

Disaster Risk of Property Development on Floodplains in Port Harcourt, Nigeria

By

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Abstract: Floodplain is an area of land adjacent to a stream or river that stretches from the banks of its channel to the base of the enclosing valley walls and usually experiences flooding during periods of high discharge. Floodplains which consist of floodway and flood fringes are natural flood basins with varied ecological functions and socioeconomic importance, such as: flood protection, water quality improvement, removing excess sediment and nutrients, recharged aquifers, improved wildlife habitat, recreational industries, forestry management and carbon sequestration, provides natural buffers to streams from farm and ranch operations and many more. However, despite these varied ecological functions of floodplain areas of Port Harcourt Metropolis, urbanisation and the quest for development have led to serious encroachment into the floodplains in the form reclamation and erection of buildings. The fundamental questions that arise are: how vulnerable are these structural developments to disaster risks associated with floodplains? What is the level of risks associated with erecting buildings on these floodplains? How acceptable are these risks? Providing answers to these questions forms the focus of this paper.

Background

Port Harcourt is the largest urban area in the Niger Delta Nigeria. It is a lowland and lies within the floodplains of River Niger. Port Harcourt features a tropical wet climate with lengthy and heavy rainy seasons and very short dry seasons with an average of 367 mm of rain. Only the months of December and January truly qualifies as dry season months in the city. It is the commercial hub of the southern Nigeria and hosts a seaport, Railway terminus and an airport. It is a very fast growing city with a population of over 2 million people and with consistent development which has put pressure on existing infrastructure and available urban space.

Flood plains are the wide and flat plains formed by the deposited materials or alluvium builds up on either side of the river with successive flood over the years. Flood plains serve as: flood protection, natural filters, improved wildlife habitats, recreational industries, among other functions. It usually experiences flooding during period of high discharges. Floodplains all over the world have been vulnerable to flood and humans have been building and living on floodplains from time immemorial all around the world (Umeuduji, 2016)

The Problematic issues

Many floodplains have been under development pressure. Rapid urbanization of Port Harcourt has led to serious encroachments into these natural flood basins in the form of massive land reclamation and erection of buildings thus, increasing their vulnerability to disasters. Many natural flood basins/ drainages in the marginal lands around the City are seriously being ravaged by food, yet there is persistent and consistent development on these floodplains (Mmom, 2016). Better understanding of the flood hazard phenomenon and its potential consequences in our society is crucial for the development of flood control policies, risk reduction projects and other types of flood management strategies. Thus, the following fundamental questions are put forth:

- I. What are the associated risks with the development on these floodplains?
- II. Why do people still live and continue to develop on these floodplains despite these risks?
- III. How do they perceive these risks?

Providing answers to these questions form the focus of this paper.

Aim/Objectives of Study

The aim of this study is to assess the Disaster Risk of Floodplains development as to develop flood control policies in the City of Port Harcourt. Against the foregoing, the following objectives are set:

- (i) Assess the socioeconomic status of the occupants and owners of property on these floodplains.
- (ii) Assess their reasons for persistent stay on these floodplains despite the flood hazard.
- (iii) Examine activities of property development on these floodplains and the triggering effects on flood hazards in the City.

Methodology of Study

The study is a survey research that focused on twenty one (21) major areas in Port Harcourt metropolis were the focus of this study and 7 heavily encroached flood plains were sampled for the survey. A total of 1,186 household were captured across the 7 floodplain communities during the field survey, thus representing the population size. 30% of these household (356) heads were respondents. Questionnaire and field observations were the instruments of data collection, secondary data were obtained from the Rivers State Ministry of Lands and Urban Development and simple descriptive statistics were used for analysis.

