A HISTORICAL SURVEY OF THE EFFECTS OF FLOODING ON YENAGOA METROPOLIS, 1996 – 2022

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Abstract
This work, examines, from a historical perspective, the effects of flooding on Yenagoa. A number of studies on the effects of flooding on Yenagoa metropolis have been conducted by scholars from the physical and life sciences, but not much has been done from a historical perspective. This work is an attempt to fill this gap and to show that the study of environmental history can be a vital tool in addressing environmental challenges such as flooding. Both oral and written sources were utilised in the work. The oral sources were majorly accounts of informants who had witnessed the devastating effects of floods in the city, while the written sources include internet sources, textbooks, articles in journals and government papers as well as diagrams and maps for better illustration of facts and the geographical depiction of the study area. The work identifies increased agricultural devastation, wildlife disappearance, erosion and sedimentation problems, socio-economic losses as well as diseases outbreak as some of the challenges posed by flooding in the city. To allay any existing doubts, more studies are needed.

Introduction
Environmental change is a subject that is as old as the planet itself.[1] It is of immense importance because the environment is the very fabric upon which societies are built. However, rapid environmental changes on the earth since the twentieth century have inspired a multidisciplinary approach to addressing environmental challenges which include the study of environmental history. It is an interdisciplinary study of the relationships between culture, technology and nature over the years.[2] It deals with the historically documented part of the story of life and death, not only of human beings but also of societies and plants and animal species, in terms of their relationship with the world around them.[3]

Environmental history draws its sources and methods from disciplines such as history, geography, archaeology, agriculture, anthropology, economics, political science, sociology and the pure and applied sciences. It sheds light on issues such as climate change, deforestation, resource exploitation, pollution, urbanisation, biodiversity loss, and sustainability. By understanding the historical contexts of environmental challenges, scholars, policymakers and the general public can better comprehend the root-causes of current environmental challenges

[1] J. R. McNeill, *Something New Under the Sun: An Environmental History of the Twentieth* Century world (New York and London: W.W. Norton & Company, 2000), p. 21.

[2] D. Worster, - https://www.sciencedirect.com/topics/social-sciences/environmental-history# (Accessed 14 May, 2024).
[3] R. Grove & M. Elvin, - https://www.sciencedirect.com/topics/social-sciences/environmental history# (Accessed 14 May, 2024).

and develop effective strategies for addressing them.[4] This work is therefore an attempt at presenting a historical perspective on the effects of flooding on Yenagoa metropolis from 1996 to 2022, with the aim of proffering solutions to these challenges. As already stated, there have been a number of attempts by scholars from the physical and life sciences to address these issues but not much has been done from a historical perspective. This work is a humble attempt to fill this gap.

Some of the challenges the authors encountered in the course of producing this work include limited scientific studies on the subject, lack of funds as well as the challenges posed by the novelty of the study. These, notwithstanding, the findings of the work are quite invaluable to our understanding of the effects of flooding on Yenagoa metropolis which include, but are not limited, to agricultural devastation, wildlife disappearance, erosion and sedimentation problems, socio-economic losses as well as diseases outbreak. These findings, notwithstanding, more studies (scientific and otherwise) are needed to mitigate the effects of flooding on the metropolis.

The Land and its People

Yenagoa metropolis is the ancestral home of the Epie/Atissa people whose history dates back to over a thousand years. It is also the capital of Bayelsa State. Tradition has it that early settlers migrated from Ancient Benin in present-day Edo State but did not mention the reason for this migration. However, it stated that settlers were allured by the fertility of the soil and its vast array of diverse aquatic lifeforms which made it a quintessential food-basket. So, despite its flood prone nature, settlers did not entertain another migration but rather adapted their socio-economic dispositions to the peculiarities of the land. Hence, they became predominantly farmers, and some hunters and itinerary fishermen just like most of their Ijaw neighbours in Bayelsa State.

Geographically, Yenagoa metropolis is located between Latitudes 4^{o}55'N and 4^{o}57'N, and Longitudes 6^{o}16'E and 6^{o}18'E respectively. It is a lowland area just like the rest of Bayelsa State, characterised by tidal flats and floodplains which makes it easily susceptible to flooding.[5] Flooding as a natural occurrence is the overflow of water into an environment that is normally dry, causing inundation (submergence) and harm to plants and animals as well as human beings and properties.[6] It could be caused by natural factors such as rainfall, tropical storms, typhoons and tsunamis, or by human factors such as levee failure, blockage of drainages, urbanisation, deforestation and so on.

