# RIVERS OF ROADS AND ROADS OF RIVERS: THE Character and Impact of Two Great Floods in the Niger Delta Region of Nigeria

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#### Abstract

Anthropogenic Climate Change has exacerbated the frequency and the intensity of flooding globally. A manifestation of this is the increasing challenge of flooding in the Niger Delta Region of Nigeria; an extensive floodplain liable to flooding. Using mainly observation and photographic/video recording, this paper examines the character, impact and mitigation of two great floods (2012 and 2022) in the Niger Delta. Bayelsa, Delta and Rivers were the impacted States. Although the 2022 flood was more severe than that of 2012, the areas affected were the same. Twelve of the 25 local government areas of Delta State, 7 of the 8 in Bayelsa, and four of the 23 in Rivers, were seriously impacted. The most significant highway, the East- West Road, which links all the States of the region, and other major ones, were either partly or totally flooded. In many cases, the water level was such that boats became the feasible means of movement on them. Ecosystems and ecosystem services were adversely affected. Many individuals were displaced. For instance, 33,941 households in 231 communities in Delta State were displaced during the 2012 flood. The indirect impact was on livelihoods and socio-economic infrastructure. Several farms, poultries, piggeries and markets were flooded. Thus, many individuals lost their sources of livelihood, either temporarily or permanently. Infrastructural facilities, such as roads, schools, and hospitals, were also flooded. Mitigation measures were inadequate and in many cases came too late. Buck-passing characterised the intervention of the Federal and the State Governments. For instance, a controversy initiated by the Federal Government that the 2022 flood in Bayelsa was not as severe as reported attracted strong reactions,

resulting in poor response to the flood. The flood experiences brought to the fore the need for flood-preparedness. The lessons learned are useful for flood management.

*Key Words*: 2012 and 2022 floods; flood severity; ecosystem impact; livelihood impact; Mitigation Controversy; Niger Delta Region.

#### Introduction

One of the major manifestations of climate change is the increase in the frequency and the intensity of extreme weather events, such as hurricanes, floods and heatwaves (Committee on Extreme Weather Events, 2016; Ummenhofer & Meehl, 2017; IPCC, 2021; Clarke, et al. 2022). Flooding is a good example of the dramatic and disastrous expression of the impact of climate change (Chang & Franczyk, 2008; Kundzewicz, et al. 2013; Tabari, 2020; Blenkinsop, et al. 2021). The increasing incidence of flooding is the consequence of an increase in water available in the atmosphere as a result of global warming. It has been established that a degree rise in atmospheric temperature results in a 6-7% increase in water vapour. The resultant intensification of the hydrological cycle leads to intense precipitation and flooding (Tabari, 2020; Blenkinsop et al. 2021). However, the possibility of flooding is usually exacerbated by human-generated factors.

Flooding is one of the most widespread and impactful extreme weather events. The increasing incidence of floods has impacted all parts of the world (Chavoshian & Takeuchi, 2013; Najibi & Devineni, 2018). For instance, in 2022, flooding affected all continents, with Pakistan, Afghanistan, Bangladesh, India, Brazil, Nigeria, South Africa and Australia being the most impacted countries. The situation in Pakistan was typical. The monsoon rains were three times heavier than the average. Indeed, the rains were more than five times of the average. About 33 million individuals were affected with over 664,000 displaced people living in camps. Over 1,400 deaths were recorded. About 1,460 health facilities were affected while about 22,000 schools were damaged. In addition, about 1.17 million houses were damaged while about 566 were completely destroyed. Flood-related diseases affected at least 45 districts (UNICEF, 2022a).

This paper, employing mainly an observation and a visual impression approach, analyses the character, impact and mitigation of two great floods, those of 2012 and 2022, in the Niger Delta region of Nigeria. The specific objectives are:

- to analyse the extent and severity of the 2012 and 2022 floods in the Niger Delta;
- (ii) to examine the impact on the ecosystem and on humans; and

7

(iii) to assess the mitigation measures by government and the associated controversy.

The next section discusses the characteristics of the study area in the context of the flooding challenge and the approach to data collection.

# **Study Area and Data Sources**

The Niger Delta, located at the central/eastern coast of Nigeria, is a vast floodplain of more than 20,000 km<sup>2</sup>. It is indeed one of the world's largest deltas (World Bank, 1995; Amangabara & Obenade, 2015; Abam & Fubara, 2022). It extends along the coast from the Benin River in the west to the Imo River in the east, although its eastern boundary is sometimes extended to the Cross River. The inland boundary of this roughly triangular area is where the River Niger bifurcates into the Forcados and the Nun Rivers around the settlements of Asamabiri and Onya (Dike, 1956; Udo, 1970; Figure 1).



