Natural Hazards and Disaster Risk Reduction Policies

Loredana Antronico - Fausto Marincioni Editors







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Loredana Antronico Fausto Marincioni *Editors*





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Cover: A woman shovels mud from her driveway in the aftermath of the October 2010 debris flow that affected the Province of Vibo Valentia (Calabria, southern Italy).

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2. The urban political ecology of flood vulnerability in the core area of Ibadan Metropolis, Nigeria

Rafiu O. Salami¹, Jason von Meding², Helen Giggins³

Abstract

Many cities in both developing and developed countries are at risk of unequal flood risk and vulnerability. To uncover the root cause of flood risk, focusing on solutions related to physical systems alone without considering political, economic, and social aspects is unlikely to minimize effectively the level of vulnerability. This study examines the root of unequal flood vulnerability in Ibadan Metropolis (Nigeria) through urban political ecology conceptual lens. It provides a new dimension of flood vulnerability analysis, detailing how urban residents in Bere, a traditional urban settlement of Ibadan experience different levels of flood risk. The study employs participatory focus groups with households and interviews with key experts to emphasize the findings from the flood victims. The overall results provide evidence of social inequities and political marginalization. The research demonstrates how socio-political factors play a significant role in shaping the creation of uneven vulnerability to flooding. Series of structural and non-structural strategies, equity and justice in resource management are necessary to build a resilient community.

Keywords: Adaptation, African cities, Disaster Risk Reduction, Flood risks, Vulnerability, Urban Settlement.

1. Introduction

The frequency and scale of flood disasters continue to increase in recent years particularly in Africa. In 2006, disasters caused by meteorological and

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hydrological hazards alone troubled more than 102 countries resulting in 7,628 deaths, 411 million people affected and causing economic damages worth US \$97 billion (EM-DAT 2016, 137). While more than one-third of global economic losses were caused by natural disasters (Hallegatte *et al.*, 2013), flooding accounts for more than 50% of all disasters recorded in 2016 (EM-DAT, 2016).

In Africa, according to Ndaruzaniye et al. (2010), flood and drought alone account for 80 per cent of the losses of life and also responsible for 70 per cent of economic losses in the last 30 years. In West Africa alone, around half a million people are affected by flood disasters per year (Jacobsen, Webster, and Vairavamoorthy 2012). In August 2011, Ibadan metropolis, one of the Nigerian largest cities where the study area is located, witnessed a disastrous flood event that resulted in the loss of over 100 lives and economic damages worth more than 30 billion Naira (US \$83 million) (Agbola et al., 2012). Most of the so-called natural disasters such as floods and droughts are triggered due to the interactions between natural and human-related factors (Pelling, 2011). Previous detailed studies that focused on flood risks and vulnerability assessment of Ibadan metropolis, as well as are still limited (Adelekan, 2011; Nkwunonwo, other African cities, Malcolm, and Brian, 2015). More importantly, in previous research, little attention has been drawn to the economic, ecological and political influence on people's vulnerability to flood risk (Westcoat, 2015; Ajibade and McBean, 2014).

Researchers have argued that poor governance and weak institutions are the major contributing factors to flood disasters rather than blaming climate change, population growth or subsistence activities of disadvantaged people (Blaikie, 1985; Watts, 2000). If serious action is not taken to tackle "the root causes of inequality, injustice, disadvantage and poverty, no amount of spending on disaster risk management will stem ever-increasing disaster losses" (Dominey-Howes *et al.*, 2016, 4). This study focuses on investigating the underlying causes of urban settlement's vulnerability to flooding risk in Bere community in Ibadan metropolitan city, Nigeria. It utilizes urban political ecology analytical lens to assess and unravel the drivers of unequal flood vulnerability in the study area.

2. Urban political ecology and flood vulnerability assessment

Most cities around the world are vulnerable to flood risk. Government leaders are continuously blaming external forces of nature as the main cause of flood risk and vulnerability, ignoring the lack of effective governance as a possible driving factor in their countries. Using an urban political ecology approach draws attention to salient questions of how some urban settlements are exposed to unequal flood vulnerability. This approach focuses on the connection between political, social, economic and ecological issues to provide solutions to contemporary environmental challenges (Bryant and Bailey, 1997; Offen, 2005; Heynen, 2014). It also examines issues concerning social and environmental justice and urban ecosystems (Keil, 2003).

