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Urban resilience in climate change hotspot

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ABSTRACT

Past and ongoing research shows that African cities remain one of the vulnerable zones of climate change, yet the least prepared. With an expected increase in climate change impacts coupled with rapid urbanization in African cities, this paper inquires: what if more attention is devoted to urban planning in the efforts towards addressing climate change issues and building resilient urban futures in Africa? Using available and relevant literature and Ghana as a case study, it argues that it is about time African cities begin to address climate change through urban planning. This paper anayzes the unexplored potentials of urban planning in addressing issues of climate change in the continent, and makes recommendations for the engagement of urban planning in developing resilient African cities.

1. Introduction

In 2019, the Washington Post ranked African nations as the most susceptible to changing climate, and the most ill-prepared in the world (Washington Post, 2019). While Fig. 1 shows that climate change impacts are widespread across urban and regional Africa with the World Economic Forum in 2018 describing Africa as being in the eye of the climate change storm, the continent's rapidly growing conurbations remain the worst defenseless worldwide (Dahir, 2018). Since the 1990s, African cities have experienced unimaginable impacts of climate change (Cobbinah and Addaney, 2019), and today 79 out of the 86 African cities that are among the rapidly expanding conurbations in the world are challenged with extreme risk due to climate change (Hewston, 2018). Given the sea level rise, warming temperatures, erratic precipitation regimes causing catastrophic flooding and prolonged droughts and threatening rapidly-expanding populations and investment opportunities, building resilience is the continent's primary surebet of survival (see Broto, 2014). Yet, national governments' commitments to implementing urban resilience strategies have not been encouraging (see Cobbinah and Addaney, 2019) despite being signatories to all transnational climate treaties (e.g., the 2016 Paris climate accord, 1995 Kyoto Protocol). To enable this global response particularly in Africa, the UN Secretary-General António Guterres in 2019 convened a climate meeting attended by world leaders, the private organizations and civil society representatives to intensify and quicken action on climate change. This summit emphasized six key areas of consideration among which cities and resilience were paramount (United Nations, 2019).

Targeted investment in urban resilience strategies will not only enhance urban living but also improve adaptation, minimize climate change related impacts, and support other infrastructure development across growing African conurbations. Poku-Boansi and Cobbinah (2018) note that investment in city resilience remains an approach for operative and well-organized strategy to managing risks and impacts associated with climate change. The scale of impacts associated with climate change in Africa, and the opportunities presented by climate resilient cities – i.e. developing a capacity for an urban system to contain shocks and stresses generated by climate change while maintaining its functionality by adapting, reorganizing and evolving into an aspired and improved state (Folke, 2006) – require scholarly attention.

Given Africa's stature as a continent hosting fastest growing cities, and the possible socio-environmental transformations that may emerge from the increased resilience building, the objective of this paper is to offer an insider viewpoint that signals urban planning academics and policy-makers to probable consequences of embracing resilience for urban development and addressing climate change in Africa through urban planning. Urban planning, as used in this analysis, refers to a highly political activity generally involving characterization of conceptual norms for space and how these norms are applied in space through state control (Korah et al., 2017; Levy, 2016). Refocusing planning practitioners on the implications of their work for human health and well-being (Barton and Tsourou, 2013), urban planning incorporates formal, procedural, and normative principles as well as the process of actualizing these ideas (Alfasi & Portugali, 2007; De Roo, 2010). It is within this understanding that this paper demonstrates the importance of urban planning in advancing climate resilient action in

