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ASSESSING THE DAMAGE AND LOSSES CAUSED BY THE FLOOD DISASTERS IN SOME SELECTED COMMUNITIES IN SOUTHERN NIGERIA.

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Abstract

The study assessed the flood disaster recovery, rehabilitation and reconstruction activities among selected communities in South-south, Nigeria. Questionnaire was used for data collection, while Statistical Package for the Social Sciences (SPSS V. 21) was engaged for proper analysis using the descriptive and inferential (analysis of variance) statistics tools for data analysis. The finding of the study revealed that social subsectors: housing (35.8%) and education (30.9%); production subsector: agricultural (61.3%); infrastructure subsector: electricity (53.3%) suffers the most damage and losses due to flood disaster. Among the communities, the short-term recovery activities include repair of existing structure (33.3%) and replacement of dry wall and repainting (32.5%), while long-term activity include construction of drainage system (23.9%), and these activities are effective (52.2%) and less effective (65.7%), respectively. There is no statistically significant difference in the factors limiting the practice and effectiveness of flood disaster recovery activities ($p = 0.174$) among the communities. In conclusion, many communities in the region practices recovery activities through community/individual-led and government-led actions; however, there is for deployment of capable hands for effectiveness.

KEYWORDS: Flood Disaster, Flood Assessment, Damage.

1.0 Introduction

Flooding is mainly from rainfall which is prevalent in the Niger Delta and southern parts of the Nigeria (Agbonkhese, *et al.*, 2014; Nkwunonwo, *et al.*, 2015, Echendu, 2020). In 2012, Nigeria experienced its worst flooding in recent history (Nkeki, *et al.*, 2013). More than 2.3 million people were displaced, 363 lost their lives and another 16 million people were impacted in

various ways and years of development gains were reversed (Nwigwe and Emberga 2014; Oladokun and Proverbs 2016). Total losses were put at US\$16.9 billion (Echendu, 2020). In reality, the extent and nature of Nigeria's flooding are such that the actual figures for displacements, losses, and fatalities cannot be truly ascertained (Nkwunonwo, *et al.*, 2015; Cirella & Iyalomhe 2018). The 2022 flood in Nigeria was even worse than that of 2012. More than 600 persons died and enormous damages recorded (BBC, 2022).

In the aftermath of disasters, frequent assessments will be conducted to understand the situation and provide required resources for meeting the needs of people in the affected areas (Hosseini, 2019). These assessments might be conducted in different stages such as rapid assessments in the early hours of the disaster to a more comprehensive and detailed assessment which provide the basic information for recovery. From 2012 to 2014, 994 disasters impacted more than 326 million people across the globe (Centre for Research on the Epidemiology of Disasters-CRED, 2014). The cost of physical damage caused by these events is also rising - from an estimated US\$20 billion on average per year in the 1990s to about \$100 billion per year in the first decade of this century (International Monetary Fund-IMF, 2012; United Nations Development Programme (UNDP), 2016). As climate change and migration accelerate, the cost of recovery will continue on an upward trajectory. Recovery strategies that champion inclusive, safe, resilient, and sustainable rebuilding and more equitable societies are in short supply and high demand.

The frequency of natural disasters especially those resulting from flood has been increasing over the years, resulting in loss of lives, damage to properties and destruction of the environment (Oruonye, *et al.*, 2017). The rural dwellers are most affected by flood disaster because of their poor living condition. According to Okeleye, *et al.*, (2016), the immediate impacts of flooding include loss of human life, damage to properties, destruction of crops, loss of livestock, and deterioration of health conditions owing to waterborne diseases. As communication links and

infrastructure such as power plants, roads and bridges are damaged and disrupted, some economic activities may come to standstill. However, in post-disaster situations, depending on the magnitude of the resulting damage, aid agencies, civil society and other organizations, private and public, may collaborate with the government to facilitate the rehabilitation and/or reconstruction of the infrastructure, based on damage and needs assessments.

