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Adapting to Climate Change – Building Capacities for Flood Risk Management in Bayelsa State, Nigeria

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Abstract- Flooding is a phenomenon that sometimes has devastating effects on human livelihoods. Impact of floods is more pronounced in low-lying areas due to rapid growth in population, poor governance, decaying infrastructure and lack of proper environmental planning and management. Flooding is also exacerbated by climate change and inadequate preparedness. However, flooding in most Nigerian cities is a major environmental challenge that has continued to defy solution as more people are rendered vulnerable to hazards involved. The implications of recent flooding in Nigerian cities include among others; loss of life and properties, spread of diseases, deformed livelihoods, assets and infrastructure. This paper therefore provides an overview of how Nigerian cities have been affected by flood incidences. The paper contends that prevailing effects of climate change, particularly flooding affecting almost everything in cities demands urgent attention in form of environmental and infrastructure planning, effective policy, improved and effective management of ecological fund, enhanced environmental disaster insurance, effective professional practice, enhanced public enlightment programmes, integration of environmental planning and education to curriculum of schools at all levels, capacity building towards adaptation and mitigation of climate change impact. It also argued for the need to reinvent Nigerian cities through good governance towards creating sustainable cities in the country.

Index Terms- Adapting, climate change, Capacities, flood, Risk, management

I. INTRODUCTION

Climate change is one of the greatest threats facing the world today. It has impacted on all ecosystems and human societies in different ways and to varying degrees. Nigeria, like many other developing countries, faces enormous social, economic and environmental challenges that are likely to be exacerbated by the impacts of climate change. At both the individual and the national levels, climate change is of serious concern because of the nation's overdependence on climate-sensitive sectors, such as hydro-power generation, agriculture, fisheries and wildlife resources. Estimations indicate that temperature will continue to rise, and the survival of coastal communities will be threatened by rising sea level. Reduction in rainfall is already impacting on rain-fed agriculture and hydro-power outages, causing significant decreases in industrial production. Climate change will bring new flood threats, especially in developing countries such as Nigeria. It may increase the magnitude, frequency, and intensity of flood risks, and have a critical impact on national economic activities. Developing countries tend to face larger flood risks because of insufficient funds, inadequate infrastructure, lack of legislation and enforcement programs, ignorance or lack of attention to the likely dangers from flooding, and other flood management issues. Additional risk factors, such as lack of preparedness and response by authorities, add to the existing vulnerabilities and will exacerbate the consequences of flooding. Delay of implementing measures against climate change may lead to serious problems including economic stagnation and persistence of poverty, which amplify the current glaring disparity between developed and developing countries.

These negative impacts of floods are related to and made worse by inadequate institutional, social, organizational, and individual capacities required for flood management in the state. In contrast, the risks might be alleviated if appropriate measures are taken based on enhanced capacity. The physical safety and the confidence in security generated by the sufficient measures may contribute toward further economic development.

In addition, the contexts surrounding water resources management including flood management have been shifting following diversification of people's sense of values, more emphasis on environmental conservation, and other increasing complexities. This paradigm shift requires more comprehensive and integrated approaches in flood management. In any process of flood management, the infrastructure and procedures are important to achieve goals. However, the capacity, which influences performance of organizations responsible for flood management, is paramount for making all elements of flood management function adequately. Especially in developing countries and of course in Bayelsa State, gaps between available capacity and the urgency to cope with the flood risks remain high. Under these circumstances, it is required to formulate new capacity building methodologies for effective flood management. Following the 2012 flooding in the country and the awareness it raised, integration of disaster risk management in Nigeria's overall development strategies has remained a key element in the country's improving capacity to deal with sudden onset as well as long-term disasters. It is against this backdrop that this study has become necessary.

This study aims to improve the life of vulnerable communities in B ayelsa State through strengthened capacities of community- based services for the preparation and mitigation of flood-related impacts. The study will promote collaboration between communities and local governments to tackle disaster risk reduction, welfare and health issues, and to develop an

integrated plan on these issues. The study involves two key components:
Community assessment and planning: This encompasses identifying community needs in strengthening capacities to cope with climate disasters, and development of an action plan. Local communities will provide information on disaster preparedness, and community-based management including waste management, neighborhood watch, basic services revolving fund systems, and land use management.
Knowledge capacity building on climate implications and flood related risks, preparedness and adaptation within the selected communities.

