
Flood Management and Governance Structure in Lagos, Nigeria



Lookman Oshodi

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1. INTRODUCTION

Flood is a natural hazard that makes no distinction in the status of any society in the world. Its occurrence in different parts of the world has shown that it is a global phenomenon that does not ostracize any community. Few examples of major floods are in Jakarta, Indonesia (January, 2013), Manila, Republic of the Philippines (August 2012), Black Sea Region of Southern Russia (July 2012), Queensland, Australia (January 2011 and 2013), nineteen States in the Federal Republic of Nigeria (2012), Tennessee, Northern Mississippi Basin in the United States of America (May 2010), Yorkshire in the United Kingdom of Great Britain and Northern Ireland (May 2007), Southern Alberta in Canada (June 2005) and the Republic of Mozambique (2000, 2012 and 2013). The common characteristics of all these disasters are massive devastation to the physical and emotional fabric of respective environment.

In many jurisdictions, flood hazard cannot be totally avoided, but minimizing its destructive impacts on lives and the environment becomes a strong priority for many governments. Learning from regular flood disasters, certain countries such as New Zealand have come to recognize flood as a major natural challenge to be confronted within the national policy consciousness; hence efforts have been relentless in evolving multi – level but coordinated strategies in building resilience communities and combating the perennial hazard.

However, many countries in the Sub Saharan Africa are yet to demonstrate full preparedness to deal with the problems, despite the increasing threat posed by the flood and possibilities of severe flooding in the future due to climatic and other environmental factors. One factor is a rise in mean sea levels, which will be around 50 centimeters by 2070 as warmer temperatures cause oceans to expand (Channelnewsasia, 2012). The enormity of the challenges ahead for the population at flood risk in Sub Saharan Africa, most of who lives below USD1.25 per day and the adopted approaches to resolving flood crisis by government in the region becomes compelling to review the governance structure for risk management practice. Lagos, the largest city in the region located in the coastal area, provides a pulsating platform to assess the governance structure on flood risk management.

Lagos is a City-State regarded as the economic and commercial capital of Nigeria with estimated 21, 200, 000 population. It has a total area of 3, 577.28 square kilometers of which 779.56 square kilometers representing about 22% is wetland and a population density of 5, 926 persons per square kilometers. Population has continued to grow at a rate of 3.2% per annum while the authority is aiming at transforming the city into African model mega city (Lagos State Government, 2012).

Flood has become a major environmental hazard threatening lives and properties within the state. Between July and October 2011, not less than 7 major floods were recorded with about 30 deaths and destructions to the properties worth millions of Naira. In the month of June 2012, the torrential rain resulted in massive floods that sent thousand of residents packing. People living in the flood plains across the state and in poorly constructed structures were mostly affected. Many residents were confounded as seeping water flooded their homes while properties worth millions of Naira were damaged as houses and fences collapsed (The Guardian, 2012).

Yet, warnings are rife on more flood crisis. The perennial occurrence of the crisis has posed serious challenge to the policy makers, urban planners and city managers. Therefore, efforts at managing the problem require innovative strategies and collaborative approach of all stakeholders.

The paper recognized that urban governance structure is a primary factor in building the resilience of a city towards mitigating or adapting to environmental risk. A devolved structure of governance is a platform to enhancing the capacity of individuals within a community or society to cope with and adapt to disturbances or changes. It provides environment that enables communities to participate and make decisions in the face of imminent and potential hazards. Therefore, the paper will examine the risk of flood and risk management practice in Lagos, comparative institutional approaches to flood management in different parts of the world and subsisting governance structure in Lagos.

2. RISK OF FLOOD IN LAGOS

The risk of flood in Lagos is comparatively higher than other upland locations in Nigeria. The high risk could be attributed to the following factors;