2.0 Literature Review

There has been an ongoing debate on defining and conceptualizing a term for human-caused and natural calamities; a commonly used English word is “disaster.” The concept of disaster has been understood in different ways depending on the era and defined in various ways depending on the purpose of users, such as national governments, United Nations (UN) agencies, and scholars. The commonly used English word “disaster” originates from the Latin words “disastrum,” meaning “ominous star.” Disaster, as it is reflected in its origin, had been historically interpreted and used as a massive and sudden calamity due to the unfavorable position of a planet or star, implying “impossible to control,” because it is caused by God’s will (Etkin, 2015). In other words, disaster had been mostly considered as a naturally occurring disaster, resulting from external components, such as typhoons and earthquakes.

Ologunorisa (2012) examined the strategies for mitigation of flood risk in the Niger Delta, Nigeria. The study had the major objective of evaluating flood risk mitigation strategies in the Niger Delta, a coastal region of Nigeria that suffers from perennial flooding. The study positioned that the structural methods of flood control tend to give a false sense of security to flood plain dwellers and thereby encouraging investments in flood prone areas. The non-structural methods on the other hand are basically behavioral adjustments to flood control. The study observed that for flood risk mitigation strategies to be effective in the Niger Delta, there is need for establishment of coastal management zone authority, land-use zoning, legislation,

building codes, flood forecasting and warning systems, flood insurance and engineering control of the major river systems.

Ijigah and Akinyemi (2015) carried out an empirical survey of causative factors and preventive measures of flood disaster in Kaduna, Nigeria. From the study, the common factors that cause flooding were poorly constructed drainage, heavy rainfall and improper waste disposal. Preventive measures for flooding were proper dumping of refuse, awareness of the public on the need to adhere to environmental rules, empowerment of government agencies to monitor residential building construction, implementation of government policies on flood and sanitization of town/city planners. Increased awareness at all levels (community, local, state and federal) of the risk of flooding, appropriate response techniques in mitigating flooding via implementation of flood control policies and flood early warning system to control flooding in Nigeria were also recommended.

According Al-min (2013) on his review of Nigeria's disaster preparedness to disaster events with emphasis on the flood disaster of 2012, identified several challenges regarding the nation's disaster preparedness, the need to strengthen Nigeria's Disaster Risk Reduction (DRR) mechanism. The study reviewed the Nigeria's disaster preparedness through assessment of the country's commitment to the international instruments of environmental management as contained in several treaties and agreements. The review indicated a general trend of accepting such instrument through the country's ratification of them, but with little efforts at its domestications of the necessary structures for its implementation. The research found out that administrative setback is hampering Nigeria from being fully prepared for eventualities of extreme environmental events; especially as occasioned by climate change.

Oladokun and Proverbs (2016) reviewed the challenges and opportunities towards flood risk management in Nigeria. The study highlighted the current weaknesses and opportunities, as well as giving recommendations for practice and for further research. Databases of academic

literature, covering a wide range of FRM issues, were systematically queried and mined using suitable keywords. The study revealed absence of integrated FRM systems, lack of inter agency coordination, substandard and weak infrastructures, inadequate drainage network, high urban poverty, low level literacy, cultural barriers and weak institutions characterize current FRM practices as the challenges towards flood risk management in Nigeria. The study recommends the adoption of an integrated approach to urban infrastructural development starting with a review of ongoing and planned infrastructural systems and projects with a view to optimizing their FRM capabilities while still meeting their intended purposes. The empowerment of more entrepreneurs into FRM solutions development and service delivery as well as the inclusion of FRM concepts and practices into the nation's educational curricula was also recommended. Nigeria also needs a multidisciplinary platform for generating effective strategic policies and efficient operational mechanisms for FRM.