11 CAUSES/SOURCES AND STYLES OF FLOODS

Causes of flood tend to vary from one locality to the other depending on the available protection and management processes. Urbanization and or the concentration of settlements continue to encroach on flood prone areas. Human actions cause floods. There is the tendency to use additional lands that are flood plains, which attract development due to their flatness, soil fertility and proximity to water. (Ivbijaro,
M.F.A. et al, 2006). Hence, Patrick, L. Abbott, (2006) stated that, „streams build floodplains by erosion and deposition, and streams reserves the right to reoccupy their floodplains whenever they see fit. And that, humans who decide to build on floodplains are gamblers; they may win their gamble for many years, but the stream still rules the floodplain, and every so often it comes back to collect all bets".
Other causes of increasing flood risk are increase in the proportion of impervious area, deforestation and channel interference, (Ivbijaro, M.F.A. et al, 2006).

Gill (2004) provides some important comments on the likely impacts of climate change on urban areas, and within, that considers the impacts from increased flooding. The publication suggests that the increase in flooding will be the most serious direct impact of climate change… „Factors of concern for flooding include: sea level rise (combined with severe storms and wave heights); more frequent, severe or prolonged rainfall events; the large size of urban catchments; an increasingly built-up environment which increases surface water run-off and, in particular, the rate of development on floodplains; the age, condition and lack of capacity of existing

drainage and infrastructure; the impact of rising groundwater in conjunction with surface flooding" (Gill 2004, p. 34).

In addition to climate change, there are urban design features that can exacerbate the risk of flooding (e.g. reduction in urban green space, increase in hard surfacing, increased density of development and, potentially, increased barriers to flood flows such as road embankments). Because of the density of population, flooding problems in urban areas are characterized as „low probability/high consequence" (i.e. there is a low probability of flooding, but if there is a flood it could have catastrophic consequences). Not surprisingly, there tends to be a low awareness of flood risk in these areas and there are communities who do not know they are at risk of flooding and that any flood would have serious consequences because of the sheer density of homes in urban areas. Flooding can be from a number of sources: rivers (fluvial), coastal, tidal, sewers, groundwater and drainage. In the urban environment increased density adds pressure, especially on urban drainage systems and sewers. As a result flooding from sewers and drainage systems is an important part of the urban flooding equation and has implications for the type of social impacts experienced. In terms of urban flooding the focus in Making Space for Water is on joining up the approach to drainage. According to Patrick, L. Abbott, (2006:380), killer floods are unleashed by several phenomenon.

- A local thunder cloud can form and unleash a flash flood (up-stream floods) in just a few hours.
- Abundant rainfall lasting for days can cause regional floods that last for weeks. This is also known as „downstream floods".
- The storm surges of tropical cyclones floods the coasts.
- The breakup of winter ice on rivers can pile up and temporarily block the water flow, and then fail in an ice-jam flood.
- Short-lived natural dams made by landslides, log jams and levees fail, causing voluminous floods.

In Bayelsa State, most of the floods are from rivers (fluvial), coastal, tidal, groundwater, drainage, heavy rainfalls etc.

111 OBJECTIVES OF THE STUDY

This study explores how to alleviate flood damage, hazards and threats under climate change, and achieve sound economic development in Bayelsa State with a focus on capacity building. Hence the following objectives are set to be achieved.

To identify the level of damages resulting from flooding in Bayelsa State.

To ascertain the need for capacity building for flood management.

To identify the capacity building for flood management applicable in the State; to reveal the required strategies for minimizing the negative consequences of flooding in Bayelsa state and to identify required capacitybuilding to cope with the increased flood risks under climate change.

To reveal the activities in the state that link climatic change which results in flooding.

To ascertain the level of preparedness of the people of the state towards eminent threats of flooding

II. HYPOTHESES

The following research hypotheses are therefore put forward to be subjected to empirical test and verifications.

There is a relationship between Capacity building and the coping capacity of flood victims under climate change in developing countries

The higher the level of preparedness the lesser the damage encountered during floods in Bayelsa State.

III. STUDY AREA

This study was undertaken in Bayelsa state. Bayelsa State was created on October 1, 1996 out of the old Rivers State by the then regime of General Sani Abacha. The name, Bayelsa, is an acronym of three former Local Government areas - Brass, Yenagoa and Sagbama - in the then Rivers State, which had earlier comprised the entire area now constituting Bayelsa State. In the tradition in the old Rivers State, which Bayelsa State was created from; acronyms are used for local government areas. Brass Local Government Area was referred to as BALGA, for short; Yenagoa was simply YELGA, while Sagbama was SALGA. So in naming the new state, BALGA, YELGA, and SALGA was compounded to form BAYELSA.