- a. Lagos has been identified, by a 2007 Organization for Economic Co-operation and Development (OECD's) study, as one of the identified 20 port cities in the world which, in terms of population, would be most exposed to coastal flooding by 2070. Lagos ranked 15 in this study. Other cities and their rankings are Kolkata (1st), Mumbai (2nd), Dhaka (3rd), Guangzhou (4th), Ho Chi Minh City (5th), Shanghai (6th), Bangkok (7th), Yangon (8th), Miami (9th), Haiphong (10th), Alexandria in Egypt (11th), Tianjin (12th), Khulna in Bangladesh (13th) and Ningbo in China (14th). The remaining five were Abidjan in Ivory Coast (16th), New York (17th), Chittagong (18th), Tokyo (19th) and Jakarta (20th), (Channelnewsasia, 2012).
- b. Topographically, Lagos is a low lying coastal city with most parts of the state less than 2 meters below the sea level.
- c. Lagos State falls under the fresh-water swamp vegetation region of Nigeria with 2, 032 mm of rainfall or more per annum and relative humidity typically above 80%.
- d. About 22% of the landscape is classified as wetland while creeks, lagoon and rivers are among the dominant features of the geography. Among the major water bodies are Atlantic Ocean bounding the State at the Southern axis. Lagos Lagoon, Lekki Lagoon, Five Cowries Creek also at the Southern part, River Ogun at the Northern part, Badagry Creek and Ologe Lagoon in the South Western part and Majidun Creek meandering through different locations in the Northern part of the State. Others are River Ole, River Owo, River Oponu, River Iju, River Abesan, River Aduyan, and Agboji Creek.
- e. The development guide plans at various levels [master, regional, district and local plans] have been compromised as evidenced in the proliferation of informal settlements from 42 in 1993 to more than 100 as at January 2010.
- f. There is lack of standard or regulatory framework to manage the development and delivery of tertiary and many secondary drainage facilities at the community level. In many communities,

construction and management of tertiary drains are at the discretion of individual plot owners. The decision to construct and manage depends on how compelling and affordable is the drainage channel to the respective plot owners (See Plate 1). Equally, construction and management of secondary drains are through contributions from the community members (See Plate 3). The contributions are often meager and erratic leading to poor quality drains and mostly, abandonment. At individual and community level, the construction and management of the drains are executed without any development guide, approved layout plan, regulations or any prescribed operational standard. In the schedule of responsibilities for the Lagos State Ministry of the Environment, construction and maintenance of secondary channels are integral parts of the Ministry's duties.

- g. The provision of drainage infrastructure is not at commensurate level with the rate of urbanization and population growth in the State.
- h. Massive and incessant land reclamation and dredging projects across the water bodies in the State with little or no regards for environmental impacts of such projects (See Plate 2).



Plate 1: A Drainage Culvert under Construction at Egan Community [Peripheral Urban Area] Funded by a Resident to Facilitate Access to his Premises and to Divert Storm Water ©LO



Plate 2: Sandfilled Portion of Lagos Lagoon at Ilubirin Resulting in Flooding of Adeniji Adele and Idunmagbo Areas of Lagos Island [Core Urban Area] ©LO

3. FLOOD RISK MANAGEMENT PRACTICE IN LAGOS

In mitigating the effects of the flood, the Lagos State Government has adopted the following strategies;

- a. **Expansion of Drainage Facilities within the City Heartland:** This is a strategy that has resulted in the expansion and upgrading of the primary drainage facilities within the central parts of the city. Areas such as Bariga, Surulere, Gbagada have benefited from this initiative. The shortcoming of this approach is that some of the drainage projects are not completed, almost five years after the commencement (See Plate 8). Also, many of the suburban areas in the State such as Egan, Igando, Ikorodu, Okokomaiko, Ijagemo, Alagbado, Epe, Egbeda, Ojokoro, Meiran among others were not covered in the expansion or upgrading projects.
- b. **Annual Debris Removal from Primary Drainage Facilities within the City Heartland:** On annual basis, the Lagos State Government through the Ministry of the Environment embarks on clearing of primary and secondary channels in the metropolitan areas. In many cases, the debris found their ways to the channels because of delayed evacuation on the part of the contractors. The drains are often left uncovered after the removal of debris leading to the early collapse of the channels and reduction in the width of the vehicular right of way. This activity is also confined to the core urban areas of the State excluding the majority of peripheral – urban areas.
- c. **Advise to the Dwellers of Flood Plains and Wetlands to Relocate:** At the approaching of rainy season in Lagos State, it is not unusual for the State Government to announce, through the print and electronic media, to the dwellers of the flood prone communities to relocate. Often, evacuation or relocation plans that could guide such exercise on the key questions on modalities for relocation, where to relocate and the nature of support for relocation are not available as people are left to decide on their best considered approaches. For wants of alternative accommodations and limited financial resources, people in the flood plains largely ignore the government announcement hoping to defend their homes and belongings.
- d. **Demolition of Homes:** In response to any major flood disaster in the State, homes in the flood prone areas especially in the low income communities are always considered as the major problems, hence they attract the demolition teams of the State Government resulting in forced evictions and displacement of families. This was the case in Agege and Ijeshatedo demolitions in August 2011, Ijora-Badia in 2010, 2012 and 2013.

