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Evaluating Flood Adaptation Governance in the city of Calabar, Nigeria

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Abstract

There is increasing demand for cities in developing societies to embed climate adaptation into policies and practices. This has implications for the governance system. However, focus is often on traditional hierarchical forms of governing and governing by network neglecting other forms of governing. This raises fundamental questions concerning how governing arrangements support or, alternatively, constrain climate hazard management. Taking the city of Calabar in Nigeria, where flooding is a major hazard, as an empirical case study, this paper consists of three elements. First, the study assesses existing approaches to adapting to climate hazards. Second, it seeks to understand the governance systems adopted in the context of flood adaptation and their implication for practice. Third, the strategies necessary for an improved implementation of climate hazard adaptation at local governance level is examined. The study is based on a stakeholder workshop and document analysis. It shows that, despite calls for decentralised governance and prevalence of a hierarchical system, other forms of governing coexist alongside these systems of governing. Five key strategies which should form the basis of urban climate hazard adaptation in practice were identified by stakeholders, including: synergy of activities among stakeholders; enforcement devoid of politics and bureaucracy, capacity building and information/data availability; increased focus on international cooperation and funding; and consideration of connections between flooding and other urban processes. The study provides insight for designers and planners, for example, on the nature of relationships required for successful flood adaptation in cities of developing countries.

Keywords: climate hazard; cities; developing countries; informal interaction; flood adaptation; governance

Introduction

Every year millions of people worldwide are affected by climate-related disasters (de Leon and Pittock, 2017, Lee et al., 2016). Over a ten years period, 1995 to 2015, over two billion people were affected by flooding, about 56% of all those affected by weather-related disasters (Centre for Research on the Epidemiology of Disasters and United Nations Office for Disaster Risk Reduction, 2016) causing economic damage, fatalities, and social hardship around the world (Ward et al., 2018). Yet, extreme climate events producing severe floods which may put additional stress on societies are likely to grow in frequency (Forzieri et al., 2018). Therefore, for cities in developing countries, that are already grappling with a myriad of economic and social challenges, managing floods is a challenge of high priority (Egbinola et al., 2017, Douglas, 2017). Given that there is now a growing recognition that flooding cannot be entirely avoided (Tingsanchali, 2012, Jongman, 2018), taking flood adaptation actions is championed to reduce risk, minimise impacts and speed up recovery (Alfieri et al., 2016).

The term 'adaptation' is often used interchangeably with closely related concept of coping. While coping strategies are short-term, immediate and reactive actions targeted against a certain hazard and activities that take place within existing structures (Cutter et al., 2008), adaptation strategies are practices and results that are sustained, continuous and are aimed at expected hazard. In simple terms, flood adaptation is intended to establish incentives for a management approach that reduces impacts rather than preventing floods (Alfieri et al., 2016). The construct of flood adaptation has become popular in policy and decision-making discourse at international, national, regional and community levels (Doroszkiewicz and Romanowicz, 2017, European Environment Agency, 2016). For developing countries it is often presented as offering real opportunities for urban centres to sustainably manage climate hazards like flooding (Ogato et al., 2017, Adger et al., 2003, Ayers et al., 2014) and meet developmental goals (Siegel and Jorgensen) especially as it incentivises treating flood water as a resource (Bottazzi et al., 2019). However, the idea of developing flood adaptation strategies is relatively new for societies in the global south. Developing effective adaptation to rising flood risk will require diverse interventions, which may include structural, institutional and societal pathways (Carmin et al., 2015, Jongman, 2018).

Wilby and Keenan (2012) identified two important components of flood adaptation namely *enabling environment* for adaptation and specific *implementing measures*. The former includes the governance structures that facilitate decision making before, during and after flood events. The latter captures all the practical steps that can be taken to defend against, live with or withdraw from flood risk. The enabling environment for adaptation depends on an appropriate governance system that can support successful flood adaptation (Juhola and Westerhoff, 2011, Mees and Driessen, 2019). Pierre and Peters (2000), provides a potentially fruitful categorisation of governance arrangements. These are *governing as hierarchies* (traditional command and control mechanism), *governing as markets* (market forces dictates the governing process), *governing as communities* (governing structure without the government) and *governing as networks* (network of public, private, and non-profit organisations working together) often referred to as decentralised governance. How these systems promote or constrain flood management has not been fully explored.

Despite a recognition of the multiplicity of flood governance system (Dhiman et al., 2019), most of the emerging narratives on flood adaptation in developing countries tend to treat them as mutually exclusive and often promote a networked form of governance devoid of a recognition of the complex and dynamic governance systems prevalent in many developing

societies (Cubitt, 2014). Unlike in developed countries where less complex systems of adaptation policy instruments already exist (Doroszkiewicz and Romanowicz, 2017), most developing countries, operate under complex governance systems that need to be well understood for flood adaptation to have any appreciable and sustained benefits. This is because constructs such as flood adaptation are based on examples and liberal ideas of democratic decision making, prevalent in developed countries, that often do not reflect reality in developing societies. This can make the implementation of and compliance with generic strategies difficult in these societies. Furthermore, studies have identified failures and/or limitations in governance structure as being a reason for the failure of adaptation strategies in developing countries such as Nigeria (Olorunfemi et al., Hanssen et al., 2013).

Despite the many challenges facing cities in the global south, attempts are being made to cope with and adapt to flood risks. Knowledge of current city level practices will be central to improving flood adaptation practices. Nevertheless, adaptation practices of cities in the global south are little known, poorly documented and often overlooked or taken for granted. If flood adaptation strategies are to achieve the hoped-for risk reduction as well as sustainability and development benefits, it is essential to critically examine and learn from how flood management practices operate on the ground. Against this background, this paper sets out to address two fundamental issues. First, to understand how cities in developing countries are responding to the challenge of flooding through policies, plans and programmes in the context of flood adaptation. Second, to examine the potential implications of existing flood adaptation practices for future flood governance in these cities. Critical questions remain surrounding how current governing arrangements support or, alternatively, constrain the ability to plan and implement an effective adaptation strategy (Tanner et al., 2009). For instance, how will the often-dominant hierarchical governance in developing societies shape/determine choices of flood adaptation strategies in their cities? Answering such question has the potential to contribute to improved flood adaptation governance in cities of developing countries.