Similarly, Nkwunonwo (2016) noted that with rapid population growth and urbanization in the country the risk of flooding to human lives and properties assumes critical dimensions. Critically, poor awareness of the hazard is a major impasse towards its management. This creates a significant gap in the knowledge of how to improve on the current efforts towards addressing the challenges of flooding in Nigeria. Since attempts to tackle the hazard appear to be limited, study was driven by the need to identify those limitations in the flood management efforts in Nigeria. Possible way-forward are suggested based on a critical review of flooding and its management in Nigeria, allied with globally acknowledged 'best practices' in flood risk reduction and lessons learned from other countries' experiences of flooding.

Obioji and Eze (2019) examined the disaster management practice of Anambra state, Nigeria. The research was anchored on Emergency Management Theory while data for this study were gathered through both primary (interview, focus group discussion, observation and self-report) and secondary (Newspapers, journals, works etc) sources. The findings of this study amongst

other things include: that poor funding, lack of disaster management equipments and facilities are some of the factors challenging Anambra State Emergency Management Agency (ANSEMA) in carrying out its disaster management functions. The study recommended among others a well-equipped ANSEMA and compulsory compliance policy be formulated and enforced to compel the members of the public to abide by ANSEMA's advice on disasters.

2.1.1 Study Area

The South-South Region of Nigeria is located on 4°49'60"N and 6°0'00"East (Figure 2.1-2.3) protruding towards the Gulf of Guinea on the Atlantic coast of West Africa (Shittu, 2014). The region is a densely populated area in Nigeria. Its population is about 31 million people. The land mass extends over about 70,000 km², and make up 7.5 percent of Nigeria's landmass. The region consists of Akwa- Ibom, Bayelsa, Cross- River, Delta, Edo and Rivers states. It harbours more than 40 ethnic groups, which include: the Annang, Efik, Ibibio, Isoko, Ijaw, Ikwerre, Oron, Itsekiri, Urhobo, Ukwani, Kalabari, etc.

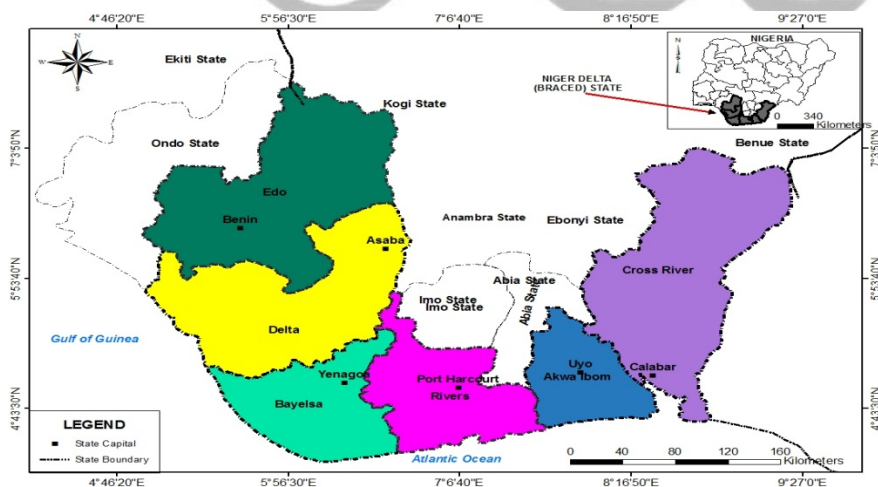


Figure 2.1: The South-South Region States Source: State Boundary from Open street map (2018)