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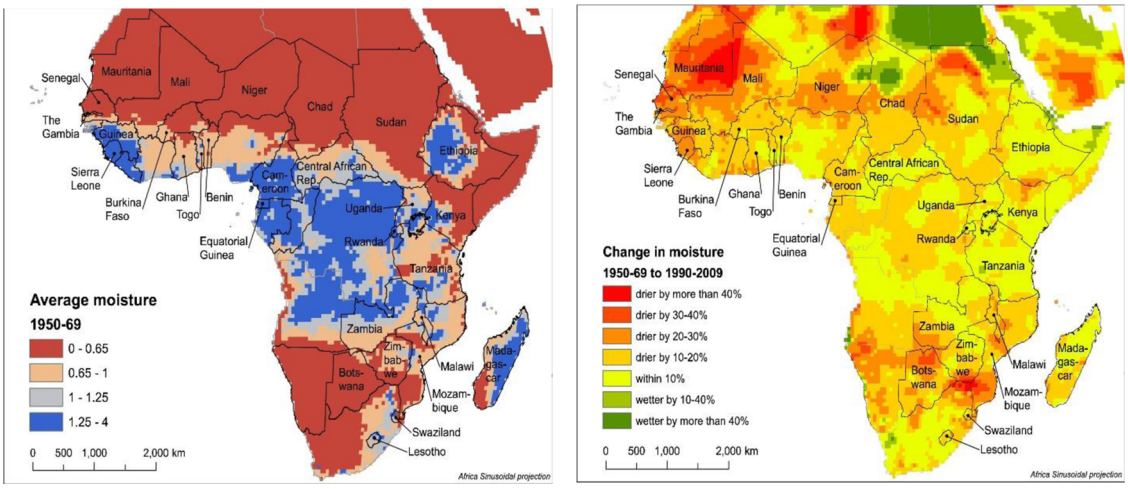

Fig. 1. Evidence of climate change in Sub-Saharan (1950-2009).
Source: Henderson et al. (2017, p.61)

African cities. This analysis will therefore be of interest to researchers dealing with general climate resilient-focused development matters in Africa's urban space.

2. Climate resilience and urban development

Africa contains the main remaining strand of the 100 rapidly growing global conurbations which are ranked as 'extreme risk' in the climate change vulnerability index (see Fig. 2). Unfortunately, these cities are also experiencing increasing urban population explosion, consisting of 15 national capitals and many of Africa's major commercial hubs, including Kampala (Uganda), where the population is expected to rise by an average of 5.1 % between 2018 and 2035; Dar-es-Salaam (Tanzania) population will grow by 4.8 %, Abuja and Lagos (Nigeria) population will grow by 4.5 % and 3.5 % respectively; with Addis Ababa (Ethiopia) recording 4.3 % in population growth. Similar findings were reported in Luanda (Angola) where the population is expected to grow by 3.7 % (Hewston, 2018). These high-risk cities already encounter everyday struggles to achieve their fundamental infrastructure requirements such as social amenities and disaster management structures, with extremely defenseless inhabitants (Korah and Cobbinah, 2016; Simon, 2014). Considering the current and projected population and climate change threats, the burden on vital amenities in these cities will only deepen. As a result of growing climate and population pressures, urban studies scholars demand timely intervention to safeguard this climatically fragile urban space (Cobbinah and Addaney, 2019; Hewston, 2018).

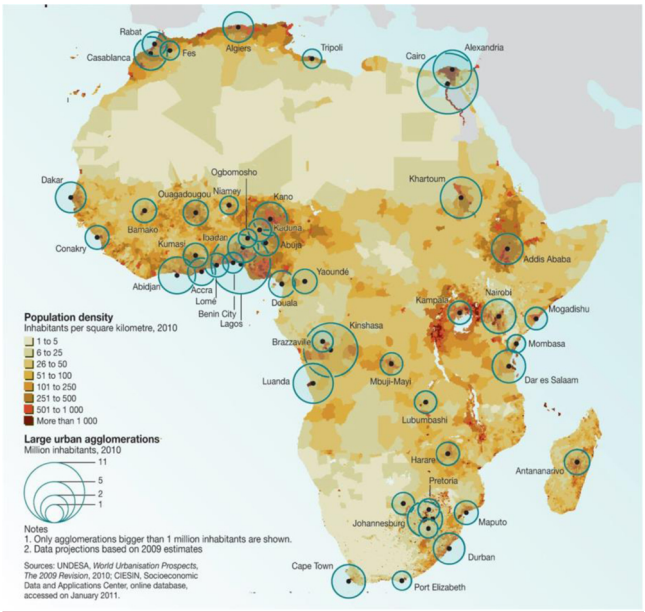

Fig. 2. Population distribution in Africa.
Source: Pravettoni (2011)

