city region is very much like a conurbation or metropolitan area. Most importantly, the city region is far more of a complex system than a monolithic entity. The evolving city region constitutes a political and economic power field comprised of a variety of cultures and societies.” According to Davoudi (2003, p. 986), “The concept of city region (which is consistent with Geddes’ original definition of conurbation and Gras’ concept of ‘metropolitan economy’) moves beyond such distinction and covers not only the commuting hinterland of the city but also the whole area which is economically, socially, and culturally dominated by the city.” There are several other definitions aside from these (Rodríguez-Pose, 2008, discusses more on this).

Despite the multiplicity of definitions and conceptualizations, there are a number of commonalities. Fundamental to all is the existence of a core city and its surrounding hinterlands which are connected in diverse spatial relationships. As wide-ranging as the

typology of those relationships, most definitions agree on economic interactions characterised by flow of goods, services and people, while others articulate socio-cultural interactions (Rodríguez-Pose, 2008). This broad understanding is somewhat grounded in the theory of urban systems, which recognizes that cities and their surrounding areas are inter-linked functionally in a symbiotic relationship typified by economic flows including labour market interactions and trade among firms (Parr, 1987; Davoudi, 2008). The relationships, which do not necessarily respect spatial administrative boundaries, evolve with time.

Morphologically, city-regions are viewed to have zonal structure, comprising core and surrounding zones (Parr, 2005; 2008; Davoudi, 2003). The core zone is constituted by a contiguous expanse of built-up area forming the principal city, which mostly is the centre of service provision, whilst the surrounding zone is composed of peri-urban, urban and rural settlements, and forms a territory that, in terms of spatial relationships, is more connected to the core zone under observation than the closest city-region.

The mapping of city-regions has, over the years, involved the application of varied approaches and methodologies. These could be broadly categorized into two groups: top-down and bottom-up (Robson et al., 2006). Top-down approaches start with the identification of cities based on a number of criteria, such as economic and administrative functionality, centrality, population threshold and nodality. Subsequently, the areas of dominant influence of the cities are mapped. On the other hand, bottom-up methodologies, which have gained currency in recent decades partly as a result of increased computational power, provide room for the emergence of city-regions from commuting patterns derived through optimization algorithms.

Likewise, the definition of the geographical extent of city-regions has largely been based on two approaches. One relies on data on economic flows derived from survey statistical sources (for instance, see De Goei et al., 2010; Burger et al., 2011), while the other is based on an estimation of convenient commuting time, which is subsequently converted to distance, to and from the principal city (Davoudi, 2008). While the latter could be criticised as overly deterministic, the former approach comes across as reductionist, stemming from an over-emphasis on economic flows to the neglect of other complex social and cultural relationships that characterise city-regions. Furthermore, the economic flows are largely reduced to travel-to-work data.

Existing Governance Framework for Spatial Planning and Management

The existing spatial governance structure of Ghana is depicted in figure 1. In the last decade of the twentieth century, Ghana embraced the path towards decentralisation in spatial governance through the formulation of the Local Governance Act, 1993 (Act 462), which has recently been replaced with the Local Governance Act, 2016 (Act 936). Moreover, in 1994, the National Development Planning Commission Act (Act 480) was enacted. These acts have been the foundation of Ghana's decentralised spatial governance structure, which functions in three tiers: national, regional and district.

At the national level is the National Development Planning Commission (NDPC), the highest authority responsible for development planning policy in Ghana as stipulated by the National Development Planning Systems Act (Act 480). The commission is responsible for analysing the macro-economy and providing structural reform options for managing the country. The NDPC is mandated to prepare broad national development plans; formulate comprehensive national development planning strategies; and ensure that the policies, programmes and strategies are effectively carried out. In addition, the NDPC must also keep its national development plans under constant review, in the light of prevailing economic, social and political conditions at both domestic and international levels. Where appropriate, the commission is expected to make recommendations for the revision of existing policies and programmes. Regarding spatial management at the national level, the NDPC develops proposals for the protection of the natural and physical environment with a view to ensuring that development strategies and programmes are in conformity with sound environmental principles. In practice, the NDPC has been mainly responsible for planning for national socio-economic development and formulating Medium Term Development Frameworks and guidelines for local planning authorities such as District Assemblies, and sectoral-level authorities like Ministries, Departments and Agencies (MDAs). It also provides policy assent to the National Spatial Development Framework (NSDF) prepared by the Town and Country Planning Department (TCPD).

The TCPD also functions at the national scale, as the statutory land use/spatial planning department. It prepares the aforementioned National Spatial Development Framework

(NSDF), which provides vision, strategic framework as well as spatial strategies for the development of the country and the management of human settlements. The most recent of these frameworks that has been approved by the NDPC is the National Spatial Development Framework for 2015–2035.

At the regional level, the Regional Coordinating Councils (RCCs) are not only responsible for the coordination of the plans and programmes of local planning authorities (Metropolitan, Municipal and District Assemblies) but also their harmonization with national development policies for consideration and approval by the NDPC. The RCCs are also in charge of monitoring and evaluating the implementation of programmes and projects of local planning authorities at the regional level.

