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FLOOD IN NIGERIAN CITIES: A CASE STUDY OF ABA-URBAN IN ABIA STATE OF NIGERIA

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ABSTRACT

Flood is by far a major environmental hazard confronting man and his environment in the 21st century, yet only few attempts are made to quantify the causes and effects in Nigerian cities. This study is instituted to identify the major causes and effects of flood menace on the Aba Urban dwellers. A total of 210 respondents were systematically sampled from ten flooded regions in the area, 21 from each stratum using survey (questionnaire and checklist) instruments. Analysis of peoples' perception using simple parameter indicated that the instigating force of this phenomenon are poor drainage system, blockage of the existing drainage channels and the dynamic nature of rainfall in Aba Urban which together constituted 131(62.4%) of the perceived flood causative factors in the area. Also, major effects that are common to the entire study area are disruption of people and vehicular movements and damages to household properties. The paper recommended strict compliance to standard in buildings (of roads, drainages and houses) on one hand; and government-public partnership in flood control and/or mitigation for sustainability on the other.

INTRODUCTION

In a global scale, flood is identified as one of the major environmental hazards confronting man and has attracted the attention of both international and national communities in recent times. Flood as a concept is a great quantity of water in a given location/place that is usually dry. This

means that its goes simultaneously with water level in relation to rainfall and other sources of water supply such as pipe or dam break. NEST (1991) defined flood as a body of water which is not usually submerged. Urban flood on the other hand, represent any overland flow over the city area that is sufficient to caused significant damaged to property, traffic obstructions, nuisance and health hazards (Rashid, 1982). Flood occurs where there is an overflow of water which makes the surrounding and profile of the soils impossible to absorb the water.

Flood in cities of Southeastern Nigeria and Aba in particular is peculiar to rainy season and has no specific time and frequency of occurrence. Flood event may occur when the soil infiltration capacity becomes less than rainfall intensity as such water reaching the earth surface percolates into the ground to form part of the shallow sub-surface flow or surface overland flow. From this occur difference types of flood such as coastal flood, catastrophic flood and others.

Although flood events are of benefits to man in area of improving the fertility and moisture content of the soils, researches have shown that the disadvantages associated with it are wide ranging and too enormous. In Britain alone, over 200 billion pound worth of property and infrastructure were damaged and over 4 million people were at risk of flood in 2006 and 2007 (McCarthy et al, 2007). A comparable toll had been reported in some coastal cities of United States, India, Sri Lanker and Japan following the occurrences of earthquake.

Flood events in Nigeria have not been given the attention it merited by government, its agencies, groups or individuals especially when considering its negative consequences on human and material resources. Such examples abound in cities of Aba, Owerri, Umuahia, Awka and other cities, where flood menace have disrupt free movement of goods and people; damaged to household properties; destroyed farm crops and facilitate the spread of harmful insects and diseases.

Similarly, urban planning is not left out because channeling of flood waters is not yielding the expected results, since there is no nearby river or standardized channels where flood water can be directed to. In some cases one sees management problems in terms of financial misappropriation which led to the abandonment of some vital flood and related projects. In many instances, principal drainage systems are either blocked or lack the capacity to accommodate the volume of flood water channeled into it. It is against this backdrop that this study is carried out in Aba urban to identify the major causes and effects of flood events in the area based on peoples' perception, with a view to making appropriate recommendations which if complied with, will

facilitate the mitigation and/or control efforts of the concern groups as well as save the vulnerable elements at risk.