The paper draws on the case study of Calabar, Nigeria which presents a valuable example of a medium sized city that is highly vulnerable to fluvial and coastal flooding in a society with relatively young flood adaptation policies, and complex governance systems. This responds to the call by Shi et al. (2016) for more adaptation studies of rapidly growing cities in societies with low financial or institutional capacities and recognises suggestions that city is an appropriate scale for climate governance (United Nations Human Settlements Programme (UN-Habitat), 2011). Calabar to this end is a 'typical' growing city prone to flooding and in the last few years has been actively building climate governance policies (Lamond and Adelekan). The paper will also make an attempt to contribute to ongoing discussions and our understanding of flood adaptation in federal states with multi layered governance and shared jurisdictions (Vedeld et al., 2016).

Context

Over the last decade, Nigerian cities have experienced increasing flood risks (Adekola and Lamond 2018). It is predicted that flood and other climate-related hazards could cost the country about 30% of the country's GDP, or $460 billion by 2050 (Building Nigeria's Response to Climate Change, 2011). In Nigeria, the evolution of thinking from prevention and coping towards flood adaptation is relatively recent and still developing. The National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) (Building Nigeria's Response to Climate Change, 2011) sets out strategies, policies, programmes, and measures for climate change adaptation in Nigeria. It establishes the roles

and responsibilities for major stakeholders, including the state and local governments which should be directly responsible for climate change adaptation at the city level. However, the NASPA-CCN enjoys no legal standing in its own right.

Nigeria operates a three-tier (federal, state and local) government system. These tiers all have responsibility for environmental management, including managing floods. Each tier of government is established to be existing separately from, and independent of the other. Whereas federal responsibility covers the whole country, state and local governments are limited to act only within their territorial jurisdiction. As it relates to flood management, there are no formally laid down responsibilities for
each tier of government. In practice what is mostly seen is that each tier has an agency responsible for emergency and environmental management. For instance, there are several efforts by the country's National Emergency Management Agency (NEMA) at the national level and its counterpart agencies at sub-national levels, known as State Emergency Management Agencies (SEMAs), to manage impacts of flooding. The local government is less involved due to crisis of governance which results in states often hijacking or diverting local government funds (Abdulhamid and Chima, 2015). In terms of financing, both federal and state governments are expected to make financial allocation from public revenue to local government (Haruna and Al-Ansar, 2013). As such the local government is often at the mercy of the state government who may often withhold funds.

Calabar is the capital city of Cross River State, Nigeria. It is made up of two local government areas (Calabar Municipal and Calabar South) and extends between latitudes 04°15' and 5° north of the equator and is 8°25' east of the Greenwich meridian (Figure 1) (Cross River State Government, 2004). The city falls within the Cross-River basin, which has a tropical, rainy climate with high rainfall (varying between 1250 mm and 4000 mm per annum depending on location); high temperatures (between 22°C and 30°C), and high relative humidity. Calabar has an area of approximately 328 square kilometres and a population of 525,000 (National Population Commission, 2006). Due to its location in the wetlands along the shores of the Atlantic Ocean and in the Niger Delta, Calabar is predominantly a commercial city with pronounced farming and fishing activities. As a major urban centre in the ecological forest zone of Nigeria, Calabar has experienced a series of floods with often considerable consequent loss (Ojikpong et al., 2016). Calabar's vulnerability to flooding can be linked to its location within a tropical rainforest, close to the coastline, and to the socio-economic and demographic nature of the city. Massive ecosystem degradation in the area (Obia et al., 2015) has led to the loss of natural protection provided by mangrove ecosystems (van Maanen et al.). Furthermore, haphazard urban development, such as the use of floodplains for development, poor solid waste management leading to blocked drainage, or the total absence of drainage in some locations, have contributed to flooding in the city (Animashaun, 2010, Antigha et al., 2014). According to Akintoye et al. (2013), around 65% of built-up areas in the city are prone to flooding.

Figure 1: Map of Nigeria showing the two Local Government Areas in Calabar

Research Method

This paper draws on findings from a stakeholder workshop held in Calabar (in June 2016), to identify specific factors that are fundamental to local governance and climate hazard adaptation in the city. The aim was to understand and draw on a range of narratives and actions related to climate adaptation with specific focus on flooding. Participants were selected from relevant stakeholder groups representing government, academia, local

community, NGO/CSO/CBO, and professional organisations. Participants held relevant positions within their organisations and were well placed to understand and discuss the wide range of issues surrounding urban flood management in Calabar. The workshop consisted of presentations by invited speakers selected from relevant stakeholder organisations, a breakout session for participants to hold discussions on pre-formulated questions, and a self-completed opinion survey designed to elicit further data. Discussions and questions pertained to institutional arrangements for climate hazard (especially flooding) adaptation as well as the challenges and expectations for implementation. In total, there were sixty-two (62) participants at the workshop and forty-nine (49) workshop opinion surveys were returned: Academic (11), Non-Governmental Organisation (11), Business (2), Government (18), and 7 others who did not indicate their stakeholder affiliation. Furthermore, the study draws on documentary evidence which allows the assessment of the ways in which adaptation to climate hazard (mainly flooding) is framed in practice, within policy documents and discourses. Data was collected from current literature (including grey sources) on flooding in Calabar. Literature from a wide range of sources, including state and local government bodies and media organisations, was drawn upon. These sources were collected using internet search engines. A structured search using Boolean searching was conducted using a wide range of terms. These related to the geography of interest (i.e. Calabar) and climate change impacts (e.g. flood, flooding etc.). Sources were investigated, and information collated, with reference to narratives, activities, and actions of relevant stakeholders during flood events in Calabar.

The qualitative textual data collected through workshop discussion notes, open ended responses to the opinion survey and literature search were collated under themes and analysed through traditional text analysis (TTA) (Bright and O'Connor, 2007). Full ethics approval was sought and granted for this study (UWE FREC/FET.16.08.001).

Results

Participants widely recognise that climate change is happening and that it is manifested in an increasing likelihood of extreme weather, evidenced by the increasing frequency and occurrence of flooding, heat waves and windstorms. Participants particularly pointed at recurring annual flooding since the 2012 incident that ravaged the entire nation (see Urama et al. (2019)). Overall, research participants regarded flooding as being the major climate hazard confronting Calabar. As such, most of the subsequent discussions focused on adaptation to flooding and its governance.