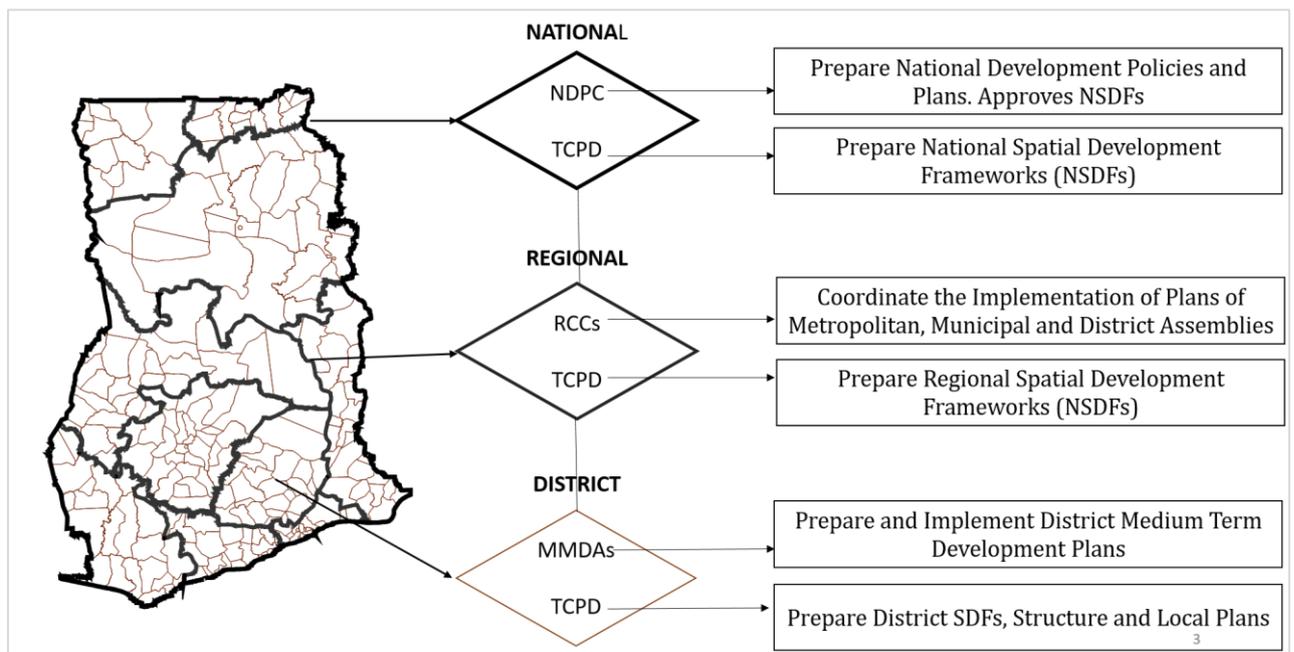
Additionally, there are Regional Planning Coordinating Units (RPCUs) that advise the RCCs on all matters relating to development in the region, including spatial and sectoral policies. Moreover, there are the regional TCPDs that formulate Regional Spatial Development Frameworks (RSDFs).

The third tier is constituted by Metropolitan, Municipal and District Assemblies (MMDAs), which function as development authorities at the local level. District Assemblies exercise the highest political and administrative authority at the local level. The local planning authorities are empowered to formulate Medium Term Development Plans for their respective districts. They are also expected to execute programmes and projects spelt out in the approved development plan for their district. Act 936 clearly specifies that the MMDAs are to initiate programmes for the development of basic infrastructure and provide municipal works and services in the district. Most importantly, the act indicates that MMDAs are responsible for the development, improvement and management of human settlements and the environment in the district. Like the regional structure, the District Assemblies also have District Planning Coordinating Units (DPCUs) that serve as the secretariat as well as developmental advisory bodies for the assemblies.

The MMDAs have several departments, including the TCPD, which is responsible for the preparation of spatial plans for the management of spatial development in districts. Under the current spatial planning regime, the MMDAs are required to formulate District Spatial Development Frameworks and structure plans; following this, , the

MMDAs prepare local plans for communities that fall within their local territorial boundaries. These plans, when approved, become the all-binding document for the management of spatial development at the local level.