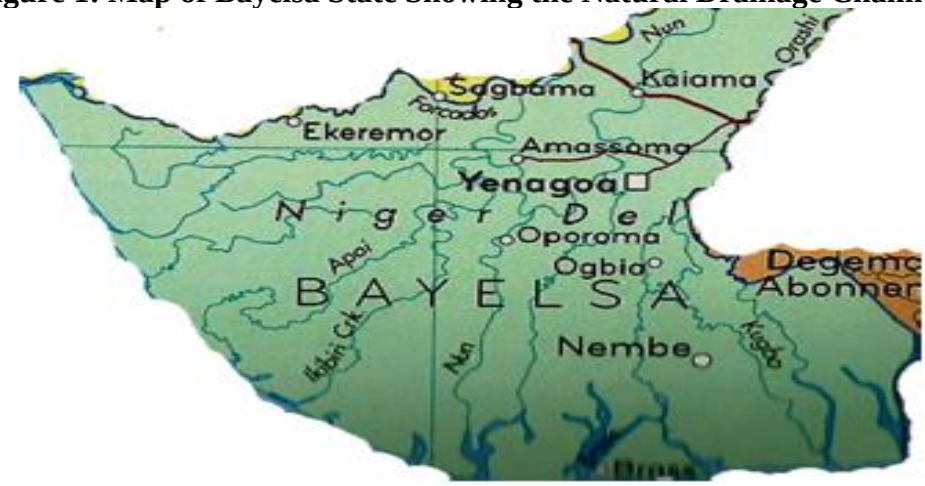
[4] Chat AI. *Definition of Environmental History*. https://www.chatai.com. (Accessed 12 July, 2023).

[5] K. Ogboi, "Physical Planning and Development in Bayelsa State: The Way Forward," in *Bayelsa State Physical Planning and Development Summit Papers* (2022), p. 34.

[6] F. S. Akene, "Preparation and Drainage Masterplan as a Way of Addressing the Challenges of Flooding in Yenagoa," in *Bayelsa State Physical Planning and Development Summit Papers,* (2022), p. 14.

[7]Map of Bayelsa State Showing the Natural Drainage Channels https://dailypost.ng/2022/10/03/ (Accessed 17 January, 2024).

Figure 1: Map of Bayelsa State Showing the Natural Drainage Channels



Source: https://dailypost.ng/2022/10/03/ (Accessed 17 January, 2024)[7]

Flooding in Yenagoa metropolis is therefore not an alien phenomenon but one whose occurrence in recent times has been exacerbated by climate change and urbanisation. Legends have it that major flooding in Yenagoa occurs once in every seven (7) to ten (10) years. Ordinarily, floods in Yenagoa can be divided into three major categories, namely, mega floods, annual floods and urban or rainy season floods.

Figure 2: Map of Yenagoa Showing Water Sampling Points

Source: Google Map (Accessed 17 January, 2024)[8]

1. **Mega Floods:** These are floods as legends have it that occur once in every seven (7) to ten (10) years. The effects are usually far-reaching such as inundation of farmlands and

[8] *Map of Yenagoa Showing Water Sampling Points* –https://www.google.com (Accessed 17 January, 2024).

even displacement of people from their homes. These floods have their roots deep in nature in accordance with the earth's water cycle process. However, due to climate change, their occurrence has been accelerated in recent times with spells in 2012, 2018, 2019, 2020 and 2022 respectively. But the 2022 flood is widely acclaimed to be the biggest and the most devastating.

Plate 1: Aerial Photo Showing the Impact of the 2022 Flash Flood on a Section of Yenagoa

Source: https://www.punchng.com/2022/10/15 (Accessed 17 January, 2024)[9]

2. **Annual Floods:** Annual floods, as the name implies, are yearly floods that traditionally occur between the months of September and October. These floods, although huge in volume, are nowhere near the mega floods as they only impact lands within the fringes of the riverbanks or traditional flood paths. They are often associated with the deposition of humus-rich soil which makes for buoyant crop yield akin to the Nile River valley region in Egypt.
3. **Urban or Rainy Season Floods:** These are floods triggered by the activities of urbanisation in the metropolis. They occur in built up areas with blocked drainage channels whenever it rains. Stagnant pools of water have become a common feature of the city's landscape during the rainy season as a result of poorly constructed drainages, buildings on floodplains, deforestation as well as the unregulated disappearance of wetlands.