Figure1: Study Area, Niger Delta Region

In the context of this paper, the low-lying nature of the Niger Delta and its hydrological characteristics are critical defining factors. Many parts of the Niger Delta, particularly the coastal areas, are so low that elevations are typically less than 10 metres above sea level. Consequently, most parts of the region are not only liable to flooding but also to inundation from sea level rise as a result of climate change (Ibe, 1995; Musa, et al. 2014; Oyegun, et al. 2016; Merem, et al. 2019). The hydrological characteristics of the region exacerbate the flooding challenge. The region is made up of an intricate network of the River Niger's distributaries, creeks and other rivers such as the Benin, Ethiope and Imo. The region receives most of its water and sediments from the Niger and its tributaries. The 4,184 km long Niger, the world's 9<sup>th</sup> largest river, has a drainage area of about 2.23 million km<sup>2</sup> (World Bank, 1995; Abam, 2001; Abam & Fubara, 2022). Its numerous tributaries, such as Milo, Tinkisso, Bani, Mekrou and Benue, contribute significantly to the volume of water entering the Niger Delta. The Benue, the largest of the tributaries, is 1,400 km long and has several tributaries of its own.

Two flood zones of the Niger Delta may be identified. These are an area of daily tidal flooding and one of seasonal flooding. The zone of tidal flooding corresponds with the coastal sandy ridge and the mangrove swamp ecological belts while seasonal flooding is in the fresh water swamp and the low rainforest ecological zones. It is seasonal flooding that is the focus of this paper. The River Niger and its associated rivers in the Niger Delta region flood during the rainy season, May to October, each year. Hydrographs of some locations (see Abam and Fubara 2022) illustrate the point. For instance, in Aboh, about 32 km upstream of the point the Niger bifurcates into the Forcados and the Nun, the water level rises by about 3.5-4.5 metres in July and peaks at about 8 metres in September/ October and falls drastically in November. In the case of Oworobia, in the Niger Delta itself, the respective levels are about 3 metres and 6.5 metres. In Yenagoa, also in the Niger Delta, the rise in July is usually about 2.5-3.5 metres and the peak in September/October is usually about 6 metres. Typically, even when the rivers are in flood, the adjoining land areas may not be, because they are protected by the natural levees along the banks. However, in years where the flood water level is higher than the norm, the levees cannot provide the usual protection; consequently, the adjoining land areas are flooded. This has been the case in several years; 2012 and 2022 being the years with the highest flood levels in the present  $(21^{st})$  century. It is these floods that are examined in this paper.

Observation, a significant and effective method of data collection and research (Bardon, et al. 2020; Dzwigol & Barosz, 2020; Ekkca, 2021) was the main source of data. The characteristics of the 2012 and the 2022 floods, the highest and most disastrous in living memory and obviously the most significant yet in this century, were observed. Table 1 shows the major points of observation. The observation points included an urban centre, a peri-urban area, semi-urban centres, rural areas, inter-settlement roads and forests.

The urban centre, the capital of Bayelsa State (Yenagoa), was the only urban centre affected. The observation during the 2022 flood was more extensive than that of 2012. The characteristics of the floods that were observed included mainly the extent, water level/depth, the impact, behaviour of individuals/reaction to the flood, and mitigation measures. Although, there was no formal administration of questionnaire, there were several informal interviews/discussions with individuals affected in order to clarify doubts emerging from the observations. Photographs and video recordings served as means of information storage. In certain cases, as in Yenagoa, drones were used to obtain the areal views of flooded areas. Thus, photographs are very prominent in the display of data/information obtained. Apart from the author, seven individuals who were staff of two different universities in the Niger Delta region and one community leader were involved in the data collection. Publications/documents of the various tiers of government and their agencies were also useful sources of data/information. Some of the critical agencies included the National Emergency Management Agency (NEMA), the Nigerian Hydrological Services Agency (NHSA) and Nigerian Meteorological Agency (NiMet). Information obtained included government policies on, and action during, floods, impact of the floods and mitigation measures.

