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Institutional Approach to Flood Disaster Management in Nigeria: Need for a Preparedness Plan

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Author's contribution

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ABSTRACT

The failure of the country's intervention strategies to satisfactorily ameliorate the sufferings of flood victims and speed-up the recovery processes justify the need for the adoption of a more efficient and innovative response plan to tackle flood emergency conditions in Nigeria. Going through the history of institutional response arrangements during flood episodes, this paper discovered the absence of well-articulated, organized institutional structure to co-ordinate response activities during emergency conditions. Existing response procedures were found to be adhoc, ineffective and poorly coordinated notwithstanding the plethora of agencies involved. Lagos state government has, however, developed a preparedness plan which is currently assisting all stakeholders, including

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those living in flood-prone areas, to anticipate/ implement recovery measures speedily in order to reduce flood damage potentials. Using the Lagos model as a case study, the paper appreciates the value of a preparedness plan and highlights its centrality in flood disaster management. Based on the positive effects of the Lagos model, the paper suggests that the federal and other state governments in Nigeria to follow the footsteps of Lagos state government by developing similar flood disaster management preparedness plans. This will enhance their ability to develop and speedily implement effective response and recovery measures.

Keywords: Flooding; government; mitigation; prior planning; flood disaster management.

1. INTRODUCTION

Institutional approach, as used in this paper, refers to government response procedures, policies, regulations, guidelines as well as to government agencies engaged in planning and managing flood emergency conditions or in helping victims to cope and recover speedily from extreme flood events. Flooding has been defined as the overflowing of the normal confines of a stream or other body of water or the accumulation of water over areas that are not normally submerged [1]. As noted by [2,3] flood may be induced by a variety of factors, most notably heavy precipitation (intensity, duration, amount, or snow). In urban areas, flooding is induced by inadequate drainage, incompatible land-use practices, weak control mechanism and high concentration of impervious surfaces which lead to remarkable increases in the volumes of runoff even at the instance of a little downpour of a short duration [4,5,6].

In Nigeria, flooding is the most frequent and most widespread natural hazard accounting for about one-third of all disasters arising from geophysical hazards and adversely affecting more people than any other natural hazard [7]. Flood disasters according to Obeta [8] accounted for about 38% of all the federally declared natural disasters between 1995 and 2005 in Nigeria. The 2012 flood disaster in Nigeria adversely affected more people in one year than the combined number of all the people affected by other natural hazards, including soil erosion between 2005 and 2010 [9]. This dominance is not surprising since the overtopping of the natural boundaries of rivers together with the submergence of the low-lying coastal areas, especially along the Lagos –Ibadan, Benin- Port-Harcourt and Calabar axis, is a more frequent occurrence when compared with the incidence of other hazards such as drought, soil erosion, earthquake and landslide [10].

In many parts of Nigeria, flooding continue to be an increasing problem, catching individuals and communities by surprise in a repeatedly exasperating way and causing disruption of social activities, damage of infrastructure and even death of people and livestock [11,12]. In 2003, severe flooding resulting from dam failure submerged farmlands in Zamfara state [13]. In Taraba State the extreme flood which occurred in October 2012 affected 111,255 people [14]. About 28,511 persons were internally displaced with 29 internally displaced person (IDPs) camps in different parts of the state. The floods also destroyed about 83,722 farmlands and 11,178 houses. The flood was so much that the Lagdo dam which was constructed on the River Benue in the republic of Cameroon could not control it. Consequently, the dam had to be opened to release some water from the excess impoundment that is capable of collapsing the dam. The release of water from the Lagdo dam upstream of the River Benue led to the flooding of the entire length and breadth of the downstream catchment of the basin. All the settlements (both rural communities and

townships) along the River Benue were flooded [7]. In southern urban and coastal areas in Nigeria flooding continue to pose a major risk to many of the inhabitants of the low-lying coastal areas [15].

The repeated occurrence of catastrophic flood episodes nation-wide, particularly in southern and urban areas in Nigeria, justifies the need for the development and implementation of an efficient preparedness plan for managing flood disaster in the country. A preparedness plan consists of phases covering pre-flood and post flood disaster activities [16]. The former includes prevention, preparedness and mitigation while the latter consists of emergency response (rescue and relief), rehabilitation and recovery (reconstructions). Prior emergency planning is an effective strategy for flood control and management [17]. It helps to drastically reduce the magnitude of floods as well as the havoc done to life, crops and infrastructure [18,19]. Prior flood emergency planning assists floodplain occupants and other stakeholders to respond more effectively to flood episodes [20]. It eliminates the implementation of hastily prepared assessment and response procedures, which, characteristically, tend to be ineffective, poorly coordinated, unsustainable and wasteful. Given this scenario, therefore, the objectives of this paper are to briefly review:

1. Reoccurring flood disasters in Nigeria.
2. The institutional approach to flood disaster management in Nigeria and highlight the gaps.
3. The preparedness plan for flood disaster management developed by Lagos state government with a view to seeing whether similar plans could be adopted at national and state levels.