[9]*Aerial Photo Showing the Impact of the 2022 Flash Flood on a Section of Yenagoa* – https://www.punchng.com/2022/10/15 (Accessed 17 January, 2024).

Plate 2: Images Showing Urban-Induced Flooding in Yenagoa

Sources:https://guardian.ng/sunday-magazine/flood-yenagoa-the-consequences-of-historic-neglect/amp/ (Accessed 17 January, 2024)[10]

Effects of Flooding on Yenagoa Metropolis

The effects of flooding in the metropolis are indeed enormous; from agricultural devastation to wildlife disappearance, erosion and sedimentation problems, socio-economic losses as well as disease outbreaks.

Agricultural Devastation

Agricultural devastation is indeed becoming a recurring decimal in Yenagoa metropolis these days regardless of agricultural preferences. From crop cultivation to animal husbandry, different farmers gave harrowing accounts of their experiences with recent flood surges devastating the metropolis. However, this was not the historical reality according to some respondents.

According to Hellen Egbo, [11] a farmer from Yenizue-Gene, the annual nature of the floods in times past was more of a blessing than a curse as they often left behind tons of nutrient-rich soil that traditionally gave the area its characteristic food-basket status. But, since 2012, the increase in flood volumes and regularity has rather made it detrimental for agricultural production in the metropolis. Hence, leading to massive losses in food crops such as cassava (*Manihot esculenta*), plantain *(Musa paradisiacal*), okra (*Abelmoshchus esculentus*) and others. Hellen Ego, further stated that due to the longer periods of stagnant water on most of their farmlands, food crops hardly do well these days.

In the same vein, Willing Paul Osain[12] of Biogbolo community, reiterated that agricultural devastation and poor crop yield are recent phenomena in the metropolis. Stating that traditionally, flooding had only been along the fringes of the Epie Creek axis of the community with its attendant deposits of rich alluvial soil an incentive for crop cultivation.

[10]*Images Showing Urban-Induced Flooding in Yenagoa* - https://guardian.ng/sunday-magazine/flood-yenagoa-the-consequences-of-historic- neglect/amp/ (Accessed 17 January, 2024).

[11] Hellen Egbo, 68, oral interview, Yenizue-Gene Community, 14th May, 2024.

[12] Willing Paul Osain, 54, oral interview, Biogbolo Community, 8th September, 2024.

Another respondent, Ebinyo Beredugo, [13] a poultry farmer at Etegwe community, recounted that her losses during the 2022 flood were simply monumental. She lamented losing tens of chickens and turkeys despite all attempts to save them due to the unprecedented high volume of the flood. She stressed that up till the time the researchers talked with her, she was yet to recover from these losses.

To buttress these claims, V. E. Ajumobi, S. B. Womboh and S. B. Ezem in a study, "Impacts of the 2022 Flood on Yenagoa Residents", [14] submitted that 77% of their respondents lost their farm produce to the flood.

Wildlife Disappearance

There has been a significant impact of the floods on wildlife population around the metropolis due to the frequent flooding of their habitats which according to some respondents was not the case in times past. This has assuredly contributed to a reduction in the amount of wildlife in the metropolis.

According to French Sakue, an indigene of Akaba community, before the creation of Bayelsa State in 1996, the community had been known for housing large reserves of many wildlife such as monkeys (*Cercopithecidae*), antelopes (*Bovidae*), bush pigs (*Potamochuroes larvatus*), porcupines *(Erithizon dorsatum*), tortoise (*Testudinidae*) and others, but since the creation of the state and especially since 2012, there has been a significant reduction in their numbers as a result of increased flooding in the community.[15]

Another distressed person, Oguru Sueyi Fred, an indigene and resident of Agudama-Epie, reiterated the above position. According to him, before 1996, and up till the early 2000s, Agudama community used to have a lot of wildlife like antelopes (*Bovidae*), grasscutters (*Thryonomys swinderianus*), alligators, bush pigs (*Potamochuroes larvatus*) and others, but since 2012 and beyond, the community has witnessed a sizeable reduction in their numbers which is not unconnected to the frequent nature of the floods as well as the unregulated deforestation of their forest by lumberjacks.[16]

Erosion and Sedimentation Problems

In recent times, the breaking away of the earth's surface as well as the deposition of sediments or debris in places they do not originally belong to is on the rise in the metropolis due to the frequent nature of the floods. According to Hellen Egbo, increased erosion as a result of frequent flooding is beginning to affect crop yield due to the constant seeping away of nutrients from their farmlands.[17]

At Kpansia community, an indigene, Mekebo Daniel stated that there has been an increase in eroded materials such as plastic wastes and bottles due to the rampant nature of the floods. These materials, he stated, mostly end up in the streams, creeks and other drainage channels in the community, thereby constituting harm to aquatic organisms like fishes as well as impeding the flow of water through the various drainage channels.[18]

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[13] Ebinyo Beredugo, 55, oral interview, Etegwe Community, 14th May, 2024.