According to Robbins (2012), political ecology revolves around "the complex relations between nature and society through a careful analysis of what one might call the forms of access and control over resources and their implications for environmental health and sustainable livelihoods" (Robbins 2012, 28). Specifically, an urban political ecology focuses on "an integrated and relational approach that helps untangle the interconnected economic, political, social and ecological processes that together go to form highly uneven and deeply unjust urban landscapes" (Swyngedouw and Heynen 2003, 1). In other words, an assessment of flood vulnerability through the lens of the political ecology framework would clearly unravel the underlying causes, impacts and solutions to flood risk and vulnerability compared to a conventional method of evaluation.

Lassa (2010) affirmed that the influence of political institutions and urban governance on disaster risk creation and hazards vulnerability are often overlooked by risk assessors. He asserted that nations that promote good governance and stronger institutions have a tendency to demonstrate better policies on disaster risk reduction, which in turns leads to an increase in disaster risk resilience (Lassa, 2010). Consequently, disaster risk reduction could be achieved by assessing the social, physical, political, economic, and environmental injustice that causes people and the urban environment to be vulnerable to flood risk.

3. Research Site

This study was conducted in Bere, an urban community in the core area of Ibadan metropolis, Nigeria (Fig. 1). The urban settlement is categorized as a high-density residential zone with low-quality of dwellings largely occupied by indigenous people of Ibadan (Enyinnaya Eluwa, Siong, and Abayomi, 2012). Figure 2 shows an aerial view of Bere's spatial pattern and distribution of unplanned settlement. It reflects the typical core area of traditional cities in developing countries characterized by physical deterioration of houses with poor sanitation facilities and lack of basic infrastructures.



Figure 1 - Ibadan, showing Bere community at the core of the city. Source: (Salami, 2017).



Figure 2 - Aerial view of Bere community's spatial distribution within the core of the city. Source: (Google Earth 7.1 2017).

Ibadan metropolis like other traditional African cities has unique spatial development patterns (Afon and Faniran, 2013). The ancient city has three dominant settlement patterns: the traditional, transitional and post-independence sub-urban zone (Fourchard, 2003; Abel, 2007). Bere is classified under traditional core area of Ibadan where informal settlements are located as far back as the pre-colonial years. The residents are indigenous people with low-quality and deficient basic infrastructures like spacious roads and effective drainage systems (Coker *et al.*, 2008). According to Adelekan (2016), Bere urban settlement and other slums who are densely populated slums in the core area of Ibadan, are made up of approximately 26,254 housing units.

4. Research methods and analytical tools

This study utilized qualitative methods through participatory focus group discussions with residents of the study area, and in-depth semi-structured interviews with experts in the field of disaster risk management including academics, professionals and flood management agents. Combining these methods are very useful instruments that are capable of unravelling the root causes of urban vulnerability in the study area. This is as a result of using multiple-lens of investigations to provide detailed answers to research questions (Creswell and Poth, 2017). Extensive methodologies and methods are required to capture and measure the complexities of people and urban settlements' vulnerability to flooding (Takemoto, 2011; Nasiri and Shahmohammadi-Kalalagh, 2013). Qualitative data were collected from both focus group discussions and expert interviews and analyzed sequentially to gain a deep understanding of the research enquiries. These sources of data provide useful, reliable and verifiable qualitative data that could broaden and strengthen the validity of the research outcome.

Two focus group discussions were conducted with 12 residents of the study area in Yoruba dialect by non-English speakers who were interested in sharing their flood vulnerability experience. The residents were selected by the Bere community leaders based on their relevant knowledge and previous flood experiences in the urban settlement. To consolidate the issues raised by the participants in the focus group, interviews with eleven experts including academics and practitioners in the field of disaster management were conducted in English language. All the qualitative data were audio recorded, transcribed with the permission and consent of the participants. With the aid of QSR Nvivo, thematic techniques were adopted to manage the qualitative data in the most efficient way. These procedures involved a careful identification and interpretation of textual data (Braun and Clarke, 2006).

5. Findings and Discussions

Based on the analyses of the qualitative data collected from focus group discussions and interviews, several issues concerning previous disaster experience, flood preparedness, socioeconomic status and coping capacity strategy were adequately addressed. The finding and explanation from focus group discussions and interviews are discussed below.

