IMPACT OF FLOOD DISASTER IN YONOV COUNCIL WARD, LOGO LOCAL GOVERNMENT AREA, BENUE STATE

BY

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(ST/DM/DP/21/001)

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DECLARATION

I hereby declare that the work in this project titled **"IMPACT OF FLOOD DISASTER IN YONOV COUNCIL WARD, LOGO LOCAL GOVERNMENT AREA, BENUE STATE"** was performed by me under the supervision of Mr. Ibrahim Waziri Hassan. The information derived from literatures has been duly acknowledged in the text and a list of references provided. The work embodied in this project is original and had not been submitted in part or in full for any other diploma or certificate of this or any other institution.

ASOM TERKIMBI JUDE   ...……………………

(ST/DM/DP/21/001)   Signature/Date

CERTIFICATION

This project titled **"IMPACT OF FLOOD DISASTER IN YONOV COUNCIL WARD, LOGO LOCAL GOVERNMENT AREA, BENUE STATE"** meets the regulations governing the award of National Diploma (ND) in Computer Science, Federal Polytechnic Mubi, Adamawa State

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DEDICATION

This project work is dedicated to Almighty God for his enabling strength he bestowed on is during the course of this project work. Also, my gratitude goes to our lovely parents for their never-ending support and encouragement during the course of this research work.

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ABSTRACT

Flood disasters continue to be a recurrent and devastating phenomenon in many regions, with Yonov Council Ward in Logo Local Government Area, Benue State, experiencing their adverse effects. This study presents a comprehensive examination of the "Impact of Flood Disaster in Yonov Council Ward," with a focus on the year [specify the year], which witnessed significant flooding. The research encompasses an in-depth analysis of the causes, extent, and consequences of the flood disaster in this specific region. It employs a multidisciplinary approach, combining geographic information systems (GIS), hydrological modeling, and community surveys to assess the flood's impact on infrastructure, agriculture, livelihoods, and the well-being of the affected population. The findings underscore the need for proactive flood risk reduction measures, improved disaster preparedness, and community resilience-building efforts in Yonov Council Ward. Furthermore, the study provides valuable insights into the broader challenges and opportunities associated with flood mitigation and recovery efforts in flood-prone regions. In conclusion, this research contributes to a deeper understanding of the intricate dynamics of flood disasters and their repercussions on local communities. It also serves as a foundation for evidence-based policies and strategies aimed at mitigating the impact of floods, enhancing disaster resilience, and improving the overall quality of life in Yonov Council Ward, Logo Local Government Area, and similar flood-prone areas.

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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Flood events are recurring natural disasters that have significant implications for human societies and the environment. They cause extensive damage to infrastructure, disrupt livelihoods, and pose significant threats to public health. Yonov, located in Logo Local Government Area of Benue State, Nigeria, has experienced devastating flood events in recent years. Situated in an area vulnerable to flooding due to its geographical location and inadequate drainage systems, Yonov is particularly susceptible to the increasing frequency and severity of flood events. Climate change has contributed to alterations in rainfall patterns and intensified rainfall events, leading to heightened flood risks. Recent climate change projections indicate that Nigeria is expected to experience more frequent and intense rainfall events, increasing the likelihood of flooding in areas like Yonov (Oguntunde *et al.,* 2020). The region's floodplain location further exacerbates its vulnerability to these changes.

Additionally, rapid urbanization in Yonov has led to the expansion of impervious surfaces, such as roads, buildings, and parking lots. This expansion reduces natural rainwater infiltration and increases surface runoff during heavy rainfall events. Inadequate drainage systems further worsen the problem, impeding efficient water flow and escalating the risk of flooding (Ewetan *et al.,* 2021).

The consequences of flood events in Yonov are far-reaching, impacting various aspects of the community's socio-economic fabric. Flooding often results in the destruction of houses, displacement of residents, and loss of property. For instance, according to the National Emergency Management Agency (NEMA), the 2017 flood in Yonov affected over a certain number of people and resulted in significant material losses (Vanguard, 2017). The disruption of livelihoods and loss of agricultural lands further compound the socio-economic impacts as agriculture is a major source of income for many residents in the area. Additionally, flood events

can lead to the contamination of water sources, inadequate sanitation facilities, and an increased risk of waterborne diseases, posing significant health risks to the affected population. Previous studies have shown that flood events can cause outbreaks of waterborne diseases such as cholera, typhoid fever, and diarrheal diseases (Ogendi *et al.,* 2019). Understanding the relationship between flooding and public health is essential to inform effective mitigation and response strategies.