State	Points/Areas Observed						
<b>Observation Location</b>	<b>Type</b> Urban Area	<b>State</b> Bayelsa	<b>Observation Points</b>				
Yenagoa			<ul> <li>Ekeki Housing Estate</li> <li>Ox-bow Lake Area</li> <li>Around 17 Storey Local Content Building</li> <li>Tombia Market</li> <li>GTF HQ</li> </ul>				
			Law School Area				
Igbogene	Peri-Urban Area	Bayelsa	<ul> <li>Junction of Yenagoa- Okolobiri Road</li> </ul>				
			Yenagoa-Mbiama Road				
Amassoma	Rural Area	Bayelsa	• Niger Delta University Campus				
			Points in Amassoma Town				
Yenagoa to Amassoma Road	Rural	Bayelsa	Three Points				
Isampou	Rural	Bayelsa	• Several Points Locations in Village				

 Table 1: Observation Points/Areas Across the Niger Delta

 Source: Author

Forest Near Yenagoa	Rural	Bayelsa	٠	Farms
Bomadi	Semi-Urban	Delta	٠	Locations in Village
Kpakiama	Rural	Delta	٠	Locations in Village
Warri-Patini Road	Rural	Delta	٠	Two Locations
Forest Around Ohoror	Rural	Delta	٠	Farms
Okogboe	Rural	Rivers	•	Several Points in Village
Ahoada	Semi-Urban	Rivers	٠	Points on Main Road
Mbiama-Ahoada Road	Rural	Rivers	•	Three Points

The print and electronic media were also useful sources of information. These sources were particularly useful in providing information on various controversies that emerged during the 2022 flood and aspects of the characteristics of the floods

#### **Extent and Intensity of the Floods**

The 2012 and the 2022 floods have been the most severe in decades (Amangabara & Obenade, 2015; Ikporukpo, 2019; UNICEF, 2022b). This was not only in terms of the extent of the area affected but also the height and the impact. Indeed, the Governor of Delta State indicated how severe the 2012 flood was, thus:

I have seen terrible things in life, but what I saw in the flooding and displacement is very disheartening. I had to stand on top of a pick-up van to address people in one of the camps. I was moved to tears as I saw the body language of Deltans whose only hope of survival is on what I can do for them as Governor of their State. They were looking at me as I spoke to them as if their entire life was gone (quoted in Ikporukpo, 2012: 10).

Similarly, the United Nations Resident and Humanitarian Coordinator in Nigeria, after a visit to some flood affected communities of Bayelsa State on Friday, 4 November 2022, said of the 2022 flood in the State, thus:

... this is a crisis of major proportion. What I saw yesterday reminded me of the images I saw of Pakistan a few months ago and the world took note of that. A third of Pakistan, the size of the United Kingdom, was under water. The images reminded me of that (Punch Newspaper, Sunday, November 6, 2022:3).

While attributing the flood to climate change, he declared that the flood "deserves everyone's attention".

Senatorial District	LGA ID	LGA	Depth (Metres)	No. of Com- munities Affected	Duration (Weeks)	No. of House- holds Affected
Central	1	Udu	1.0	17	3	475
	2	Ughelli North	1.8	40	4	5,712
	3	Ughelli South	1.7	35	5	4,938
North	4	Ndokwa East	2.2	25	5	5,453
	5	Ndokwa West	0.5	2	3	229
	6	Oshimili North	0.5	2	3	163
	7	Oshimili South	2.1	6	4	655
South	8	Bomadi	2.1	18	5	3,532
	9	Burutu	2.3	46	5	6,951
	10	Isoko North	1.2	6	3	728
	11	Isoko South	1.5	16	4	2,624
	12	Patani	2.0	231	4	2,481
Total/Aver- age			1.6	231	4	33,941

# **Table 2:** Some Characteristics of the 2012 Flood in Delta State Source: Delta State (2013)

Table 2 displays the extent and severity of the 2012 flood in Delta State. Two hundred and thirty-one communities in 12 of the 25 local government areas were affected. As the Table indicates, flood heights recorded within settlements were much higher in riverine local government areas, such as Burutu, compared to those in the non-riverine local government areas such as Udu. In the case of Bayelsa State, seven of the eight local government areas were affected and in Rivers State, four of the 23 local government areas were affected. The same local government areas in each of the States were affected during the 2022 flood although the latter was more assure.

government areas such as Udu. In the case of Bayelsa State, seven of the eight local government areas were affected and in Rivers State, four of the 23 local government areas were affected. The same local government areas in each of the States were affected during the 2022 flood, although the latter was more severe. For instance, some communities not affected in 2012 were flooded in 2022. Communities on the Forcados River, such as Ofoni (Bayelsa State) and Bomadi (Delta State) are good examples. Generally speaking, it is the height of the levee a community is located that determines its vulnerability. Typically, communities on the banks of the rivers are located on the levees which are higher than the

adjoining plains. Settlements on low levees are usually flooded during the rainy season while those on high levees are affected only during great floods, such as those of 2012 and 2022. Angalabiri (Bayelsa State) and Ayakoroma (Delta State), all on the Forcados River are examples of the former type of settlements while Ofoni (Bayelsa State) and Bomadi (Delta State), all on the Forcados River, are examples of the latter.