5.1. Focus group discussions

5.1.1. Flood experience and the frequency of occurrence

All the participants in the focus group overwhelmingly agreed that they had previous flood experience and continuously expose to flood disaster every year particularly during the rainy season. The oldest participant in the focus group discussion affirmed that flooding is a frequent disaster in the community, but the August 2011 flood disaster affected all houses in Bere community. He reiterated that the two hours of rainfall wreak havoc on all residents in the area. It is evident that despite the residents' flood experiences in the previous years and awareness of risk, dwellers are not well-prepared for future flood risk. In line with this result, previous studies have shown that there is no significant association between risk awareness and the level of preparedness to flood disaster (Salami, 2017; Salami, Von Meding and Giggins, 2017).

5.1.2. Causes of flooding in the community

Some of the respondents alluded to residents' activities, such as blockage of natural waterways with solid wastes, encroachment on floodplains and prolong heavy rains as the major contributing factors to flooding and subsequent disaster. Others believed that the local authority failed to play their role of protecting the lives of inhabitants through the provision of infrastructures such as effective drainage system to handle overland flows during rainy season. A discussant from the focus group said, "our drainage channels are not wide enough to contain rainwater during rainfall" (Salami, 2017, 131). It is evident that the key issue is poor governance and lack of support by the local authority, such as provisions of effective infrastructural development to mitigate flood disaster. Despite government's critical roles at all levels to manage risk and provide preventive measures, they rarely mentioned as contributors to the consequences of disaster vulnerability, poverty and risk creation (Wisner, 2016; Lewis and Kelman, 2012).

5.1.3. Preparedness, coping and adaptive strategies for flood risk

Despite the participants' past flood experience in the community, most of them make few or no preparations for yearly flooding in the study area. While adoption of forced temporary migration during the rainy season was a means of preparation for some participants, others believe in God for protection. In the words of a respondent contribution,

"We believe in prayers, during the raining seasons, whenever we notice there is a possibility that rainfall would occur, we pray to God to protect us against disastrous rainstorms" (Salami, 2017, 132). In previous studies on the vulnerability of wind hazards and cyclones in the study area and in coastal Bangladesh respectively, some residents relied on God for safety (Haque and Blair, 1992; Adelekan, 2012).

In case of coping and adaptive mechanism adopted, most of the participants expressed their dissatisfaction over government's response to victims of flood disasters. One of the discussants commented on behalf of the victims based on his experience:

"They continue to struggle individually to build their house back a bit by bit with our little resources. There is no help from the government. Many occupants have left their dilapidated old houses permanently. Most of the residents are petty traders and artisan. They can't afford to build their traditional houses back" (Salami, 2017, 132).

Most of the residents in Bere are low-income earners with the informal economy (Salami, 2017). With low-level of income, researchers have argued that there is a strong link between levels of flood preparedness and residents' socioeconomic characteristics (Vojinović, 2015; World Health Organization, 2002). It is evident that the profile of the household in terms of social and human capital will largely influence the coping capacity to risk and flood vulnerability.

5.1.4. Lack of government support

All the respondents affirmed that government at all levels have disappointed them in all areas of governance. One of the statutory duties of government is to protect their people. Failure of those in authority such as local government officials to provide basic amenities of life has led to a lack of trust and confidence in government. Credibility and institutional legitimacy can only be achieved through public trust (Burnett *et al.*, 2008). For example, most of the interviewees reiterated several failed promises of the government concerning dredging of rivers, construction of culverts and drainages to prevent flooding during a downpour. For the government to achieve a significant improvement in building a resilient society, community-led policy implementation should be a way forward.

5.2. Interviews with experts

In order to gain further insight and validate findings from the focus group discussion on the underlying factors influencing flood vulnerability, disaster management experts were interviewed. Different relevant topics on flood vulnerability in Ibadan were discussed to elicit key information needed by the researchers.

5.2.1. Root causes of flooding and its impact

Based on the experts' point of view, frequent flood disasters recorded in the study area are due to the lack of political will by the local authority to provide preventive measures for future occurrences. One of the interviewees queried successive governments by these words:

"They (government at all levels) play politics with lives of the people. Political interference and attitudinal behaviour of the people. It took the government up to twenty years to complete channelization of Ogunpa River, and this had minimised the problem of flooding in Ibadan until the occurrence of August 2011 destructive flooding" (Salami, 2017, 137).