2. REVIEW OF REOCCURRING FLOOD DISASTERS IN NIGERIA

Nigeria experiences both fluvial and coastal flooding [21]. Fluvial flooding occurs along the floodplains lying adjacent to the numerous rivers criss-crossing the country [22]. Majority of the most severe flood hazards experienced in Nigeria are fluvial. Several states such as Adamawa, Sokoto, Kebbi, Zamfara, Plateau, Taraba, Bornu, Ogun, Ebonyi, Cross-River, Delta and Kaduna States have been affected, often repeatedly [23]. The Kaduna flood disaster of October 2006, which was partly caused by dam collapse, claimed over 100,000 lives. This is the highest number of deaths so far recorded in a single flood event in Nigeria [8]. The 2012 flood disaster which affected over 23 states in Nigeria was described as the most devastating in the last 40 years [7]. The flood submerged houses, transportation routes, farms and markets. About 1.3 million people were displaced and 431 people lost their lives nationwide [7].

Coastal flooding along the low-lying coastal areas in the south is also widespread [2,22] and [24]. Urban floods, like other disasters, are hazards which occur frequently in Nigeria due to high rate of urbanization, rapid population growth and high degree of imperviousness in urban areas [21]. Table 1 summarizes the characteristics of some major flood episodes in Nigeria between 2000 and 2012 while Fig. 1 shows the spatial distribution of the affected areas.

Table 1. Spatial distribution of disastrous floods in Nigeria (2000-2012)

S/N	Year	Name of affected area	Number of L.G.as affected	Date (month/year)	Type of flood	Recorded Impacts or effects
1	2000	Ibaji-Gurara River (Kogi State)	1	August/ September 2000	Flash	Over 150,000 persons rendered homeless
2	2000	River Katisina-Ala (Benue State)	2	September/October 2001	fluvial	Several farm lands and crops were submerged
3	2001	River Pai (Tarab State)	NA	September 2000	Flash	Thousands of people were rendered homeless
4	2002	No extreme flood was recorded in Nigeria				
5	2003	Ebonyi River and Cross River (Ebony and Cross River State)	3	September 2003	fluvial	Farms, houses and roads were washed away.
6	2003	Kubuwa steam (FCT Abuja Sub Urb)	1	September 2003	Urban	Vehicle & houses submerged
7	200	Kaduna River (Kaduna State)	4	October 2003	Flash	About 100;000 People Were Drowned (Worst Flood Event In Nigerian History)
8	2004	River Gongola (Gombe State)	NA	October 2004	fluvial	20 people died
9	2003	Epe	NA	September 2003	Coastal	Houses, vehicles etc submerged
10	2005	No extreme flood disaster was recorded in Nigeria				
11	2006	Ogun river (Lagos and Ogun States)	4	June 30 th 2006	Urban	Over 20 settlements lying close to Ogun river were deserted
12	2006	Zamfara River (Zamfara & Kebbi State)	NA	October 2006	fluvial	Farmlands, houses, roads and culverts were washed away
13	2007	Sokoto & Rima River (Sokoto State)	2	September 5 th 2007	fluvial	500 people were rendered homeless
14	2007	Sokoto river (Kebbi State)	NA	August 28, 2007	fluvial	3000 people rendered homeless; 300 house submerged (Dakingari village, worst affected)
15	2007	Ngadda River (Borno State)	NA	October, 2007	Flash	21 villages sacked by the flood water
16	2007	Wuse River (Plateau States)	5	October, 2007	Flash	47 persons died 200 settlements, washed away (worst in 30 years)
17	2007	Shasha River (Lagos States)	2	Thursday, August 9 th 2007	Flash	Vehicles, houses farmlands & roads were destroyed
18	2009	Benin and Enviro	13	August 14 th 2009	Urban	Damaged urban infrastructure and displaced people
19	2011	Ibadan and Enviro	11	August 26 th 2011	Urban	Damage of urban infrastructure (roads, bridges, houses, schools, markets) death of 8 persons
20	2012	Niger-Benue trough	22 (states)	September 2012	Fluvial	Damaged farms, houses, roads, and displaced millions of people about 431 persons were killed by flood water

Sources: 1. Erosion, Flood and Coastal Zone Department of the Federal Ministry of the Environment, Abuja (For Nos 1-18)