Bayeslsa State is Located in the Southern part of Nigeria. It's covers 21,100 Square Kilometres with capital at Yenagoa. The State is geographically located within Latitude 04^{o} 15‟ North, 05^{o} 23‟ South and longitude 05^{o} 22‟ West and 06 ^{o} 45‟ East. It shares boundaries with Delta State on the North, Rivers State on the East and the Atlantic Ocean on the West and South. Bayelsa State is a tropical rain forest, with more than three quarters of this area covered by water, with a moderately low land stretching from Ekeremor to Nembe. The area lies almost entirely below sea level with a maze of meandering creeks and mangrove swamps. The network of several creeks and rivers in the South, all flow into the Atlantic Ocean via the major rivers such as San Bartholomew, Brass, Nun, Ramos, Santa Barbara, St. Nicholas, Sangana, Fishtown, Ikebiri Creek, Middleton, Digatoro Creek, Pennington and Dobo. The vegetation here is characterized by the mangrove forest. In the North, it has a thick forest with arable lands for cultivation of various food and cash crops.

There are four main languages in Bayelsa State, which are Izon, Nembe, Ogbia and Epie-Atissa. It is important to note that the Ijaws (izon) constitute the majority in the area. The predominant religions in the State are Christianity and Traditional worship. The major occupations in the State are fishing, farming, palm oil milling, lumbering, palm wine tapping and local gin making, trading, carving and weaving. Bayelsa State is a major oil and gas producing area and it contributes over 30% of Nigeria‟s oil production. Bayelsa State is home to Oloibiri in Ogbia Local Government Area, where oil was first struck in Nigeria in commercial quantities in 1956. Gas production activities are currently being intensified in the State as feedstock to the LNG Gas Supply Plants in Bonny which is located in Oluasiri local government area of the state. Also the gas feed will feed into the proposed national associated gas gathering networks that will feed other LNG plants, power plants and end users in the manufacturing sector. The major oil exploration and production companies operating in the State are Shell, Agip and Chevron Texaco. The Kolo Creek Gas Turbine Project owned by the Bayelsa State Government supplies electricity to Yenagoa, the State Capital, and surrounding towns and villages. Bayelsa State is, presently, the only State in Nigeria that provides electricity for itself without any supply from the National Electricity Grid. Bayelsa State has large reserves of clay, sand and gravel. Bayelsa State has a wide variety of festivals, music, arts, crafts, folklore, artifacts, museums and monuments. The White Graveyard at Twon-Brass in Brass LGA, the Slave Tunnel at Akassa in Brass LGA, Olodi Museum at Ogbolomabiri, Mangrove Museum at Nembe, Ogidigan Deity at Bassambiri and King Ockiya‟s Mausoleum at Ogbolomabiri all in Nembe LGA, Late Chief Christopher Iwowari‟s Monument at Bassambiri in Nembe LGA. Bronze Heads at Opume in Ogbia LGA, Isaac Boro Memorial Monument at Kaiama in Kolokuma/Opokuma LGA. These museums are stocked with artifacts dating back to hundreds of years. A proposed Museum at Oloibiri will chronicle the history of oil exploration in Nigeria and serve as a center of excellence in petroleum history, entertainment and learning. At Twon-Brass in Brass Local Government Area, there are the Commonwealth Graves of British soldiers who died in the Nembe-British War of 1895 (otherwise known as the Akassa war). In nearby Akassa, there is the Slaves Transit Camp. There is a War Boat in Aleibiri. The Atlantic Ocean beache stretches across Twon-Brass, Okpoama, Olodiama, Koluama, Sangana.

This study is necessary because of the importance of the region to the economic development of the country. Conflict in the area will mean serious problem to the country.

IV. PROCEDURE AND METHODOLOGY

The research population for this study was drawn from Bayelsa state, one of the south-south geo-political zone of Nigeria. This study is part of a comparative study that examined the degree of capacity building preparedness for flood risked management in the state. A survey research design was used in this study. The research uses description as well as analysis. The study is based on both primary and secondary sources. It adopt both the quantitative and qualitative research method. To arrive at the intended investigation, the study utilizes both the simple percentages and chi-square statistical analysis to test the relationship between variables.