Given the recurring nature of flood events and their devastating impacts, there is an urgent need to develop comprehensive flood risk management strategies for Yonov. This requires a multidisciplinary approach that integrates urban planning, engineering, environmental management, and community engagement. Therefore, this study aims to assess the impact of flood disasters in Yonov, Logo Local Government Area, Benue State, Nigeria. It seeks to understand the causes and patterns of flood events, evaluate the socio-economic consequences on affected communities, examine the impact on public health and the environment, analyze existing flood management strategies, and propose recommendations for improving flood risk reduction and resilience in Yonov. By addressing these research objectives, this study aims to provide valuable insights for policymakers, urban planners, and other stakeholders involved in flood risk management and resilience-building efforts in the area.

1.2   Statement of the Problem

The flood events in Yonov, Logo Local Government Area, have resulted in severe consequences, including loss of lives, displacement of residents, damage to infrastructure, contamination of water sources, and the spread of waterborne diseases. The lack of comprehensive studies on the impact of flood events in Yonov has hindered effective disaster management and mitigation efforts. Consequently, there is a pressing need for a detailed investigation of the impact of flood events in Yonov to provide valuable insights for policymakers, urban planners, and other stakeholders in developing appropriate strategies for flood risk reduction and resilience building.

1.3   Aim and Objectives

The aim of this study is to assess the impact of flood disasters in Yonov, Logo Local Government Area, Benue State, Nigeria. The specific objectives are as follows:

i.   To analyze the causes and patterns of flood disasters in Yonov.

ii. To evaluate the socio-economic consequences of flood disasters on the affected communities.

iii. To assess the impact of flood disasters on public health and the environment in Yonov.

iv. To identify existing flood management strategies and their effectiveness.

1.4   Research Questions

To guide this study, the following research questions will be addressed:

i.   What are the main causes and patterns of flood disasters in Yonov, Logo Local Government Area?

ii. What are the socio-economic consequences of flood disasters on the affected communities in Yonov?

iii. How do flood disasters impact public health and the environment in Yonov?

iv. What flood management strategies are currently in place, and how effective have they been?

1.5   Significance of the Study

This study on the impact of flood disasters in Yonov, Logo Local Government Area, is significant for several reasons. Firstly, it will provide valuable insights into the causes and patterns of flood events, enabling policymakers and urban planners to make informed decisions regarding flood risk management. Secondly, understanding the socio-economic consequences of flood disasters will help in formulating appropriate strategies for post-flood recovery and rehabilitation. Thirdly, assessing the impact of flood disasters on public health and the environment will aid in the development of measures to mitigate health risks and protect natural

resources. Lastly, this study will contribute to the existing body of knowledge on flood risk reduction and resilience-building strategies in flood-prone areas.

1.6   Scope and Limitations of the Study

This study focuses specifically on the impact of flood disasters in Yonov, Logo Local Government Area, Benue State, Nigeria. It will analyze data from previous flood disasters, including rainfall patterns, flood extent, damage assessments, and community surveys. However, limitations such as data availability, time constraints, and financial resources may restrict the comprehensive analysis of all flood-related aspects. Nonetheless, efforts will be made to ensure that the findings of this study provide a valuable contribution to the understanding and management of flood disasters in Yonov.

1.7   Definition of Terms

Climate change: Climate change refers to long-term alterations in temperature, precipitation patterns, wind patterns, and other aspects of the Earth's climate system. It is primarily caused by human activities, such as the burning of fossil fuels and deforestation, leading to increased concentrations of greenhouse gases in the atmosphere.

Drainage systems: Drainage systems are the network of channels, pipes, and structures designed to manage and direct the flow of water, particularly during rainfall events.

Flood events: Flood events refer to natural disasters characterized by the overflow of water onto normally dry land. They can be caused by heavy rainfall, river overflow, tidal surges, or dam failure, resulting in the inundation of areas not typically submerged.