Figure 1: Spatial Governance Structure of Ghana

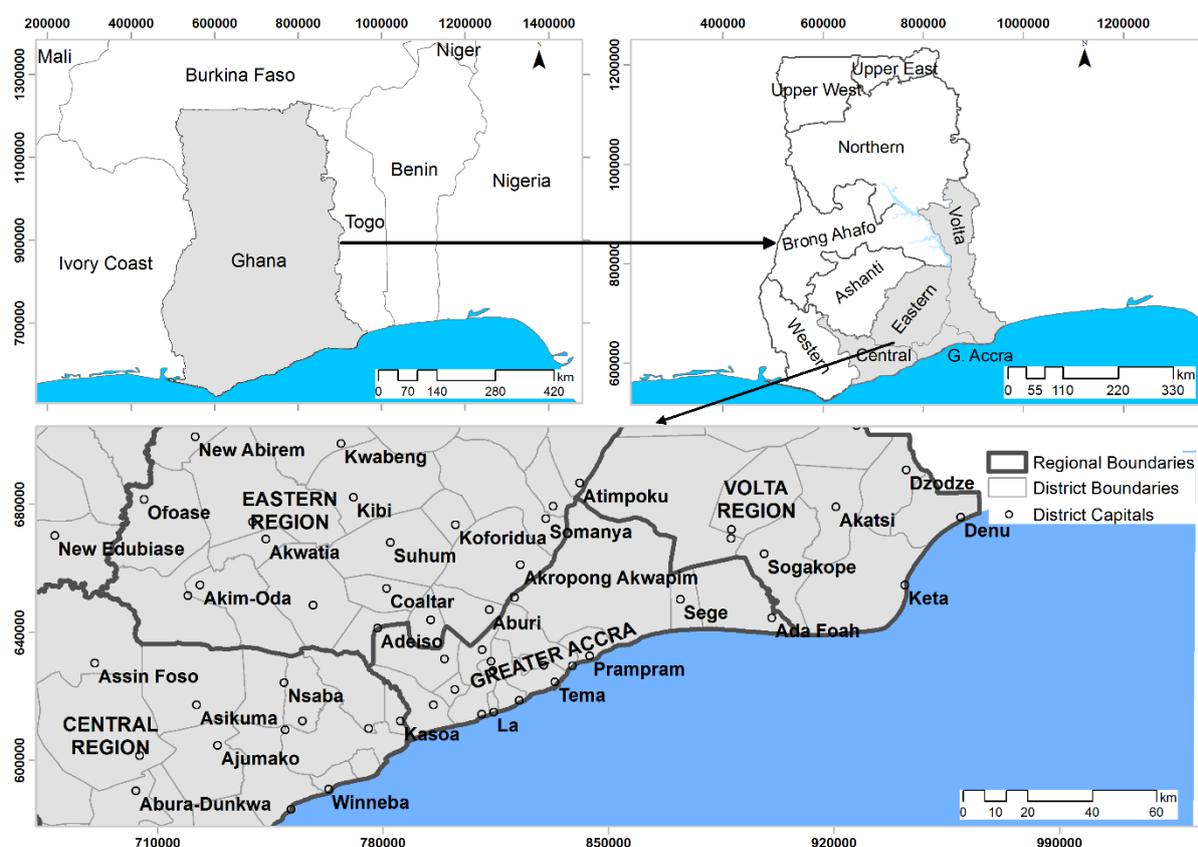


Source: Authors, based on review of statutory planning documents

Methodology

The study area, located in the southern part of Ghana, covers four administrative regions: Greater Accra in full, and parts of the Central, Eastern and Volta regions. Whilst, stemming from its capital status, Accra's influence is national, the impact of the city's urban expansion is highly pronounced in the four regions studied. Figure 2 shows the geographic location of the case study area.

Figure 2: Study Area in Geographical Context



Source: Authors, based on spatial data from TCPD of Ghana

The methodology for the research is outlined and discussed under three interconnected sub-themes: mapping and analysing historical urban expansion; understanding the existing spatial governance system; and delineating the Accra City-Region.

Mapping and Analysing Historical Urban Expansion

In mapping the historical urban expansion, data on land cover for 1990 and 2015 was accessed. For 1990, we accessed an already classified Landsat imagery for Ghana from the Forestry Commission through the Town and Country Planning Department. Using ArcGIS software package, two land cover classes—built-up and water—were extracted, while other land cover classes—encompassing grassland, forestland, croplands and bare land—were categorized as non-built-up.

For 2015 built-up, we obtained a 30m spatial resolution Landsat 8 OLI imagery with path 193, row 056 and 11 percent cloud cover from the United States Geological Survey (USGS). Geometrically, the image was referenced to the coordinate system: WGS 1984, UTM Zone 30N. Comparing the satellite imagery with very high resolution Google Earth imagery for the same area, it was realized that the cloud cover was mainly in non-built-up areas. That notwithstanding, we proceeded further to perform atmospheric corrections through the conversion of digital numbers to reflectance values using the semi-automatic classification pre-processing functionality in QGIS. To enhance the accuracy of classification, a Normalized Difference Built-up Index (NDBI) was computed.

Training samples were subsequently selected using the imagery's true band colour combination, the NDBI and a very high resolution Google Earth image for 2015. The training samples comprised three classes: built-up, which encapsulated all developed lands regardless of the use; non-built-up, which included forest, agricultural lands, grasslands, bare lands and rocks; and water. The imagery was then classified into the three categorical classes above using maximum likelihood algorithm in QGIS. Still within QGIS, and using 250 random points from Google Earth imagery, 82 percent overall classification was achieved.

In understanding the urban expansion within and across administrative boundaries, GIS shapefiles for the districts and regions were accessed from the TCPD through the LUPMIS system. Using ArcGIS software, the classified imageries for 1990 and 2015 were further analysed and juxtaposed to display the urban expansion that occurred over the 25-year period.

Understanding the Existing Spatial Governance System

In unravelling the existing spatial governance system, we contacted the TCPD and organized a meeting with senior planning officers from the head office. In addition, we accessed the statutory documents from which the existing system is derived. These include the Local Governance Act, 2016 (Act 936); the National Development Planning Systems Act, 1994 (Act 468); and the Land Use and Spatial Planning Act, 2016 (Act 925).

Delineating the Accra City-Region

As aforementioned, over the years, methodologies for delineating the geographical extent of city-regions have been based on data on travel patterns and estimations of convenient travel time. While the latter is overly deterministic, data on the former is virtually non-existent for Ghana, as with many countries in sub-Saharan Africa. This study, however, adopts a different approach based on Tobler's first law of geography, which postulates that closer things are more related (Tobler, 1970). The theory, though several decades old, has found relevance for spatial analysis even in the twenty-first century (Miller, 2004). Linking Tobler's law, which is also based on the concept of distance decay, to the understanding that city-regions are made of core cities and interconnected surrounding hinterlands, the study spatially maps the continuity in the distribution of population (rural and urban) and built-up areas around the core city, Accra. The approach also capitalises on existing data on the context.