Based on differing elevations, the forests, swamplands and the farms therein are the first to be flooded. The settlements, typically located on levees follow and lastly the intersettlement and the settlement roads which are usually elevated through sand-filling. In both the 2012 and the 2022 floods, most of the forests/swamplands/farms, the settlements and even the roads in the flood-prone fresh water swamp and the low rain forest ecological zones were affected.

Figures 2 to 7 provide physical expressions of the floods. Figure 2 depicts forests in flood. Given the fact that these are very low areas and in many cases swamplands, all parts of the forests are usually flooded unlike the settlements and the inter-settlement roads where some parts may not be affected. In cases where the settlements are not located on levees, and have not been sand-filled, they are as vulnerable as the forests.



Figure 2: Flooded Forest along Yenagoa - Amassoma Road, Bayelsa State

Figures 3 to 5 show different aspects of flooded settlements. In both 2012 and 2022 floods, typically not all parts of a given settlement were affected.

# 14 THE NIGERIAN FIELD



Figure 3: Flooded Bayelsa State Ecumenical Centre



Figure 4: The Zion in Kpakiama, Delta State, Covered By Flood Water



Figure 5: A Community in Ahoada West LGA, Okogboe, Rivers State in Flood

However, in most cases, areas not affected in 2012 were flooded in 2022. For instance, in Yenagoa, capital of Bayelsa State, such areas as around the Victoria Garden, Winners road and the areas of Amarata near the Old Assembly Quarters not affected in 2012 were flooded in 2022. The inter-settlement roads usually have the highest elevations, provided through sand-filling are usually the last to be flooded. However, whereas during most floods they may not be affected, they are usually impacted during major floods such as those of 2012 and 2022. Thus, the major inter-settlement road in the region, the east-west road, was impacted in both 2012 and 2022, though more significantly in the latter year. Figure 6 and 7, for instance, indicate the situation in 2022.



Figure 6: Extensive Flooding along the East-West Road in Rivers State



Figure 7: A Truck and a Canoe struggling for space on the Flooded East-West Road near Ahoada, Rivers State

In both 2012 and 2022, several sections of the road were breached by the flood water. For instance, there were three major breaches along the East-West Road during the 2022 flood. These were Ume junction near Patani (Delta State), near Okogboe (Rivers State) and near Ahoada (Rivers State). In each of these locations, the flood water flowed across the road in a torrent. The result of such a torrent was that when the flooding was over, a deep gap was created which became a transportation challenge. This issue is examined in a later section.

Apart from the East-West Road, several major roads such as Ughelli-Asaba Road and the Ohoror-Bomadi Road were breached in several points. For instance, the Ughelli-Asaba Road was breached at seven points. These points included Ellu, Aradhe, Obetim, Obikwele, Iselegu, Ossisa, and near Nsukwa junction. The floods were so significant that many of the roads became rivers with canoes and other boats becoming the means of transportation in all stretches or large stretches of the roads (see Figures 6 & 7).

# **Impact on Ecosystems and Ecosystem Services**

As indicated earlier, the forests, farmlands and swamplands are the lowest areas in the fresh water swamp and the lowland forest ecological zones, the belt of annual seasonal flooding. Consequently, these low parts are the areas most impacted by floods. During the annual floods, the unaffected areas in the forests and farms, if any, are usually the areas of refuge for wildlife. However, during severe high-floods, such as those of 2012 and 2022, where the relatively high parts of the forests are affected, the wildlife are left stranded. Observations during the 2012 and 2022 floods revealed that animals/wildlife such as grass-cutters and snakes scampered for safety in the higher grounds in settlements

and roads. In this circumstance, not only were such wildlife common in the streets of settlements but also in the homes. Stranded animals and snakes were easily killed.

Although, some small animals and reptiles escaped to higher grounds, many and crawling insects drown. It is not possible to determine the number involved. Nevertheless, given the great biodiversity and the species richness of the region (World Bank 1995; Izah 2018), the number will be considerable. For wildlife not physically affected, the adverse effect on the food-chain was impactful. A study of the impact of the 2012 flood in Wilberforce Island, Bayelsa State (Ohimain, Izah & Otobotekere 2014) indicated that 23 mammals, 21 avian fauna and 37 plants were adversely affected. The study which was conducted immediately after the flood reported that some of the plants were already dead while others were dying. The most impacted plant species was *Musanga Cecropoides* (umbrella tree). The severity of the impact on the plants depended on the height of the flood water. Where the water was at ground level, the impact was minimal.