2. [25] (for Nos 18-19) Drainage Department of the Lagos State Ministry of the Environment

3.[7]. (for No 20)

4. NA = Not Available

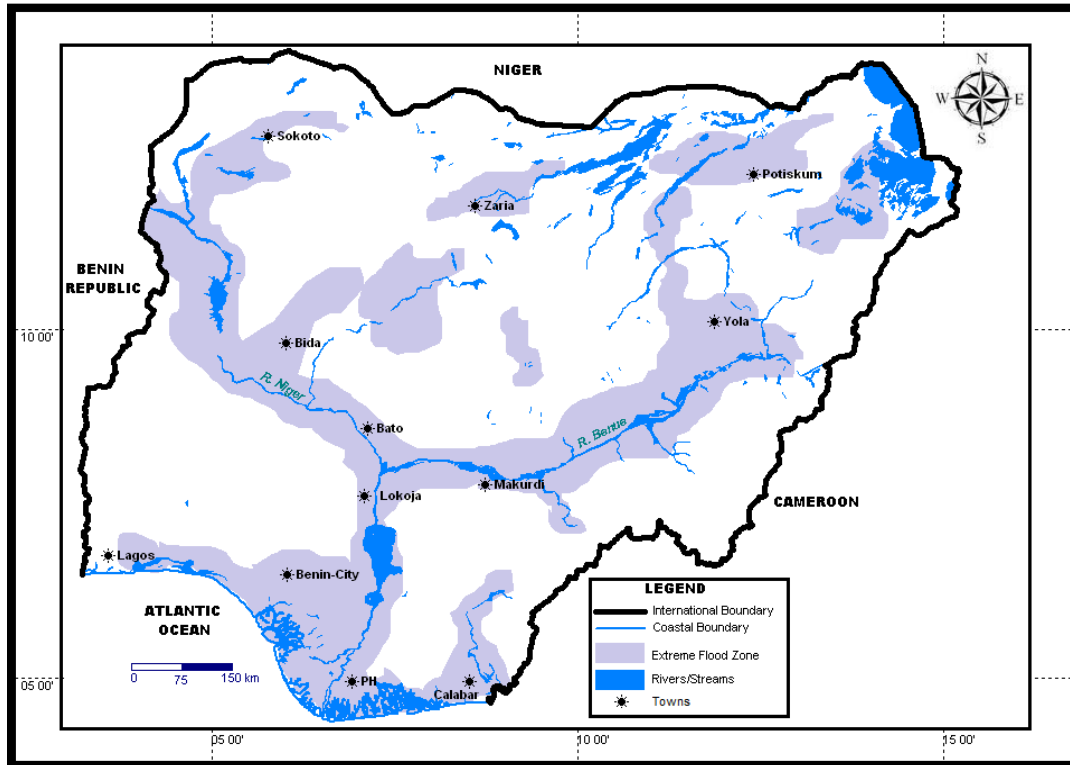


Fig. 1. Spatial distribution of areas affected by extreme floods in Nigeria between (2000-2012)

Source: [26]. 2012)

3. CURRENT INSTITUTIONAL APPROACH TO FLOOD DISASTER MANAGEMENT IN NIGERIA

Prior to 1960s, response to flood disaster conditions in Nigeria was an exclusive preserve of private individuals and groups in affected areas [8]. There was no specific, well-formulated institutional response procedure for tackling flood episodes. The federal government's pioneer intervention agency came into being during the First, Second and Third National Development Plans of 1962-68, 1970-74 and 1975-80 respectively, through the establishment of the federal and state ministries of works [27]. The Natural Disaster Department of these ministries were mandated to create awareness among the citizenry on flood and associated hazards and to develop sound response strategies to combat flood events through properly cost programme of adjustment, abatements and protection [28]. In addition, these agencies were mandated to identify, seek and acquire the necessary data needed to combat flood and associated natural disasters [13]. These agencies assisted greatly in identifying and characterizing flood-prone areas in Nigeria. They designed and developed weak drainage channels (especially in urban areas), diversion channels and dams to store surface runoff. These structures helped to reduce flood damage potentials in various parts of Nigeria [27]. In 1988, the Federal Environmental Protection Agency (FEPA) was established as a unit in the Federal Ministry of Works and Housing. FEPA was mandated to develop policies and programmes which can secure Nigeria from the negative impacts of ecological disasters [8].