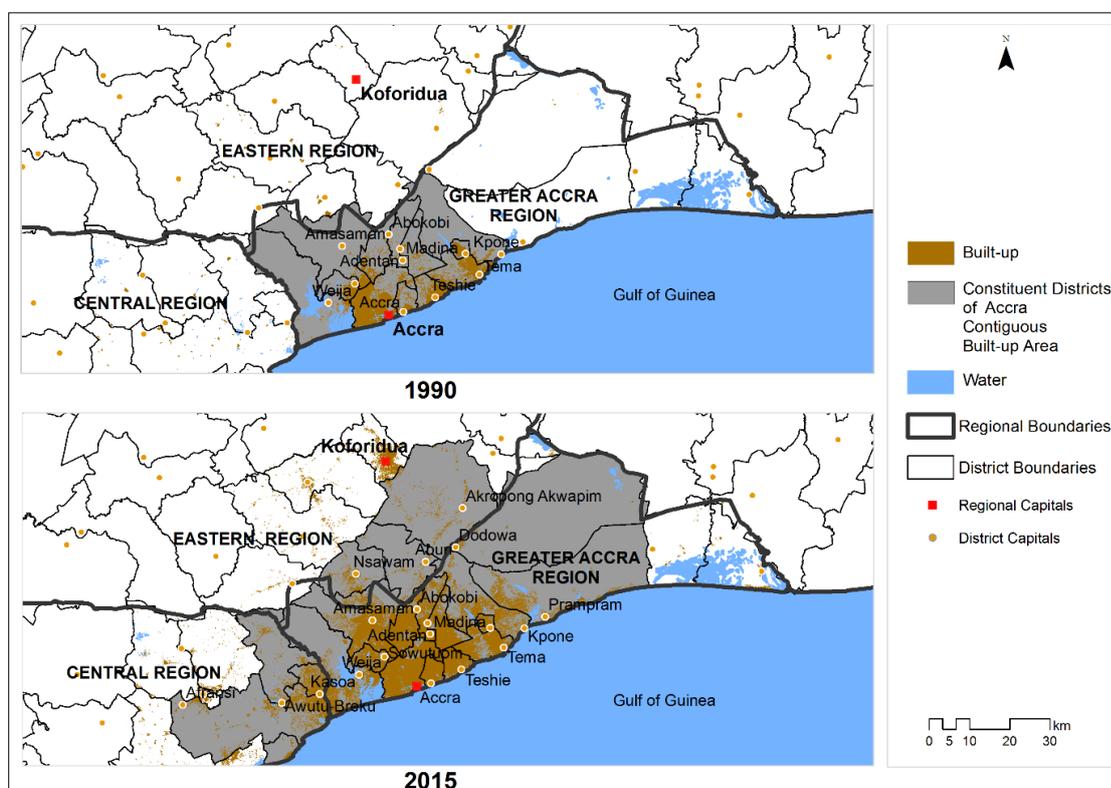
The research acquired data on the spatial distribution of settlements, classified into urban and rural, from the Ghana Statistical Service (GSS) and on the transportation network comprising trunk roads from the TCPD. In analysing the data and delineating the city-region, the study area was standardized into 5 km² cells and the total rural population within each cell was computed and spatially mapped using ArcGIS. Similarly, using the multiple attributes functionality of ArcGIS, the growth of urban settlements by size over the last intercensal period (2000–2010) was mapped and overlaid on the rural population distribution. The built-up areas for 2015, trunk roads, and regional and district boundaries were additionally overlaid, facilitating the delineation of the Accra city-region.

Results

The Dynamics of Historical Urban Expansion of Accra

Over the past two and a half decades, Accra has undergone considerable built-up expansion. Figure 3 spatially shows the historical expansion between 1990 and 2015 while table 1 depicts its spatial and numerical details. In 1990, the contiguous built-up area of the city, which was around 245 km², fell only within the administrative boundaries of the Greater Accra region. The 1990 built-up area intersected 12 districts¹—Accra Metropolis, Ledzokuku-Krowor, Ga Central, Ga South, Ga East, Ga West, La Dade-Kotopon, La Nkwantanang-Madina, Adenta, Tema Metropolis, Ashaiman and Kpone-Katamanso—with varying extents of coverage. Using Accra suburb as a starting point, the built-up area largely stretched easterly to Kpone, westerly to Weija and northerly to Madina, constituting about 16 percent of the total land area of the 12 districts and one-fifteenth of the total area of the administrative region.

Figure 3: Urban Expansion in Accra, 1990–2015



¹ The reference point is district boundaries as of 2012.

Source: Authors, based on processed Landsat imageries

By 2015, Accra had expanded rapidly in all directions except, of course, south, which is covered by the Gulf of Guinea. The contiguous built-up extent more than quadrupled to approximately 1,050 km² as depicted in table 1, and in the process, the city recorded an annual urban expansion rate of 6 percent. This rate is significantly high, especially when compared with that of Ghana's second largest urban region, the Greater Kumasi Sub-Region, which expanded at 5 percent annually over a similar period (Acheampong et al., 2016).

In contrast to 1990, the contiguous built-up area in 2015 extended beyond the administrative boundaries of the Greater Accra Region to encompass areas in the Central and Eastern Regions. In all, the built-up area spread to 20 districts—14 in the Greater Accra Region and 3 each in the Central and Eastern Regions. Thus, in addition to the 12 districts that absorbed the built-up extent in 1990, the city expanded to cover: Shai Osu Doku and Ningo-Prampram in the Greater Accra Region; Gomoa East, Awutu Senya East and Awutu Senya West in the Central Region; and Nsawam Adoagyiri, Akuapim North and Akuapim South in the Eastern Region. Again, using Accra suburb as a reference point, the city expanded to the west beyond Weija and Kasoa to Awutu Breku; easterly beyond Kpone to Prampram; northerly to Nsawam; and north-easterly to Dodowa, absorbing about a fifth (21 percent) of the total land area of the 20 constituent districts and 28 percent of the Greater Accra Region's land area (3,735 km²).

Table 1: Contiguous Urban (Built-up) Expansion of Accra, 1990–2015

District	Land Area (km ²)	1990		2015	
		Contiguous Built-up Area Constituents	Built-up (km ²)	Contiguous Built-up Area Constituents	Built-up (km ²)
Ga West	300.09	✓	10.36	✓	134.90
Accra Metropolis	139.93	✓	90.22	✓	128.50
Kpone-Katamanso	240.35	✓	7.53	✓	86.42
Ga South	342.40	✓	7.22	✓	75.58
Ga East	85.82	✓	13.83	✓	70.89
Tema Metropolis	87.99	✓	41.42	✓	65.86
Adenta	78.10	✓	7.71	✓	59.55
La Nkwantanang-Madina	71.02	✓	4.51	✓	46.68
Ledzokuku-Krowor	47.67	✓	26.52	✓	42.13
Ga Central Municipal	49.08	✓	12.36	✓	35.76
La Dade-Kotopon	36.10	✓	13.34	✓	34.52

Ashaiman	18.58	✓	10.56	✓	15.11
Gomoa East	540.44			✓	76.82
Ningo-Prampram	623.65			✓	54.86
Awutu Senya East Municipal	108.17			✓	38.54
Akuapim North	614.34			✓	24.92
Nsawam Adoagyiri	175.27			✓	20.79
Awutu Senya West	244.83			✓	20.78
Akuapim South	224.54			✓	9.52
Shai Osudoku	970.57			✓	7.69
Total	4998.97		245.58		1049.81

✓ = Constituent

Blank = Non-constituent

Source: Authors, based on analysis of Landsat imagery

Examining the Relevance of the Existing Spatial Governance Framework: Historical and Contemporary

It is imperative that in examining the relevance of the existing spatial governance structure, critical attention is accorded the spatio-temporal dynamics that have evolved through time. Pursuant to this, two epochs are examined: 1990, which gives a contextual image of the urban spatial structure prior to the adoption of the decentralization path; and 2015, which provides a more contemporary context of the evolution of the overall spatial structure. Figure 4 shows patterns in the spatial structure of Accra built-up areas between 1990 and 2015.