Factors Contributing to Flood Vulnerability

In the context of Calabar, the dominant human factors that exacerbate flood vulnerability were identified as solid waste management and poor city planning. For instance, the increasing and widespread consumption of sachet water, popularly known as 'pure water', in many cities of Nigeria was highlighted in the workshop. With the increasing urban population and poor municipal water supply situation, excessive demand for sachet water and polythene being dumped indiscriminately are major factors contributing to blocked drainage that leads to flooding in the city. This is a result of the lack of safe drinking water. The rapid and large-scale encroachment of settlements onto low-lying wetland areas is another factor identified as increasing Calabar's vulnerability to flooding. Many of these settlements do not have the necessary formal planning permission, expected to be granted by the state government. Participants at the workshop pointed out that in most cases the process of land allocation is informal – a situation whereby traditional actors and even actors from within the state [but not acting formally] allocate lands without recourse to the formal process. Erection of unplanned settlements is closely linked to another vulnerability factor that informs an increasing rate of unauthorised construction on drainage lines. Inevitably, some of these

settlements outside the central business districts are slum areas that also lack basic infrastructure.

Flood Adaptation Policies and Strategies in Calabar

Overall, we found that the idea of flood adaptation is new and still a developing area. The concept is rarely used directly in the narrative of actors when compared to flood prevention. However, the study identified various measures being adopted by the various actors in Calabar that could be regarded as flood adaptation measures because they have been sustained and continuous over a period.

State flood adaptation policy and practices

The study found no documentary evidence of state or local government policy on flood adaptation in Calabar. Neither could we find any policy documents that deal with general flood management. Evidence from the stakeholders' workshop further corroborates the paucity of policies on flood adaptation in Calabar. None of the workshop participants (including representatives of the government) were able to mention or refer to any statutory law governing adaptation or flood management. Workshop participants were not aware of the NASPA-CCN which was developed at the Federal level. Of the forty-nine respondents to the survey, eight indicated knowledge of a policy relevant to climate hazard adaptation in Calabar. Of these, the annual tree planting campaign was the most widely mentioned and only one person referred to a specific law, the Urban and Regional Planning Law of Nigeria 1992. The tree planting campaign aimed to plant five million trees to support afforestation and mitigate climate change. Successive government in the state have promoted urban tree planting initiatives for diverse aims including to enable urban areas to adapt to and mitigate against climate change, enhance urban sustainability and improve human health and well-being.

One of the strongest statements indicating a move towards adaptation to flooding was made by the Director-General of the State Emergency Management Agency, who said the agency is spending N800 million [$US 2.3 million] to adapt to flooding in the state:

> We have bought mattresses and toiletries; provisions have been made for foodstuff and other necessities of comfort …This money will be used to build a permanent camp for 216,000 people that are likely to be severely affected by the flood. …Part of the amount will also be used to hire boats to move some people in the riverine areas to safer places and provide water and healthcare for them (Pulse.ng, 2016).

In addition, participants at the workshop identified the following as the main implementing measures adopted in Calabar and can be regarded as strategies to promote adaptation. These are practices that are regarded to have endured over many years and state administrations. We attempt here to give examples from recent activities.

- Public awareness and sensitisation programmes to educate residents about their actions and impacts on the environment. This often comes in the form of talks and campaigns targeted at specific groups within the city, i.e. motor park operators, students, and traders.
- Tree planting campaign and criminalisation of indiscriminate tree felling. For instance, in a bid to increase its forest cover and urban afforestation to mitigate Climate Change challenges, the Cross-River State Government had a target to plant 5 million trees

annually. There was also a two-year logging moratorium and establishment of an anti-logging task force.

- Waste collection and management – following the inability of the contracted firms handling the evacuation of refuse in Calabar metropolis to meet their obligations, in June 2016, the Cross-River State Governor announced immediate termination of their contracts and mandated the Calabar Urban Development Authority (CUDA) to handle the task of clearing waste in the city. The aim was to promote effective clearing of drainage that leads to flooding.
- Enforcement of standards (establishment of green cadet/police) and Master Plan (promoting greater Calabar Master plan). For example, in November 2016, the state government enforced green police with statutory responsibilities of enforcing Cross River State sanitation laws and to police the forest from illegal deforestation, while enhancing tree planting to stabilise the ecosystem.
- Establishment of organisations/agencies: In the absence of formal policy documents, there has been a focus on the establishment of organisations to enforce environmental laws in a bid to stem the twin challenge of blocked drains and unplanned development. The establishment of specific organisations was one of the most interesting and unique aspects of state governments' arrangements for institutionalising flood adaptation within cities' government and governance structures. Compared to available resources during the past administration (pre-2015), there has been realignment of government agencies and ministries. This has resulted in the establishment of more development and environment-based agencies and government departments – for example, the Ministry of Climate Change targeted at general environmental management in the state. There are currently twelve state and local government entities that play a role (directly or indirectly) in climate hazard management in Calabar (Table 1). The majority of these are state government agencies and they are established or realigned at the behest of the presiding state governor. According to one of the workshop participants, referring to the process leading to the establishment of 'green police' in the state: 'the decisions have already been completed before the issue were brought before us, we were not consulted'.
- Drainage rehabilitation and expansion. Successive governments at the state level have invested substantial funds on construction of drainage in the city. For example, in 2013, the state government claimed to have completed a N2 billion ($5.5 million) state-of-the-art underground drainage system for Calabar (Premium Times 2013).

These strategies are not formalised in any policy document and are not coordinated by a central [government] agency. The administration of flood adaptation practices in Calabar was found to be almost wholly dominated by the state government. For instance, there was no evidence that local government agencies are involved in climate hazard management. Yet, the NASPA-CCN recommends responsibilities for the federal, state and local governments as well as other key stakeholders.

Table 1: Key state and local government agencies responsible for flood adaptation in Calabar (Based on grey literature and workshop survey).

Community level adaptation

Flood adaptation at community level is commonplace in Calabar. There are practices that are long-standing and frequently adopted by communities in anticipation of flood incidence. For instance, one adaptation technique involves communities deploying canoes as a main means of transportation during flooding. According to the village head of Efut Ikwa community in Calabar South Local Government Area, this practice is not new: "during the rainy season,

there are some compounds you cannot have access to and their occupants cannot come out unless they use canoe" (Uchechukwu, 2015). The operation of this mode of transportation is not yet formalised and involves the establishment of informal routes during of floods. Another strategy is for residents and businesses to elevate their buildings or construct concrete walls as a means of adapting to flooding (Figure 2). There was also mention of communities (through youth groups) coordinating annual purchase and laying of sandbags at the onset of flood season to check flood impacts. This is seen as a community-based adaptive strategy for dealing with expected floods and is often supported by some non-governmental organisations and local small and medium-sized businesses.