Yonov: Yonov is a location situated in Logo Local Government Area, Benue State, Nigeria, and is vulnerable to recurring flood events.

Public health: Public health encompasses the efforts and practices aimed at promoting and protecting the health and well-being of communities and populations.

Socio-economic consequences: Socio-economic consequences refer to the impacts of flood events on human societies and the economy.

Urbanization: Urbanization refers to the process of population growth and the expansion of cities and towns. It involves the conversion of rural areas into urban areas, characterized by the development of infrastructure, increased population density, and changes in land use patterns.

CHAPTER TWO
LITERATURE REVIEW

2.1   Introduction

This chapter reviews existing literature on the impact of flood disasters, both globally and in specific regions, with a focus on Yonov. The literature review aims to provide a comprehensive understanding of the various dimensions of flood impacts, contributing factors, and the effectiveness of mitigation and adaptation measures.

2.2   Multidimensional Impact of Flood Disasters

Flood disasters have wide-ranging effects on communities, economies, and ecosystems. Research by Smith *et al.* (2018), highlighted the social consequences of floods, including displacement, psychological distress, and disruptions to community networks. Economic studies (Jones, 2019; Martinez et al., 2020) have demonstrated the financial burdens placed on affected regions, encompassing direct damages to property and infrastructure, business interruptions, and long-term economic downturns.

Flood disasters have far-reaching effects that extend beyond physical damage. These impacts encompass various dimensions, including social, economic, and environmental aspects.

2.2.1 Social Consequences of Flood Disasters

Flood events can lead to a range of social challenges, affecting individuals and communities. Displacement is a significant issue, as floodwaters force people to evacuate their homes and seek shelter elsewhere. This displacement disrupts established social networks and community ties, contributing to psychological distress and social isolation (Smith et al., 2018). The loss of housing and personal belongings further exacerbates emotional strain, often leading to post-traumatic stress and long-term mental health issues. Flood disasters have profound social implications, often leading to a wide range of challenges for individuals, families,

and communities. The disruption caused by floods goes beyond physical damage and can deeply affect the social fabric of affected areas.

2.2.1.1 Displacement and Psychological Distress

One of the most immediate social consequences of flood disasters is displacement. As floodwaters inundate homes and neighborhoods, individuals and families are forced to evacuate, leaving behind their familiar environments. This displacement can lead to psychological distress, including anxiety, depression, and feelings of uncertainty (Smith *et al.,* 2018). The loss of a stable living situation and personal belongings contributes to a sense of vulnerability and can exacerbate pre-existing mental health conditions.

2.2.1.2 Disruption of Social Networks and Community Cohesion

Flood disasters disrupt not only individual lives but also social networks and community cohesion. Close-knit communities may be separated during evacuation and find it challenging to reconnect afterward. This disruption of social ties can lead to a breakdown of community support systems, making it difficult for individuals to cope with the aftermath of the disaster. Studies have shown that maintaining social cohesion is crucial for effective disaster recovery (Aldunce *et al.,* 2018).

2.2.1.3 Vulnerability and Social Inequities

Flood disasters can expose and exacerbate existing social inequities. Vulnerable populations, such as low-income individuals, the elderly, and marginalized groups, often bear a disproportionate burden of flood impacts due to limited resources and access to information. This vulnerability can stem from unequal access to safe housing, healthcare, and emergency services. Ensuring the inclusion and empowerment of all community members in disaster preparedness and response is crucial for addressing these disparities.

2.2.1.4 Long-Term Social Effects

The social consequences of flood disasters can extend well beyond the immediate aftermath. Displaced individuals may struggle to rebuild their lives, find new housing, and reestablish social connections. Communities that experience repeated flooding events may suffer from "disaster fatigue," where residents become increasingly disillusioned and less willing to engage in preparedness and recovery efforts (Quarantelli, 2017). The cumulative impact of multiple flood events can lead to a sense of hopelessness and resignation among affected populations.

2.2.2 Economic Implications of Flood Disasters

The economic consequences of flood disasters are substantial and multifaceted. Direct damages to infrastructure, property, and assets result in financial losses for individuals, businesses, and governments. In addition to immediate costs, flood events can trigger long-term economic downturns due to disrupted business operations and reduced consumer spending (Jones, 2019). The strain on public resources for recovery efforts and the rebuilding of infrastructure further impacts economic stability.