The case of Ijora-Badia was exceptional, the commencement of World Bank assisted drainage channels (See Plate 6) in the community led to demolition and burning of homes. Upon protest by the community, the implementing agency, Lagos Metropolitan Development and Governance Project (LMDGP) awarded relocation assistance cost to the affected families in December 2012. Other demolished communities were not providential. The Ijora-Badia community was eventually destroyed in February 2013, without any compensation or relocation of the residents.

Other communities in the flood plain received regular threats of forced evictions and demolition while retail markets such as Anikantamo (Adeniji Adele), Sura both on Lagos Island and Ladipo in Mushin were summarily shut down over flood concerns.

- e. **Proposed Resettlement Scheme for the Residents of Ogun River Catchment Areas.** The government through the Ministry of the Environment in October 2011 has informed the residents of Ajegunle community near Ikorodu to be prepared for relocation. The Commissioner for the Environment had assured the community that work will commence on the housing resettlement scheme before January 2012 citing land allocation problems for delay in the project. Ajegunle is a peripheral urban settlement in the Northern part of the State under Ikorodu division. It is a major community in the catchment areas of Ogun River. In the development plan of Lagos State, the community and other adjoining locations were zoned as wetland and for agricultural use. Lack of clear implementation strategies for the plan, huge housing deficit in the core urban areas, increased population and pace of urbanization in Lagos have led to the conversion of the area to residential use.



Plate 3: A Typical Secondary Drainage at Igando Community [Peripheral Urban Area] Funded by the Community ©LO