In 1999, the Federal Ministry of Environment was established. The ministry was, among other things, mandated to assess the flooding potentials of watersheds across the country as well as to determine, design, develop and/or authorize the development of appropriate flood mitigation measures in these watersheds [28]. The Flood, Erosion and Coastal Zone Department of the ministry categorized flood-prone areas in Nigeria into three, namely:

1. The low lying coastal areas: This area is generally low-lying and has a unique drainage. The south-flowing rivers and their tributaries find their way to the Atlantic ocean through this area thereby increasing the areas vulnerability to floods [29].
2. The Niger Benue trough: This trough consists of extensive flood plains of the Niger River and Benue-its largest tributary. This region is relatively densely populated and frequently flooded [30].
3. Urban and built-up areas: (especially in southern Nigeria-Lagos, Ibadan, Benin, Warri, Port-Harcourt, Uyo and Calabar) see Fig. 2. In Nigeria urban areas are growing rapidly due to a combination of factors such as rapid population increases, agglomeration of industries, social amenities etc. [31]. Uncontrolled urbanization and other anthropogenic and physical factors lead to frequent flooding in Nigerian urban areas [32].

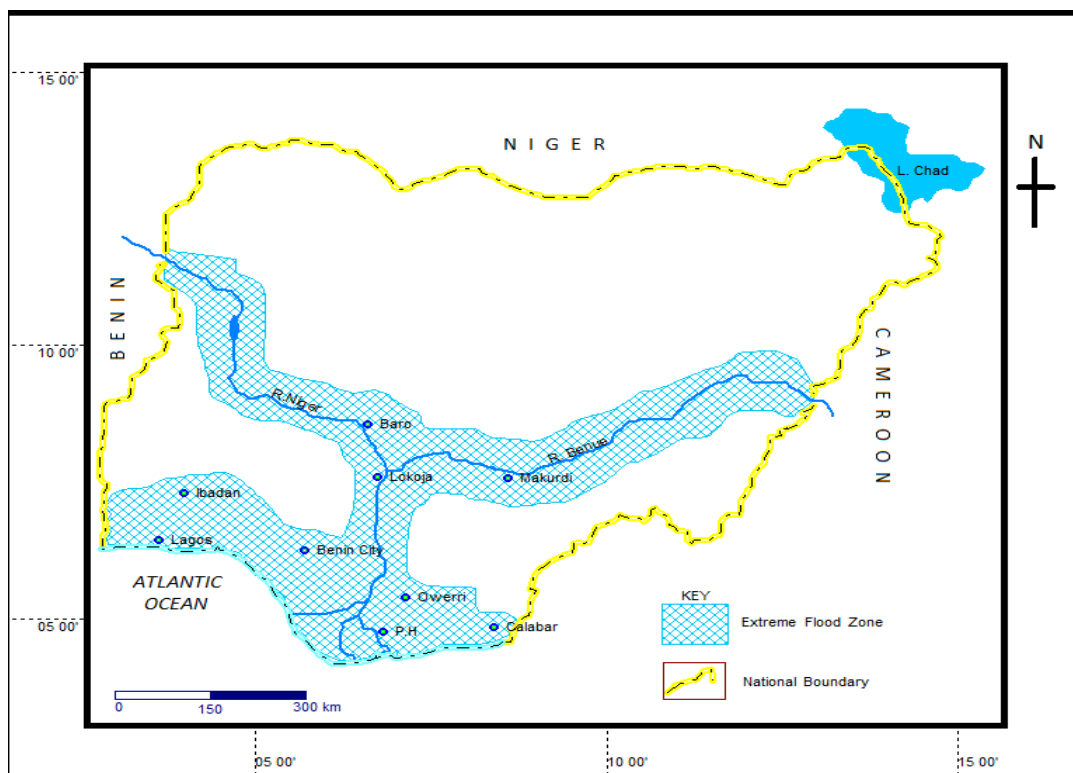


Fig. 2. Extreme flood-prone areas in Nigeria

Source: "Flood Control and Drainage Department" Federal Ministry of the Environment, 2012

In September 2002, a technical report of the ministry titled "Ecological Disasters in Nigeria" described flooding as an age-old problem in many parts of Nigeria. The document noted that flood disaster is becoming more frequent, intense and unpredictable for many communities. The paper also observed that flood incidents in Nigeria are not the result of a single cause but is the effect of a number of associated problems. The document re-emphasized the need for the continued adoption structural and non-structural strategies to combat flood hazards in Nigeria.