V. DATA ANALYSES AND PRESENTATION

Introduction:

In this study, appropriate, tools and procedures has been adopted to present and analyze the data so far collected from the field work. 115 questionnaires (100%) printed and distributed, while 105 retrieved from the subjects are therefore analyzed and interpreted using tables, simple percentage, and Chi-Square ( ) non-parametric statistical analysis test.

TABLE 1. SOCIO-DEMOGRAPHIC DATA OF RESPONDENTS

ITEM	FREQUENCY	PERCENTAGE (%)
1. Sex		
Male	60	57.14%
Female	45	42.86%
TOTAL	**105**	**100%**
2. Religion		

	Christianity	98	93.33%
	Islamic	3	2.86%
	Traditional	2	1.90%
	Others	2	1.90%
	TOTAL	**105**	**100%**
3.	**Age**		
	15-30	38	36.19%
	31-45	50	47.62%
	46-60	15	14.29%
	≥61	2	1.90%
	TOTAL	**105**	**100%**
4.	**State of Origin**		
	Akwa-Ibom	2	1.90%
	Bayelsa	78	74.29%
	Cross - River	1	0.95
	Delta	5	4.76%
	Ebony	1	0.95%
	Edo	2	1.90%
	Imo	2	1.90%
	Lagos	5	4.76%
	Rivers	8	7.62%
	Undecided	1	0.95%
	TOTAL	**105**	**100%**

5.	**Family Type**		
	Monogamy	35	33.33%
	Polygamy	45	42.86%
	Married but Divorced/Separated	15	14.29%
	Single	9	8.57%
	Others	1	0.95%
	TOTAL	**105**	**100%**
6.	**Occupation**		
	Farmer	15	14.29%
	Trader	20	19.05%
	Civil servant	62	59.05%
	Others	8	7.62%
	TOTAL	**105**	**100%**

Table 2. Showing the impact of flooding on the people

ITEM	**FREQUENCY**				**∑F**
	YES		**NO**		
	FREQ	**%**	**FREQ**	**%**	

Q. 7.	**105**	**100**	**0**	**0%**

Q. 8.	**101**	**96.19**	**4**	**3.81**	
Q. 9.					
I	**103**	**98.10**	**2**	**1.90**	
Ii	**95**	**90.48**	**10**	**9.52**	
Iii	**98**	**93.33**	**7**	**6.67**	
Iv	**101**	**96.19**	**4**	**3.81**	
V	**104**	**99.05**	**1**	**0.95**	
Vi	**80**	**76.19**	**25**	**23.81**	

Table 2 above reveals that the people of the state has in one way or the other, suffered some level of negative impacts and damages from flooding, as all the respondents 105, representing 100% agreed.

It also revealed that 101, (96.19%) said they have been a victim of flood damages, and 4 (3.81%) did not suffer such damages.

It shows that, loss of lives and properties, 98.10% (103) said yes, while 2 (1.90%) said no. loss of biodiversity, 95 representing 90.48% said yes, 10 (9.52%) said no. Also, most of the respondents, 98 i.e, 93.33 revealed that flooding has caused dangerous diseases and sicknesses, while 7 (6.67%) said no. And 96.19% (101) disclosed that flooding has disrupted life-sustaining activities in the state, but 4 (3.8%) disagreed. Most of the respondents, 104 representing 99.05 answered that flooding contaminates the water body, 1 (0.5%) said no. Finally, it was shown that 80 (76.19%) of the subjects revealed that flooding has caused emotional and psychological problems, though, 25 (23.81%) disagreed.

Table 3. Showing the readiness of the people to flood occurrence

ITEM	FREQUENCY				∑F
	YES		NO		
	FREQ	% FREQ		%	
Q. 10.	28	26.26	77	73.33	
Q. 11.	25	23.81	80	76.19	
Q. 12.	101	96.19	4	3.81	

This table discloses that most people, 77 representing 73.33% of the subjects do not keep memories of the impacts of previous flooding while 28 ((26.67%) do. It further reveals that most of the respondents, 80 (76.19%) as against 25 i.e 23.81% (that said yes) do not always get prepared for eminent floods in order to avert its detrimental dangers. As such majority of the respondents 101 (96.19%) agreed that the more prepared people are, the less likely the impact of flooding will have on them, however, minority, 4 (3.81%) disagreed.

Table 4. Showing Causes of damages suffered during floods

ITEM	FREQUENCY				∑F
	YES		NO		
	FREQ	% FREQ		%	
Q. 13.					