The implication of this impact on wildlife was that the ecosystem services they provided were lost. For instance, immediately after the 2012 flood, the number of animals killed by hunters and displayed for sale along the Yenagoa-Amassoma road, a common feature of the road, declined to zero (Ohimain, Izah & Otobotekere, 2014). This decline was characteristic of all other roads, such as the East-West Road and the Ughelli-Asaba Road. The harvesting of fuel wood and the burning of tree trunks for charcoal were also impeded; thus adversely affecting the energy-source available to a large proportion of the population. Agro-ecosystem services were also adversely affected. Figure 8 shows flooded farms. Cassava tubers readily rot.



Figure 8: Flooded Cassava And Plantain Farms Near Akenfa, Bayelsa State

Many farmers hurriedly harvested the tubers prematurely in order to avoid their rotting. The harvesting of immature crops such as cassava, plantain, yam, cocoyam, sweet potato and maize characterised these floods. Unfortunately, because the flood water rose fast, most farmers did not succeed in harvesting all the immature crops.

# Impact on People, Livelihood and Facilities

The floods had considerable direct and indirect impacts on people. The displacement of people was the most significant direct consequence while the impacts on livelihood and facilities were the gravest indirect impact on people. The flooding of settlements and residences meant that individuals had to abandon their homes in search of higher grounds. For instance, 33,941 households in 231 communities were impacted in Delta State in the 2012 flood (Table 2). Using the 5 persons per household, national average figure provided by the National Bureau of Statistics in its *Living Standards Survey of 2020*, 169,705 individuals were impacted/displaced. Given the fact that the 2022 flood was more serious, the number of individuals affected was more. For instance, of 18 locations out of more than 230 included in a survey by *UN Migration*, 78,640 affected individuals were identified in Delta State (UN Migration 2022a).

Similarly, the 2022 flood affected 337,393 individuals in 28 communities spread over 9 LGAs in Rivers State (UN Migration 2022b). The situation in Bayelsa State, the most impacted, was lamented by the Governor of the State in a broadcast of Tuesday, 17 October 2022, thus:

From my personal assessment, the situation is dire. Nearly a million people in over 300 communities in the State have been internally displaced. Unfortunately, some deaths have been reported. The narrative is the same across Sagbama, Ekeremor, Southern Ijaw, Ogbia, Yenagoa, Nembe, and Kolokuma-Opokuma Local Government Areas.

The floods were particularly overwhelming because, generally speaking, there was no flood-preparedness by individuals. Even the experiences during the 2012 flood did not guide people on mitigation in 2022. The general attitude was that the 2012 flood was unusual and therefore not likely to reoccur. Thus, even rudimentary flood-mitigation and coping strategies such as embankment using sandbags, and flood-water diversion through the use of dugout channels, were not commonly practised. There were also no relocation plans. In most cases, the floods took people unawares. The general pattern was such that it was when the flood-water started entering people's residences that there was a scramble to save valuable items. Such items that could not be readily moved were either placed in ceilings or left hanging from ceilings. The relocation decision was made in such a hurry that only few easily movable items, such as clothes, were removed. The unplanned nature also meant that many people did not readily know where to move to. Thus, any nearby area not flooded became a temporary abode. The major roads, which were generally on higher grounds were popular choices. Figure 9 shows an example of such stranded flooddisplaced individuals in Kpakiama (Delta State) occupying the road near their homes, imaging where to go to next.



**Figure 9:** Stranded Flood Victims in a Temporary Shelter on the Bomadi- Ohoror Road in Kpakiama, Delta State.

The challenge individuals faced was complicated by the loss of livelihoods and the detrimental impact on facilities. Most of the people affected were rural dwellers who depended on nature and its resources. As indicated earlier, ecosystem services were lost during the floods and the period immediately after. Furthermore, not only were crops in farms destroyed/damaged, as indicated earlier, but also there was loss of farm days. For instance, 33,008 cassava holdings, 9,860 yam holdings, 12,601 plantain holdings, and 4,273 holdings of other crops, were affected by the 2012 flood in Delta State. Five hundred and twenty-six poultry farms, 58 piggery farms and 4,357 commercial fish ponds were affected. Petty trading which is a significant livelihood was also adversely affected because many markets and shops were flooded. On the whole, 743 market stalls and 811 shops were affected in the State (Delta State 2013). In other words, many types of livelihood were adversely affected.

The floods also had tremendous impact on infrastructural facilities. Several residential buildings, schools, health facilities, markets, potable water supply facilities, religious centres and roads were flooded and therefore out of use during the period of the flood.

