Policy coherence between climate change adaptation and urban policies in Ghana: implications for adaptation planning in African cities

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ABSTRACT

African urban areas and cities are primarily seen as vulnerable to climate change. Apparent attempts to get required policies have led to the widespread proliferation of overlapping and duplications of policies. Using a policy coherence framework, this study aims to synthesise the coherency of climate adaptation and urban policies in Ghana. The study used content analysis of existing policy documents to understand if specific variables are explicit, implicit or not mentioned in four urban and climate change policies in Ghana. It was found that there is a minimal degree of coherence only in the adaptation measures, but there is a general lack of coherence in the motivation and implementation. This can be attributed to radically different current institutional arrangements for urban planning and climate change, inconsistent use of data and terminologies, and lack of embracement of innovations in urban planning in African cities. The findings suggest that attention must be given to integrated collaborative adaptation planning to address these impediments in urban planning context of African cities.

1. Introduction

In Africa, by the end of the 21st Century, the surface temperature is likely to exceed 2°C due to climate change, and extreme events such as floods and droughts are likely to intensify (IPCC 2014). This is likely to have significant impacts on agriculture, health, livestock production, freshwater and intensification of ecosystems extreme events such as floods and droughts (UNEP 2021). Crop yield is expected to reduce by 10%–20% by 2050 if average warming is about 2°C (UNEP 2021), and if it exceeds 3°C, arable land for major African staple crops will be unsuitable for food production (UNEP 2021).

With these impacts, the need for climate adaptation has therefore been a major policy priority in Africa (Antwi-Agyei et al. 2015; Atanga et al. 2017; Filho et al. 2018; Pelling et al. 2018; Godsmark et al. 2019, January 1). Over the years, sensitive sectors (agriculture, health, forestry, etc.) have attracted several policy interventions through local, national and international collaborations (Godsmark et al. 2019; Sorgho et al., 2020). However, studies have reported fragmentations and duplications of initiatives across sectors (Kalaba et al. 2014; England et al. 2018; Ranabhat et al. 2018). Interactions between such policies at the operational level can positively or negatively influence each other, leading to their (in) effectiveness (Nshimbi 2019; Afonis et al. 2020; Waheed et al. 2021). Studies have therefore shown that most of these policies are incoherent with each other (Kalaba et al. 2014; England et al. 2018; Ranabhat et al. 2018). Policy coherency is the degree of integration of relevant components of policies as a way to give systematic support towards the achievement of common objectives (Carbone 2008; Nilsson 2010; Pelling Anadú 2010).
et al. 2012; Harahap et al. 2017; Ranabhat et al. 2018). As a result, policy coherence is imperative in addressing how one sector adaptation measure can be effective through supportive instruments, practices or initiatives from another sector while ensuring resource efficiency (Brodhag and Talière 2006; Antwi-Agyei et al. 2017).

Several studies in Africa have often highlighted the vulnerabilities of African cities and urban areas to climate change and hence the need for adaptation policies (Broto 2014; Cobbina et al. 2017; Salami et al. 2017; Simon and Leck 2015; Cobbina & Poku-Boansi, 2018). Several national governments have therefore adopted different national adaptation and urban policies over the last few decades as a way of addressing the vulnerabilities of African cities to climate change (Carmin et al. 2012; Simon and Leck 2015; Ziervogel et al. 2016, 2021). However, under existing fragmented institutional arrangements in Africa (Akaateba et al. 2018; Dakyaga et al. 2021), achievement of policy objectives might further be compromised if policy coherence is limited (England et al. 2018). The fragmentation raises a critical gap in the extent to which climate adaptation and urban development policies are coherent with each other.

In the context of the numerous policies that have been adopted within a relatively short space of time in Ghana (Padgham et al. 2015; Ahmed et al. 2016a; Lawson et al. 2020), albeit largely donor financed, a critical epistemic question that arises is whether there is coherency and contradictions between climate change adaptation and urban development policies. For example, as much of these are donor funded, there is high risk of not reflecting the lived realities of the cities. Also, the different ways in which climate change terminologies are used between planners and practitioners can mean different in diverse policies. Understanding the coherency and contradictions can significantly ramify our understanding of some significant trade-offs and knock-on-effects, especially given that different sectors might have conflicting interests since most policies are donor-funded. For example, increasing impervious surfaces within cities for urban mobilities have a competing interest with climate adaptation measures to have natural drainage as an adaptation measure to urban flooding. It, therefore, becomes imperative to examine the coherence of the current climate change adaptation and urban policies to understand the trade-offs and synergies.