The continued propensity of flood incidents in Nigeria necessitated the establishment of additional institutions from the late 1990s to assist in flood disaster management in Nigeria [19]. The new institutions are:

- i. National and State Emergency Management Agency (NEMA)
- ii. National Commission for Refugees (NCFR)
- iii. Federal Environment Protection Agency (FEPA) (established earlier in 1988) and
- iv. Nigerian Metrological Agency (NIMET)

NEMA procures and distributes relief materials in the form of food items, non-food items and bedding materials to the affected victims while a technical mitigation committee of FEPA undertakes flood impact assessment responsibilities and develop structural and non-structural measures. NCFR prepare emergency shelters or find suitable accommodations for internally displaced persons. NIMET studies the pattern of precipitation nationwide and acquires, classifies and preserves metrological data needed for flood prediction and forecasting. Non-governmental organizations, particularly the Red-Cross society respond by providing cash and relief materials to affected persons or by ensuring that those who lost their lives are properly buried.

4. GAPS IN THE CURRENT INSTITUTIONAL RESPONSE APPROACH

Our focus in this section is not to assess the strengths and weaknesses of the array of legislations and agencies involved in the planning and management of flood disasters in Nigeria. Rather our goal is to highlight the gaps in the current institutional response approach.

When a disastrous flood episode occurs in Nigeria, the institutional response approach has almost always, consisted of facilitating the evacuations of victims and providing such victims with the most urgent assistance (food, clothes, medicine etc) in order to alleviate hardship and facilitate recovery. Literature evidence shows that the practice of providing relief materials to flood victims started in the early 1980s during the Ogunpa, Sokoto-Rima, Buguada river flood disasters [13]. Before the 1980s, the government's flood response plan had been limited, for the most part, to the collection of data on local impacts of floods to substantiate governments request for assistance [8]. After the above-mentioned major fluvial flood episodes, many state governments, especially those with expansive flood-prone areas, took a more active interest in the flood dynamics of their local environments. The federal government, on its part, included 'extreme flood' on the list of ecological disasters which threaten the livelihood of many Nigerians and so merit government attention, response and action. The Federal and some state governments constituted adhoc-flood mitigation units and empowered such units to implement flood alleviation measures.

In the wake of the 2012 flood disaster, the Federal Government, as expected declared it a National Disaster and released ₦17.6 billion to the affected states. The money was allocated

for the mitigation of the effects of the flood on Nigerians. The President said that while the affected states will receive ₦13.3 billion altogether, the Federal Government agencies will receive ₦ 4.3 billion. The affected states were categorized (based on varying degrees of reported impacts) as follows;

Category A states: Adamawa, Anambra, Bayelsa, Benue, Delta, Kogi, Oyo and Plateau.

Category B states: Bauch, Cross River, Edo, Imo Jigawa, Kaduna, Kano, Lagos, Nasarawa, Niger and Taraba

Category C states: Abia, Ebonyi, Gombe, Katsina, Kwara, Ogun, Ondo and Rivers

Category D states: Akwa-Ibom, Borno, Ekiti, Enugu, Kebbi, Osun, Sokoto Yobe, Zamfara and Federal Capital Territory.

All categories 'A' states received ₦ 500 million each; category 'B' states, ₦ 400 million each; category 'C' states, ₦ 300 million each, and category 'D' states, ₦ 250 million each" (Adebayo and Oruonye 2013). To further intensify Federal Government intervention activities, the following agencies of the Federal Government were allocated funds as follows: ministry of Works, ₦ 2.6 billion; National Emergency Management Agency (NEMA), ₦ 1.1 billion; Ministry of Environment, ₦ 350 million; National Commission for Refugees, ₦ 150 million; and technical committee on flood's impact assessment, ₦ 100 million.

With these cash and material resources, NEMA provided relief materials in the form of food items, non-food items and bedding materials to the affected people. The challenge that the NEMA encountered was the large population to contain with during the disaster management and sharing of relief materials. Also most of the affected people complained that the relief materials provided was too small to cushion the effects of the flood. The Government officials on the other hand insisted that the relief materials provided cannot be adequate enough to cushion the effect of the flood considering the colossal losses they suffered but was meant to serve as a palliative measure at the moment.

Literature evidences [5,16,7]. Show that these institutional approaches have not improved the ability of the Nigerian population to anticipate and cope with major flood hazards. Several factors are responsible for this. The leading factors include:-

1. Absence of prior planning that addresses issues which boost flood-loss potential such as unwise land use practices etc.
2. Limited resources availability in threatened communities.
3. Absence of land use policies that can:
 - (a) Steer potential developers to alternative locations outside the flood-prone areas
 - (b) Outlaw or reduce the rate of floodplain invasion
 - (c) Compel governments to invest in flood mitigation measures on a sustainable basis.
 - (d) Prohibit deforestation and other unwise land use practices in threatened areas.
4. Absence of up to date flood control acts
5. Inadequate number of sustainable flood control strategies especially in low lying coastal and southern urban areas of the country.
6. Lack of up-to-date flood outline maps and weak regulatory framework