Despite widespread climate change impacts and growing vulnerability, urban Africa struggles to build resilience. Cobbinah et al. (2015) identify capacity constraints of African cities in relation to resources (both logistics and personnel) to ensure the implementation of resilience approaches in order to adequately address and adjust to the emerging challenges. As a consequence, flood events have become more frequent and catastrophic, urban poverty is on the rise (UN-Habitat, 2010), vulnerable population occupation in the urban space is increasing (Cobbinah et al., 2015), and unrelenting economic hardship (Potts, 2009) creating difficult and uncertain future. For example, in Dar es Salaam (Tanzania), research indicates that approximately 70 % of the residents reside in slums and/or unplanned communities lacking essential services (Jenkins et al., 2014), located in zones (e.g., wetlands) serving as nature reserve and defenses against natural occurrences including flooding. Despite Africa's negligible contribution to climate change (about 4% of the global total emisions in 2017), the continent is faced with increased threat as global emissions are increasing (Dahir, 2018). In 2019, many African leaders, the business community and civil-society representatives congregated for Africa Climate Week 2019 to discuss strategies for consolidating multi- and trans-sector approach to addressing climate change. There was a consensus among participants on the urgency to bring into line climate change strategies with city level development plans and to guarantee local and global financial support to execute action plans on climate change (Washington Post, 2019). This summit is one of several summits and agreements that African governments are signatories to. The present state of African cities does not suggest any positives from these public showcasing (see Cobbinah et al., 2015). At this point, there is no guarantee that with the needed external funding support, African cities will be able to build climate resilience, as that requires considerable political will and resources, in addition to popular support recognizing the need for climate action prioritization.

Table 1
Population Growth Trajectory of Major Ghanaian cities.
Source: Various censuses of Ghana Statistical Service (1970, 1984, 2000, 2010)
*Projections based on 2010 population census.

City	1970	1984	2000	2010	2020*
Accra	624,091	969,195	1,658,937	2,070,463	3,070,463
Kumasi	346,336	469,628	1,170,270	2,035,064	3,035, 064
Sekondi-Takoradi	143,982	188,203	289,595	539,548	946,000
Tamale	83,653	135,952	202,317	371,351	642,000
Cape Coast	56,601	65,763	82,291	169,894	259,894
Tema	60,767	100,052	141,479	139,784	155,782
Koforidua	46,235	58,731	87,315	120,971	156,266
Ho	24,199	37,777	61,658	104,532	149,998
Sunyani	23,780	38,834	61,992	74,240	80,299
Wa	13,740	36,067	66,644	71,051	78,107
Bolgatanga	18,896	32,495	49,162	65,549	74,430

3. Climate resilience in African cities: the Ghanaian experience

Ghanaian cities are increasingly exposed to the impacts of climate change and unplanned urbanization (Darkwah et al., 2018). As presented in Table 1, major cities such as Accra, Kumasi, Sekondi-Takoradi and Tamale are fast urbanizing and sprawling into neighbouring districts. An outcome of this uncontrolled growth has been the destruction and pollution of water resources, encroachment and change of use of nature reserves, rapid decline in urban agricultural land, increased demand for energy and adoption of unsustainable energy options (Korah and Cobbinah, 2016). Similarly, these cities are exposed to the impacts of climate change such as damaging flood events (see Table 2). Available literature (e.g., Darkwah et al., 2018; Poku-Boansi and Cobbinah, 2018) indicates that Ghanaian cities are highly vulnerable and least prepared in terms of building resilience for future shocks. Interesting, several studies (e.g., Adarkwa, 2012; Quagraine, 2011) have proposed a number of strategies for developing resilient futures: for example, considerable attention to all important land uses including green spaces, nature reserves, and open spaces, as well as adherence to urban development protocols.

Underlying these resilience recommendations is the relevance of urban planning. Unfortunately, Darkwah et al. (2018) characterize urban planning in Ghanaian cities as one of a knee-jerk reaction to emergencies and disasters, delivering limited meaningful outcomes. Ghana's experience with urban planning dates back to the 1877 when it was introduced by the British during European colonization to address issues of poor hygiene and sanitation in Accra, Ghana's national capital (Quarcoopome, 1993). With the introduction of the Town and Country Planning Ordinance (Cap 84) and the establishment of the Town and Country Planning Department, a national approach to urban planning emerged to promote sustainable development of human settlements (Cobbinah & Korah, 2016; Fuseini and Kemp, 2015). Further legislative and policy frameworks such as the Local Government Act of 1993 (Act 462) - now Local Governance Act of 2016 (Act 936) -, National Development Planning Systems Act of 1994 (Act 480), the Land Use and Spatial Planning Act 2016 (Act 925) and the National Urban Policy Framework (2012), and the National Building Regulation Act (LI 1630) were introduced as part of the evolving governance system to support urban planning.