I	98	93.33	7	6.67	
Ii	98	93.33	7	6.67	
Iii	80	76.19	25	23.81	

Table 4 unfolds firstly, that people suffer serious damages during floods as a result of laziness - of which 98 (93.33%) said yes as against 7 (6.67%) that said no. also, lack of preparedness, 98 (93.33%) said yes, while 7 (6.67%) said no. furthermore, lack of government‟s assistance records 80 (76.19%) as yes and 25 (23.81%) as no, indicating reason for serious damages in times of floods in the state.

Table 5. Showing activities that induce climate change

ITEM	FREQUENCY				∑F
	YES		NO		
	FREQ	%	FREQ	%	
Q. 14.					
I	103	98.10	2	1.90	
Ii	101	96.19	4	3.81	
Iii	105	100	0	0	
Iv	80	76.19	25	23.81	
V	101	96.19	4	3.81	

This table discloses climate change inducing activities. It uncovers that burning of fossil fuels records 103 (98.10%) yes, as against 2 (1.90%) no. also, 101 representing

96.19% agreed that people build on flood plains while 4 (3.81%) did not. Another of such activities is oil spillage which all the respondents, 105 (100%) said yes. In addition, majority 80 (76.19%) said yes to indiscriminate dumping of wastes as against 25 (23.81%) that said no. finally, the table revealed that people engage blocking of drainages and water ways, as most of the respondents 96.19% (101) agreed while 4 (3.81%) said no.

Table 6. Showing the efforts of the governments

ITEM	FREQUENCY				∑F
	YES		NO		
	FREQ	%	FREQ	%	
Q. 15.	80	76.19	25	23.81	
Q. 16.	10	9.52	95	90.48	
Q. 17	104	99.05	1	0.95	

Table 6 unmasks the role played by government before, during and after flood incidents in the state. Majority of the subjects represented by 80 (76.19%) as against 25 (23.81%) (that said no) said yes, that government has done something about flood hazards in the state. The subjects, most of the, 90.48%i.e, 95 said there are no effective capacity development programs by the government, though 10 (9.52%) said there is. Finally, almost all the subjects 99.05% (104) agreed that the impact of flood can be reduced through effective capacity development programs, while 0.95% i.e 1 of the respondents disagreed

VI. TESTING OF HYPOTHESES

The hypotheses will be tested with Chi-Square () non-parametric statistical analysis test.

The rule here is, where Chi-Square () obtained (calculated) value is less than Chi-Square () critical (table) value, the null hypothesis (Ho) be accepted and the alternative hypothesis (HR) be rejected. But if the reverse is the case (i.e. If  (obtained) >  (critical) value), then the null hypothesis be rejected and the alternative hypothesis (HR) be upheld.

The above statement (rule) is applicable to the two hypotheses of this research.

Hypothesis 1

Null hypothesis Ho: „There is no relationship between Capacity building and the coping capacity of flood victims under climate change in developing countries"

HR: „There is a relationship between Capacity building and the coping capacity of flood victims under climate change in developing countries"

This hypothesis is tested with items, 16 and 17 from the questionnaire.

CONTINGENCY TABLE 1

ITEM	FREQUENCY		Total
	Yes	No	
Capacity development	10	95	105
No capacity dvelopment	104	1	105
Total	114	96	210

Chi-Square (χ^2) = $\sum (fo - fe)^2/fe$

Where: χ^2 = Chi-Square

fo = frequency observed

fe = frequency expected

The frequency expected (fe) = ct x rt/$\sum$n

Where: ct = column total

rt = row total

$\sum$n = total of all scores in the table.

Frequency expected (fe) for YES = 114x105/210

=11970/210

fe (yes) = 57

Frequency expected (fe) for NO = 96x105/210

=10080/210 fe (NO)

=48

Chi-Square ( ) Obtained 1.

	fo	fe	fo - fe	$(fo - fe)^2$	$\sum(fo - fe)^2/fe$
a - yes	10	57	-47	2209	38.75
b - no	95	48	47	2209	46.02
c - yes	104	57	47	2209	38.75
d - no	1	48	47	2209	46.02
Chi-Square ( ) Obtained =169.54					

This value for the test statistic can now be tested for its significance. Sampling Distribution = Chi-Square ( )

distribution

Critical Region: Alpha = 0.05

Degree of freedom (DF) = (r-1) (c-1)

Where, r = number of row

c = number of column

DF = (2-1) (2-1)

=1x1

DF = 1

Chi-Square ( ) (critical) = 3.841

Computed-Chi-Square (χ^2) = $\sum(fo - fe)^2/fe$

χ^2 = 169.54

VIIII RESEARCH DECISION

At 0.05 Level, (the critical region), with the Degree of Freedom (DF) = 1,

would begin at χ^2 (critical) = 3.841. With the obtained (calculated) χ^2 of 169.54, we reject the null hypothesis which says, „There is no relationship between Capacity building and the coping capacity of flood victims under climate change in developing countries".