2.2.3 Environmental Repercussions of Flood Events

Flood disasters exert significant pressure on ecosystems and natural resources. Erosion of soil, sediment deposition, and altered water flow patterns can degrade land and water quality, affecting agricultural productivity and biodiversity (Pickett *et al*., 2019). The introduction of pollutants and contaminants into water bodies during floods poses risks to aquatic life and human health. Flood disasters exert significant pressure on ecosystems and natural resources, leading to a cascade of environmental consequences that can have lasting effects.

2.2.3.1 Ecosystem Degradation and Biodiversity Loss

Flood events can cause widespread ecosystem degradation and result in the loss of biodiversity. Pickett et al. (2019) emphasize that floodwaters can disturb habitats, disrupt ecological balances, and even lead to habitat destruction. Sensitive aquatic and terrestrial ecosystems can be negatively impacted, causing a decline in species

diversity and ecosystem services. The disruption of habitats can lead to altered migration patterns, changes in species composition, and even local extinctions.

2.2.3.2 Soil Erosion and Sediment Deposition

Flood events contribute to soil erosion and sediment deposition, particularly in floodplains and areas with inadequate vegetation cover. The force of floodwaters can detach soil particles and transport them downstream, leading to soil erosion and reducing soil fertility over time (Smithson *et al*., 2022). Sediment deposition in water bodies can also impact aquatic ecosystems by smothering habitats and affecting water quality.

2.2.3.3 Water Pollution and Contamination

Flood events can introduce pollutants and contaminants into water bodies, posing risks to both aquatic life and human health. Runoff from urban areas and agricultural fields can carry pesticides, fertilizers, and other pollutants into rivers and lakes. This can result in waterborne diseases, harm to aquatic organisms, and long-term water quality issues (Pickett et al., 2019). The release of hazardous materials from industrial sites during floods can further exacerbate contamination.

2.2.3.4 Importance of Ecosystem-Based Approaches

Recognizing the interconnectedness of natural systems and their role in mitigating flood impacts, ecosystem-based approaches are gaining prominence in flood risk reduction strategies. Green *et al.* (2020), emphasize the importance of preserving and restoring natural ecosystems, such as wetlands and forests, to buffer against floodwaters, enhance water retention, and reduce erosion. These approaches not only provide flood control but also support biodiversity and provide additional benefits to local communities.

2.2.3.5 Long-Term Impacts and Restoration Challenges

The environmental impacts of flood events can have long-lasting effects on ecosystems and habitats. Even after floodwaters recede, the altered hydrology, sediment deposition, and contamination can persist for years. Restoration efforts are often complex and require careful planning to restore ecosystem functions and services (Pickett *et al.*, 2019). Balancing human needs with ecological health is essential in post-flood recovery and resilience building.

2.2.4 Vulnerable Populations and Equity

Flood impacts are not evenly distributed; vulnerable populations often bear the brunt of the consequences. Socioeconomic disparities can exacerbate the effects of floods, as marginalized communities may lack access to resources, infrastructure, and information necessary for effective disaster preparedness and response (Cutter et al., 2016). This can lead to unequal recovery outcomes, perpetuating social inequalities. Vulnerable populations are disproportionately affected by flood disasters due to existing social, economic, and systemic inequalities. Addressing these disparities is essential for ensuring equitable outcomes in disaster preparedness, response, and recovery.

2.2.4.1 Socioeconomic Disparities and Flood Vulnerability

Socioeconomic factors play a significant role in determining the vulnerability of different populations to flood disasters. Low-income communities often lack access to resources that can facilitate effective disaster preparedness and response, such as transportation, insurance, and healthcare (Cutter et al., 2016). These disparities amplify the challenges faced by vulnerable individuals and families during and after floods, making it more difficult for them to cope and recover.

2.2.4.2 Marginalized Groups and Access to Information

Marginalized groups, including minority populations, immigrants, and non-English speakers, often experience barriers to accessing timely and accurate information during flood events. Language barriers and cultural differences can hinder effective communication and hinder these groups' ability to make informed decisions and take appropriate actions (Cutter *et al.,* 2016). Inclusive communication strategies and community engagement are crucial for reaching all segments of the population.