Despite the availability of the urban planning administrative framework and legislation, Ghanaian cities remain a product of planning systems' inadequacies (e.g., poorly resourced urban planning agencies), land management distortions (e.g., land tenure challenges),

Table 2
Chronology of some devastating flood events in Ghana.
Source: Adapted from Daily Guide (2015) cited in Gough et al. (2019, p.163).

Date	Nature/Characteristics	Impact	Regional Spread
4 July 1968	Accra recorded heaviest rainfall in nine years	Normal life of the city brought to standstill	Accra
29 June 1971	Downpour started midnight	Houses collapsed, thousands of people rendered homeless	Sekondi-Takoradi
5 July 1991	Downpour started midnight	Flooding of low-lying areas of Accra, commuters and vehicles affected, power installation damaged	Accra
13 June 1997	Intermittent downpour for two days	Flooding of Accra threatened to cut off communities in various parts of the city	Accra
1999	Floods swept through some regions in Ghana	300,000 people affected	Upper West, East, Northern, Brong-Ahafo, Volta Regions
2007	Floods in some regions	307,127 people affected	Upper West, Upper East, Northern Regions
5 May 2010	Two hours of stormy rainfall	Parts of the city and its streets submerged in water	Central Accra, Ofankor, Begoro
22 June 2010	Nation's worst flood disaster	35 deaths	Across Ghana
24 June 2010	Floods	3 bridges collapsed	Agona Swedru, Central Region
14 October 2010	Flooding due to torrential rains and opening of Bagre dam in Burkina Faso	161,000 people displaced	Nationwide
18 October 2010	Flooding in Central Gonja District	55 communities submerged following overflow of Lake Volta	Northern Region
2 November 2010	Flooding Afram plains	2800 people displaced from 120 villages and towns along Lake Volta; 850 buildings, farms, markets and roads affected	Kwahu North, South, East in Afram Plains
24 February 2011	Heavy rains from 9.30 pm to 3 am, 71.5 mm of rain	Many communities affected – either submerged or properties washed away	Accra
1 November 2011	Heavy downpour	14 deaths and 43,087 people affected	Accra
31 May 2013	Heavy rains	Flooding in parts of the city	Accra
6 June 2014	More than 10 h downpour	Flooding of several parts of the city	Accra
4 July 2014	Heavy rains	Several low-lying areas flooded	Accra
3 June 2015	Devastating flood with 212.8 mm of rainfall recorded	over 150 lives lost, destruction of properties and displacing hundreds of people.	Accra
18 and 28 June 2018	Heavy rains and thunderstorms	deaths of 14 people, displacement of 34,076 others, and damaged properties estimated at $168,289	Accra, Kumasi
7 April 2019	Heavy rains	Flooding in several parts of the city, and 38 houses destroyed. Five deaths, 200 people displaced	Accra, Ho, Kumasi
14 April 2019	Heavy rains	Flash flooding. Seven lives lost	Accra
30 May 2019	Heavy rains and strong winds with 78 mm of rainfall in Accra	Five people died in Ngyeresia community, three lives lost in Accra, overflow of Odaw river in Accra	Accra and Western Region
28 October 2019	Heavy rains	Flooding in parts of the city. A bridge collapsed in Agbogba, Accra-Tema Motorway closed	Accra

counterproductive institutional roles (e.g., traditional authorities playing the role of urban planning agencies) and limited public knowledge on urban planning issues in Ghana (Adarkwa, 2012; Cobbinah, 2017; Fuseini and Kemp, 2015). As a result, Ghanaian cities continue to experience increased vulnerability to climate change as urban planning that produces resilient futures is lacking. Ghanaian cities have become zones of accumulated stresses (e.g., housing challenges) and unexpected shocks (e.g., floods) (see Darkwah et al., 2018), requiring fundamental paradigm shift.