Figure 2: Practices of local residents to adapt to flooding

Non-Governmental Organisations and Private Sector Flood Adaptation

We found little documentary evidence of roles played by non-governmental organisations and private sector in flood adaptation in Calabar. However, workshop participants suggest that these sectors do play voluntary, fragmented and uncoordinated roles which do not relate to direct planning of adaptation measures or decision making. For example, a representative of the Nigerian Red Cross Society, Calabar Branch pointed out that the organisation has consistently prepared for and supported the state government in post-disaster recovery, although less so in the decision-making process. This is similar for the private sectors who take on a peripheral role, remaining distanced from the decision-making process. We found that businesses have keyed in to play a role through the annual Calabar Carnival through sponsorship. For example, a local bank collaborates with the state government by holding an annual event to educate people on how to manage climate hazards such as flooding (Vanguard Newspaper, 2017).

Required Changes towards Climate Hazard Adaptation in Calabar

This study also sought to understand from the perspective of stakeholders, the impediments and solutions to the governance of climate adaptation in Calabar. Workshop participants identified five key factors which strongly impact the effectiveness of local governance arrangements (with most of the discussion focusing on flooding). The factors include: lack of synergy of activities among stakeholders, lack of enforcement devoid of politics and bureaucracy, lack of capacity and information/data scarcity, lack of international cooperation and funding, and lack of consideration of connections between flooding and other urban processes. It is against this backdrop that participants proposed improvements in these characteristics as key strategies needed for sustainable flood adaptation in the city. These may help to obviate bottlenecks and promote sustainable flood adaptation through an efficient and coordinated land management and decision-making system.

a) Synergy of activities among stakeholders

'…. Government should ensure continuous synergy and collaboration among stakeholders and development partners in achieving its resolve to tackle the challenges of managing flooding in Calabar' (Workshop Participant 1).

Synergy as a continuous process rather than a one-off event was regarded as a key element in the process of ensuring successful flood adaptation. Most participants currently rate the level of collaboration, and therefore synergy, among stakeholders as being weak. For instance, only twelve respondents either agreed or strongly agreed that there is adequate exchange of information and interaction among the stakeholders involved in the management of climate-

related hazards in Calabar. There was a consensus among participants that there are many actors involved [informally and most without decision-making powers] in the management of flooding in Calabar, but there is no mechanism within which they can operate in a coordinated manner for meaningful impact. Workshop participants recognise this horizontal cooperation – between government agencies and actors as needing the highest level of coordination.

A widely cited instance (by workshop participants) of lack of synergy is in the process of land allocation and activities of modern state institutions and traditional institutions. According to the Land Use Act of 1978, all land is nationalised and their management vested in the state governments. However, in reality, in most communities, the traditional institutions which managed lands long before formal institutions were introduced still continue. This is possible because state actors recognise the traditional institutions and are able vary state institutions for
mutual benefits. According to a workshop participant "people are building according to how and who sells the land to them and not according to any planning process". Participants generally suggested that having collaborative/participative processes and aligned objectives between state and traditional institutions can help build a common and agreed land allocation framework. This could contribute to reducing the rate of unplanned construction located within flood-prone wetland areas in the city.

b) Enforcement devoid of politics and bureaucracy

'…there are drainages, there are laws and there is a master plan for Calabar, but it has not been followed [enforced] by successive governments …. it is the enforcement of available laws that is the problem' (Workshop Participant 2).

It was suggested by workshop participants that planning and zoning laws and their enforcement are weak, and that weak enforcement of existing laws and legislation plays a major role in flooding in Calabar and many other Nigerian cities. Lack of enforcement can embolden those who wish to contravene laws for their own gain since they are not concerned about repercussions. This may explain why participants do not see more government policies and programmes as an ideal approach to flood adaptation. According to the opinion survey, the need to do more in law enforcement ranked highest of all possible adaptation strategies, above ten other possible flood adaptation strategies covering structural, institutional and societal approaches, identified by Carmin et al. (2015). According to one participant: 'the most vulnerable people who live in slums along flood plains and wetlands, which tend to develop areas with poor urban infrastructure, including flood-prone land, are not the only ones to be targeted for enforcement, but also government agencies'. This was followed by several participants indicating examples of flagrant disregard of environmental laws by state agencies, including building on green areas, pollution etc.

Another important aspect is the need for government to ensure that standards of government infrastructure projects are enforced. Participants complained of shoddy engineering and drainage projects procured by government agencies. Interestingly, this lack of standards was not blamed on corruption between commissioning and execution but rather on politics. One participant pointed out that:

'politicians are thinking of the next election and how to win the next election and how to get a road on time irrespective of quality – they want it commissioned before the next election, so they don't mind if there is no drainage'.

Thus, participants suggested that scrutiny and enforcement of standards should encompass both the populace and government. An inequitable enforcement, whereby laws are imposed on some classes but not on others, is seen as inimical to sustainable flood management. An urban law enforcement approach that is equitable, accountable, responsive, and transparent is required to form the basis of flood adaptation at a local level. One stakeholder's suggestion as to how to facilitate this included the creation of organisations within the city that will involve all stakeholders but are devoid of government influence, although the practicality of establishing such an NGO would need to be ascertained, taking into consideration the peculiarities of governance in Nigeria. As pointed out by Jha et al. (2012), identifying which institutional arrangements are most effective in the delivery of urban flood risk management measures is fundamental to success. However, what is clear is that, due to political pressures and resultant conflicts of interest, an enforcement body wholly controlled by the state is currently unsustainable, rather what is required is a network of stakeholders empowered to enforce environmental laws.

c) Capacity building and information and data availability

'Because they lacked the data and the training needed to understand and link climate data to projects, they do not factor in climate change into projects' (Workshop Participant 3).

Capacity building, retraining, and educational programmes to increase environmental awareness and public involvement of stakeholders logically sit at the centre of any flood adaptation framework, given the recognised capacity deficit among stakeholders. Participants accept the need for adequate environmental education and training to effectively and fully confront the challenges of flood adaptation. Government stakeholders account for the implementation of the vast majority of flood management measures in Calabar and could continue to do so even if more stakeholders are brought into the flood management arena. Therefore, there is a need for increased capacity building among government employees with respect to the adaptation of climate change in general and flooding in particular, as well as enhanced understanding of each government department's responsibility in terms of flood measures.