In fact [25] noted that the weakness of existing institutional frameworks for flood disaster management contributed to the 2010 to 2012 flooding in Nigeria. Manifestations of the weak institutional frameworks are reflected in many detrimental activities taking place in Nigeria

cities. Building construction on river floodplains, indiscriminate waste disposal, and illegal parking of vehicles at unauthorized locations are common in the city. In some instances, building approvals were granted without a clear understanding of the nature of the environment and the impacts of the construction on the overall environmental quality of the locality. Such constructions both obstruct the free flow of water and are at risk of being flooded. Also, several other workers such as [8,28] have noted that the current institutional approach to flood disaster management in Nigeria lead to the implementation of hastily prepared assessment and response procedures which are mostly ineffective, unsustainable, poorly-coordinated and wasteful. This fact led Lagos State Government to search for an alternative approach as discussed below.

5. THE LAGOS STATE FLOOD PREPAREDNESS PLAN

The Lagos state flood preparedness plan is currently the first of its kind in Nigeria [33]. The response plan deals with flood prevention and mitigation, response and recovery, and it encompasses both short-term and long-term actions [34]. The preparedness plan was developed in 2003 in response to the incessant and recurring flood disaster in almost every part of the state [8]. The specific objectives of the plan according records in the State Ministry of the Environment are to:

1. Provide the state with effective and systematic plan or means of executing pre-flood prevention activities as well as of dealing with (emergency) flood problems which may occur over the short or long-term: This objective enables disasters managers to monitor, mitigate and even prevent flooding.
2. Identify and recommend the most appropriate mechanisms for response and recovery in affected areas: This objective assists professionals to minimize/eliminate waste and manage flood disasters efficiently.
3. Specify response actions to be implemented during disaster or in threatened areas: This objective is necessary for the mobilization of resources, determination of costs, coordination and implementation of emergency projects as well as for search and rescue mission
4. List agencies and responsibilities in the flood response plan: This objective helps to eliminate the duplication of efforts and conflicts between government agencies, as well as in assessment of performance and planning development.
5. Determine response activities to be handled by affected communities, organizations, local governments and state authorities: This objective promotes stakeholders participation and increases the people's knowledge of their local environment which is essential for effective flood management.
6. Gather and evaluate data about the nature of floods: This objective assists professionals in classifying the state into high flood risk, medium risk and low risk areas as well as in policy development and in providing necessary environmental information. It also assists disaster managers to quickly access and visually displays critical information by location.
7. Identify problems that are beyond the ability and capability of the threatened or affected area (community or local government) to resolve: Information obtained under this objective enables the state government to justify requests for external assistance. This information is particularly useful for national response agencies such as the National Emergency Management Agency (NEMA).

Records available in the state ministry of the environment show that the response plan is based primarily on resources sourced from the local and state governments; federal

assistance is generally viewed as a “last resort” when local capabilities and funds are exhausted. The plan emphasizes the need for stakeholders’ involvement and has nine units in its organizational structure. The units and a flow diagram of the plan are shown in Fig. 3.

The abatement unit is housed in the Lagos State Ministry of the Environment. The staff of this unit carries out pre-flood prevention activities. The unit is the most visible, most active and for Lagos residents, (who contravene urban planning laws) the most dreaded (because the unit demolishes structures built across natural water flow paths) organ of the preparedness plan. The staff, cynically referred to as *the “Environmental Police (EP) or the Flood Abatement Gang (FAG)”* by the urban residents work throughout the entire urban landscape in their uniform apron to reduce flood damage potentials. They perform the following pre-flood prevention responsibilities:

- I. Sensitization exercises
- II. Persuade the residents not to reside in flood-prone areas
- III. Clear drains
- IV. Authorize the demolition of structures constructed across natural water flow paths
- V. Assist in disseminating early flood warning information to all the nooks and crannies of flood-prone areas
- VI. Dissuade residents from dumping waste in the urban drains
- VII. Network with other agencies with similar goals
- VIII. Assist all stakeholders to carry out their responsibilities as enshrined in the preparedness plan
- IX. The approach adopted by this unit, according to NEMA’s 2013 report, involves dividing Lagos into high, medium and low flood-risk areas, using previously assembled data on the location attributes and on the nature of flooding in Lagos. More efforts and resources are expended in monitoring and enforcing regulations against human activities which affect the drainage system such as dumping of refuse, erecting structures on flood plains and other indiscriminate actions that interfere with the free flow of water on the high and medium flood risk areas. More sanitizations programs are also organized in these zones for the urban residents to enable them take more proactive actions in preventing flooding.