4. The role of urban planning in building climate resilient African cities

Fundamentally, urban planning should result in the production of functional and inclusive urban spaces where residents' needs are fulfilled, aspirations met, and their capacity to innovate enabled without compromising the urban ecological and cultural integrity and spatial systems (Lwasa and Kinuthia-Njenga, 2012). Within the framework of developing climate resilient cities, urban planning in Africa should remain the basis for the determination of quality of urban life, and further produce a decision-making mechanism to appropriately respond to, and manage urban crises particularly those relating to climate change in most vulnerable zones within the urban space. In a time of climate uncertainty and rapid urban population growth, the state of health and survival of African cities are largely contingent on urban planning that produces infrastructure inclusiveness – in terms of provision of and access to basic goods and services – and promotes spatial integration through land use patterns that consider both formal and informal spaces. In fact, this is consistent with the Habitat Agenda of 1996 Principle 4.

Yet, with current urban planning in Africa epitomized by less inclusivity and production of undesirable urban spaces – e.g., destruction of open spaces and nature reserves, traffic congestion, growth in slums, uncontrolled urban sprawl, destruction of water ways/bodies (Cobbinah et al., 2015), it is perhaps reasonable to argue that the creation of climate resilient cities is a mirage. Urban planning in Africa is at the crossroads, and, as argued by Lwasa and Kinuthia-Njenga (2012), this is the period innovation in planning is required to deconstruct the perpetual production of problematized urban spaces. It is in this regard that this paper provides two ways to engender urban planning's usefulness in producing climate resilient futures in African cities: (i) creation of inclusive climate resilient cities; and (ii) production of climate sensitive spatial plans.

4.1. Creation of inclusive climate resilient cities

With large slum populations, African cities are increasingly vulnerable to climate change. Promoting inclusiveness in climate resilience thinking has the tendency to produce renew optimism in managing climate change impacts. While inclusivity in urban planning is a recent concept emerging from the activities of civil society organizations and other stakeholders (Okpala, 2009), it has come to reflect public participation or community participation in the planning process (e.g. Maginn, 2007). Emphasizing its importance in urban planning, Beltrão (2013) explains that a city without inclusive approach to planning cannot deliver resilient future outcomes. An inclusive approach to urban planning considers community orientation particularly for those in informal communities often lacking an organized voice (Jain, 2014): supports transparency and accountability; promotes collaboration between civil society, governments, and private sector stakeholders; and encourages political empowerment of the disempowered.

A focus on inclusive approach to planning creates a platform for the poor and the disempowered in the urban environment to be cared for and questions the existing predominant planning regimes. It is therefore all about promoting equal values and setting a stage for stakeholder engagement to address ongoing and emerging urban issues, including climate change. Within the context of building climate resilient African cities, Davidoff (1965) explains that urban planning would produce resilient futures when it promotes inclusivity rather than exclusivity in relation to residents' participation in planning, development, and management. While some (e.g. Jain, 2014; Njoh, 2003) believe that urban planning provides an important mechanism for exercising control and power, others (e.g. Forester, 1999) are concerned about the limited inclusive position of urban planning, particularly in Africa where it fails to guarantee fair representation of the various parts of the urban space especially those living in informal and slum communities.

Urban planning remains a dynamic and multi-faceted process and requires a robust mixture and combination of diverse proposals to realize productive urban solution (Beltrão, 2013). These proposals comprise negotiations and compromises between political considerations, diverse stakeholder aspirations and spatial planning protocols. With an inclusive approach to urban planning, there is a careful consideration for how environmental (healthy water/sanitation and vulnerable locations), social (inclusive housing, and social amenities), cultural (locally accepted), economic (close proximity to formal/informal employment opportunities), financial (public and private resources), institutional (policies/regulations and capacity), and physical components (land and infrastructure) can be combined in a communicative and democratic manner to produce resilient urban environment. Unfortunately, urban planning in Africa frequently fends off negotiations, compromises, and innovative ways of engagement especially between political considerations and community aspirations. Meanwhile urban planning remains the foundation of all types of urban development (Sustainable Development Solutions Network., 2013), and that getting urban planning right can lead to production of climate resilient futures.

It is worth acknowledging that some African countries including Tanzania, Nigeria, Uganda, Zambia and Gambia, are making efforts toward inclusive planning. As reported by Okpala (2009), Zimbabwe embarked on legislative and institutional reforms to broaden and democratize the process of urban planning by enabling considerable involvement and participation of the people in the planning process. Also in Nigeria, Okpala (2009) observes local stakeholder consultations in urban structure planning projects involving cities of Awka, Nnewi, and Onitsha all in the Anambra State. These inclusive approaches are signs of optimism for the future as an inclusive urban planning produces public awareness and aids climate change management preparations.