Figure 2.4: Warri North and Isoko South LGA Sampled Location

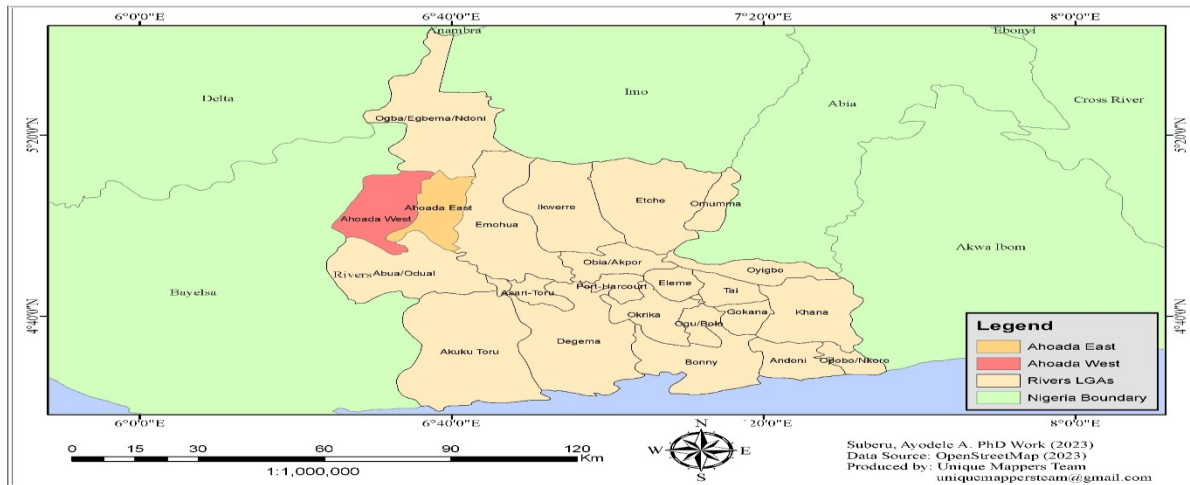


Figure 2.5: Ahoada West and Ahoada East LGAs Sampled Location



3.0 Results

Table 3.1 presented the details on copies of questionnaire administered to respondents from six (6) communities that cut across three (3) states (Rivers, Bayelsa and Delta) from the Niger Delta region. A total of four hundred (400) questionnaires were administered among respondents while three hundred and eight-five questionnaires (385) were properly filled and returned for further analysis. This represents ninety-four percent (94%) of the total administered questionnaires.

At Rivers State, a total of one hundred and twelve (112) questionnaires were administered while one hundred and four (104) were filled and returned. This represents a questionnaire returned rate of ninety-three percent (93%) of the total administered questionnaires. At Delta State, a total

of one hundred and four (104) questionnaires were administered and all were properly filled and returned. This represents a questionnaire returned rate of hundred percent (100%). For Bayelsa state, a total of one hundred and eighty-four (184) questionnaires were administered while one hundred and seventy-seven were filled and returned. This represents a questionnaire returned rate of ninety-six percent (96%) of the total administered questionnaires.

Table 3.1: Copies of Questionnaire Administered to Respondents

State	Selected LGAs	Number Administered	Number of Questionnaire returned	Total Returned/State	Percentage of Questionnaire returned
Rivers	Ahoada West	68	60	104	96%
	Ahoada East	44	44		
Delta	Isoko South	64	64	104	
	Warri North	40	40		
Bayelsa	Yenagoa	96	92	177	
	Southern Ijaw	88	85		
Grand Total		400	385		

Source: *Field Survey, 2023*

Damage and Losses Caused by Flood Disasters on Various Sectors

Table 3.2 presented the damage and losses cause by flood disasters on various sectors from study areas. Considering the social sector of mostly affected by flood, the analysis showed that 35.8% of sector affected was housing, 19.7% of the sector of the affected sector was health facilities while 30.9% and 13.5% of the respondents indicated education and cultural heritage social sector mostly affected by flood respectively. Among the production sector, 61.3% of the respondents indicated that agricultural subsector was mostly affected by flood, 26.5% indicated commerce and industry while 8.6% and 3.6% of the respondents indicated finance and tourism as the major subsector of production sector that was mostly affected by flood. Furthermore, the infrastructure mostly affected by the flood indicated that 53.3% were electricity, 11.9% is communication

while 13.3% and 21.5% of the infrastructure affected include transportation and water/sanitary/hygiene respectively.