Other units get involved when a catastrophic flood occurs or when emergency conditions threaten. When this happens the state government constitutes an inter-ministerial policy and coordination committee that is typically composed of high-level representatives from concerned agencies. This committee sets the general tone and direction for the plan. It establishes impacts assessment system, assembles and analyzes data, makes recommendations to the governor on appropriate mitigation measures, but leaves the operational duties to the abatement unit and task forces. The scientific and technical committee is composed of nationally recognized scientists, usually drawn from different scientific disciplines. This committee undertakes scientific studies, investigations, identifies problems, proffers solutions, develops monitoring strategies and ensures that all recommended and/or implemented actions are tied to good science. The governor based on recommendations, project scope, severity of the disaster and availability of resources determines whether to set-up a task force to handle short-term projects and/or an implementation committee to handle long-term projects. Six of such task forces (finance, water availability, disease control, aesthetics, logistics and relief) were set-up in 2007 during the Epe (Local government area) flood disaster in Lagos (NEMA, 2013). Other units in the system includes the mitigation information office which acts as a clearing house for flood-related information and the citizens advisory committee, which generates people’s support for the program.

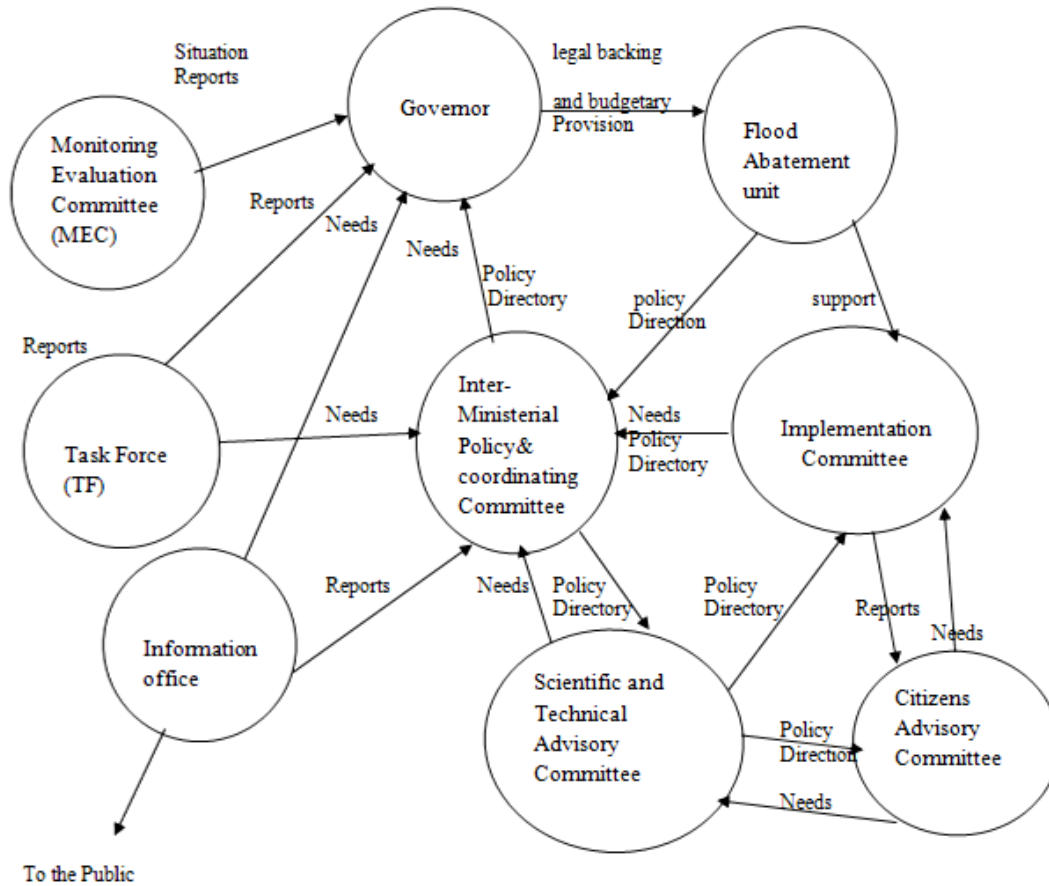


Fig. 3. Units and flow diagram of the Lagos state response plan

Sources: Lagos State Ministry of the Environment

6. OBSERVATIONS/COMMENTS

Nigeria lags behind many other countries in flood disaster management [35,36]. In the United State of America, Britain, Australia, Canada, India, Pakistan, China, Bangladesh and Philippines considerably more efforts are directed towards flood disaster management both at national and provincial levels [37]. Governments and citizens in these countries fight flood hazards through carefully developed and properly coordinated response and recovery activities that drastically reduce flood-loss potentials [38,37].