[14] V. E. Ajumobi, S. B. Womboh and S. B. Ezem, "Impacts of the 2022 Flood on Yenagoa Residents." *ResearchGate.net.* January, 2023, - https://www.researchgate.net/publication/367092515_Impacts_of_the_2022_Flodding_on_the_Residents_of_Yenagoa_Bayelsa_State_Nigeria (Accessed 14 May, 2024).

[15] French Sakue, 64, oral interview, Akaba Community, 15th December, 2023.

[16] Oguru Sueyi Fred, 44, oral interview, Agudama-Epie Community, 14th December, 2023.

[17] Egbo, oral interview.

[18] Daniel Makedo, 46, oral interview, Kpansia Community, 14th May, 2024.

Socio-Economic Losses

Floods are generally known for their disruptive effects. The mega floods in particular have always led to widespread disruption of socio-economic activities in the metropolis. The 2022 flood is a good example. These floods often lead to almost a complete halt in socio-economic activities in most parts of the metropolis. They force residents from their homes into temporary shelters where they mostly rely on aid from the government, non-governmental organisations and well-meaning individuals, until the floods fully recede from their homes.

To paint a vivid picture of the extent of damage to property during the 2022 flood, the study by Ajumobi, Womboh and Ezem is again a good reference. This study shows that 68.8% of all the respondents interviewed agreed that their beds were damaged by the flood while 62.6% said it was their rugs and 56.7% said their chairs, etc.[19] Below is a table showing a detailed compilation of the damage to property in the metropolis.

Table 1: Impact of Flooding on Property

Property	Yes		No		No Response		Total	
	Freq	Per	Freq	Per	Freq	Per	Freq	Per
Televisio n	368	51.1	272	37.8	80	11.1	720	100
Radio	388	53.9	181	25.1	151	21.0	720	100
Chairs	408	56.7	219	30.4	93	12.9	720	100
Tables	256	35.6	241	33.5	223	31.0	720	100
Beds	495	68.8	123	17.1	102	14.2	720	100
Fridge	385	53.5	209	29.0	126	17.5	720	100
Rug	451	62.6	181	25.1	088	12.2	720	100
Others	263	36.5	32	4.4	425		720	100

Key: Freq = Frequency, Per = Percentage

Source: Ajumobi, Womboh & Ezem's Field Survey (2022)[20]

Disease Outbreak

Flooding is usually associated with outbreak and spread of diseases as a result of contamination of water bodies and so on. When floods occur, especially mega floods, sewages overflow into nearby rivers, creeks and drinking water sources, thereby causing diseases outbreak, particularly among those with compromised immune systems and other health conditions.[21] Corroborating this fact, Bebelikizibe Amos, an indigene and resident of Biogbolo, narrated that during the 2022 flood, sewage-laden water filled their surroundings with stench and disease-causing pathogens which led to several people falling sick of different illnesses.[22]

At Igbogene community, Atoye Ada-George, an indigene and resident also reiterated the above position, stressing that contaminated flood water led to a lot of young children in the community falling sick during the period.[23]

Ajumobi and his colleagues in their findings reveal that common diseases that surfaced during the 2022 flood include diarrhea, measles, cough and malaria. The most common, according to them, was diarrhea which recorded about 38.5% of the respondents who fell sick during the period.[24] This means that the affected persons might have consumed flood contaminated water

[19] Ajumobi, Womboh & Ezem, "Impacts of the 2022 flood on Yenagoa Residents."

[20] Ajumobi, Womboh & Ezem, Field Survey (2022).

[21] Ajumobi, Womboh & Ezem, "Impacts of the 2022 flood on Yenagoa Residents."

[22] Amos Bebelikizibe, 53, oral interview, Biogbolo Community, 14th May, 2024.

[23] Ada-George Atoye, 51, oral interview, Igbogene Community, 15th December, 2023.