While these attempts are emerging in urban planning practice in Africa and are a positive first step toward building climate resilient futures, inclusiveness is not only an act of consultation. Diaw et al. (2002) observation indicates that while consultation is not an uncommon act, many stakeholders such as non-governmental agencies and community-based organizations are not adequately engaged in decision-making as inclusiveness is characterized as a constraint to fast decision-making, administrative and delivery process, and in some instances compels decisions to be reached mostly by technocrats. In this case, despite the popularization of urban residents' voice and other stakeholders in urban planning in recent times, many people experience exclusion particularly the poor, disabled, children and the aged, in urban planning in Africa. A significant militating factor to inclusive urban planning in Africa relates to the capacity inadequacies and African governments' ill-commitments, particularly at the national level, to strengthen urban planning institutions – in relation to autonomy, resources, and personnel – and encourage improved people's participation in the planning process. To improve and overcome the present urban planning challenges in building climate resilient cities, the next section provides some strategies to facilitate urban planning's role in promoting inclusive climate resilient cities in Africa.

4.2. Adopting inclusiveness as urban planning strategy

Urban planning experiences across Africa is an indication of limited

recognition of inclusiveness as an urban strategy. In most African cities, it is common to identify important planning documents ranging from long, medium, and short-term plans to United Nations country-level plans, which provide a framework for socioeconomic and spatial development. In the face of climate uncertainty, it is timely that inclusiveness is recognized as an urban planning strategy and reflected in major planning documents guiding development. With inclusiveness as an urban planning strategy, it will ensure that all protocols required to produce resilient urban spaces including infrastructure and social services provision, and generation of economic opportunities are fairly implemented, as well as actualization of people's aspirations in planning practice. In this sense, inclusiveness as an urban planning strategy would ensure political commitment to urban welfare providing a reasonable basis for accelerated socioeconomic development and climate resilient cities in the future.

4.3. A focus on multiple stakeholders and sectors

A focus on multiple stakeholders and sectors in the urban environment will lead to inclusiveness in two ways: first, it provides a framework to guarantee equal and considerable attention in planning to all important actors, particularly weaker and vulnerable residents (e.g. poor, aged, disabled, and children) with limited visibility and overlooked interests. Second, an inclusive approach to urban planning generates attention and focus on all critical sectors of the urban economy (e.g., economic, social, environment, and institutional). The extent of interaction between these sectors of the urban economy is important to building inclusive climate resilient cities. As previously discussed, inclusiveness remains a process of providing equal opportunities irrespective of an individual's socioeconomic standing, and transcends economic opportunities to all aspects of human life and urban functionality with the aim of ensuring the realization of individual's full life potentials. This proposal for inclusive urban planning is particularly central for vulnerable people, and often neglected sectors of the African economy (e.g. environment, culture). As explained by Cobbinah and Darkwah (2017), despite these groups and sectors constituting significant part of Africa's urban population and urban space respectively, their profile is mostly missing in urban planning. In this case, it is important for urban planning agencies and governments in Africa to recognize these groups and sectors and develop a database on them, in terms of their needs and management requirements. Census reports, qualitative studies, situational analysis, and stakeholder consultations may provide a good start for identifying the various vulnerable groups and sectors. Political and community level participation may provide vital information for appreciating the status and role of these vulnerable groups, and further provide an understanding of ways of strengthening their resilience.

4.4. Reconsideration of current urban planning regimes

Another important aspect of African urban planning requiring attention to promote inclusive climate resilient cities is the various planning protocols (i.e. legal frameworks, and mode of operations). Cobbinah and Darkwah (2017) explain that the current practice of urban planning in Africa remains considerably a relic of colonization with the British town planning system and the French planning regiment strongly dictating patterns of planning practice. Although, social exclusion is denounced in, and democratic participation is guaranteed in the constitutions and legal profiles of many African countries, fair inclusion of all in political and economic engagement is lacking. A reconsideration of the existing regulation and legal framework governing urban planning in African countries in the form of reform is a necessary step to address structural hinderances to inclusiveness. A reconsideration of urban planning protocols is likely to increase the urgency of capacity development of urban planning institutions, in terms of training, resources and personnel, to position them to deliver inclusive climate resilient cities. Learning from the Ghanaian case study where there is availability of ample planning legislation but no practical results, this paper suggests that African governments ought to effectively cooperate with planning institutions, private sector, and other planning-related stakeholders particularly the urban populace in delivering reforms to current planning protocols to make them relevant to present local conditions, including climate change risks.