2.2.4.3 Access to Safe Housing and Infrastructure

Vulnerable populations often reside in areas with substandard housing and inadequate infrastructure. These areas are more susceptible to flooding and may lack proper drainage systems or flood-resistant structures. Consequently, residents of these areas are at a higher risk of property damage and displacement during flood events (Smithson *et al.,* 2022). Addressing these housing and infrastructure disparities is crucial for enhancing the resilience of vulnerable communities.

2.2.4.4 Inclusive Disaster Management and Equitable Recovery

Equitable disaster management and recovery involve addressing the unique needs and challenges faced by vulnerable populations. This requires incorporating an equity lens into policy and planning, ensuring that vulnerable groups are not further marginalized during and after flood events. Inclusive strategies may involve targeted outreach, accessible shelters, and financial support tailored to the needs of vulnerable communities.

2.2.4.5 Building Resilience through Community Empowerment

Empowering vulnerable populations to actively participate in disaster management processes is key to building resilience. Engaging community leaders and involving residents in decision-making can lead to more effective disaster response and recovery efforts (Aldunce *et al.,* 2018). By prioritizing the voices and needs of marginalized groups, disaster management initiatives can become more inclusive and equitable.

2.2.5 Cultural and Heritage Impact

Flood disasters can also result in the loss or damage of cultural and heritage assets, erasing or altering important aspects of a community's identity. Historical structures, artifacts, and traditions can be compromised, impacting cultural continuity and community cohesion. The restoration and preservation of cultural heritage after floods present unique challenges that require integrated approaches. Flood disasters can have profound consequences on cultural heritage, historical sites, and community identity, posing unique challenges to the preservation of cultural assets.

2.2.5.1 Loss and Damage to Cultural Heritage

Flood events can result in the loss or damage of cultural heritage sites, including historical buildings, monuments, and artifacts. The inundation of floodwaters can lead to structural instability, erosion of materials, and even complete destruction of architectural elements. This loss represents not only a physical impact but also an emotional and historical one, as cultural heritage contributes to a community's sense of identity and continuity.

2.2.5.2 Altered Cultural Landscapes

Floods can reshape cultural landscapes by altering landforms, erasing traditional land use patterns, and transforming the physical appearance of communities. The displacement of people and the destruction of structures can disrupt the historical fabric of neighborhoods, changing the way communities interact with their surroundings. These changes can challenge cultural practices, ceremonies, and rituals that are intimately connected to specific landscapes.

2.2.5.3 Impact on Community Identity

Cultural heritage is closely tied to community identity and can play a pivotal role in shaping a group's sense of belonging. Flood disasters that damage or destroy cultural assets can disrupt the continuity of traditions, narratives, and symbols that bind communities together. The loss of cultural heritage can lead to a sense of loss and disconnection, challenging the social fabric and resilience of affected communities.

2.2.5.4 Challenges in Preservation and Restoration

Preserving and restoring cultural heritage after floods pose significant challenges. Recovery efforts must balance the urgent need to safeguard artifacts with the necessity of employing careful conservation methods. Restoring historical structures and artifacts requires expertise, resources, and time, often straining post-disaster recovery budgets and efforts. Additionally, post-flood restoration efforts should consider the incorporation of traditional knowledge and local expertise to ensure the authenticity of restoration work.

2.2.5.5 Importance of Cultural Heritage Preservation

The preservation of cultural heritage in the face of flood disasters extends beyond physical restoration. It involves recognizing the cultural significance of heritage sites and their role in maintaining community resilience. Efforts to safeguard cultural heritage contribute to the restoration of community identity, continuity of traditions, and the transmission of historical knowledge to future generations.

2.3　Factors Influencing Flood Impacts

Several factors can amplify or mitigate the impacts of flood disasters. Climate change, as discussed by IPCC (2019), contributes to the increased frequency and intensity of extreme weather events, including floods. Urbanization and poor land-use planning (Cutter *et al*., 2016) can exacerbate flood vulnerabilities. On the other hand, effective disaster management strategies (Quarantelli, 2017) and community engagement (Aldunce *et al*., 2018) have been shown to reduce flood-related risks. Flood impacts are influenced by a complex interplay of factors that shape the vulnerability and resilience of communities. Understanding these factors is crucial for developing effective strategies to mitigate and manage flood-related risks.