The key research objective is to understand how coherence between climate change adaptation and urban policies can compromise adaptation in Africa. The research therefore seeks to address the question, how coherent are the current urban and climate adaptation policies. The study draws insights from Ghana and adopts the policy coherence for development (PCD) framework as an analytical lens to understand the motivations, measures and implementations geared towards integrating climate change issues in urban policies. The paper seeks to make the argument that fragmentations and incoherencies between urban and climate adaptation policies present a governance dilemma that can compromise the achievement of the sustainable development goals (SDGs) 11 and 13 in African cities. The SDGs are the global blueprint for achieving better and sustainable future for all. The study is organised as follows. Section 2 gives an understanding of the concept of policy coherence. Section 3 gives an overview of climate change initiatives in Ghana. Section 4 addresses the methods for data collections and analysis. Section 5 provides a detailed description of the results, while Section 6 discusses the relevance of the major findings and their implication for future research and integrated urban policy development.

2. Policy coherency: conceptual overview

Over the years, there has been a surge in studies on policy coherence across sectors (Waheed et al. 2021). Although its definition or interpretation is often considered contentious, many scholars seem to agree that policy coherence relates to the integration of different aspects of policies (See Section1) (Carbone 2008; Nilsson et al. 2012; Harahap et al. 2017; Ranabhat et al. 2018). Incoherence can occur through institutional, political and administrative reasons including the lack of knowledge of policy effects (Ranabhat et al. 2018). Therefore, it is assumed that policy coherence can lead to the reduction in policy conflicts, contradictions and promotion of synergies (Kalaba et al. 2014; England et al. 2018; Waheed et al. 2021).

Identifying the degree of coherence is a valuable step in achieving policy objectives since synergies and trade-offs present opportunities and challenges for innovation in governance. To measure the degree of policy coherence, we applied policy coherence for development framework (Nilsson et al. 2012;
Harahap et al. 2017; Waheed et al. 2021). This framework has focused on the procedural aspect of policy coherence (Nilsson et al. 2012; Kalaba et al. 2014; Harahap et al. 2017; England et al. 2018; Ranabhat et al. 2018). Since the policies to be considered under this study are already under implementation with minimal information on the policy-making processes (i.e. in Ghana), this study engages the actual policy documents for coherence analysis and not the processes that were followed.

Therefore, the study adopts the policy coherence for development (PCD) framework by engaging the content analysis from diverse levels. The PCD framework considers five aspects through which coherence can be measured (Ranabhat et al. 2018). These include motivations of the policies, action measures, implementation plan, resources and monitoring and evaluation (Ranabhat et al. 2018).

In terms of policy motivation, especially when the policy is seen as a form of practice such as adaptation or urban planning, it is essential to understand the motivation behind the objectives (Larsen and Powell 2013). The coherence in the motivators of different policies can provide insights into the trade-offs and synergies, especially for externally funded policies such as climate change (Ranabhat et al. 2018). For example, if a policy adoption was motivated by the availability of international funding, it is likely not to reflect some localised priorities, which can be incoherent with other policies that are not internationally funded (Ranabhat et al. 2018).

In terms of action measures, this allows understanding of the interactions of different policy measures to unpack potential conflicts, trade-offs, and synergies (Ranabhat et al. 2018). Studies have shown that proposed actions in one policy might have trade-offs and synergies with other actions in different policies (Nilsson et al. 2012; Harahap et al. 2017; Waheed et al. 2021). Hence, exploring how action measures are coherent is an important step in addressing trade-offs and synergies.

Also, the implementation practices allow for the understanding of different actors’ roles, interests, complementarities, and overlaps. The implementation plans can therefore provide insights into the gaps that could potentially affect policies (Ranabhat et al. 2018). In the implementation plan, time allocation, actors’ involvement and overlaps of activities are easily identified and addressed. Within the implementation plan, trade-offs and synergies in resource allocation can easily be addressed.

Finally, monitoring and evaluation (M&E) plans offer other aspects for coherence analysis of policies already in implementation (Waheed et al. 2021). Through the M&E plans, actors responsible for each aspect of the implementation are clearly stated making it easy to check duplication of mandates as well as holding actors accountable for success and failures (Ranabhat et al. 2018).

This study, therefore, analyses policy horizontally (i.e. coherence at one national level across policy motivation, measure, implementation, resources and M&E) as opposed to vertical analysis, which looks at different levels of government.

3. Overview of climate change and urban development initiatives in Ghana

3.1 Climate change policies

Historically, the vulnerabilities and impacts of climate change in Ghana have been well documented by several studies (Ahmed et al. 2016b; Atanga et al. 2017; Fagariba et al. 2018; Opare 2018; Naab et al. 2019). Significant manifestations of climate change reported include variability in rainfall, rise in temperature and sea-level rise (Padgham et al. 2015; Naab et al. 2019). Data showed that as of 2014, GHG emission was estimated at 16.51 MtCO₂e, which is an increment of 82% since the last decade (Environmental Protection Agency 2017). Since 1960, the annual temperature increased by 1.0°C, increasing the number of ‘hot’ day per year (Environmental Protection Agency 2017).