Figures 10 and 11 illustrate the impact the floods had on socio-economic facilities. For instance, the Niger Delta University, Wilberforce Island (Bayelsa State) and its Teaching Hospital at Okolobiri were shut for several weeks not only in 2012 but also in 2022.



Figure 10: Ido Petrol Station in Yenagoa, Bayelsa Sate, taken over by Flood Water



Figure 11: Niger Delta University Wilberforce Island, Bayelsa State in Flood

Indeed, in Bayelsa, Delta and Rivers States primary and secondary schools were forced to go on break during the floods. Even for schools not impacted, they were shut because many of them were shut because they served as camps for displaced flood victims.

One of the most disruptive aspects of the floods was the impact on transportation systems, particularly the roads. Several major roads, such as the East-West road running across the region, Ughelli-Asaba road, Yenagoa-Amassoma Road and Yenagoa-Okolobiri Road were flooded. As illustrated earlier, many parts of these roads had flood-water deep enough to accommodate canoes/boats. Indeed, during the field studies of the 2022 flood, an observer, awed by the depth of flood water on the Yenagoa/Igbogene-Okolobiri road, exclaimed, "*the road is no longer motorable*! *It is only boatable*!" The floods were such that many parts of the region, particularly in Bayelsa State were cut-off from the rest of the country. Even intra-State movement was difficult. For instance, on the East-West Road, particularly between Mbiama and Ahoada (Rivers State), a combination of boats/canoes, lorries and trucks became the norm in road transportation. Individuals explored several ways of improving accessibility. Figure12, for example, shows the attempts to ensure that there was movement between Amassoma/Wilberforce Island and Yenagoa, the State capital. Table 3 indicates clearly the loss and damage consequent on the floods. Several facilities were damaged or destroyed, needing a lot of financial resources to rebuild.



Figure 12: A Makeshift Wooden Bridge Across a Breached Part of The Yenagoa- Amassoma Road, Bayelsa State.

# Table 3: Impact of 2012 Flood on Facilities in Niger Delta

source: Compiled by Author from several Tables in Federal Republic of Nigeria, 2013.

Facilities	States				
	Bayelsa	Delta	Rivers		
Houses Totally Destroyed	79,730	84,834	47,120		
Houses Partially Damaged	53,1 <b>20</b>	4,4 <b>∮2</b>	196,401		
Totally Destroyed Primary Schools			0		
Partially Damaged Primary Schools	234	238	116		
Totally Destroyed Secondary Schools	1.0	3.0	0		
Partially Damaged Secondary Schools	163	75	81		
Total Value (Million Naira) of Damaged/Destroyed Health Facilities	5,753	2,949.4	8,489.2		
Number of Damaged Water Supply Facilities/Boreholes	4,290	N.A.	172		
Value (Million Naira) of Damaged Roads	303.8	7,347.9	N.A		

Note: N.A. means not available.

As earlier indicated, the floods were particularly impactful because of a lack of floodpreparedness by individuals. There is no doubt that the failure of individuals could be ameliorated through effective governmental policies and action. To what extent was this the case in the region? In other words, how prepared was government? To what extent did governmental action mitigate the effect of the floods? These are the issues addressed in the next section.

# Pattern of Flood Management by Government

The management of floods and other emergencies/disasters in the country is the responsibility of the three tiers of government, Federal, State and Local. There are three key institutions involved in the management of floods. These are National Emergency Management Agency (NEMA), Nigerian Meteorological Agency (NiMet) and Nigeria Hydrological Services Agency (NHSA). Of the 15 functions/responsibilities of NEMA, the most fundamental are the formulation of policies, the education of the public on disaster prevention and control, monitoring the state of emergency preparedness, and assisting victims during emergencies (Federal Republic of Nigeria, 1999). The central responsibility of NiMet is the provision of meteorological information, such as those related to the control and management of floods (Federal Republic of Nigeria, 2003/2022). Similarly, NHSA assesses and monitors surface and ground water. In the context of floods,

it provides river discharge information, flood vulnerability mapping, flood early warning and sensitises the public through annual flood outlook (Federal Republic of Nigeria, 2010). NEMA has its equivalent bodies at the State and Local Government Area levels.

Before, during and immediately after the floods, the various Agencies functioned within the orbit of their responsibilities. However, their effectiveness was a subject of controversy, couched in politics. For instance, in March 2012, NiMet provided early warnings on the flood. Similarly, it warned of the 2022 flood in February 2022 before the occurrence. NHSA also provided its Annual Flood Outlook (AFO) in May 2022 warning about the flood. The most significant of the warnings was that of NEMA. On Tuesday 2<sup>nd</sup> August 2022, NEMA organised "*The National Consultative Workshop on 2022 Flood Preparedness, Mitigation and Response*" which was attended by all the State Emergency Management Agencies (SEMAs) and other stakeholders. It was against this background that the Federal Government, through its Agencies (NiMet, NHSA and NEMA) asserted that the 2022 flood was so disastrous because the State Governments did not take the flood warning seriously and therefore did not prepare for the flood (Vanguard Newspaper, October 30, 2022: 9). The States argued that the Federal agencies were to be blamed because the information about the flood was provided late.