From another point of view, an interviewee believed that heavy rainfall, topographical characteristics such as proximity to hills, valleys and rivers play a contributory role in frequent flood experience in the study area.

5.2.2. Socioeconomic factors and flood preparedness nexus

The face-to-face interviews with experts and practitioners revealed that there is a strong relationship between the level of preparedness and the socioeconomic status of the residents of Bere community. Their perceptions of preparation for flood risk are determined by many factors such as, employment, education, income, tenure security and housing quality. In separate interviews, all the interviewees affirmed that most of the inhabitants of Bere urban settlement are low-income earners, slum dwellers with a poor living standard of life. For instance, the structural integrity of houses, construction materials and sanitary services are determinants of good housing quality (Rumbach and Shirgaokar 2017). Therefore, unhealthy conditions of housing expose its inhabitants to multiple risks (Guzmán, Schensul and Zhang, 2013). In addition, researchers such as, Brouwer *et al.* (2007), Vojinović (2015), and Zahran *et al.* (2008) argued that a society with a high population of low-income households and lower human capital is most likely to expose to a higher degree of flood risk and lower level of flood preparedness. This implies that there is a link between the household's socioeconomic status and the degree of preparedness for flood hazards.

5.2.3. Lack of planning and development management

Professionals and researchers interviewed blamed the past governments for the lack of success in designing a sustainable master plan as the major cause of flood vulnerability. One of the academics affirmed that Ibadan metropolis "has never had a master plan and may never have one, unfortunately...because those in authority are playing politics with lives of people." In other words, there is no standard guiding tool for planning and development. Without a plan before physical development, urban flood vulnerability will be difficult to minimize (Arimah and Adeagbo, 2000). Another respondent reacted this way:

"We need to plan first before the development of a town or city, but in the case of Nigeria, we develop before planning. We allowed physical infrastructure to be chasing development, if we turn around the table and plan before development, things will change for the better. By injection of various principles and techniques of physical planning into development, things will change for the better. Abuja, Federal Capital Territory of Nigeria is a good example of best practices. You will be proud of the city as a resident unlike other unplanned cities or suburbs in Nigeria" (Salami, 2017, 138).

According to Baker (2012) and Ajayi *et al.* (2012), natural disasters such as floods and droughts are linked to human activities including poor drainage infrastructure, deficient refuse management and construction of shelters in flood zones. In view of these comments, there is a need for an effective and efficient urban development and planning regulations to checkmate unhealthy physical development in the metropolitan city.

6. Conclusion

This research focused on the investigation of the root causes of flood vulnerability in the core area of Ibadan metropolis, Nigeria. The study empirically assessed the flood vulnerability in Bere, an urban community with high density and low-income residents. The research site was studied to know how physical, demographic, political, cultural factors shaped its flood vulnerability using urban political ecology framework to gain a better understanding about the drivers of urban settlement's vulnerability to flooding.

The research's findings from the focus group discussions and in-depth interviews revealed that the residents of Bere, which is a high-density urban settlement are highly vulnerable to flood risk. This research outcome was based on the dwellers' affirmation and subsequent confirmation from the interviewees concerning the government inefficiency, level of residents' exposure to flood risk, susceptibility and their status in relation to socioeconomic characteristics (such as, location, earnings, housing quality and disaster coping/adaptive capacity). It is evident from the study that flood vulnerability is socially constructed. It demonstrated that poor urban governance, politics and institutional structures contribute immensely to the production of urban vulnerability to flooding hazards in the study area in Ibadan metropolis.

It is important for all stakeholders to invest consistently on both structural and non-structural measures to achieve sustainable disaster risk management including flood preparedness, preventive measures, emergency and disaster recovery. It is also crucial for government officials to uphold equitable access to opportunities and resources, as well as to embrace social justice for all to build a resilient community. Lastly, in line with the Sendai Framework for Disaster Risk Reduction (SFDRR) requirements (UNISDR 2015), empowering local institutions to play more roles and implementing a "bottom-up" approach to community-rooted interventions will boost disaster risk reduction.

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