The Environmental Policy of the country which seeks to ensure sustainable development through subjecting all policies, plans and programmes of the country to sustainable environmental assessment is the bedrock of the seven principles guiding the policy. The principles of the policy are: (i) promoting urban centres as engines of growth, (ii) promoting development through an integrated settlement system, (iii) facilitating socio-economic development of rural and lagging regions, (iv) mainstreaming environmental concerns into urban development, (v) enhancing participatory and accountable urban governance , (vi) employing information, education and communication strategy, and (vii) emphasising the roles of central and local governments. As can be observed, the fourth principle particularly seeks to mainstream environmental issues into urban development.
From 1995 until date, the government of Ghana, through its Ministries, Departments and Agencies, has implemented over 40 climate adaptation-related policies, strategies, and plans (Mensah et al. 2016). The sectoral focus of policies before 2012 was on the socioeconomic aspect of rural development and poverty reduction, agriculture and water resources (Mensah et al. 2016; Environmental Protection Agency 2017). The policy priorities of these earlier policies before 2012 focused on four primary areas: (i) improve quality and access to climate information, (ii) increase resilience of both built and natural infrastructure, (iii) improve water supply and quality, and (iv) social support for the vulnerable groups. From this, the government recognised the socioeconomic impacts of climate change as a significant challenge to national development (Mensah et al. 2016). However, many of these initiatives were relatively small-scale, donor-funded, and across sectors that are fragmented in their institutional arrangements (Mensah et al. 2016).

By 2010, there was an urgent need to harmonise all adaptation-related policies into a coherent national framework to address two issues (Environmental Protection Agency 2017). The first purpose was to use such a national blueprint as a tool for international collaboration, especially for climate change activities financing. Secondly, it was also a roadmap for mainstreaming climate change adaptation into the national development planning process through the decentralisation framework. By 2012, the first major policy on climate change as a separate thematic area was adopted. Coincidentally, the first-ever national policy of urban development was also adopted in the same year (see Table 1).

The National Climate Change Adaptation Strategy (NCCAS) has a goal ‘to enhance Ghana’s current and future development to climate change impacts by strengthening its adaptive capacity and building resilience of the society and ecosystems.’ The NCCAS has ten priority areas: early warning; alternative livelihoods; capacity development; research and awareness creation; environmental sanitation; water resources; agriculture; health; energy systems and fisheries. In this plan, reference to ‘urban’ was only mentioned eight times but often related to urban poverty or urban vulnerabilities.

Following this, the National Climate Change Policy (NCCP) was adopted in 2013 to implement a vision to ‘ensure a climate-resilient and climate-compatible economy while achieving sustainable development through equitable low-carbon economic growth for Ghana.’ It has six pillars namely: governance and coordination; capacity development; science and technology; finance; international cooperation; information and communication; and monitoring and reporting. Priorities under these pillars were in five areas: agriculture, disaster preparedness, natural resource, social development and energy. The entity responsible for the implementation of this policy is the Ministry of Environment, Science, Technology and Innovation. In this policy, urban issues and adaptation started to be more visible, with the word ‘urban’ mentioned 42 times. It was expected, especially in 2010 since for the first time in the history of Ghana, over half (50.9%) of the population lived in urban areas.

### 3.2 Urban development policies

In 2012, the first-ever National Urban Policy (NUP) was adopted with 12 policy objectives. The 10th of these objectives seeks to promote climate change adaptation and mitigation mechanisms. The responsibility for implementing the NUP and its action plan (NUPAP) is on the Ministry of Local Government and Rural Development (MLGRD) through the decentralisation system in Ghana. The policy has eight (8) initiatives and seventeen activities all aimed at promoting climate change adaptation and mitigation. These initiatives are (i) intensify public information and awareness campaigns on energy conservation, climate change and mitigation strategies; (ii) encourage progressive reduction of hazardous substances by industry; (iii) promote settlement structure plans designed to achieve a high level of amenity as well as the prevention of effluent and refuse pollution; (iv) promote and strengthen cooperation of adjoining MMDAs in collaboration with traditional authorities.

| Policies                                    | Year | Implementing Institution                                           |
|---------------------------------------------|------|-------------------------------------------------------------------|
| National Climate Change Adaptation Strategy (NCCAS) | 2012 | Ministry of Environment, Science, Technology and Innovation (MESTI) |
| National Climate Change Policy (NCCP)       | 2013 | Ministry of Environment, Science, Technology and Innovation (MESTI) |
| National Urban Policy (NUP)                 | 2012 | Ministry of Local Government and Rural Development                |
| National Urban Policy Action Plan (NUPAP)   | 2012 | Ministry of Local Government and Rural Development                |
and other relevant stakeholders in management of waterbodies and other natural resources; (v) avoid coastal zone development which affects ecologically sensitive areas; (vi) impose and enforce more effective coastal zone and wetlands management regulations; (vii) strengthen the capacities of agencies that are charged with promoting environmental standards; and (viii) generate public awareness on climate change and litigation strategies through mass media educational campaigns.