Prior to examining the relevance of the existing spatial governance framework, it is important to point out that over the past two and a half decades, administrative district boundaries have changed at least three times, and in all instances, the area under consideration was affected. To enhance clarity, the current district boundaries that were created in 2012 are used throughout. Figure 4 is an overlay of 1990 and 2015 built-up extents on district and regional administrative boundaries.

Starting from 1990, it appears the spatial governance framework considered the built-up structure as of the time. From the bottom, whilst establishing District Assemblies (DAs) and empowering them with the authority to plan and implement plans in districts, the decentralization structure recognised cases where urban expansion coalesced two or more administrative district boundaries. For instance, from figure 4, an urban extent continuum is observed from La in the La Dade-Kotopon district (AMA

as of 1990) to Sowutuom of Ga Central (Ga as of 1990). Not only were such areas recognised, but more importantly, as earlier stated, the decentralization structure established Regional Coordinating Councils (RCCs) as administrative units to coordinate the plans of districts within an administrative region.

Preparing two or more separate plans for one contiguous built-up area required significant coordination in order to avoid chaos, hence the role of the RCCs. For instance, in such cases, it is highly daunting—if not impossible—to isolate the impact of a plan, programme or project in one district on the other. Under the current structure, whilst the coordination role of RCCs could be very arduous, guidance could be sought from RSDFs' documents inherent in the system. However, it should be mentioned that the SDFs only became part of the structure in 2012 under the new three tier planning system. Thus, the governance framework in the 1990s accounted for the then-existing spatial structure.

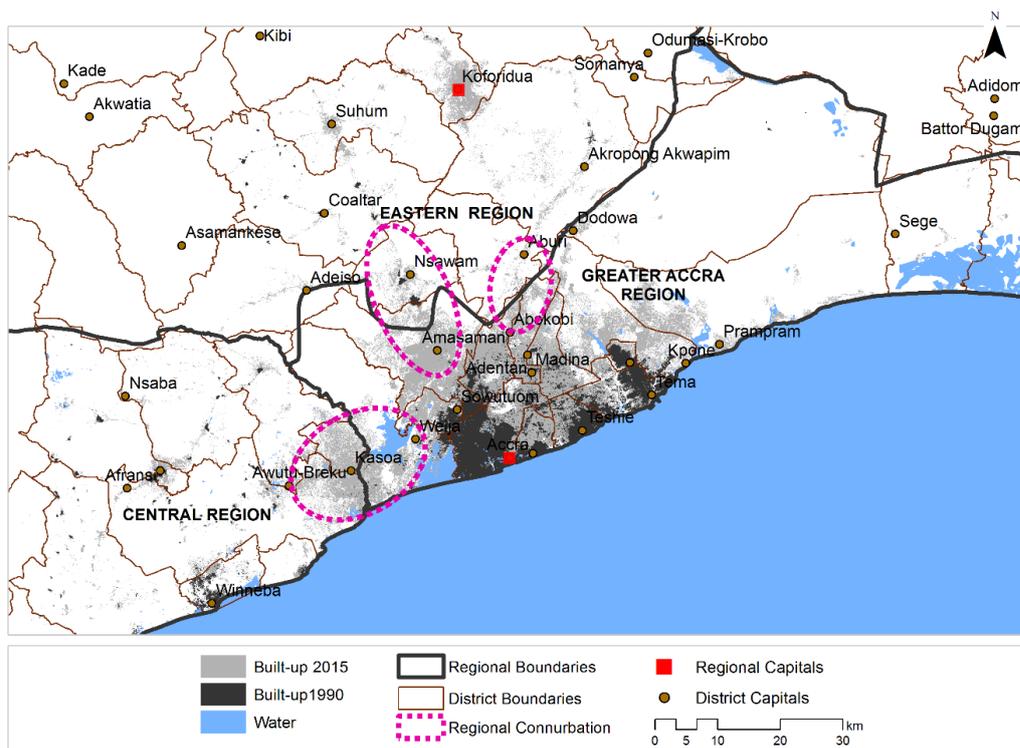
However, about twenty-five years down the line, the urban spatial structure has evolved immensely, laying credence to the need to re-examine the contemporary relevance of the governance framework. The relevance and importance of the RCCs, established in 1993, appear to have increased as of 2015, as more districts merge into one. For instance, from Prampram to Awutu-Breku, La to Nsawam, a continuous urban development is observed, as shown in figure 4. Indeed, as earlier analysed, urban extent continuum cuts across 20 separate administrative districts, requiring coordination among their respective DAs. Thus, unlike in 1990 when contiguous urban expansion was largely among districts within the same administrative region, the case in 2015 is far more complex. As noted earlier, the 20 districts that constitute the contiguous Accra built-up area fall within 3 different administrative regions: the Greater Accra, Central and Eastern Regions. From figure 4, there have been at least 3 areas of regional conurbation: a continuous expansion from Madina in the Greater Accra Region to Aburi in the Eastern Region; expansion from Sowutuom to Nsawam in the Greater Accra and Eastern Region respectively; and an expansion from Weija in the Greater Accra Region to Awutu Breku in the Central Region.