METHODOLOGY AND DATA

This study is empirical in nature, supported with some secondary data. At first, a stratified sampling technique was used to group the study area into ten (10) strata (Umungazi, Abayi, Azikiwe, Asa, Faulks, Eziukwu, Ngwa, Uratta, Osisioma and Port-Harcourt roads), each representing flooded zone. A survey instruments (structured questionnaire and checklist) were used to collect information from 21 respondents that were systematically sampled from each stratum making a total targeted population of 210 sampled in Aba Urban. The sampled population comprises of householders, traders and other road users in the area. This is because they are likely to be more vulnerable the hazard than other people

REVIEW RELATED LITERATURE

Over the past few years, researchers from United States, United Kingdom, and Australia have called attention to in-depth studies of city flood and the need for increase short time-lead warnings (Handmer, 2001; Penning-Rowsell et al, 2004). This issue is a significant focus of the current research program into the European Union Flood sites (Kortenhaus and Samuels, 2004). Such studies were carried out from cities in the developed countries and most of them were sponsored research as exemplified in the works of Drobot and Parker, (2007), McCarthy et al, (2007), Parker et al, (2007) and Hayden et al (2007) whose studies focused on information communication; short time-lead warnings and regional flood risk modeling.

Similarly, some studies have assessed the impacts of and modeled flood events in Britain and Australia as exemplified in the works of Bevan (2005), Thicken et al (2005) and Penning-Rowsell and Wilson (2006). This was made possible due to enabling environment (supports) provided by the government, its agencies and research groups.

In Nigeria only few attempt have been made to explore flood hazards in some cities Ajaiyi (1990), NEST (1991), Idoko (2006), Abam (2006) and Okereke (2007) with much emphasis on the causes in either the whole country or at its region. Therefore, since every city is unique and possessed its individual characters that make it distinct from others, those causes of flood may likely changed as a function of time, population, planning, climate, local geomorphology and others. Also, the impacts of flood hazard on the vulnerable elements at risk may also vary based on the physical, economic and environmental factors.

Obasi (2005) and Strahler (1973) observed that flood occur when soil infiltration capacity is less than the inflow of energy and matter (input of rainfall), rain water reaching the surface form part of the shadow subsurface flow either as overland flow, through flow or underground flow. This implies that interaction between land forms and climate could, to some extent be the key determinant factors for flood severity in a given area.

Okereke (2007) has argued that the perennial flood in Aba commercial city is orchestrated by dilapidated drainage system and road network, improper dumping and management of refuse and poor urban planning. His paper tends to neglect population growth, climate, urbanization and local geomorphology.

In Port Harcourt, Rivers state, Idoko (2006) has identified inadequate drainage system and the topography of the city as the major impediments to surface runoff which invariably accelerated flood in the city areas. In Benin City, Edo state, Ozo and Ikhouria (1983) found that population dynamics and the culminated effects on increasing demand for residential houses, roads, markets, recreations, social amenities, deforestation and other anthropogenic factors are main causes of flood incidence in the city area.

From the above review of few studies on urban flood, there are some marked distinctions or dichotomies between the developed and developing countries. Whereas countries like Britain, United States, England, Australia and Germany are interested on providing useful forecasts and communicating such information to the people based on appropriate models to enhance impact mitigation/adaptation; developing countries like ours are not yet satisfied with the variables that instigated this menace in most areas, hence this study focuses on those causes and effects based on the peoples' perception.

SUMMARY OF FINDINGS

Some of the perceived causes of flood events are numerous but varies based on the respondents interest, locations of their residence and knowledge as identified and presented in Table 1 below. Analysis using simple percentage indicated that 56(26.7%) identified poor drainage system as the major cause of flood in the area; 51(24.3%) identified blockage of the drainage channel. Also, 24(11.4%) and 22(10.5%) supported rainfall amount and poor drainage system in their area. Poor sanitation, population growth, urbanization, topography, commercial activities, soil and deforestation attracts low respond range of between 12(5.7%) to 2(0.9). Poor drainage system ranked first among the 14 causative variables, followed by blockages of flood

channels with a difference of 5(2.4%); while rainfall amount ranked 3rd in the series. Commercial activities ranked 11th and none of the above ranked 12th 0(0%) in the series.