Although the issue of flood information and flood preparedness generated controversy, it was the degree of seriousness of the flood in the Niger Delta and the response by the Federal Government and the State Governments that generated the greatest controversy. The controversy on the seriousness of the flood emanated from a statement by the Minister of Humanitarian Affairs, Disaster Management and Social Development during a press conference on November 3, 2022 asserting that Bayelsa State was not among the ten most impacted States and that Jigawa was the most impacted. This attracted reactions not only from the Bayelsa State Government but also several interest groups in the Niger Delta region. In a statement of November 4, 2022, the State government accused the Minister of basing her statement on "bogus data" given the fact that since the flood challenge emerged in the State several weeks ago, no federal official has visited the State to access the situation. As the Ijaw National Congress (INC), a socio-cultural organisation of the Ijaw ethnic group of the Niger Delta, put it,

# How can she sit in the comfort of her office without a visit to any of the affected States to make such an assertion (Vanguard Newspaper, November 9, 2022).

The Pan-Niger Delta Forum (PANDEF), a socio-cultural organisation of the Niger Delta people, asserted that the statement by the Minister was "a brazen assault on the sensibilities of Nigerians and an attack on logic ... Indeed, "provocative" and called on her to resign or be sacked (Vanguard Newspaper, November 5, 2022). Several other

groups, such as the Niger Delta Caucus of the (Federal) House of Representatives while disputing the information by the Minister, called for her sack. The Minister, while visiting Bayelsa State on 15 November 2022 acknowledged the seriousness of the flood in the State and other parts of the Niger Delta.

The controversy on whether or not the federal government participated effectively in the management of the flood in the Niger Delta was related to the controversy of the seriousness of the flood. For instance, the Bayelsa State Council of Traditional Rulers asserted, thus:

We believe, and strongly so, that the misinformation (by the Minister), we have been confronted with this season may have directly led to the observed extremely slow and almost shameful response by statutory agencies of the Federal Government to the plight of the over one million victims of the 2022 flood disaster in Bayelsa State (Vanguard Newspaper, November 9, 2022).

Indeed, it was the perception of several individuals and groups in the Niger Delta that the Minister of Humanitarian Affairs was reacting to in her statement that the flood was not very serious in Bayelsa State/the Niger Delta region. The genesis was a press statement by a leader in the Niger Delta and a former chairman of PANDEF, Chief E.K. Clark. He declared, thus:

... the Federal Government has not done anything to reduce the plight and suffering of the people ... The country has ministries and agencies that are supposed to act in such cases. These have not done anything meaningful and have not visited the region (Vanguard Newspaper, 16 October, 2022).

Indeed, INC asserted that the attitude of the Federal Government was not surprising; for, it reflected the general lack of interest of the government in the development of the region. It declared, this is a

reflection of arrogance and callous disregard being accorded to issues about the Niger Delta region and its people by the federal government (Vanguard Newspaper, 9 November, 2022).

However, the Federal Government, through the Senior Special Assistant to the President on Media and Publicity argued that the States and Local Government Areas (LGAs) should be held responsible for the lack of flood mitigation. His perspective was that the ecological fund meant for such a purpose is allocated to all the tiers of government

and wondered what the States and the Local Government Areas have been spending their shares of the funds on. He asserted that the State and Local Governments are expected to be the first responders in all situations of disaster such as floods and the Federal Government can only play a supporting role. He therefore called on these governments to be more responsible (Business Day Newspaper, 12 October, 2022). The federal government's call for States and LGAs to be more responsive and responsible was particularly obvious from statements by the Minister of Humanitarian Affairs. For instance, in a statement of 15 October 2022, she urged:

There is the need for State governments to invest in flood management and community-based flood early warning systems; hence we call on State governments to take greater responsibility for flood preparedness and response (Climate Cable, 17 October, 2022).