From the above, the institutional arrangement for urban planning and climate change is radically different. In terms of urban planning, institutions ranging from MMDAs, physical planning departments, Lands Commission and its various divisions as Surveying and Mapping Division, Land Use and Spatial Planning Authority, Ministry of Environment Science and Technology as well as Ministry of Local Government and Rural Development are involved. Until the passage of the Land Use and Spatial Planning Act (Act 925, 2016), the institutional arrangements were characterised by role ambiguity, role duplications, mismatch in the assignment of roles to organisations vis-a-vis their skills, outdated laws and weak institutional collaborations. The establishment of separate institutional arrangements for land ownership and modernist planning has also been blamed for the failure of urban planning to generate sustainable urban development outcomes. The Town and Country Planning Ordinance, 1945 (Code of Administrative Procedure (CAP) 84), which was a legacy of colonial government in conjunction with Act 462 of 1993 (now Act 936, 2016) and the National Building Regulation, 1996 (LI 1630) regulated urban planning.

Several initiatives towards addressing urban planning challenges including the design and implementation of Land Administration Project (LAP) 1&2, the formulation of the National Spatial Development Framework, the preparation of the national urban policy, and the development of the land policy have been rolled out. The Land Use and Spatial Planning Act (Act 925, 2016), regulates urban planning in the country. The Act, as stated earlier, establishes the Land Use and Spatial Planning Authority as the regulatory body for settlements and spatial planning in Ghana. It also mandates the Authority to collaborate with the National Development Planning Commission to prepare a Long-Term National Spatial Development Plan. The National Spatial Development Framework shall have as its object, the judicious use of land and the equitable distribution of national infrastructure and facilities in various human settlements of the country. Closely linked to it are the regional SDFs, prepared by the Regional Spatial Planning Committee (RSPC) under the Regional Coordinating Council (RCC) and approved by the NDPC. At the district level, the district SDF is prepared by the District Spatial Planning Committee (DSPC) for ratification by the Assembly.

As the primary regulation governing spatial planning in Ghana, the LUSPA Act does not have a particular section devoted to environmental quality and sustainability. There is provision, however, for tree preservation and planting requirements to be specified in the content of local plans and the conduct of strategic environmental assessment as part of the processes of developing the national spatial development framework. Four of the eleven areas for which zoning regulations should be developed for are on the environment. These are: environment, conservation, creation of green belts and creation of national, regional, district and local parks. The absence of a dedicated section to environmental quality and sustainability suggests the incoherent nature of urban planning framework to climate change adaptation.

4. Methodology

4.1 Data and analysis

In total, four documents were analysed, as shown in Table 1, to understand the degree to which climate change adaptation and urban development policies are coherent in achieving a common objective of urban resilience. As urban areas are critical for global sustainability, especially in contributions to climate mitigation and adaptation, it is imperative to explore how urban and climate policies are in sync in policy motivation, measure, implementation, resources and M&E. Policy coherence manifests in plans, programmes and institutional structures, and these aspects of the four policies in Table 1 were analysed using content analysis. In each document, we explore how each factor in Table 2 was either explicit, implicit, or not mentioned and coded accordingly. As various words are used differently between urban planning and climate science, by explicit, we mean that specific information or statement is mentioned in relation to the variable under review. By implicit we mean some
Table 2. Factors for policy coherence analysis.

| Factor | Variable |
|--------|----------|
| Motivation | Observed climate change trends |
| | Projection on climate change |
| | General impacts on climate change |
| | Impacts of climate change in urban area |
| | International support (i.e. funding) |
| | Signatory to an international treaty |
| Measures | Effective coastal zone and wetlands management |
| | Early warning systems |
| | Public awareness on waste management and sanitation |
| | Enforcement of development controls |
| | Flood risk control measures and storm-water infrastructure |
| | Climate-sensitive and resilient land use planning |
| | Green infrastructure for natural cooling (i.e. urban agriculture) |
| | Capacity for adaptation planning |
| | Water and energy use efficiency in buildings |
| | Pro-active urban firefighting management |
| | Disaster risk reduction in informal settlements |
| Implementation plan | Institutional set up |
| Resources | Allocation of responsibilities |
| Monitoring and evaluation | Financial |
| | Human |
| | Implementation follows ups |
| | Reporting |

Source: Adapted from (Ranabhat et al. 2018)

Keywords are mentioned in relation to the variable under consideration, but full statement is not clear or available. For example, if we are considering international support (i.e. funding), by explicit, the content of the document must indicate a statement that policy preparation and adoption was funded and states the name(s) of funder(s). For implicit, the content may show that the policy document got international support but the type of support such as funding or technical assistance is not clear. Finally, if the factor is not mentioned at all, we classify it as ‘not mentioned’. The final analysis of the codes [explicit (a), implicit (b), or not mentioned (c)] was done in Excel.