While flooding in Calabar has become an annual occurrence with severe consequences mostly felt by the urban poor, there is no evidence that the government is considering investment in early warning systems. This was identified as a major skills gap for state and local government officials. Governments rely solely on information provided by the Nigerian Meteorological Agency, a central government body that lacks cohesion or collaboration with other ministries, departments, or agencies in being able to provide and disseminate full climate services (Adekola and Lamond, 2017). A local (i.e. state level) department that processes data for early warning would allow for improved preparedness and readiness for emergency actions. However, it will require expertise and training, especially in areas such as the use of remotely sensed data in early warning, identified by participants as lacking in Calabar's flood forecasting system. Some of these skills may however be present in other stakeholders, which could be easily transferred in a networked governance environment. Some non-governmental stakeholders pointed out that they relate with and offer some low-key climate information services to communities and some government departments.

Respondents were confident in their risk-handling processes but required more information to be more effective. Participants found a need for adequate information, such as climatic, environmental, socio-economic, and demographic data, prominent for flood adaptation decision-making. Having access to this data - and being able to conduct a comprehensive and reliable analysis and use of this - should be the basis of non-structural and engineered approaches (Jha et al., 2012). What became apparent during the workshop was that some of this information can be drawn from grassroots experiences of dealing with flooding at household and community levels, and may also reside in other stakeholders outside of the state government. Where these may not be available or obvious to decision makers, there may then be a need to strengthen stakeholders' capacity to conduct up-to-date studies collaboratively, especially capacity in understanding relevant local knowledge and practices and how to streamline these into policies and strategies.

d) International cooperation and funding is important

'This workshop is very timely, it provided a good avenue for cross fertilization of ideas, we need more of this kind of workshop to provide a platform for us to interact with relevant international organizations that can help us' (Workshop Participant 4).

While training and information are critical pre-requisites in the flood management process, it was recognised that the system would only be successful were it backed by adequate funding. Participants believed that this cannot be provided by the government alone and perceived that support from international agencies and other stakeholders would be needed. It has long been recognised that a financing structure that depends heavily on government bodies for infrastructure in developing countries is unsatisfactory both in terms of outputs and in terms of impact on the environment (Briscoe, 1999). Thus, international support and cooperation plays a major role. The areas of international cooperation identified by participants include everything from predicting the floods to building stronger materials and infrastructure that will be resilient to flooding, as well as improved warning devices. There were also calls for the government to encourage funding from the private sector, especially small and medium sized enterprises which are the backbone of the urban economy in most cities. For these sectors to be supportive they may require shifts to a less hierarchical governance structure that involves other stakeholders including themselves. This shift can potentially strengthen resolve to fund adaptations at city level through engendering a sense of ownership and of having a credible and effective voice in the process.

e) Consider connections of other urban activities

'.. there are all kinds of problems [factors] worsening the flood situation in Calabar …. If we must solve this problem, government must first of all address these issues'

The perceived links between floods and landslides and between flooding and other urban challenges such as pollution, sand mining etc, show the importance of ensuring that the problem of flooding in the city should not be addressed in isolation but integrated into day to day environmental management. A holistic approach to hazards, including pollution, erosion, and landslides, reduces the possibility that flood management exacerbates the negative effects of these other problems, thus negating any gains of flood adaptation. For example, there was a general understanding that while flooding makes major roads impassable:

'it is the activities of trucks [used mainly to transport petroleum products] blocking major roads that is responsible for worsening traffic gridlock during flood incidences.'

Although a representative of the Ministry of Climate Change stated that this situation will be investigated and addressed, it is a serious indicator of the fact that flood adaptation policies and strategies cannot stand in isolation. A commitment to the aims and contents of flood management policies, together with full implementation of other environmental and city planning laws is central to the ability to live with flooding in Calabar. Considering the many pressures facing Calabar today, it is more important than ever for the government to invest in developing a strategy that is holistic.

Discussion

As discussed earlier and pointed out in literature regarding adaptation in global south (see (Pelling et al., 2018)), we also found that discourse around flood adaptation is relatively new in Calabar. However, we found that elevation of building seems to be enduring strategy rooted in practice of local communities. Overall, there is a lack of clear and consistent framework that institutionalises flood adaptation in city governance. Although, with floods now assuming an annual occurrence in Calabar, key actors are now acting and taking decisions in anticipation of a flood. This suggests that a move towards anticipatory flood adaptation is within the grasp of critical stakeholders. However, important changes would be necessary not just in demonstrating the needed political will required to mainstream flood adaptation into city planning (Pelling et al., 2018) but also in setting in motion a flood adaptation governing system that operates beyond the government (Ng, 2016).

The creation of new agencies of government has been a dominant strategy adopted in managing climate related hazards (including flooding) in Calabar. However, the creation of these new agencies and portfolios have only entrenched bureaucracy and competition, relegating actual activities to a sectoral level with none of the agencies taking charge. This resonates with the idea of institutional layering whereby governments create new organizations within existing arrangements and by adding new institutional forms with limited authority alongside existing arrangements (Van der Heijden, 2011). This practice is characterized by numerous “regime complexes” in which organs of state have overlapping mandates and radical change in major institutions gets more difficult over time. Layering can be observed in the policy incoherence in flood management in Calabar, whereby separate agencies established to address flooding with little or no coordination, have resulted in fragmentation of responsibilities to address flood. In such a situation even shifts in the balance of power may do little to alter the basic architecture of flood governance. Experience shows that where this exists, even minor hazards can have a larger impact on the society (Foresight and Government Office for Science, 2010, Kahn, 2005). Thus, the layering of state institutions responsible for flood adaptation would not only make simple decision making more difficult (Bottazzi et al., 2019) but could also escalate incidents towards catastrophic impact. Interestingly, in response to suggested inability of state institutions to enforce and to self-regulate, participants during the stakeholder workshop called for establishment of an independent agency to ensure equitable, accountable, responsive, and transparent of relevant laws. Exploring the practicality of such an agency would offer insight about specific features and dimensions of flood management reforms needed in Calabar.

Also important is the need to streamline climate hazard management in a holistic manner. Climate hazard management in Calabar at present does not constitute an independent policy area, it is very fragmented. There is no state or city-wide adaptation strategy or plan, but there

is a series of environmental and climate change objectives which invariably touch upon climate hazards (especially flood) management issues, such as: 'tree planting, waste management and public awareness'. The climate hazard adaptation issues are scattered across different government agencies, each of which have other key responsibilities. These agencies could be streamlined to have aspects of their responsibilities relate to climate hazards. For instance, the Ministry of International Donor Corporation could champion fundraising for climate hazard adaptation projects in Calabar, even though it might not be directly responsible for actual climate hazard management.