A major problem arises here: whilst the continuous urban expansion transcends the boundaries of administrative regions, the mandate of RCCs is only intra-region. In other words, the spatial governance framework in its current state does not have inherent

structures and mechanisms for fostering coordination among District Assemblies located in different administrative regions, even when there are continuous built-up lands among the districts. The coordination role of RCCs is by law (Local Government Act, 2016, [Act 936]) restricted to within an administrative region. Thus, at the sub-national level, it is legally impossible to coordinate the plans of districts across two or more regions. The structure of the governance framework, therefore, falls short of the mega-urban spatial structure that has evolved in recent years.

In a nutshell, while the current spatial governance framework is useful in some areas, it is deficient in other aspects, especially taking into consideration the enormous urban expansion that has taken place over the years and its resultant spatial structure. Hence, the spatial governance framework requires a comprehensive review and update.

Figure 4: Built-Up Extent of Accra Area, 1990–2015



Source: Authors, based on processed Landsat imageries

Exploring the Emerging Accra City-Region and Understanding its Spatial Characteristics

Having previously established how the urban expansion has outgrown the existing spatial governance structure, this section explores the bigger emerging city-region and subsequently offers policy recommendations for its management and possible integration into the spatial governance framework.

In carving out the city-region, figure 5 has been prepared. By mapping the contiguity in the distribution of rural population around urban centres, we are not only served with first-hand information on the spatial relationship between urban and rural settlements but also have an idea of the sphere of influence of the former. Moreover, as shown by figure 5, the intensity in the flow of the rural population appears to diminish with increasing distance from the core cities, depicting the concept of distance decay and Tobler's first law of geography, which underpinned the study's approach, as stated previously. Upon identifying the city-region, it is important that its spatial characteristics are examined.

The delineated Accra City-Region (ACR), as presented by figure 5, occupies 15,352 km² of land, constituting about 6.4 percent of the total land area of Ghana. The city-region spans four administrative regions: Greater Accra, Eastern, Central and Volta Regions. In addition to covering all 16 of the districts in the Greater Accra Region, ACR encompasses: 14 districts in the Eastern Region (Birim Municipal, Upper Manya, Akuapim North, Yilo Krobo, New Juaben, Asuogyaman, Lower Manya Krobo, Nsawam Adoagyiri, Akuapim South, Suhum Municipal, Ayensuano, East Akim and Upper West Akim); 7 districts in the Central Region (Awutu Senya East Municipal, Awutu Senya West, Gomoa East, Effutu, Agona West and Gomoa West); and 4 districts in the Volta Region (Keta Municipal, South Tongu, North Tongu and Central Tongu).

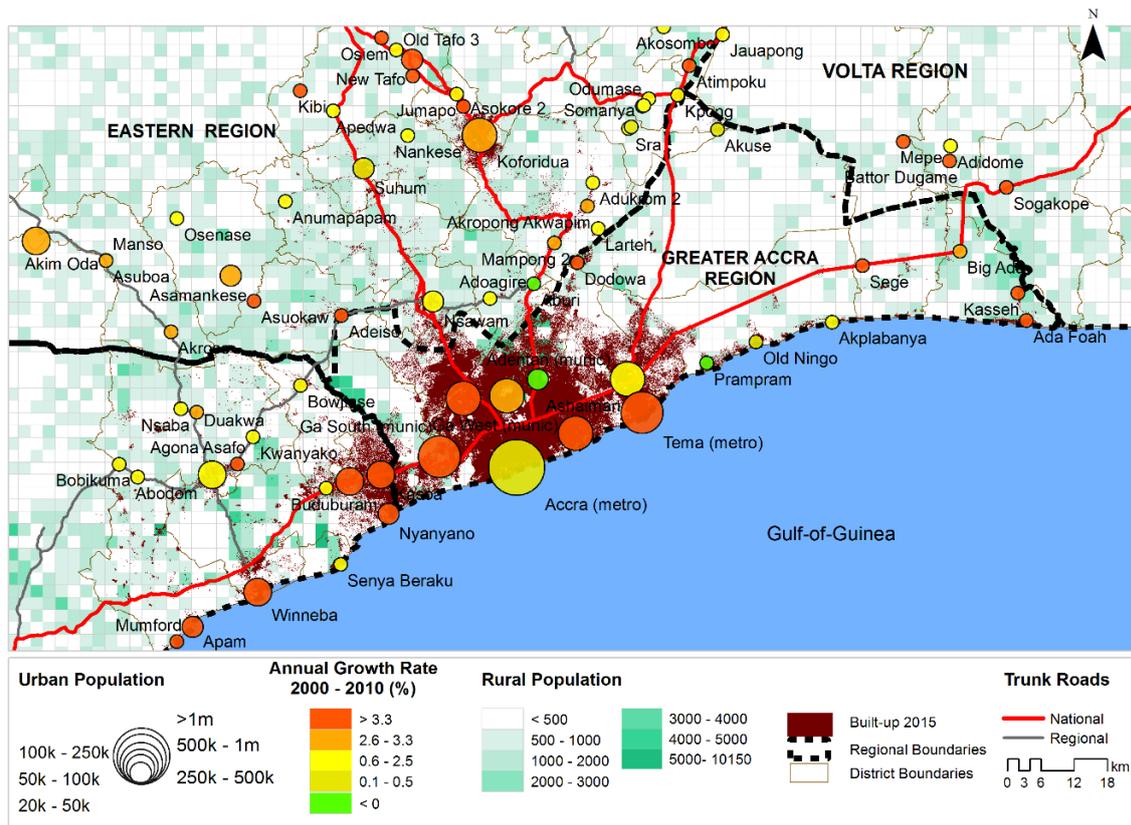
Population data for the settlements in the area for 2000 and 2010—the two most recent census years—was obtained from the Ghana Statistical Service. While ACR encompasses about 6.6 percent of the land mass of Ghana, the city-region accounts for about 27 percent of the total population of the country. Moreover, as of 2010, it included around 40 percent of Ghana's national urban population. Out of the city-region's 6.6 million residents, 5 million were urban dwellers. ACR's urban population, distributed over 80 settlements, grew at an annual rate of 3.3 percent over the first decade of the twenty-first century and concomitantly increased in urbanization level from 70 to 75 percent. The urban population could further reach 11.2 million by 2035, which will push ACR's

urbanization level to 92 percent. By growing at annual rate of 2.6 percent, the area increased in population by approximately 1.5 million between 2000 and 2010, and is further projected to reach about 12.3 million by 2035 based on the TCPD's settlement projections (2015).