For motivation, we reviewed the content of each document to understand if six aspects of motivation are explicit, implicit, or not mentioned in these documents. Firstly, we looked at the content of each document to understand if all the variables for motivation in Table 2 are explicit, implicit, or not mentioned. The variables were selected based on a recent study (Ranabhat et al. 2018). These are important motivational factors that can trigger a policy adoption and hence exploring if the adaptation and urban policies are explicit in these factors are important. When these variables are explicit in all the four documents under review, we conclude that the motivation under each variable of motivation is coherent. However, when the variables are implicit and not mentioned, then we conclude that there might be some degree of incoherence. For implementation plan, resource and M&E, we used the same approach.

For measure, recent studies have shown some important variables of climate mitigation and adaptation in African cities (Ahmed and Puppim de Oliveira 2017; Puppim de Oliveira and Ahmed 2021). These variables as shown in Table 2 are used to understand if the policies under consideration have actions for these issues or not. For each policy document, we reviewed the content by using keywords to identify these variables. When these variables are identified in all the policy documents, we conclude that there is coherence and incoherent when they are not identified.

5. Results

5.1 Climate change adaptation strategies and motivations

Different terminologies such as hazard, risk, impact, vulnerability, resilience, cope, adaptation, and other synonyms are used interchangeably to justify the need for an adaptation policy through the documents. Drawing on Ranabhat et al. (2018), and motivational factors across the different motivations for inclusion of adaptation in policies, only the NCCP has detailed information across all the six elements. However, international support in funding was the most common driver in all the policies (see Table 3). All the policies were donor-driven through official development assistance. Therefore, it was not surprising to observe that international funding agencies such as the UK Department for International Development and foreign embassies such as the Embassy of the Netherlands were members of the national climate change committee (NCCCE) (Ministry of Environment Science Technology and Innovation 2013). The NCCAS was prepared and funded by the Danish Ministry of Foreign Affairs. Also, the NCCP was primarily funded by the United Nations Development Programme (UNDP) and DFID. The NUP and NUPAP were both funded by German
Table 3. Motivations for policies.

| Factor                                      | Climate Policies | Urban Policies |
|---------------------------------------------|------------------|----------------|
| Observed climate change trends             | NCCAS b a c c    | NUP a c c      |
| Projection on climate change               | a a c c          | NUP a c c      |
| General impacts on climate change          | a a c c          | NUP a c c      |
| Impacts of climate change in urban area    | b a b c          | NUP a c c      |
| International support (i.e. funding)       | a a a a          | NUP a c c      |
| Signatory to an international treaty       | a a c c          | NUP a c c      |

\( a = \text{explicit}, \ b = \text{implicit}, \ c = \text{not mentioned} \)

5.2 Policy consistency in urban adaptation measures

Drawing from existing literature on the urban adaptation measure (Broto 2014; Lwasa 2014; Ward 2017; Pelling et al. 2018), Table 4 shows the four policy documents’ urban-related climate change adaptation strategies. The most widely recognised adaptation measures include coastal and wetlands management, public awareness, resilient land use planning, and capacity for adaptation. These measures are all explicit in both the climate and urban policies thereby making them coherent. These measures are consistent with general patterns in the literature on urban climate change adaptation (Broto 2014; Lwasa 2014; Ward 2017; Pelling et al. 2018). Aside from these measures, it can be observed for all other measures, the two policy domains are not coherent.

However, considering recent strands in the literature in terms of green infrastructure (D’Alessandro et al. 2018; Azunre et al. 2019; Puppim de Oliveira and Ahmed 2021), the omission of green infrastructure for natural cooling (i.e. urban agriculture, wetlands, green open spaces, parks, etc.) in all the policies reflects a critical concern. This reinforces the conventional thought that urban agriculture and wetlands are not part of the mainstream land use planning practices in most African cities (Puppim de Oliveira and Ahmed 2021).

Table 4. Policy coherence in urban adaptation measures.

| Adaptation Measure                                      | Climate Policies | Urban Policies |
|---------------------------------------------------------|------------------|----------------|
| Effective coastal zone and wetlands management           | NCCAS I I I I    | NUP I I I I    |
| Early warning systems                                    | I I N N          | I I I I        |
| Public awareness on waste management and sanitation     | I I I I          | NUP I I I I    |
| Enforcement of development controls                      | N N I I          | I I I I        |
| Flood risk control measures and storm-water infrastructure| I I N I          | I I I I        |
| Climate-sensitive and resilient land use planning        | I I N I          | I I I I        |
| Green infrastructure for natural cooling (i.e. urban agriculture) | N N N N      | I I I I        |
| Capacity for adaptation planning                         | I I I I          | NUP I I I I    |
| Water and energy use efficiency in buildings             | N N I I          | I I I I        |
| Pro-active urban firefighting management                 | N N N N          | I I I I        |
| Disaster risk reduction in informal settlements          | N N N N          | I I I I        |

\( I = \text{identified}, \ N = \text{not identified} \)

Development Cooperation and the World Bank. This in a way reflects the international commitment of donor countries to climate finance through foreign aid. Some studies have historically raised alarms on the lack of national government ownership of such donor-driven policies (Ahmed et al. 2016a; Hasselskog et al. 2017). However, recent studies show that national ownership and donor influence can coexist. In instances where there are practical issues of lack of national ownership, it is often traced to internal and external actors such as the private sector and non-governmental organisations rather than donors (Gautier and Ridde 2017; Hasselskog et al. 2017).