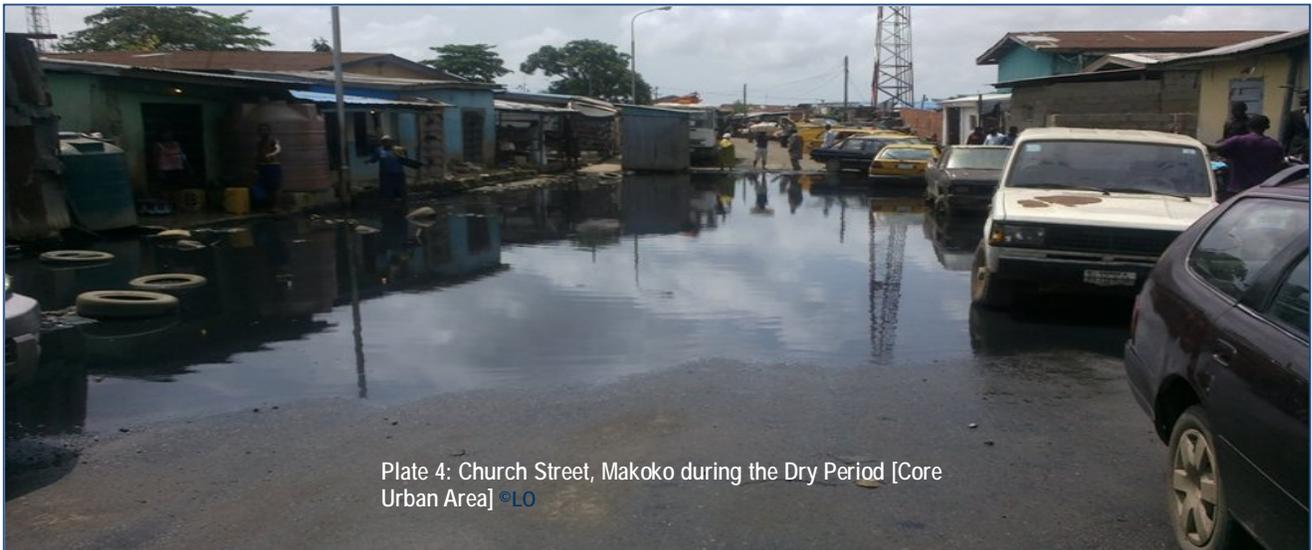


Plate 4: Church Street, Makoko during the Dry Period [Core Urban Area] ©LO



Plate 5: Yaba / Iwaya Primary Drainage [Core Urban Area] ©LO



Plate 6: World Bank Assisted Drainage Project at Badia [Core Urban Area] ©LO

4. COMPARATIVE INSTITUTIONAL STRUCTURE FOR FLOOD MANAGEMENT IN DIFFERENT PARTS OF THE WORLD

Country/City	Agency	Institutional Framework	Functions	Population	Land Area [km ²]	Population Density [persons / km ²]
England & Wales	The Environment Agency	Head Office (Bristol and London) 7 Regional Offices 21 Area Offices	<ul style="list-style-type: none"> - Shoreline management plan and policies. - Catchment flood management and planning - Drainage and domestic waste 	54, 809, 100	151, 031	363
Lagos	Ministry of the Environment [Comprising of Office of Environmental Services and Office of Drainage Services]	<p>Office of Environmental Services</p> <p>Office of Drainage Services (Responsible for Flood Risk Management Practice in Lagos State)</p> <ol style="list-style-type: none"> 1. Drainage Department. 2. Emergency Flood Abatement Department 3. Sewage Department. 4. Water Resources Department. 5. Multilateral Department. 6. Erosion Control, Land Reclamation. 7. De - flooding of Schools. 	<ul style="list-style-type: none"> - Preparation of master plan of Drainage System in Lagos State. - Design and construction of primary and secondary collectors. - Maintenance of primary and secondary channels. - Collection and disposal of storm waters. - Supervision of projects on major channels being funded by the World Bank. - De - flooding of schools. - Coastal and Hinterland Erosion Control. - Development, control and maintenance of parks and gardens. - Monitoring of cemeteries. - Control and management of Public Toilets. - Sanitation and beautification of Secretariat Complexes. 	21, 200, 000	3, 577.28	5, 926

<p>City of Austin, Travis County, Texas [Flash Flood Valley]</p>	<p>Watershed Protection Department</p>		<ul style="list-style-type: none"> - Maintain and improve water quality - Reduce flood impacts to life and properties - Create a stable stream system that decreases property loss from erosions and increase the beneficial uses of waterways. - Provide adequate maintenance of drainage infrastructure. 	<p>842,750</p>	<p>771.56</p>	<p>1,092</p>
<p>Harris County, Texas</p>	<p>Harris County Flood Control District</p>	<p>6 primary divisions to carry out its mission:</p> <ul style="list-style-type: none"> - Engineering and Construction - Environmental Services - Human Resources - Infrastructure - Office of Chief Engineer - Support Services. 	<ul style="list-style-type: none"> - Overseeing rivers, streams, tributaries and flood waters in Harris County "for domestic, municipal, flood control, irrigation and other useful purposes." - Reclamation and drainage of the overflow land of Harris County, the conservation of forests, and for keeping navigable waters "navigable" by regulating the storm waters that flowed into them. - Provide flood damage reduction projects that work, with appropriate regard for community and natural values. - Devise the flood damage reduction plans. - Implement the flood damage reduction plans. - Maintain the infrastructure. 	<p>3, 700, 000</p>	<p>4,548</p>	<p>814</p>
<p>Sacramento Area, California</p>	<p>Sacramento Area Flood Control Agency</p>		<ul style="list-style-type: none"> - Lead flood control improvement efforts for the Sacramento Area. - Conserve and protect valuable habitats and crucial ecosystem functions. 	<p>2, 400, 000</p>	<p>2,570</p>	<p>934</p>

			<ul style="list-style-type: none"> - Initiate natural resource planning and habitat restoration design, integrated with levee protection and floodway management to protect public safety. - To reduce flood risk, thereby minimizing the impacts of floods on human safety, health, and welfare. - Consistent with these flood risk reduction goals, to preserve and enhance the environmental and aesthetic values that floodways and floodplains contribute to the quality of life in the Sacramento region. 			
New Zealand	Ministry for the Environment	<p>While the Ministry concentrates on policy formulation and strategic guidelines, the Local Government (LG) is responsible for the day to day management of environment. LG is made up of;</p> <ul style="list-style-type: none"> - 12 Regional Councils that coordinate and set policy for resource management, water management, soil conservation and transport. - 70 District and City Councils (Territorial Authorities) that deals with 	<ul style="list-style-type: none"> - Provide environmental management system, including laws, regulations and national environmental standards. - Provide environmental direction through policy statements, strategies guidance and training on best practice. - Provide information about the health of the environment. - Administer government funding for grants on environmental resources programs. 	4,460,476	271,000	16

		land development, water supply, waste disposal, storm water, and community facilities such as parks and reserves. - 4 Unitary Authorities that combine the functions of regional and city councils.				
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Source: Author's Tabulation, 2013

The table on comparative institutional structure is designed on the principle that many devastating floods can not be prevented; hence it did not measure the impacts or outcomes of different agencies on their targeted communities. The table, however, examined other parameters such as institutional structure to manage floods, total population in the catchment areas of the institutions, land area and population density which to a large extent influence the types of results or outcomes in the management of flood in respective jurisdictions.