The lack of coordination among state agencies also underscores the absence of a central state agency, suitable institutional arrangements and lack of a flood management plan in the city. Hence, ongoing initiatives by different actors remain largely uncoordinated, even between government actors and agencies. This is similar to the issues Oladipo (2010) identified at the national level, a circumstance which results in overlap and duplication, with multiple agencies exercising similar functions. However, based on the NASPA-CCN, it is expected that a central state agency will coordinate activities with other key stakeholders in a participatory manner. The NASPA-CCN emphasised the importance of vertical cooperation and coordination between different levels of decision-making and administration. It also alluded to the need for horizontal cooperation and coordination between sectors such as land use and urban planning, water management, disaster management, meteorological services, and the environment. This is expected to be done through: 'inter-ministerial and inter-agency coordination and collaboration'. Yet, our results indicate that such coordination needs to go beyond setting up meetings between ministries and agencies, to a conscious effort to integrate and recognise all relevant actors, including local government, communities and traditional institutions, in the flood adaptation regime and decision-making process.

The observed predominance of state over local government may be because local governments are not well-funded, due to a system that allows the responsibilities and funding of lower tier governments to be usurped by higher tier ones (Oviasuyi et al., 2010). This lack of resources appears to have played a role in the redundancy of local government in flood management. Although this could be a law and constitutional issue, it needs to be considered in relation to effective management of the urban environment and the need to adapt cities as an urban system. Failure to address this challenge could negate flood adaptation in many Nigerian cities. Stakeholders with a city-wide brief such as non-governmental organisations, multilateral and donor agencies could also exert some influence.

The impressions recent flood incidents have left on many of the stakeholders reveals the dominance of the hierarchical system of governing when it comes to flood adaptation. Hence the consensus among workshop participants of a need for shared responsibility in terms of flood adaptation governance in Calabar. Underlying this is recognition that existing governing as hierarchies structure dominated by the state alone cannot cope with the requirements of flood adaptation strategies needed in the city because local communities and other actors buy-in is essential for success. This underscores the importance of governance issues to efficient flood adaptation (Ward et al., 2013).

While apparently the system in Calabar is hierarchical and dominated by the state with lack of formal channels for stakeholder interaction, actual practices show that informal channels of interactions among actors are commonplace. State officials do seek inputs especially from the NGOs and business sector in decision making relating to flood management. Results suggests that these interactions often have their roots outside ‘formal’ governance structures,

yet they can mobilize resources to promote *or even negate* flood adaptation. This is in tandem with studies that have identified and highlighted the importance of the porous boundaries between state and non-state actors (DiMaggio, 2017, Bulkeley and Schroeder, 2011, Kuyper et al., 2018). Suggestions by participants was that this practice of engagement provides capability for non-state actors (i.e. business and NGOs) to become effective partners with the government in coproducing and promoting flood adaptation approaches. Furthermore the importance of informal interactions in the production of space for coordination and consultations outside 'formal' governance structures (Chisholm, 1992) becomes clear.

We find that government and communities flood adaptation strategies can be complementary, rather than inhibitive. However, it was surprising that there was little evidence to suggest that similar informal channel of cooperation exists between state government actors and local communities. Despite such weak local community to government informal interactions and weak adaptation initiatives by the state, local communities have developed innovative flood adaptation practices. This active participation of the local communities could be leveraged upon to promote a strong city-wide adaptation framework. One aspect which the government seem to have learnt from is the recent purchase of boats for transport during flood season, a practice which has long been practiced by local communities as an adaptation measure. This could be a positive sign for streamlining household and community level adaptation measures into a local city governance framework. Stakeholders could respond by supporting this, for example, formalising this means of transportation, especially during 'flood season', so residents are not taken advantage of by opportunistic canoe operators. Other community-based approaches including building elevation should also be supported. This could actually be a step in right direction investing in community-wide and property-level flood protection needed to improve management of local flood risk (Bello et al., 2017). Not keying into these existing practices could even make it more difficult to adequately manage flooding. As suggested by (Odemerho, 2015) basing flood adaptation on local stock of flood knowledge has positive implications for flood adaptations. Despite the need for better collaboration between state and local communities, each one acting based on their preferred governing system is likely to remain important in motivating better flood adaptation.

We found that, as it relates to the Management of flood adaptation in Calabar, different systems of governing co-exists with actors from various groups involved in their practices. The interest of stakeholders differs in the governing system that they may champion, as such they have responded differently to flood adaptation. The government is often political and will favour governing as hierarchies; local communities will favour governing as communities, businesses will favour governing as markets and perhaps non-governmental organisations and civil society will champion a governing as networks. This is a far cry from calls for a decentralised governance whereby flood management responsibilities are delegated away from government (Termeer et al., 2017, Barton et al., 2015, Restemeyer et al., 2018) or a bottom-up approach, whereby flood management from communities informs policy (Knighton et al 2018). However, results suggest that flood management in Calabar is currently a co-existence of governing systems operating together. Although dominated by hierarchical structure, the strength of the other governing systems prevalent should not be discounted. The majority of literature addressing climate governance recognise the multiplicity of governance arrangements in cities (Howlett and Ramesh, 2014, Betsill and Bulkeley, 2006, Fünfgeld, 2015, Phuong et al., 2018), and have often advocated one governing system over the other or advocated bringing together key public and private actors in a policy arena (Jörgensen et al., 2015, Urwin and Jordan, 2008, Vedeld et al., 2016). However, this does not tell the full story in understanding climate action in cities of global

south, where the state can be weak, with the influence of government restricted and policy arena is an arena of power where the *strongest* has control. Therefore, deciding or promoting one governing structure over the other does not reflect reality and could negate the purpose of flood adaptation in a global south city where governance is complex. Therefore, unlike some other literature, we argue against preferring a system of governing over another. The different forms of governing operating side by side, co-existing and exerting different forms of power and agency creates flexibility to respond to flood challenges. Seeing the benefits that derive from co-existing of the different governance arrangements, we believe this is well unsuited for addressing contemporary problems, such as flood adaptation in cities of global south. Practitioners should not view the different governing systems on separate trajectories but recognise the ability of various governing systems to co-exist and support the same adaptation system. Flood adaptation governance could then be based on pragmatic and workable structures rather than on idealistic but unachievable representations (Bottazzi et al., 2019). Therefore, it should be recognised that a sustainable flood adaptation initiative would be one that encompass institutions of all key stakeholders and tries to balance their interests.