The analysis observed that there is coherency between NCCP and NCCAS as they both have explicit information on the variables as shown Table 3. As a signatory to the UNFCCC and the Kyoto Protocol, Ghana, is mandated to have policy directions for managing and adapting to climate change. The NCCP and NCCAS both fall within this mandate and have gotten funding through international climate financing. The policies also have explicit or implicit information on observed trends and impacts of climate change in urban areas. However, between climate policies and the urban policies, there appear incoherent in many respects. For example, both NUP and NUPAP have no information on climate change trends, impacts and projections thereby making them not coherent with the climate policies in terms of motivational factors. Whereas the drivers of the climate policies include climate impacts, threats and projection, it is not the same for adaptation aspect in urban policies. In the urban policies, adaptation is largely driven by the availability of international support (see Table 3). So, the motivations between climate and urban policies in terms of adaptation are therefore radically different.
In Ghana, of all the different types of green infrastructure to be protected under the Land Use and Spatial Planning Act 2016 of Act 925, urban agriculture is not inclusive (Republic of Ghana 2016, p. 12). Yet, studies have shown that urban agriculture can help multiple functions as a source of climate adaptation, food security and livelihood for the urban poor (Nyantakyi-Frimpong et al. 2016; Azunre et al. 2019; Puppin de Oliveira and Ahmed 2021).

Situating the results within the context of the imaginaries and lived realities of cities of the global south, the policies have also failed to give due attention to adaptation and disaster risk reduction in informal settlements or slums. As most scholars of southern urbanism will argue that slums and informal settlements are significant features of African urbanisation (Schindler 2017; Lawhon and Le Roux 2019; Ahmed et al. 2020), the omission in adaptation measures reflects that the policies are not pro-poor and well situated to the context-specific realities of Ghana.

Considering historical and recent fire outbreaks in Ghanaian cities and other African contexts (Oteng-Ababio et al. 2015; Addai et al. 2016; Oppong et al. 2017), pro-active urban firefighting management has become an essential feature of adaptation. Yet, all the policies have omitted this aspect of adaptation, although evidence shows that the trends of urban fires are increasing, especially in the markets (Oteng-Ababio et al. 2015; Oppong et al. 2017).

### 5.3 Policy coherence in the implementation

#### 5.3.1 Implementation plan

The clarity in allocating responsibilities and an institutional arrangement is imperative for implementation as they form the basis for tracking progress and reporting. Whereas the Ministry of Environment, Science, Technology and Innovation (MESTI) coordinated the preparation of the NCCP, there is no clear overarching main ministry responsible for the implementation of the policy. The policy stated that the institutional set-up for the NCCP falls within the mandates of 13 Ministries and their special agencies. However, the NCCAS noted that the institutional arrangement for implementation would be part of the decentralised planning implementation system with MESTI as the apex authority implementation. Within MESTI, the National Climate Change Committee was to be established as the focal point for NCCAS. Whereas the NCCP took a centralised approach (i.e. with lack of main coordinating unit), the NCCAS took a decentralised approach (i.e. with a central coordinating unit). However, both stated the need for incorporating private sector and civil society organisations. The NCCAS, therefore, stated the need for capacity development across the levels of government within the decentralised governance system. Yet, the NCCP does not mention capacity development within the institutional arrangements. However, from the NUP and NUPAP, none of the policies mentioned the need to set up an institutional arrangement for climate change adaptation. This has the tendency of impeding the effective implementation of the policies. Between the climate and urban policies, there is no coherency as only the climate policies have explicit information on institutional arrangement but the urban policies do not.

The assessment further indicated that all the policies have some information about the responsibilities of major actors. Apart from the coordinating unit, the NCCAS was not very explicit on the responsibilities of the other organisations and was without timelines. For the NCCP, detailed responsibilities of all the 13 Ministries mentioned were provided. In terms of urban, only the NUPAP with adaptation measures were assigned to specific organisations for implementation and with clear timelines (*note: but not an institutional set-up for adaptation as shown in Table 5*). Comparing between the climate and urban policies, there is coherency in terms of allocation of responsibilities for adaptation as both policy domains have explicit information and similar actors for implementation.