In England, City of Austin, Harris County, Sacramento and the New Zealand, the population densities are relatively lower compared to Lagos. This lower density is a platform to promote the flexibility of the Flood Management Agencies with a view to responding and engaging the community groups and volunteers in the prevention, control and management of flood crisis.

In addition, the institutional decentralization in England and the New Zealand is a strategic option of setting priorities and understanding flood problems in a disaggregated manner at the communities' level. Decentralization is useful in developing focused hazard plans for different parts of large administrative area with regulatory and overall coordination of all hazard plans emanating from a centralized entity. Administratively, Sacramento Area in California State and Harris County in Texas State are equivalent in urban governance ranking to Local Government Area in Lagos while City of Austin in Texas State is equivalent to a Local Council Development Area, respectively in Lagos.

At the community level, Harris County Flood Control District demonstrated best practice in engaging the properties and assets located at the flood plain through Voluntary Home Buyout and Project Right of Way Acquisition programs. These are two programs that promote mutual understanding between the government and the governed. They give opportunities to home owners and renters to appreciate the risk of flood in their neighborhoods and provide array of options to minimize properties and assets loss. Forced evictions and involuntary displacement are never parts of mitigating strategies in these cases.

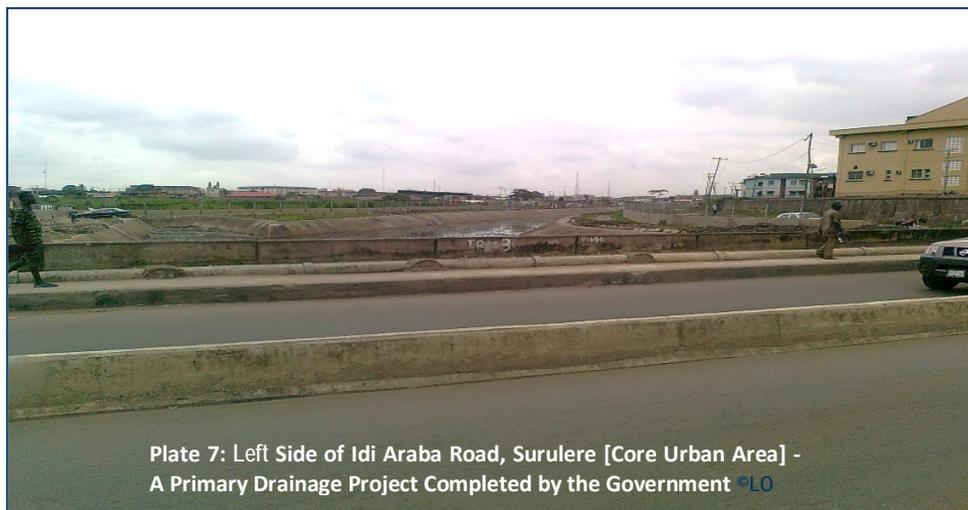


Plate 7: Left Side of Idi Araba Road, Surulere [Core Urban Area] - A Primary Drainage Project Completed by the Government ©LO



Plate 8: Right Side of Idi Araba Road, Surulere [Core Urban Area] – A Suspended Primary Drainage Project by the Government ©LO

5. GOVERNANCE ISSUES AND FLOOD MANAGEMENT IN LAGOS

From the State's response to the challenge of flood in Lagos and comparison of institutional structure for managing flood in some parts of the world, it is obvious that the Lagos State Ministry of the Environment is overwhelmed by the responsibilities in the sector. Therefore, the major recommendation for consideration in this paper is structural decentralization of flood management institution in Lagos State and strengthening of the Ministry of the Environment to play more proactive roles in overall supervision, policy and strategic direction for environmental management.