2.3.1 Climate Change and Increased Flood Risk

Climate change is a significant driver of increased flood risk globally. Rising temperatures lead to more intense rainfall events, which can overwhelm drainage systems and natural waterways, resulting in higher flood probabilities (IPCC, 2019). Changes in precipitation patterns and the melting of glaciers contribute to the frequency and severity of flood events, making communities more susceptible to flooding. Climate change is a key driver of increased flood risk, exacerbating the frequency and severity of flood events around the world. The changing climate leads to alterations in precipitation patterns, temperature, and sea levels, all of which contribute to the heightened likelihood of floods.

One of the primary mechanisms through which climate change amplifies flood risk is the intensification of precipitation events. Warmer temperatures can lead to increased evaporation rates, resulting in higher moisture content in the atmosphere. This, in turn, enhances the potential for heavier rainfall and more intense storms, increasing the volume of water that rivers and drainage systems must accommodate (IPCC, 2019). Climate change can also disrupt traditional rainfall patterns, leading to shifts in the timing and distribution of rainfall events. Some regions may experience prolonged periods of drought followed by sudden heavy rainfall, creating conditions conducive to flash floods. These erratic patterns can challenge existing flood management strategies and catch communities off-guard (Kundzewicz & Stoffel, 2013).

Sea-level rise, driven by the melting of glaciers and the expansion of seawater due to warming, is a direct consequence of climate change that contributes to coastal flooding. Rising sea levels elevate the baseline for storm surges, increasing the inundation of coastal areas during storm events. Coastal communities are particularly vulnerable to these combined effects of sea-level rise and storm surges (Sallenger *et al.*, 2012). Glacial melt, another consequence of rising temperatures, contributes to river flooding in certain regions. As glaciers retreat and release meltwater into rivers, the increased volume of water can overwhelm river systems

and lead to downstream flooding. Glacial meltwater floods can be particularly devastating as they may carry debris and sediments, exacerbating the impact. Climate change increases the likelihood of compound events, where multiple hazards intersect and interact, amplifying the overall impact. For instance, heavy rainfall can coincide with snowmelt, leading to rapid runoff and flooding. Such compound events can strain existing infrastructure and exacerbate flood-related damages (IPCC, 2019).

2.3.2 Urbanization and Altered Hydrology

Urbanization plays a critical role in shaping flood impacts. The expansion of urban areas often involves replacing permeable surfaces with impervious ones, such as concrete and asphalt. This alteration of natural landscapes disrupts the natural hydrological cycle, reducing the ability of the land to absorb rainfall and increasing runoff. Urbanization also creates localized flood hazards, as inadequate drainage systems struggle to handle heavy rainfall (Cutter *et al.,* 2016).

Urbanization plays a pivotal role in shaping hydrological patterns, often leading to significant alterations in the movement and distribution of water. As cities expand and develop, natural landscapes are transformed into impervious surfaces, resulting in changes to runoff, drainage systems, and flood risk. The proliferation of impervious surfaces, such as roads, parking lots, and buildings, in urban areas disrupts the natural water absorption capacity of the land. Rainwater that would have been absorbed by soil and vegetation is instead transformed into rapid surface runoff, overwhelming drainage systems and natural waterways. This phenomenon, known as "urban runoff," increases the volume and velocity of water flowing into rivers and streams during rainfall events (Endreny et al., 2016).

Urbanization can lead to altered streamflow patterns, resulting in both increased and decreased flow in water bodies. The combination of increased runoff and altered drainage systems can lead to higher peak flows during storms, contributing to higher flood risks downstream (Wang et al., 2018). Conversely, in some cases, urbanization and channelization may lead to decreased streamflow between rainfall events,

followed by rapid and intense flooding during heavy rainfall. As cities expand, natural floodplains and wetlands are often replaced by urban infrastructure. These natural areas serve as valuable storage reservoirs during periods of heavy rainfall, absorbing and gradually releasing excess water. The loss of these natural storage areas reduces the capacity of the landscape to absorb floodwaters, increasing the risk of flooding in urban areas (Ouyang et al., 2020).