Data/Analysis

Table 2. Percentage Length of Stay Frequency Distribution of the Respondents

| Duration Of Stay | Frequency | Percentage (%) |
|---------------------|------------|----------------|
| Less Than 1 Year | 40 | 11.2 |
| Between 2 – 4 Years | 114 | 32 |
| 5 Year & Above | 202 | 56.7 |
| Total | 356 | 100 |

Source: Field Survey, 2018

Table 2 incidence of building collapse in the study Area

| Year | No. of incidence | Estimated loss (\$) | No. of lives lost |
|------|------------------|---------------------|-------------------|
| 2007 | N.A | Nil | Nil |
| 2008 | NA | Nil | Nil |
| 2009 | NA | Nil | Nil |
| 2010 | 2 | 2.4m | Nil |
| 2011 | N.A | Nil | Nil |
| 2012 | NA | Nil | Nil |
| 2013 | 5 | 3.7m | 3 |
| 2014 | 9 | 28.3m | 11 |
| 2015 | 4 | 19.7m | 12 |
| 2016 | 7 | 21.2m | 4 |
| 2017 | 9 | 36.4m | 3 |

Source: Rivers State Ministry of Urban Development, 2017

The data on table 2 above shows that the years 2014 and 2017 recorded the highest incidents of building collapse in these floodplains an estimated \$28.3m and \$36.4m respectively as economic loss. Similarly, a total of 33 lives were lost due to the incidents building collapse in the floodplains between the years, 2007-2017.

Table 3: Flood incidents in the Area and associated losses

| Year | Estimated loss in (\$) | No. of lives lost |
|------|------------------------|-------------------|
| 2007 | NA | NA |
| 2008 | NA | NA |
| 2009 | NA | NA |
| 2010 | 38.5m | nil |
| 2011 | NA | NA |
| 2012 | 216m | 3 |
| 2013 | 21m | nil |
| 2014 | NA | Nil |
| 2015 | NA | Nil |
| 2016 | 39m | 2 |
| 2017 | 107.4m | nil |

Source: Rivers State Ministry of Urban Development, 2017

Tabl2 4 Reason for persistent stay in these floodplains

| Reasons | FREQUENCY | PERCENTAGE |
|--|-----------|------------|
| Social Reason | 100 | 28.1 |
| Economic Reason | 180 | 50.6 |
| Ignorance of the risk factor | 23 | 6.46 |
| Non-implementation of planning regulations | 53 | 14.88 |
| TOTAL | 356 | 100 |

Source: Fieldwork, 2018

Table 5 Perception of the residents about the flood risk of development on these floodplains

| S/N | Response on their perception of risk | Frequency | % |
|-----|---|-----------|------|
| 1 | Flood is a normal occurrence | 223 | 62.6 |
| 2 | The risk can be transferred (Insurance) | 90 | 23.3 |
| 3 | Unbearable | 43 | 12.1 |
| 4 | Total | 356 | |

Source: Fieldwork, 2018

Discussion of results

The analysis above shows that majority of dwellers of these flood plains are self-employed; most of them are business owners, while some others are low income earners who see that as cheap and affordable space within the city. Most of the occupants have lived there for over 5 years despite the flood hazard. Analysis also shows that the predominant reason of staying in the floodplains is economic factor. This indicates that sustainable livelihood issue is what brought and kept them there in spite of increased unmitigated disaster risk issues they are faced with. Residents of these floodplains have suffered other hazards such as

building collapse and erosion. Cost of land in floodplains appear to be cheaper/affordable than well-drained land. Also, the desire to maintain social ties contributes to persistent development and stay in floodplains. Government does not enforce development control in the city. High incidence of flood and attendant losses is always incurred. There is persistent flood and building collapse and loss of lives and properties. Many floodplain residents/developers see these risks as normal. They are aware of insurance, but are not engaged in it

Conclusion

This risk people are exposed to in the course of developments on urban floodplains was discovered in some cases to be as a result of Non-implementation of planning regulations/ minimum development standards. On the other hand, there are other social and economic forces that are drivers to or influence people's decision to persistent development of flood plains despite the risks. Perception of people vary in term of acceptability of the risk associated with development on floodplains. However, developments on these floodplains will continue with the dire consequences unless Government strictly enforce development regulation/ control

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