

Review of Flood Disaster Risk Management in six West African Megacities

¹*OLANREWAJU C C. ¹REDDY M

¹ Department of Public Management and Economics, Durban University of Technology, Durban South Africa

*corresponding author:

e-mail: carolnwogu@gmail.com

Abstract. In developing countries, the factors affecting vulnerability and exposure to floods are growing rapidly as urbanization puts more people and assets at risk. Particularly susceptible, is the fast growing informal settlements in central cities and peri-urban locations. Six noteworthy West African megacities: Accra, Cotonou, Dakar, Freetown, Lagos, and Monrovia located in low elevation coastal zones are at constant risk from sea level rise or flooding. These cities exhibit similar characteristics of urbanization and flood management gaps. These include incompetently maintained infrastructures, low quality shelters, low resilience of urban poor, poor garbage disposal, social issues and poor planning and maintenance policies. It is of high priority to give urgency to the need for Flood Risk Management (FRM) in urban settlements on the political and policy agenda. Several management strategies have been developed. However, implementation and sustainability remains the major setback in the success of sustainable FRM in these megacities.

Keywords: Flood disaster, Flood Risk Management, West Africa, Urbanization, Policies

1. Introduction

Floods is the most recurrent among all natural disasters. Flood related incidents have been increasing over the past two decades with a record of 178 million people affected by flood in 2010 (Jha et al., 2011). In developing countries fatalities remain high impacting mostly on the poor and socially disadvantaged who live in densely populated, low quality informal settlements in central cities and peri-urban locations (ActionAid, 2006, Jha et al., 2011). Urbanization is implicated in flood risks making urban flooding very dangerous and costly to manage due to the high population exposed (Jha et al., 2011). Six highly populated West African cities that are located in low elevation coastal zones and are at constant risk from sea level rise or flooding have been selected in the current study. The cities include Accra in Ghana, Cotonou in Benin, Dakar in Senegal, Freetown in Sierra Leone, Lagos in Nigeria and Monrovia in Liberia. Through review of relevant literature, this study evaluates the causes of floods, and

the effectiveness of government strategies and policies in dealing with the flood problem.

2. Causes of floods

All the cities under review are densely populated with very high level of industrial and commercial activities. Uncontrolled and rapid urbanization, poor waste disposal, overflow of rivers within the cities catchment, poor public education and sensitization as well as climate change have been implicated to cause urban floods in Accra (GFDRR, 2011). During the civil war in Sierra Leone in the 1990's, many people fled to the capital Freetown increasing the population with no urban strategy or plan in place leading to shortages in affordable housing. Global warming and poor environmental conditions are implicated in the flooding in Monrovia (Admin, 2018). A research carried out in Agege, a high density community in Lagos attributes yearly floods to the absence or non-functionality of drainage systems, dumping of waste into the drainage and water bodies and frequent and high rainfall (Abolade et al., 2013). Others include, land-use and land-cover modifications. In Cotonou, flooding is exacerbated by lack of genuine housing policy and poor communication between Disaster Risk Management (DRM) agencies (Ouikotan et al., 2017). This is also the case with Dakar as its administrative and governance policy regarding DRM is unclear (Jha et al., 2011). Largely to blame for flooding in the study areas is the weak disaster management (DM) policies and lack of a functioning integrated flood risk management.

3. Flood Risk Management (FRM)

FRM in these cities is very complex cutting across urban planning and management, river basin management, coastal area management, infrastructure planning and wetland management. Mismanagement and regulations of one will affect holistic flood management (Adelekan, 2010). Structural and non-structural methods have been employed in FRM in the study areas. Structural methods are insufficient and inadequately maintained (Ouikotan et al., 2017). Non-structural methods include land-use control and catchment management, disaster relief preparedness and planning, and early warning systems

among others. The land-use laws and guidelines in the areas under review are seen to be diverse and uncoordinated with weak urban planning policies that are unable to reduce settlements in flood prone areas and control the migration of people towards the city (GFDRR, 2011, Ouikotan et al., 2017). All the cities have developed and implemented flood emergency plan for flood disaster relief in the case of a flood disaster. However, the level of preparedness, response and recovery is very low. Early warning systems are poorly maintained or absent (Ouikotan et al., 2017). DM structures in these cities do not have high priority in the national budget and so do not have adequate financial support (GFDRR, 2011). National disaster risk management frameworks in Dakar are fragmented and overlapping (Schaer et al., 2018). In Accra, the government national disaster and emergency policies is weakened by its inability to implement DRM plans on urban flooding (GFDRR, 2011). In Freetown, the government lack the man-power and technical resources to design and implement an urban development plan (Schaer et al., 2018). In several settlements in Lagos, enforcement of environmental laws and sponsoring of public awareness and educative programs, repair and construction of drainage systems by government of various levels and proper channelization of river bodies to prevent overflow during heavy downpour is inadequate (Abolade et al., 2013). The National Disaster Management Agency in Monrovia is functionally inadequate in terms of capacity and support because of lack of needed financial and logistical support to function effectively (Admin, 2018).

4. Challenges and Recommendations

These mega cities have tried to incorporate the integrated flood risk management approach. This uses combined FRM techniques to effectively diminish urban floods. (Jha et al., 2011). However, proposals made have been unable to be fully implemented and functional. This review identified several recommendations that have been offered for a holistic flood disaster risk management. They include:

- Inclusion of proactive measures into urban planning and integration of FRM concerns into new settlements as they develop (Jha et al., 2011).
- Enforcement of environmental laws and sponsorship of public awareness and educative programs as well as the repairs and construction of drainage systems by governments of various levels to prevent overflow during heavy rainfalls (Abolade et al., 2013)
- Development of flood risk maps providing current information for the appropriate

allocation of resources by decision makers as well as inclusion of representatives of slums in decision-making. (Jha et al., 2011)

- Provision of short term plans to include proper assignment of responsibilities (Schaer et al., 2018)
- Provision of detailed data on flood damage or potential exposure. (Ouikotan et al., 2017)

5. Conclusions

All the cities are developing with a large portion of population living in informal settlements outside immediate control of authorities as regards land-use controls. The review also noted that comprehensive flood management planning is required to cope with the increasing risk and changing situation. These are to include public education on flood risk awareness, restriction of the growth of informal settlements into flood plains, management of flood risk from social, economic and environmental viewpoints as well as institutional capacity building for effective risk reduction and flood management.

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