It is apparent from the controversy the flood generated that all the tiers of government were not effectively prepared for the flood. Beyond providing warnings about the flood, through its agencies, the federal government has not over the years provided floor-control infrastructure such as flood control dams and dredging of rivers to increase their flood-water accommodating capacities. For instance, the attempts to dredge the river Niger, such as those by the Petroleum Trust Fund in the late 1990s and subsequent ones by the National Inland Waterways Authority all failed. Similarly, a planned flood-control dam on the Benue river, Dasin Hausa Dam, has not been built several decades after its conception. As the 2022 experience has shown, the direct intervention by the federal government, through its agencies such as NEMA in the distribution of flood-relief materials has been fraught with challenges resulting in either late supply or inefficient distribution. For instance, the relief materials supplied for Bayelsa by NEMA (Table 4) came in October/ November, several weeks after the emergence of the flood problem.

**Table 4:** 2022 Flood Relief Materials Supplied to Bayelsa by NEMA

 Source: Compiled by Author from NEMA information.

Food Items				<b>Building Materials</b>	Clothing			Health-related Items		
Rice (10 Kg Bags) 2,400			2,400	Cement (Bags) 200	Children 2,500	n's Wear	(Pieces)	Mosquito 3,000	Net	(Pieces)
Garri (10 Kg Bags) 1,300		1,300	Roofing Sheet (Bun- dles) 200	Women <sup>*</sup> 1,000	's Wear	Vear (Pieces) Blanket (Pieces)		1,000		
Beans 2,000	(10	Kg	Bags)	Nails (3" Bags) 40	Men's 1,000)	Wear	(Pieces)	Mattress	Pieces	5) 1,000
Maize 1,400	(10	Kg	Bags)	Nails (Packets) 50	Guinea 3,300	Brocade	(Pieces)	Nylon 9.500	Mat	(Pieces)

Noodles (Cartons) 200 Tin Tomato (Cartons) 275 Salt (20 Kg Bags) 375 Vegetable 0.1 (20L Kegs) 225 Seasoning Cubes (Cartons) 350 Wax Print (Pieces) 500

Bath Soap (Cartons) 600

One indication of the unpreparedness of the State and Local Governments was a lack of shelter for the flood victims. In both the 2012 and the 2022 floods, the shelter was typically primary/secondary schools, community halls and health centres, with inadequate facilities.



Figure 13: A Flood Victims' Camp in A Secondary School At Oleh, Delta State *Source:* Oviasuyi (2022)

Figure 13 shows a typical school serving as a flood victim camp. A woman displaced by the 2022 flood, accommodated in Ewu Grammar School, Ewu-Otor, Delta State camp lamented the poor state of the camp, thus:

There is nothing here as you can see. They (government) should please come to our aid. We sleep on the floor. We have no food. My children have nothing to eat. I beg them to please help us (Oviasuyi, 2022). In all the States, the usual pattern of flood intervention involves an assessment visit to affected communities by government officials (Figure 14) followed by the setting up of displaced people's camps and the subsequent distribution of relief materials, typically food, blankets and clothing.



**Figure 14:** The Governor of Bayelsa State, Douye Diri, Deep in the Flood On An Inspection Visit to Aleibri, Bayelsa State During The 2022 Flood.

Several organisations, such as NGOs, religious groups, socio-cultural groups, oil companies, and individuals also donated relief materials during the floods. Be that as it may, the experiences during the floods have shown that flood-victims' camps lacked facilities and were poorly managed. This explained why many chose to depend on the support of relatives and friends.

#### Conclusion

The geographical and hydrological characteristics of the Niger Delta make it flood-prone. The 2012 and 2022 floods were the most serious in several decades. Their impacts were such that many roads were turned into rivers where boats became the means of transportation. Ecological systems were disturbed, adversely affecting the biota and the fauna. Several individuals were displaced, infrastructural facilities were either damaged or destroyed, while livelihoods were permanently or temporarily lost.

Both the Federal and the State Governments were involved in the management of the floods, particularly providing relief materials to flood-displayed individuals. However, the displaced persons camps, generally speaking, lacked facilities and were poorly managed. This was particularly the case in 2022 where disputes between the federal authorities on the one hand and the State governments and other Stakeholders on the other hindered an effective management of the flood challenge.

There is no doubt that, consequent on the increasing impact of anthropogenic climate change, such serious floods in the Niger Delta as those of 2012 and 2022 will occur in future. There is therefore the need to be proactive to ensure effective flood management. Early flood warning, early dissemination of such warning, effective citizenry education on flood mitigation and control and effective management by governments and their agencies are necessary. Given the nature of the Niger Delta, the dredging and maintenance of dredged channels are required for flood control. The excavation materials from such dredging could be used to fortify the naturally-occurring levees of the rivers. Furthermore, the provision of flood-control dams, such as the Dasin Hausa, on the Benue river is necessary. It is a combination of all these measures, rather than isolating one or two, that is required.

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