4.5. Promoting maintenance via monitoring

African cities are largely faced with the poor maintenance culture in terms of infrastructure and services. This situation limits them to effectively respond to climate change impacts in an inclusive and fair manner, frequently leading to communities within the urban space being cut off from the other parts of the city through, for example, climate change impacts (e.g. floods). This strategy of promoting maintenance through monitoring in urban planning is important in determining that effects and indices of planning orders are consistent and reflect the expectations and interests of every actor, particularly the urban populace. Cobbinah and Darkwah (2017) note that monitoring does not only produce expected planning results, but importantly it guarantees the non-repetition of previous failures, thus producing desired planning outcomes. As such, an improved maintenance culture can be achieved when monitoring is a planning agenda, ensuring checks and balances in the process, and can contribute to inclusive resilient cities.

While it is hoped that the above proposals may lead to a more inclusive urban planning across the continent, it is worth mentioning that the advancement of inclusive urban planning is unlikely to deliver climate resilient cities without consideration to spatial planning (see Beltrão, 2013).

5. Production of climate sensitive spatial plans

Building climate resilient cities in Africa requires considerable attention to and use of land. Promoting spatially integrated urban development that responds to the formal and informal environments and transcends the city boundary to the city-wide region provides a pathway to addressing challenges associated with incongruous morphologies characterizing African cities (Habitat Agenda, 1996). Research (e.g., Cobbinah et al., 2015b) suggests that urban planning practice in Africa could still produce climate resilient urban spaces characterized by efficient and sustainable spatially organized cities amid rapid population explosion and climate challenges. A regional planning approach, spatially considering adjoining districts, can further engender sustainable urban development and climate resilience outcomes in rapidly evolving conurbation (UN-Habitat, 2009). As explained by Okpala (2009), the absence of a spatially integrated urban spaces that directs urban population and physical growth in coordinated manner would increase the vulnerability of cities to climate change related events. In this context, urban planning practice in Africa should go beyond city level planning to integrate the adjourning districts in a regional planning framework to ensure that there is a concerted approach to planning and managing urban conurbations. This has the potential of addressing issues of slum proliferation and urban vulnerability to climate change impacts.

Unfortunately, the present uncontrolled and unplanned morphologies across African cities remain a threat to climate resilience and resource efficiency in terms of providing basic services (Cobbinah et al., 2015b). The city of Lagos (Nigeria) lost huge sums of financial resources in equipment, structures, road facilities, and other infrastructure due to spatially fragmented developments (Okpala, 2009). The Lagos situation lends credence to The Economic Commission for Europe (1986) claim that that the lack of spatially integrated urban planning and regulations across the world, irrespective of the degree of socioeconomic status, may produce unsurmountable urban planning

consequence that can only be addressed at a significant cost and considerable effort without any assurance of reasonable outcome. Achieving climate resilience in cities therefore requires wisdom, efficiency, and effectiveness of urban planning with a focus on producing spatially integrated urban environment, ensuring inclusiveness and healthy environment for urban residents. Addressing issues of fast-paced urbanization and increasing climate change impacts in Africa depends greatly on the production of inclusive urban systems that are properly planned and spatially integrated.

6. Towards climate resilience-based urban Africa

The literature analysis suggests there is highly limited practical efforts towards climate resilience in African cities. Moreover, African governments' commitment to climate change is shrouded in the challenge of meeting other perceived urgent development needs (Simon, 2014), rather than focusing on addressing climate change impacts. Meanwhile addressing climate change through resilience thinking has the potential to contribute to meeting other development needs as research (Ahern, 2011; Albers and Deppisch, 2012; Jabareen, 2013; Lu and Stead, 2013; Poku-Boansi and Cobbinah, 2018; UNISDR, 2013) shows that several countries, including Australia, Netherlands, New Zealand, have successfully embraced resilience thinking in their development efforts. While African cities are not at the same level as those of the Global North, this analysis has shown that that adequate consideration to urban planning has the tendency to spur renew optimism in urban Africa as it would engender the production of the essential capacity for conurbations to address and adjust to evolving transformations in their economy, environment, infrastructure, and community (Broto, 2014; Simon, 2014; Waters, 2012). This capacity of building resilience in terms of conurbations natural and intrinsic social strengths to reconstruct themselves has been demonstrated in research on disaster management (Campanella, 2006; Wallace and Wallace, 2008).