Perceived causes	Total Response	Percentage	Ranking
Rainfall	24	11.4	3 rd
Poor drainage system	56	26.7	1 st
Blockage of flood channel	51	24.3	2 nd
Urban Growth	12	5.7	5 th
Poor Sanitation	8	3.8	7 th
Poor Town Planning	22	10.5	4 th
Population growth	7	3.3	8 th
Topography	15	7.1	6 th
Deforestation	3	1.4	10 th
Commercial activities	2	0.9	11 th
Soil	5	2.4	9 th
All of the above	2	0.9	11 th
None of the above	0	0	12 th
Don't Know	3	1.4	10 th
Total	210	100	14 items

Table 1: Perceived Causes of Urban Flood in Aba Urban. Source: Authors' Research (2013)

The above finding implies that poor drainage system; blockages of the existing channels and dynamic nature of rainfall in Aba Urban are the major flood causative factors which together constituted 131(62.4%). Therefore, any successful attempt to regulate flood events or mitigate/control its occurrences and/or effects on the vulnerable elements in the study area, the key causative factors must be integrated into the system for enhanced sustainability. This finding partially affirms Okereke (2006) assertion that “flood events in southern Nigeria are orchestrated by dilapidated drainage system and road network, improper dumping or management of refuse and poor urban planning”.

Discounting for the above causative factors, respondents also identified diverse ways flood incidence in Aba Urban have affected them negatively with some estimated monetary values. The result summarized in Table 2 below shows that outstanding damages associated with flood in Aba Urban comprises of household items, vehicular/pedestrian movements, farm crops, fences and insects like mosquitoes infestation. Estimate of monetary varies within the sampled

areas ranging from a total cash sum of #1,250,000.00 in Port-Harcourt Road area to #30,000.00 for Eziukwu area. It is expedient to note that, though most respondents were unable to quantify the effects/damages, data from obtained from those that were able to quantify theirs stood at an estimated total sum of three million, two hundred and eighty-four thousand, nine hundred and fifty naira (#3,284,950.00) for the sampled Aba Urban. These damages according to the respondents are often bore by the people with no assistant from the government.

Sampled Areas	Major effects/damages/losses	Estimated monetary values (#:k)
1. Umungazi	Household items, farm crops, disrupt peoples' mobility	50,000.00
2. Abayi	Household items, farm crops, disrupt movement, mosquitoes.	102,050.00
3. Azikiwe	Household items, fence and disrupt peoples' mobility	312,750.00
4. Asa	Household items, farm crops, disrupt peoples' mobility	40,600.00
5. Faulks	Household items, farm crops, disrupt peoples' mobility	200,800.00
6. Eziukwu	Household items, farm crops, disrupt people movement, road.	30,000.00
7. Ngwa	Household items, farm crops, disrupt people/vehicular mobility	700,900.00
8. Uratta	Household items, farm crops, disrupt peoples' mobility	500,450.00
9. Osisioma	Household items, farm crops, disrupt people/vehicular mobility	200,150.00
10. Port-Harcourt	Household items, fences, disrupt people/vehicular mobility	1,250,000.00
TOTAL		3,284,950.00

Table 2: Major Damages of Flood and Estimated Cost in the Study Area.

Source: Authors' Field Survey, (2013).

CONCLUSION AND RECOMMENDATIONS

From this study, it clear that urban flood is an unwanted phenomenon following its devastating effects on man and his environment. The causes and effects are numerous and wide ranging depending on vulnerability factors. Analysis of peoples' perception reveals that the

driving force of this phenomenon are poor drainage system, blockage of the existing channels and dynamic nature of rainfall in Aba Urban which together constituted 131(62.4%) of the flood causative factors. Also, major effects that are common to the entire study area are disruption of people and vehicular movements, damages to household properties and others. Therefore, government and its agencies should formulate people oriented policies and ensure that issues of environment are the affairs of both the government and the masses for sustainability of development; hence there is urgent need for partnerships and adoption of integrated approach in addressing flood events in the area and beyond.

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