#### 5.3.2 Resources

For financial resource, we looked at whether each policy has arrangements to meet the financial requirement for implementation. The climate policies (NCCAS and NCCP) have clear information on sources

| Table 5. Implementation process of adaptation measures. |
|---------------------------------|-----------|-----------|-----------|
| Factors                        | Climate Policies | Urban Policies |
|                                | NCCAS | NCCP | NUP | NUPAP |
| Implementation plan            | a     | a     | c   | c     |
| Institutional set up           | a     | a     | c   | c     |
| Allocation of responsibilities | b     | a     | a   | a     |
| Resources                      | a     | a     | c   | c     |
| Financial                      | a     | a     | c   | c     |
| Human                          | a     | a     | a   | a     |
| Monitoring and evaluation      | a     | a     | c   | c     |
| Implementation follows up      | a     | a     | c   | c     |
| Reporting                      | a     | a     | c   | c     |

*a = explicit, b = implicit, c = not mentioned*
of funding. For the implementation of the NCCP, it was estimated that over US$9.3 billion is needed (Asante et al. 2015). In 2015, when these policies were taking off for implementation, about US$240 million was allocated for climate change-related activities, which was very low compared with what was required for implementations of NCCAS and NCCP (Asante et al. 2015). Also, the urban policies (NUP and NUPAP) do not have any information on financial arrangements for implementation. Between the urban and climate policies, there is no coherency in term of source of funding for implementation. Whereas the climate policies have detailed source of funding, the urban policies do not have clear information of how to fund the implementation of urban adaptation strategies. Consequently, the government of Ghana has established a Climate Change Finance Tracking tool at the Ministry of Finance responsible for coordinating climate finance in Ghana.

Nonetheless, both policy domains (climate and urban) provided information on capacity development for adaptation through training, research, knowledge transfers and partnerships with the private sector, international organisations and civil society organisations. This makes them coherent in terms of human resource capacity development for climate adaptation.

5.3.3 Monitoring and evaluation (M&E)

The climate policies (NCCAS and NCCP) have detailed M&E. The NCCP specifically stated that the concept of ‘Measurement, Reporting and Verification’ (MRV) would be applied for M&E, but no coordinating unit is established for such activities. However, the NCCAS instead provided more details on tracking progress and M&E through the different levels of government within the decentralised system. NCCAS also proposed establishing an M&E unit within the National Climate Change Committee comprising both state and non-state actors. The M&E unit keeps data on reporting and tracking by collating information through the decentralised system. This makes it easy to track progress of implementation. However, the urban policies (NUP and NUPAP) did not have any arrangement for M&E set up related to climate change adaptation. This makes the urban policies not coherent with the climate policies in terms of arrangement for M&E. So, it might become difficult to track progress towards urban resilience and climate adaptation in cities without any arrangement for M&E.

6. Implications for adaptation planning in African cities

From the results, scientific facts and international support (i.e. funding and signatory to a treaty) have compelled African governments to have adaptation policies. The availability and access to climate financing through donor countries have triggered the proliferation of many projects out of these policies. Nonetheless, the NCCP and NCCAS are coherent in their stated objectives, motivation and adaptation measure and implementation (see Tables 3, 4 and 5) because there is explicit information in the policy documents. The NUP and NUPAP are also coherent in their objective, motivation and measure but not implementation. However, between climate change (i.e., NCCP and NCCAS) and urban policies (i.e., NUP and NUPAP), a minimal degree of coherence is only observed in the adaptation measures (see Table 4). Still, there is a general lack of coherence in the motivation and implementation (see Tables 3 and 5). In the adaptation measure where coherence is observed, the consistency is related only to public education, capacity for adaptation planning and adoption of resilient land use planning. Several necessary measures are inconsistent, including green infrastructure and early warning systems. This lack of incoherence can be tracked to how urban planning and environmental governance are structured in Ghana (see Section 3). In an era where African cities are strategically positioning themselves to implement the SDG 11 and the new urban agenda (NUA), the findings highlight the need for collaborative, integrated multi-level adaptation planning. The incoherency between climate and urban policies calls for critical attention to several issues if multi-level adaptation planning can leverage improving coherence. These issues include addressing the governance dilemma, common understanding of climate terminologies, data for adaptation planning and paying attention to urban green infrastructure in African cities.

6.1 Overcoming the governance dilemma for African cities

The results suggest that adaptation to climate change and urban policies needs to be coordinated within clear institutional arrangements. As adaptation planning must be coordinated across different levels of government, a clear institutional structure will pave
the way for successful policy preparation and implementation through the reduction of trade-offs while maximising synergies. Studies in Africa have shown that governance is a critical source of policy failure (Antonio Puppim de Oliveira 2002; Puppim de Oliveira and Ahmed 2021). Also, some studies have shown that synergies between policies can be achieved through a collaborative, integrated multi-level adaptation planning (Broto 2014; Ziervogel et al. 2016; Atanga et al. 2017). Yet, in most African countries, environmental governance and climate change are not integrated within the decentralised planning (Acheampong and Ibrahim 2016; Cobbinah et al. 2017). Studies in Africa have shown that inertia in African planning systems, vested interests, institutional overlaps and fragmentation are critical factors hindering SDG 11, especially climate change issues and urban sustainability (Watson 2016; Valencia et al. 2019). The results show that for African cities need to strategically position themselves to tap into the potentials of integrated multi-level adaptation planning in addressing policy incoherencies.