At the settlement level, the urban population ranged from about 5,000 in Nankese in the Eastern Region to 1.85 million in Accra Metropolis in the Greater Accra Region. The urban settlements, based on growth between 2000 and 2010, have been classified into five groups, namely: settlements that grew faster than Accra City-Region's urban average (26); settlements that grew at least at the pace of ACR but slower than the city-region's urban average (11); settlements that grew slower than the city-region but faster than its rural average (34); settlements that recorded slower growth than the city-region's rural average (5); and settlements that declined (3), as depicted in figure 5.

The city-region also recorded marginal growth in rural population from 1.57 million in 2000 to 1.67 million in 2010, reflecting an annual growth rate of 0.6 percent. Owing to urbanization, the rural population is forecasted to decline to about 1 million by 2035. The rural population of the city-region was absorbed by about 3,900 settlements in 2010. Spatially, the rural population is relatively dense from the outskirts of Greater Accra towards the Eastern Region.

Figure 5: Proposed Accra City-Region



Souce: Authors, based on processed satellite imageries, population and spatial data from GSS and TCPD

Discussion

As evident from the results, over the past two and a half decades, urban expansion has been particularly massive and rapid in Accra City-Region. This has been in tandem with a number of factors including the economic growth, population growth, migration and urbanization that characterised the period. Information extracted from the GSS (2013) and TCPD (2015) provides additional detail about these trends. On the economic front, there was a tenfold increase in GDP between 1994 and 2010, with the region accounting for close to a quarter of the country's GDP in the latter year. Moreover, the region annually received at least three-quarters of the country's Foreign Direct Investment (FDI) projects between 2002 and 2012. Regarding migration, the Greater Accra Region recorded the highest positive annual net migration between 2000 and 2010. The region also gained an additional 2.8 million urban dwellers between 1984 and 2010, leading to an increase in urbanisation level from 83 to 99.5 percent. Collectively, these factors offer explanations for the outstandingly high urban expansion recorded over the period.

The rapid expansion has occasioned an evolution in the overall urban spatial structure of Accra City-Region as shown under the results section. However, while the urban spatial structure evolves, the corresponding spatial governance system, especially in terms of the institutional framework, has been static. A typical case is the expansion of contiguous built-up area, merging districts in multiple administrative regions. The existing decentralization and spatial governance framework arrangement have no layer responsible for the planning, management and coordination of such dynamically evolving areas, which, in effect, undermines the contemporary relevance and effectiveness of the governance structure.

Several reasons could explain the gap between the evolving urban structure and the spatial governance framework. The most obvious is the sheer speed of organic expansion of the city over the past two and a half decades. Multiple studies (Anokye et al., 2013; Boamah et al., 2012; UN-HABITAT, 2011) have chronicled how development proceeds in Ghana without any planning consent. Affirming these, through discussions with key planning stakeholders in Accra, it was brought to bear how some developers—be it households or corporate entities—develop with no recourse to the planning system. Indeed, the 1990 master plan for Accra did not envisage the emergence of such large contiguous urban extent, as it proposed the Kasoa enclave as vegetation/green area. However, with weak enforcement of plans and planning regulations, the area has been urbanized. Thus, the historical urban expansion, which has created a gaping hole in the existing spatial governance system, was not anticipated nor planned.

The governance-space mismatch presents challenges that manifest in diverse ways. From the perspective of urban and regional planning within the context of Ghana, there is the situation where multiple disjointed and uncoordinated plans are prepared at different times for one spatially contiguous and integrated urban area. Under the current spatial governance arrangement that promotes the formulation of RSDFs, the Accra contiguous urban extent captured in figure 4—intersecting three administrative regions—will have three different spatial development frameworks, one for each administrative region. The formulation of a SDF for the Greater Accra administrative region has been initiated and was in concluding stages as of June 2017. Meanwhile, the adjoining Central and Eastern Regions, which are the direct recipients of the urban expansion of Accra, are not included in the ongoing SDF project.. It is worth noting that

most people in the newly urbanising areas—such as Kasoa and Awutu-Breku in the Central Region, and Aburi and Nsawam in the Eastern Region—commute to Accra on a daily basis. In essence, any framework prepared exclusively for any one of the administrative regions in the contiguous area will not only overlook the evolved and still evolving urban spatial structure but also undermine the deeply intrinsic spatial relationships that characterise the area.

After formulating a SDF for Greater Accra, the same will be prepared for the Eastern and Central Regions, but most likely at different times. This arrangement is inefficient and deprives the regional administrative units the opportunity to share costs. Moreover, the implementation of such frameworks is made enormously daunting, especially in harmonizing programmes and projects.

Again, by failing to recognise the evolving city-region, the current institutional framework equally loses sight of the diverse opportunities and challenges that come along with it. For instance, in addition to reducing the cost of preparing multiple disjointed plans through the formulation of one integrated SDF for the functional area, there is the opportunity of tapping into the overwhelming critical mass which the city-region presents. The massive population in the city-region offers the threshold for delivering high-level infrastructural facilities, which might not have been justified by considering each administrative region independently. All these opportunities are lost under the existing spatial governance system.