This should not discountenance the drive to bring actors together in the policy arena, however, practitioners should not be blind to power relations in the policy arena. Thus, it is not enough bringing together key actors, it is even more important to ensure that their beneficial flood adaptation practices are not undermined in the process. A system that recognises the practices powers of all stakeholders may generate cross-sectoral understanding, help build capacity, share needed information, and build commitment to flood adaptation and has a stronger potential of ensuring vertical and horizontal cooperation. This is in-line with the suggestions by workshop participants and similar studies (see Bottazzi et al. (2019), Adelekan (2016), Kubwarugira et al. (2019)) that integrating all stakeholders' views, institutions and interests in the planning of strategy and direction for flood adaptation yields insight into issues, challenges, concerns, and opportunities which may not otherwise have been known or fully understood.

Our study highlights that flood adaptation in complex developing cities will not be addressed successfully by any one category of actor or by a single governing approach. There could be implications of such approach that promotes interactions between formal and informal institutions for other partners and, especially, funders (Vink and Schouten, 2018). We argue that rather than limit their enthusiasm to participate in climate hazard management in the developing cities that lack a form of decentralised governance, better recognition of informal networks is likely to enhance participation and result in improved risk management.

Overall, our study underscores the need for cities in the global south with complex multi-level government system where the state dominates through governing by hierarchies, to promote stronger integration of policy regimes and institutional structures of diverse actors both vertically and horizontally. Despite this recognition the process as envisaged will be deeply complex to achieve However, lessons from Calabar suggests that in reality this process is already partly in existence although through informal networks. Government can move to recognising this *governance* arrangement and providing legitimacy and authority for platforms where diverse actors become effective partners with the government in coproducing and promoting flood adaptation approaches.

Conclusion

This paper set out to (i) to understand how a global south city is responding to the challenge of flooding through policies, plans and programmes in the context of flood adaptation and (ii)

examine the potential implications of existing practice for flood governance. We have found that, although, in a largely fragmented and uncoordinated way, key actors in Calabar are taking steps in a bid to cope with or adapt to flooding. However, flood adaptation governance is being weakened by multiplicity of agencies and the lack of a vertical cross-sectoral network of state government agencies. Furthermore, the multi-level government structure as practiced in Nigeria appear to have failed in promoting adaptation to flood, at least in terms of the weak involvement of local government in the process. The local government authorities' capacity to act on climate hazard management has been constrained by its operation within a multi-level government system with restricted mandates and resources at city, sub-city, and local/community levels. This is despite the fact that local governments are the engines for growth and development, created with the goal of bringing government closer to people at a grassroots level.

While, flood governance in Calabar is reminiscent of the traditional hierarchical approach that leaves little or no room for other sectors (such as NGO, private, CBOs) to participate in decision-making, we found existence of other forms of governing, notably as communities and network made possible by informal interactions. Yet, in this context of a highly fragmented flood adaptation regime, community level flood adaptation initiatives are increasing and gaining legitimacy. Such multi-level governance through informal channels gives expression to the idea that there are many interacting authority structures at work in managing climate related hazards. It "illuminates the intimate entanglement between of state agencies and between the state and other key actors. It is therefore incumbent on practitioners to recognise the coexistence of the formal and informal aspects of institutions of various stakeholders and recognizing the existence of more than one plausible interpretation of reality.

The NASPA-CCN was fruitful in setting the scene for climate adaptation in Nigeria to include the roles and responsibilities of key stakeholders at all levels. However, it is here suggested that in developing a flood adaptation strategy at local level, emphasis should not be limited to responsibilities and roles alone. The strategy should go further to reflect the possible barriers faced and system that need to be adhered to in local level flood governance in Nigerian cities. To this end, the NASPA-CCN framework helped focus the analysis on the near absence of local authority and other stakeholders in flood management in Calabar. This mismatch between the constitutional requirements and those responsibilities identified for local government in the NASPA-CCN framework and the actual practice whereby local government is almost rendered ineffective is a major constraint to flood adaptation in Calabar. Addressing such a challenge borders on constitutional issues; it could be an arena for NGOs and multilateral and donor agencies to focus attention.

As a way forward for climate hazard management in Calabar, five key strategies were identified by stakeholders. These are synergy of activities among stakeholders; enforcement devoid of politics and bureaucratic, capacity building and information/data availability; increased focus on international cooperation and funding; and consideration of connections between flooding and other urban processes. In addition to pursuing the five strategies, we propose three additional suggestions. First, the lack of a centralised government agency responsible for flood management could be overcome by making one of the government ministries, i.e. the Ministry of Climate Change, the focal state government agency responsible for coordinating flood management. Furthermore, specific tasks and areas of responsibilities can then be identified for other agencies. Second flood adaptation actions ongoing at local community levels, could be mainstreamed into a Calabar Flood Management Plan. Third to

review and if necessary, amend the state's relevant environmental laws, with a view to streamlining government agencies and providing clarity around roles and responsibilities of agencies. To achieve all these will require a shift in the government's climate leadership style; a shift that is characterized by an increasing willingness of the government to share and use its power in a bid to promote flood adaptation. The case of Calabar also highlights that adapting to flooding is highly dependent on how government agencies are organised to create institutions that will inspire innovation, inventions and research that address the flood challenges in the city.

Although our case study may not be universal, it provides useful insight for flood adaptation governance in cities of developing societies as it summarises evidence and opinion from a broad spectrum of stakeholders. The study illustrates that climate governance is by no means devoid of conflicting interests and practices, but within informal channels of interactions could provide a platform for promoting multi-level, multi stakeholder flood adaptation governance. We recognise that an increasing number of studies are now focusing on multi-level governance in managing environmental change both in developed and developing societies, none has highlighted the importance of the informal interactions among key actors in the way we have done.

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Governing for Flood Adaptation in Cities of Developing Societies: A Case Study of Calabar, Nigeria.

Table 1: Key state and local government agencies engaged in flood management in Calabar (Based on grey literature and workshop survey).