6.2 Climate terminologies, glossary and capacity training of African planners

The results reflect a lack of clear understanding and consistent use of climate change, adaptation, and related terminologies among sector specialists. It was observed that urban policies a word such as adaptation means differently in the climate change policies. In urban policies, adaptation is used synonymously as coping strategy, but in the climate change, this is completely different to reflect long-term sustainable practices in addressing climate change. The results are consistent with other studies in Africa, which have shown that a major bane to the integration of environmental sustainability issues into urban planning processes is the radical differences in the meaning, use and understanding of key terms between planners and other professionals (Ahmed and Puppim de Oliveira 2017; OECD 2020; Diko et al. 2021). A recent study blamed the absence of the climate change glossary at the local level for the lack of coherence in the use and application of terminologies, affecting general policy coherence (OECD 2020). Overcoming the diverse use of terminologies and consolidating climate terms and their understanding is imperative for adaptation planning. The findings suggest that there is a need for capacity development of African planners on climate terminologies as the lack of understanding can derail policy efforts. For example, implementing adaptation to mean coping strategies (i.e. charcoal selling) can lead to maladaptation thereby increasing climate threats in African cities.

6.3 Climate data for adaptation planning

The results also reflect limited climate data in the urban policies compared to the climate adaptation policies. In instances where data is used, urban and climate change policies cite different figures. The results confirm the general belief that a significant reason across Africa is the lack of information sharing among sectors and difficulty accessing such information (Street et al. 2019; OECD 2020; Diko et al. 2021). For adaptation planning to address coherency between urban and climate change policies, national and sub-national governments must develop a climate change data hub as a central repository where all agencies can retrieve data for planning purposes. Incentives must be put in place to make owners (i.e., especially the private sector and NGOs) accessible in useful formats for adaptation planning.

6.4 Important role of green infrastructure in African cities

Finally, for urban planning policies to address coherence issues with climate change sectors, there is a need to plan to embrace adaptation innovations in urban planning practices. The results show that climate adaptation measures within the urban context failed to adopt innovative strategies that can improve resilience to climate change in African cities. The results are consistent with other studies that found that most adaptation policies innovations in green infrastructure and urban fire management are important for adaptation in African cities (Douglas 2016; Afionis et al. 2020). Yet, such strategic directions are less explored in urban policies and serve as a source of incoherence between urban and climate change adaptation policies in African cities. Scaling up green infrastructure innovations in urban policies is therefore imperative in improving coherence with innovations in climate adaptation policies.
7. Conclusion

The objective of this paper is to examine the policy coherence between climate change adaptation and urban policies and its implication for adaptation planning in African cities. Considering the extensive literature highlighting the vulnerabilities of African cities and urban areas to climate change and the need for adaptation policies (see Broto 2014; Cobbinah et al. 2017; Salami et al. 2017; Simon and Leck 2015) and attempts by African governments over the last few decades to addressing these vulnerabilities to climate change (see Carmin et al. 2012; Simon and Leck 2015, April 1; Ziervogel et al. 2016, 2021) by adopting different national adaptation and urban policies, the paper attempts to understand the coherence of these policies using a policy coherence framework. Understanding the coherency and contradictions in these policies can significantly enhance our understanding and position policymakers and practitioners on the path on effective implementation.

Findings from the study indicate minimal degree of coherence in adaptation measures but lack of coherence in the motivation and implementation of the policies. The coherence in adaptation measures was in line with the widely recognised adaptation measures such as coastal and wetlands management, public awareness, resilient land use planning, and capacity for adaptation. The finding is consistent with general patterns in the literature on urban climate change adaptation as suggested by scholars such as Broto (2014), Lwasa (2014) and Pelling et al. (2018).

The study also found that the policies do not cover all aspects of adaptation in African cities. For example, the analysis found that urban firefighting management as an adaptation mechanism was ignored in all the policies even though the trends of urban fire appear increasing as suggested by Oppong et al. (2017) and Oteng-Ababio et al. (2015).

Based on the findings from the study, it is recommended that understanding and applying adaptation planning as a process to implementing climate change and urban policies will require leveraging motivations adaptation to draw synergies for collaboration, overcoming the diverse use of terminologies and consolidating climate terms, developing climate change database and embracing adaptation innovations. These strategies are particularly important because having coherence of climate change adaptation and urban policies provides an important avenue to ensuring sustainable communities. Further studies are needed on documentation of how coherence can be improved during implementation. During implementation, adjustment can be made to address issues of incoherencies yet such studies are still limited, and the current paper does not address this issue.

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