As earlier discussed, building climate resilience via urban planning offers cities enormous opportunities to deal with climate change vulnerabilities and adaptation. Of course, realizing this potential of resilience is not an undemanding task. Concerns have been expressed in relation to resilience failing to produce the original state after disturbance, and that what emerges as the result of the former condition is undesirable such as conflict and poverty (Meerow et al., 2016). Despite these concerns, research indicates that building climate resilience cities emphasizes innovation and technological advancement in urban transformation which are required in managing climate change impacts (e.g., Ernstson et al., 2010). Although current thinking and application of resilient strategies have largely focused on the Global North, there is some evidence of application in urban planning in Africa (e.g., Cartwright et al., 2012; Roberts, 2008; Waters, 2012). Thus, the worth of building resilience cities via urban planning remains imperative in Africa's urban development, but improbable to be realized without complete collaboration with, reform and commitment of urban planning administrators and their protocols.

This analysis identifies urban planning as a critical tool in building resilient cities in Africa, and that the accomplishment of creating resilient conurbations is largely based on urban planning administrators, their protocols and implementation requirements. Simon (2014) has strongly maintained that for climate change to be addressed in African cities, there is the need to engage with urban planning protocols at the local city level. While there are calls for city planners to assume a leadership role in addressing climate change through planning, prioritization and valuation of plans (Wheeler et al., 2009), there is neglect of the degree to which these strategies can or should be implemented in African cities. A careful consideration of the strategies proposed in this paper will enhance urban planning's leadership role in addressing climate change as it is a necessary requirement for climate resilience by enabling context specific tailored solutions (see Broto, 2014). This will promote a capable, and committed city administration that is well positioned to collaborate with local populations living in risky environment (Dodman et al., 2012). Unfortunately, urban planning experiences across the continent have not been positive, as they are characterized by lack of good forms of planning due to colonial influences and failure in global assistance and development organizations efforts to resolve urban problems using development approaches that are unresponsive to the African situation.

Given the current state of urban planning across African cities, it does not appear that planning at the city level can counterbalance the increasing climate change impacts that threaten the survival of African cities. The hope for protecting the rapidly growing global cities in Africa therefore relies on the capacity of urban planning to enhance resilience to climate change impacts via inclusiveness and spatial integration. It is unquestionable that more attention be focused on city level planning initiatives. It is about time, as Simon (2014) indicates, to consciously and critically engage with, and emphasize positive contributions of urban planning in addressing the changing climate and delivering resilient urban futures in Africa.

7. Conclusion

It has been 21 years since Mileti applied the urban resilience concept in the planning discipline and argued that it remains fundamental for urban disaster risk management (Mileti, 1999). Across African cities, national and international policy initiatives indicate that governments are committed to building resilient cities to protect urban populations from current and future climate threats. Yet, attention on other perceived urgent development needs has caused limited engagement to address climate change (Broto, 2014; Simon, 2014). This situation has not resulted in any meaningful impact on climate change management in African cities and requires a rethink in approach focusing strongly on urban planning regimes, without which it is may not be possible that current interventions will engender meaningful outcomes to address the climate change challenge. Nor will the current initiatives, as demonstrated in the Ghanaian case, produce much in terms of considerable socio-economic outcome for urban development. As earlier discussed, although the fate of climate resilience in Africa may currently hang in the state of uncertainty, increased attention to urban planning that responds to community aspirations and city level development is required to build resilient futures. This paper demonstrates that a focus on climate resilience via urban planning can lead to improved service delivery, informed citizenry and political action which are critical for managing changing climate impacts and improving living in urban Africa.

CRediT authorship contribution statement

Patrick Brandful Cobbinah: Conceptualization, Data curation, Formal analysis, Writing - original draft, Writing - review & editing.

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