Making Spatial Governance Systems More Responsive to the Evolving Urban Spatial Structure

To improve the responsiveness of the spatial governance system, the following recommendations are made:

Recognise the city-region and its opportunities, and plan for it. Perhaps the most important aspect for integrating the massive urban expansion that has occurred over the years into the existing spatial governance structure is recognising the resultant city-region, understanding its characteristics and planning for it. In the analytical section, Accra City-Region was identified and its characteristics detailed. The region presents multiple opportunities for both public and private investment. By holding more than a

quarter (27 percent) of the total and 40 percent of the national urban population, ACR presents the threshold required for the provision of high-level services and infrastructure. For instance, whilst the 4 million people in the Greater Accra Region might not be enough impetus for the provision of intra-urban rail infrastructure, which is particularly deficient in the region, the 6.5 million dwellers of the city-region could certainly be a better platform, if not more than enough, to meet the demand threshold. Thus, the micro-foundations of agglomerations—the sharing, matching and learning espoused by Duranton and Puga (2004)—could be well maximized in the city-region. For the private sector, the huge population of the city-region is a potential market to explore. Through the recognition of these potential opportunities, city authorities could advertise, convince and seek investment from private entities or explore public–private partnership models.

Establish Joint Development Planning Boards and plan for the city-region. Upon recognising the city-region and the opportunities it presents, tapping the benefits requires effective planning and management of the area as an integrated spatial unit. The challenge here, however, emanates from the fact that the operational spatial governance structure recognises three layers of administrative boundaries: national, regional and district. In view of this, planning for ACR will not only require an official designation of the area as a planning area, but also the composition of an administrative structure to oversee its planning and management.

Despite the challenges of the existing institutional arrangement, the National Development Planning System Act, 1994 (Act 480) offers some hope for integrating evolving areas such as ACR into the spatial governance system. Section 13 of the act proposes the composition of a Joint Development Planning Board (JDPB) with an executive instrument for specially designated planning areas such as ACR. Upon their formation, JDPBs are empowered by the act to, where necessary, modify the powers of the District Planning Authorities and the Regional Coordinating Councils wholly or in part within the designated area as may be necessary to provide for their effective functionality. The act further clarifies that for the avoidance of doubt, it is declared that a Joint Development Planning Board shall only be established for the purposes of formulating and supervising the implementation of development plans for a designated area. In addition, a Joint Development Planning Board is vested with the authority to

determine the economic, social, spatial and sectoral policies of the designated area, as well as the mobilisation of human, physical and financial resources for the development of the area.

Procedurally, the act requires that development plans prepared by a Joint Development Planning Board be submitted to the NDPC for consideration with copies distributed to the affected District Planning Authority and Regional Coordinating Council. Upon approval of the development plan by the commission, the plans of the affected District Planning Authority are required to be modified accordingly.

While they are yet to see the light of day, the provisions of section 13 of the aforementioned act are extremely relevant to the effective planning and management of the city-region. It is therefore proposed, based on the law, that a Joint Development Planning Board be constituted for Accra City-Region. The board's responsibility should be to coordinate local plan formulation and implementation in the city-region. Regarding the SDF, the board should have the mandate of formulating one for the city-region. Upon the declaration of ACR as a planning area and the establishment of the ACR Development Planning Board, the spatial governance system would be in sync with the rapidly evolving spatial structure, thereby improving its contemporary relevance.

Implement plans and enforce development management regulations for the city-region. Notwithstanding the significance of recognising and planning for ACR, these are not, independently, sufficient actions. Indeed, it is imperative to understand how ACR evolved in the first place. As advanced earlier, the emergence of the city-region was a result of rapid urban expansion, which largely happened without the consent of the planning system. This brings to the fore the gap in plan formulation and implementation. Thus, if the poor implementation of plans and weak enforcement of development management regulations continue, the integration of the ACR Joint Development Board into the current system will be irrelevant in a matter of time. It is therefore crucial that attention is accorded the implementation of plans by the proposed board.

Engender coordination in plan formulation and implementation among districts. Among other things, a more effective management of the evolving spatial structure will involve assisting MMDAs to understand the intricate spatial relationships that exist in

the city-region; for instance, how the planning policies, programmes, projects and regulations in one district affect others, especially neighbouring districts. This, in a way, could engender some form of natural coordination among the DAs, one that is not only intra-regional but also inter-regional, where districts in one region recognise the need to coordinate with surrounding districts in other administrative regions. For instance, the District Assemblies of Ga South and Awutu Senya East in the Greater Accra and Central Regions, respectively, could coordinate with each other in the formulation and implementation of district plans if they understand the far-reaching consequences of their actions on one another.

Conclusion

The rapid urbanization phenomenon has occasioned wide-ranging spatial processes including the expansion and merger of cities with no recourse to traditional administrative boundaries, resulting in the emergence of city-regions. Despite the multiplicity of studies on the phenomenon, the spatial governance implications of the emergence of city-regions remains a huge gap in the urban planning literature. Moreover, approaches to delineating city-regions have, over the years, been restricted to estimations of convenient travelling time and data on travelling patterns. This study used Accra, Ghana, as a prism through which the spatial governance implications of the evolution of city-regions can be viewed while adopting a unique approach inspired by Tobler's first law of geography and the concept of distance decay. The methodological approach, which involved spatial mapping of rural-urban population continuum, transportation network, built-up patterns and GIS techniques, proved useful in

delineating the geographical extent of Accra City-Region. After analysing the historical urban expansion, the evolving spatial structure was juxtaposed with the corresponding existing spatial governance framework, thereby enabling a subsequent examination of the contemporary relevance of the latter. The research finds a gap between the rapidly emerging spatial structure and the operational governance framework of Ghana, as there is no provision in the latter for the planning and management of the evolving city-region that territorially spans multiple administrative regions. Going forward, within the local context, it is imperative that the lagging spatial governance system be made more responsive, if not proactive, to the evolving spatial structure of the city-region. It is equally important that urban policy recognises city-regions such as ACR and the diverse opportunities they present; plan for them through joint development planning boards; and foster natural coordination, even among local planning authorities across different administrative regions. Globally, the research practically illustrates that alternative methodologies such as spatial mapping of rural and urban population continuum and GIS techniques, grounded in theoretical conceptions like Tobler's first law of geography and the concept of distance decay, could be useful in studying city-regions.

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