For this sample, we here by state that there is a statistically significant relationship between Capacity building and the coping capacity of flood victims under climate change in developing countries".

Hypothesis 2

Null hypothesis H_{O2}: The higher the level of preparedness the higher the damage encountered during floods in Bayelsa State.

HR2: The higher the level of preparedness the lesser the damage encountered during floods in Bayelsa State.

This hypothesis is tested with items, 8 and 11 from the questionnaire.

CONTINGENCY TABLE 1

ITEM	FREQUENCY		Total
	Yes	No	
Unprepared	101	4	105
Prepared	25	80	105
Total	126	84	210

Chi-Square () = $\sum (fo - fe)^2/fe$

Where:  = Chi-Square

fo = frequency observed

fe = frequency expected

The frequency expected (fe) = ct x rt/$\sum$n

Where: ct = column total

rt = row total

$\sum$n = total of all scores in the table.

Frequency expected (fe) for YES = 126x105/210

=13230/210

fe (yes) = 63

Frequency expected (fe) for NO = 84x105/210

=8820/210

fe (NO) =42

Chi-Square () Obtained 2.

	fo	fe	fo - fe	$(fo - fe)^2$	$\sum(fo - fe)^2/fe$
a - yes	101	63	38	1444	22.92
b - no	4	42	-38	1444	34.38
c - yes	104	63	38	1444	22.92
d - no	1	42	-38	1444	34.38
			Chi-Square () Obtained =114.6		

This value for the test statistic can now be tested for its significance. Sampling Distribution = Chi-Square ( )

distribution 

Critical Region: Alpha = 0.05

Degree of freedom (DF) = (r-1) (c-1)

Where, r = number of row

c = number of column

DF = (2-1) (2-1)

=1x1

DF = 1

Chi-Square () (critical) = 3.841

Computed-Chi-Square ( ) = $\sum(fo - fe)^2/fe$

= 114.6

The test statistic, (obtained or computed) = 114.6, fall above the critical region, of which Alpha = 0.05, with 1 Degree of Freedom, begins at (critical) of 3.841.

Therefore we reject the null hypothesis (Ho2) that says, The higher the level of preparedness the higher the damage encountered during floods in Bayelsa State. Hence the alternative hypothesis upheld.

VII. CONCLUSION

From the findings of this research work, the following conclusions have been made:

There are serious negative impacts of flooding rife in the state, and many people, if not all, are victims as a result of climate change .Also, the most prevalent of such detrimental impacts (damages) include: loss of lives and properties (both private and public), loss of species such as fishes, snails, crops (and other useful plants), animals (gone on extinction), insects etc, causing dangerous diseases and sicknesses, interruption of almost all human activities for survival, contamination of the water body, and causing emotional and psychological problems.

Moreover, Lack of concern and lack of preparedness towards eminent flooding is one of the major reasons for excruciating damages and negative effects encountered. Also, though the government attempted certain flood management, prevention and coping strategies and programs, but such programs seems epileptic and ineffective as serious attentions are not given to them.

Furthermore, Flooding is majorly caused by human activities. As people engage in activities that induce climate change which is the harbinger for global warming, resulting into several environmental problems such as flooding, and others. Other causes found include; building flood plains, indiscriminate disposal of wastes resulting in blockage of drainages and other water ways.

VIII. RECOMMENDATION

Awareness should be emphatically created on the dangers of eminent flooding, and individuals, groups, families, communities , local governments , state governments should take it upon themselves to try as much as possible to work towards preventing the likely threats and dangers of flooding, everyone should show concern , not easily forgetting the previous damages and get prepared and adjust accordingly.

In addition, enlightenment programs should and other capacity development strategies to adapt and cope during flooding should be put in place and the government and all well meaning citizens should its continual effectiveness and functionality.

Furthermore, laws should be passed to regulate such activities like burning of fossil fuels, indiscriminate dumping of refuse, sanitation of the environment, (especially gutters), building /developing on flood plains (to ensure that the water ways are clear and free), and oil spillage etc.

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