[24] Ajumobi, Womboh & Ezem, "Impacts of the 2022 flood on Yenagoa Residents."

or food. To get a vivid sense of the contamination to sources of drinking water, a tabular representation of the various categories and degrees of contamination is provided below.

Table 2: Impact of Flooding on Sources of Drinking Water

Source	Yes		No		No Response		Total	
	Freq	Per	Freq	Per	Freq	Per	Freq	Per
Open Well	704	97.8	Nil	Nil	16	2.2	720	100
Closed Well	6	0.8	705	97.9	9	1.3	720	100
Borehole	683	94.9	Nil	Nil	37	5.1	720	100
River	711	98.8	Nil	Nil	9	1.3	720	100

Key: Freq = Frequency, Per = Percentage

Source: Ajumobi, Womboh & Ezem's Field Survey (2022)[25]

Conclusion

It is obvious from what has been presented, that the effects of flooding on the metropolis are simply multifaceted. It is also clear that flooding has been an annual source of nutrient-laden soil for farmers, but this nature-sanctioned process has been seriously altered by recent changes in climatic conditions and urbanisaton. Hence, the increased negative effects on the metropolis. From damages to agricultural production to wildlife disappearance, and from erosion and sedimentation problems to socio-economic losses and diseases outbreak and spread, the effects are indeed enormous.

To curb these effects, it is recommended that the State Government should adopt a development control process that would involve the use of proper plans and recommended standards for the metropolis. Dredging of rivers like the Epie Creek and other drainage channels on regular basis is critical to reduce the floods. The government should also put in place robust preventive measures in order to reduce the flooding impact on residents.

The Federal Government should of necessity build more dams in Nigeria's rivers and tributaries in order to checkmate seasonal discharges from inland dams like the Kainji/Jebba Dam in North Central Nigeria and the Lagdo Dam in Cameroun, which are the major sources of mega floods in the Niger Delta in general. Residents, on their part, must avoid actions that are inimical to the environment such as building on floodpaths, rampant felling of trees, and poor waste disposal systems capable of exacerbating the flooding challenge.

References

Aerial Photo Showing the Impact of the 2022 Flash Flood on a Section of Yenagoa. https://www.punchng.com/2022/10/15.

Ada-George, Atoye. 2023. Oral interview, Igbogene Community.

Ajumobi, V.E., S. B. Womboh and S. B. Ezem, "Impacts of the 2022 Flood on Yenagoa Residents." *ResearchGate.net.* January, 2023, - https://www.researchgate.net/publication/367092515_Impacts_of_the_2022_Flodding_on_the_Residents_of_Yenagoa_Bayelsa_State_Nigeria (Accessed 14 May, 2024).

Akene, F. S. 2022. "Preparation and Drainage Masterplan as a Way of Addressing the Challenges of Flooding in Yenagoa," in *Bayelsa State Physical Planning and Development Summit Papers.*

Amos, Bebelikizibe. 2024. Oral interview, Biogbolo Community.

Beredugo, Ebinyo. 2024. Oral interview, Etegwe Community.

Chat AI. 2023. *Definition of Environmental History*. https://www.chatai.com.

[25] Ajumobi, Womboh & Ezem, Field Survey (2022).

Makedo, Daniel. 2024. Oral interview, Kpansia Community.
Egbo, Hellen. 2024. Oral interview, Yenizue-Gene Community.
Grove, R. & M. Elvin. https://www.sciencedirect.com/topics/social- sciences/environmental history#.
Images Showing Urban-Induced Flooding in Yenagoa. 2024. https://guardian.ng/sunday-magazine/flood-yenagoa-the-consequences-of-historic- neglect/amp/.
Map of Bayelsa State Showing the Natural Drainage Channels https://dailypost.ng/2022/10/03/.
Map of Yenagoa Showing Water Sampling Points. 2024. https://www.google.com.
McNeill, J.R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth* Century world, New York.
Ogboi, K. 2022. "Physical Planning and Development in Bayelsa State: The Way Forward," in *Bayelsa State Physical Planning and Development Summit Papers.*
Oguru, Sueyi Fred. 2023. Oral interview, Agudama-Epie Community.
Osain, Willing Paul. 2024. Oral interview, Biogbolo Community.
Sakue, French. 2023. Oral interview, Akaba Community.
Worster, D. 2024. https://www.sciencedirect.com/topics/social-sciences/environmental-history#.