Considering the extent of the damage on various subsectors, the finding indicated that subsectors such as housing (73.8%), health facilities (44.4%), education (66.0%), agriculture (77.1%), electricity (69.9%), transportation (64.2%) and water/sanitary/hygiene (80.3%) have tangible damage while commerce and industry (78.2%), cultural heritage (43.6%) and communication were intangible.

Table 3.2: Damage and Losses Caused by Flood Disasters on Various Sectors

Variables	Rivers		Bayelsa		Delta		Total (%)	*n = Frequ enc y, % = Perc enta ge Sour ce: <i>Fiel d Surv ey, 2023</i>
	N	%	N	%	N	%		
Social Sector Mostly Affected by Flood								
Housing	35	33.7	62	35.0	41	39.4	138 (35.8)	
Health Facilities	27	25.9	36	20.3	13	12.5	76 (19.7)	
Education	30	28.9	56	31.6	33	31.7	119 (30.9)	
Cultural Heritage	12	11.5	23	13.0	17	16.3	52 (13.5)	
							385 (100)	
Production Sector Mostly Affected by Flood								
Agricultural	70	67.3	110	62.1	56	53.9	236(61.3)	
Commerce and Industry	25	24.0	38	21.5	39	37.5	102(26.5)	
Finance	9	8.7	15	8.5	9	8.6	33 (8.6)	
Tourism	-	-	14	7.9	-	-	14 (3.6)	
							385 (100)	
Infrastructure Mostly Affected by Flood								
Electricity	34	32.7	118	66.7	53	51.0	205(53.3)	
Communication	14	13.5	22	12.4	10	9.6	46 (11.9)	
Transportation	26	25.0	17	9.6	8	7.7	51 (13.3)	
Water/Sanitary/Hygiene	30	28.9	20	11.3	33	31.7	83 (21.5)	
							385 (100)	
Sub-Sectors	Tangible Damage (%)		Intangible Damage (%)		No Damage (%)		Total (%)	
Housing	284 (73.8)		56 (14.5)		45 (11.7)		385 (100)	
Health Facilities	171(44.4)		145 (27.5)		69 (17.9)		385 (100)	
Education	254 (66.0)		106 (27.5)		25 (6.5)		385 (100)	
Cultural Heritage	141 (36.6)		168 (43.6)		76 (19.7)		385 (100)	
Agricultural	297 (77.1)		88 (22.9)		-		385 (100)	
Commerce and Industry	-		301 (78.2)		84 (21.8)		385 (100)	
Financial Sector	102 (26.5)		188 (48.8)		95 (24.7)		385 (100)	

Tourism	-	-	-	385 (100)
Electricity	269 (69.9)	87 (22.6)	29 (7.5)	385 (100)
Communication	126 (32.7)	246 (63.9)	13 (3.4)	385 (100)
Transportation	247 (64.2)	138 (35.8)	-	385 (100)
Water, Sanitation and Hygiene	309 (80.3)	76 (19.7)	-	385 (100)

Tangible Damage = Destroyed structure and items in the structure, Intangible Damage = only flood water but no destruction, No Damage = no flood impact.

4.0 Conclusion

Flood disaster recovery activities through rehabilitation and reconstruction operations They provide a direct ‘connect’ between disaster response and long-term development. Recovery activities is significant in ensuring resilience of the impacted individual and its effectiveness is important in preventing future impact. The study examined the flood disaster recovery, rehabilitation and reconstruction activities among communities in South-south, Nigeria and from the findings of the study, it was concluded that many communities in the region practices recovery activities through community/individual-led and government-led actions; although, the short-term (rehabilitation) perceived to be effective but the long-term (reconstruction) activities are less effective.

5.0 Recommendations

Based on the study findings, the following recommendations were made:

- i. Deployment of capable hands for flood post-disaster activities and stricter monitoring of activities to ensure that the activities the activities implemented will curb or minimize the impact of flooding in the future.
- ii. Local knowledge of the environmental setting should not be disregard and improvement/enhancement of the local recovery actions should be highly considered in the disaster recovery plan.

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