Therefore the Lagos State response plan initiative is, in our view, a step in the right direction because it will assist Nigerians to fight flood hazards speedily and in a coordinated manner. The plan will assist governments and other agencies that are interested in developing sustainable response procedures to fight flood hazards. The Lagos model contain innovative lessons which include how to organize and maintain effective citizens involvement, collect and analyze data, assess and prioritize problems, develop and implement response activities and communicate results of programme activities. Other lessons include the need to produce flood hazard maps and utilize them effectively for flood management as well as

the need to disseminate information on flood forecast and early warning in English and vernacular through the local media.

The Nigerian Emergency Management Agency (2013) Flood Disaster report and records available at the Nigerian Hydrological Services Agency (NHSA) Abuja, indicate that for the period 2003-2012, flood magnitude/frequency and extent of inundated areas in Lagos state have decreased, to the extent that since 2006, Lagos has featured only once on the list of areas ravaged by extreme flood hazards in Nigeria see Table 2.

Table 2. States affected by extreme floods in Nigeria since 2006

S/no	year	States affected by extreme floods	States affected by moderate floods
1	2006	Kaduna, Ogun, Zamfara	Edo, Delta, Rivers, Cross River, Kogi, Akwa-Ibom and Imo.
2	2007	Sokoto, Borno, Plateau and Lagos (Epe L.G.A) only	Turaba, Ebonyi Anambra, Kogi and Ondo
3	2008	None was recorded	Bayelsa, Rivers, Edo, Delta, Kebbi and Taraba
4	2009	Edo, Oyo	Plateau, Akwa-Ibom, Sokoto, Kaduna, bauchi, Benue and Adamawa
5	2010	Bayelsa, Rivers (coastal)	Ebonyi, Zamfara, Kano, Kebbi and Cross River
6	2011	Oyo, Edo,	Jigawa, Imo, Plateau, Gombe, Taraba and Kadunna
7	2012	Anambra, Adamawa, Bayelsa, Benue, Delta, Kogi, Oyo and Plateau	Bauchi, Cross River, Edo, Imo, Jigawa, Kaduna, Kano, Nasarawa Niger, Taraba and Ogun

Sources: (1) [39] for Nos 1, 2 and 5 (2) [40] for Nos 2, 4, 6 and 7

In addition, the NEMA's 2013 report also indicated that reported economic losses and fatalities from floods in the state has reduced considerably due principally to increased flood water conveyance capacity of the Lagos drainage systems. In spite of increases in the frequency and intensity of heavy rainfall, which contribute to increases in precipitation-generated flooding, only one (Epe) out of the 81 local government areas ravaged by flood disasters in Nigeria in 2013 was from Lagos state [39] -thanks to Lagos flood defenses.

The federal government and other state governments, in our view, can adapt and further develop the Lagos model to address both the assessment and response capabilities of government. On the alternative, the federal government can constitute a committee of experts and mandate same to develop a national response plan needed for implementing and/or coordinating the nations' flood mitigation and recovery responsibilities through actions and policies that ensure scientific rigor and quality. This will:

- (i) Aid the development of sustainable flood control structures
- (ii) Facilitate the establishment of sound flood control acts
- (iii) Improve flood warning systems and
- (iv) Assist in setting flood insurance premiums in Nigeria.

Finally, there is no gainsaying that the Lagos state flood emergency preparedness plan is a real practical demonstration of governments' commitment to fighting flood hazards. The

goals are laudable and the approach, particularly as regards stakeholders' involvement, is quite appreciable.

7. CONCLUSION

Floods are natural occurring processes that are difficult to prevent but can be managed in order to reduce its physical, social and economic impacts. In recent times, flood disaster management, like any other disaster, has shifted from relief, rescue, rehabilitation and recovery to a new paradigm that stress on prevention, mitigation, preparedness and emergency response. Nothing worthwhile is achieved without prior planning and flood disaster management is no exception. Apart from Lagos, no other state in Nigeria has a preparedness plan at present, upon which flood emergency conditions can be tackled. NEMA and other concerned agencies only provide relief materials and rescue victims. The Lagos model, in our view, should be adapted by other states and the Nigerian nation because of the innovative flood management responsibilities contained therein. Such responsibilities include: (1) flood forecast and early warning (2) prevention through effective urban planning (3) assessment of flood extent (4) rescue and evacuation (5) relief provision (6) post flood impact assessment, recovery and rehabilitation. The Nigeria Government & her citizens appear to be conscious but helpless in confronting this environmental problem which confronts her repeatedly. So something should be done, as recommended above, otherwise the ongoing urbanization and rapid population growth may complicate the problem so much that it becomes incurable.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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