The capacity inadequacies of the centralized structure are evidenced, not only in the flood risk management practice area, but also in other segments of social and economic governance of the State. The governance structure in Lagos State is based on State Government / Local Government model which has been operational since 1976 as obtainable in other States in Nigeria. While the State government responsibilities towards the provision and management of transportation, land, education, health



Picture 9: Flood Sacked Homes at Adeniji Adele Low Income Housing Estate, Lagos Island – Proposed for Redevelopment [Core Urban Area] ©LO

care, water, roads, environmental sustainability, housing, urban planning and development have become fraught with gross inadequacies, the governance structure at the 20 Local Government level has not demonstrated innovative strategies of making impact in these sectors nor deliver any meaningful services to the citizens.

The creation of additional 37 Local Council Development Areas (LCDAs) by the Lagos State Government in 2003 appears to be satisfying political expediency rather than development and service delivery to the people. Their formation was not based on proper planning and vibrant accountability mechanisms. The

supposed constitutional functions of the local authorities in construction and maintenance of roads, streets, street lightings, drains, open spaces, homes for the destitute or infirm have been ignored while visibility of local government electoral actors during the three year periodic elections have been exceptional.

In spite of the asymmetrical governance structure in the State, population has continued to increase. The total population rose from about 13,420,000 in the year 2000 to 21,200,000 in 2012. This has resulted in huge mismatch between the demand for infrastructure including flood control facilities and supply of the same by the government.

6. MOVING FORWARD

Considering these inadequacies, it is imperative to consider other model of governance and management of the State's infrastructure. One of such model is the State Government – Local Government – City Management structure. The model can equally be described as City in City Governance Approach. This approach will decentralize the provision and management of social and economic infrastructure, enhance the Local Government productivity, work in accordance with the peculiarities and priorities of different components of the state, provide platform for citizens' inclusiveness and participation in development policies and programs that affect them and stimulate healthy competition among the communities.

To effectively manage the risks of flood in Lagos State, decentralizing the current institutional framework into two tier system needs to be considered. The first tier is the Ministry of the Environment with focus on policy and strategic direction while the second tier will comprises of flood control agencies at the Local Government and under the proposed city management structure. The independent but interrelated flood control agencies at the local government level would serve as delivery institutions for managing flood, providing drainage facilities and engaging the communities as part of their strategic outputs.

On the proposed resettlement scheme, which apparently is a medium term recovery planning strategy to reduce the number of population at flood's risk, it is suggested that the Ministry of the Environment should collaborate with the Lagos State Ministry of Housing and the Lagos State Urban Renewal Agency (LASURA) who may have considerable level of expertise and competency to deliver on this mandate. The participation of the following groups and organizations is essential; the community groups, Not for Profit Organizations, private sector (finance institutions and building materials manufacturers), Lands Bureau and Local Governments in both evacuating and receiving communities. There is need to develop a platform for Not-for-Profit Organizations to play leading roles in such resettlement or housing programs in the future. Evolving the process that will see to the emergence of Not-for-Profit Organizations as leading the resettlement and redevelopment programs is one of the expected outcomes of the proposed decentralization model.

As a precursor to the proposed governance decentralization, it is ideal to develop a decentralization policy that will define the relationship among the various levels of government, outline rights and liabilities, functions and responsibilities, financing options and nature of charter to be adopted at the decentralized

levels. Aside the constitutional provision on the relationship among the existing three levels of government in Nigeria, no state including Lagos has formulated a decentralization policy.

In pursuing the long term resettlement strategy for the population at risk and settlements upgrading, it has become imperative for the Lagos State government to develop housing policy, resettlement guidelines and environmental policy which will provide planning and implementation framework for housing delivery, resettlement operations and flood plain management, respectively. The policies and guidelines are helpful in constructively engaging the population at risk rather than resorting to sporadic and spontaneous measures such as violent destruction of homes and shutting of markets that breed army of disloyal citizens. Sharing knowledge from the best practice adopted by the Harris County Flood Control District in engaging the population at flood risk may be useful in this regard.

7. CONCLUSION

Globally, flood has been recognized as one of the natural hazard that cannot be avoided, but the manner and organization of flood risk management practice can influence the level of risk attending the hazard. Decentralization in the operations and management of urban services, especially flood control appears to be one of the key strategies of mitigating the risk of flood in most of the jurisdictions highlighted in Section 4 of the paper. For Lagos State to be at optimal performance in flood control and management it would be insightful to consider policies institutionalization and structural decentralization of operations along the governance framework identified.

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