Government agency	Current and expected roles
Calabar South Local Government Area and Calabar Municipal Local Government Area	Responsible for governance at the local level. Rarely visible at the moment but should be at the centre of liaising with and coordinating views and activity of communities as well playing a lead role in emergency planning and recovery after a flood event.
Calabar Urban Development Agency	Primary task is to ensure Calabar is well-planned with control on informal settlement areas with formation of new districts, which is a central factor in preventing increase in future flood impacts. However, now burdened with the challenge of waste management and keeping the city clean.
Cross Rivers State Emergency Management Agency (CRSEMA)	To coordinate resource towards efficient and effective disaster prevention, preparation, mitigation, and response. The agency is often overburdened by a rising spate of communal clashes, so that when the flood season sets in, its capacity could be grossly weakened to respond to flood emergencies.
Forestry Commission	Sustainably develop, conserve, and manage the forest reserves of the state. 26% of the state's 23,074 km² land area is forest.
Ministry of Environment	Formulates and implements policies for the protection of the natural environment against pollution and degradation. The mandate for this ministry is broad and it has a lot to grapple with at the moment.
Ministry of Climate Change	Expected to drive policy development and implementation on Climate Change at the state level. This is a new ministry designed to coordinate forestry and a focus on climate change, which are key factors in city flooding.
Ministry of International Donor Cooperation	Coordinate funding for adaptation, i.e. designs and construction of resilient infrastructure.
Ministry of Lands and Survey	Responsible for land allocation. Important in ensuring that land is allocated on basis of effective planning. This is done together with the Cross River Geographical Information Agency.
Ministry of Sustainable Development and Social Welfare	Has state responsibility to execute pro-poor projects to ameliorate the sufferings of the people. Although not an emergency agency like SEMA, it will play a key role in placing special emphasis on people with disabilities, elderly people, and the sick and feeble in flood adaptation.
Ministry of Water Resources	Control of river channels and providing portable drinking water.
Ministry of Works	Has central responsibility for both managing existing (often outdated) and design of new infrastructure. This could be the central ministry for design of flood resilient infrastructure. At the moment there is evidence that the public infrastructure is frequently not designed in a flood resilient manner.

Governing for Flood Adaptation in Cities of Developing Societies: A Case Study of Calabar, Nigeria.

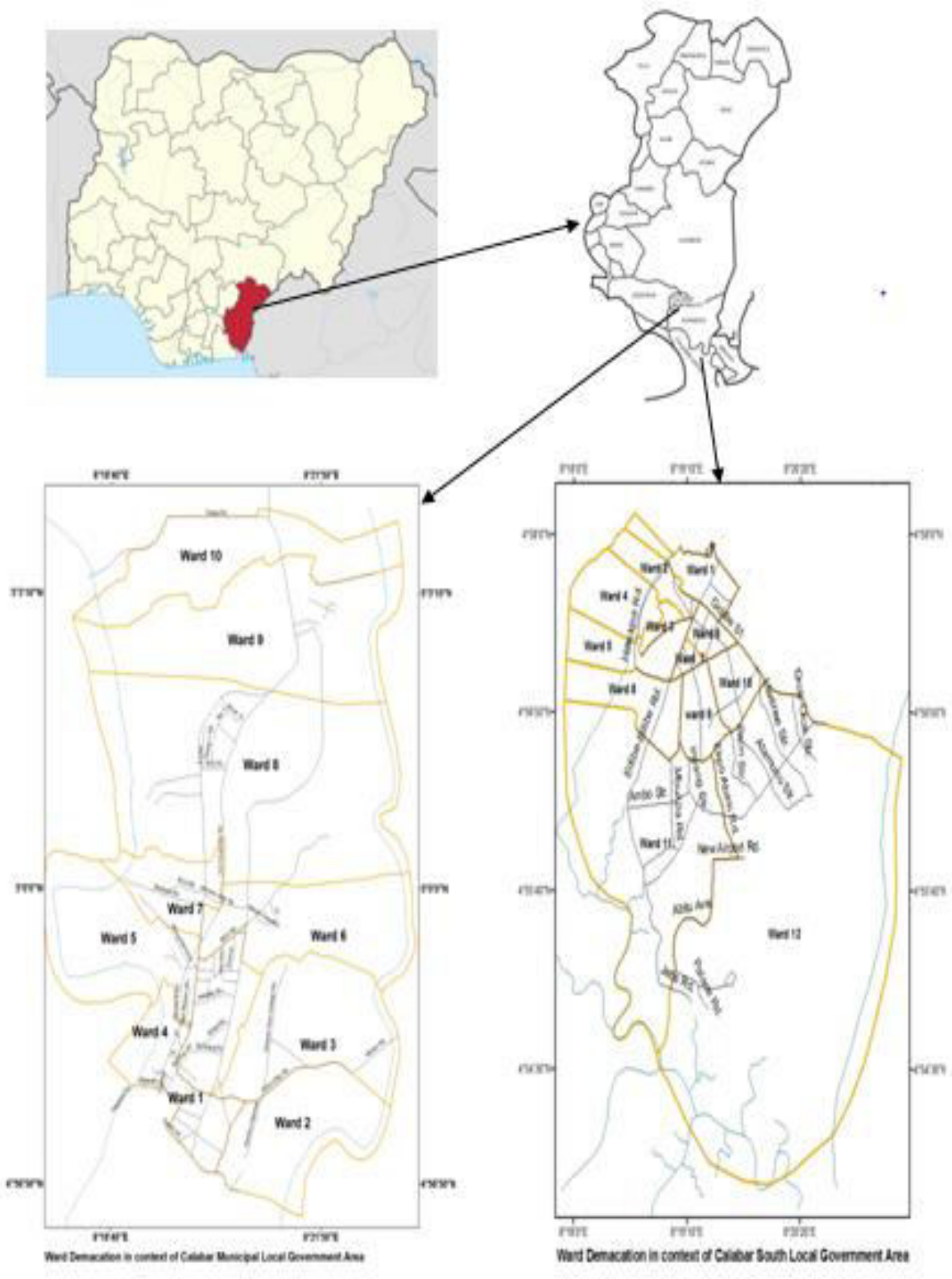

Figure 1: Map of Nigeria showing the two Local Government Areas in Calabar

a) A concrete wall constructed to prevent flood from entering the house

b) Sandbags arranged few meters from building to prevent flood waters

c) Trees planted as a way of adapting to flood

d) Canoe, alternative means of transportation during flood

e) Stairs constructed to raise building above flood level

f) Self constructed drainage close to home entrance

Figure 2: Practices of local residents to adapt to flooding (Source: All images taken during field work, except d - http://www.alamy.com/stock-photo/nigeria-canoe.html)