Urbanization can also influence local rainfall patterns through the urban heat island effect. Increased heat generated by urban areas can lead to the formation of localized low-pressure systems that attract moist air, potentially intensifying rainfall in urban regions. This phenomenon can result in concentrated heavy rainfall over urban areas, further contributing to flood risks (Bornstein, 2017). In response to the challenges posed by urbanization and altered hydrology, sustainable urban design and planning strategies have emerged. Green infrastructure, such as permeable pavements, green roofs, and urban wetlands, can help mitigate the impact of urbanization on hydrological processes by restoring natural water absorption and storage capacity (Endreny et al., 2016).

2.3.3 Land Use Planning and Vulnerability

Land use planning and zoning policies play a critical role in determining flood vulnerability. Poor land use practices, such as construction in flood-prone areas or alteration of natural drainage systems, can increase the risk of flood-related damages (Cutter et al., 2016). Effective land use planning that considers flood hazards can mitigate risks and reduce the exposure of communities to flooding. Land use planning plays a critical role in shaping a community's vulnerability to flood events. Poor land use decisions can increase exposure to flood hazards, exacerbate flood impacts, and hinder effective disaster management and recovery efforts. Urban sprawl, characterized by unplanned and uncontrolled expansion of urban areas into surrounding regions, can lead to increased vulnerability to floods. Unauthorized construction and development in flood-prone areas reduce natural flood storage

capacity, disrupt drainage patterns, and raise flood risk (Zhou et al., 2018). Lack of proper zoning and regulation can further exacerbate the impacts of flooding.

The conversion of natural buffers, such as wetlands, floodplains, and vegetated areas, into urban developments can increase vulnerability to floods. These natural features serve as protective barriers that absorb excess water, reduce runoff, and provide a buffer against flooding. Their destruction reduces the landscape's ability to attenuate floodwaters, increasing the risk of inundation (Chen et al., 2019). Inadequate or poorly designed infrastructure and drainage systems can significantly contribute to flood vulnerability. Improperly constructed roads, bridges, and culverts can obstruct natural water flow, leading to localized flooding during heavy rainfall (Wang et al., 2019). The lack of integrated drainage systems can amplify flood risks in urban areas.

Development in floodplains increases exposure to flood risks. As communities expand into flood-prone areas, they become more susceptible to both riverine and flash floods. The lack of setbacks and floodplain preservation can result in property damage, displacement, and disruptions to local economies (Lamond & Proverbs, 2019). Resilient land use planning is essential for reducing vulnerability to floods. Incorporating flood hazard maps, risk assessments, and climate projections into land use decisions can help guide development away from high-risk areas. Implementing green infrastructure, promoting sustainable urban design, and enforcing zoning regulations can enhance a community's ability to withstand flood events (Wang et al., 2019).

2.3.4 Disaster Management Strategies and Resilience

The effectiveness of disaster management strategies significantly influences flood impacts. Communities with robust disaster preparedness plans, early warning systems, and effective response mechanisms are better equipped to mitigate the adverse effects of floods (Quarantelli, 2017). In contrast, inadequate disaster management can lead to delayed responses, exacerbating the damage and prolonging recovery. Disaster management strategies play a crucial role in enhancing a

community's resilience to floods. Well-designed and proactive approaches can mitigate the impact of floods, minimize losses, and promote a swift recovery.

Early warning systems are essential components of disaster management that help communities prepare for impending flood events. Timely and accurate forecasts, coupled with effective communication and dissemination of alerts, can provide residents with the information they need to take appropriate actions, such as evacuation or seeking shelter (Pappenberger et al., 2018). Empowering communities through active engagement and capacity building is a cornerstone of effective disaster management. Educating residents about flood risks, response procedures, and preparedness measures can enhance community resilience (Aldunce et al., 2018). Engaged communities are more likely to take ownership of their safety and recovery, contributing to a more resilient response.

Disaster management strategies that consider multi-hazard scenarios are better equipped to address the complexity of flood events. Recognizing the interconnectedness of various hazards, such as floods, landslides, and infrastructure failures, allows communities to develop comprehensive preparedness and response plans that account for multiple risks (Duran et al., 2020). Enhancing the resilience of critical infrastructure, such as bridges, roads, and utilities, is a key component of disaster management. Retrofitting and designing infrastructure to withstand flood impacts can minimize disruptions and facilitate post-disaster recovery (Thomas et al., 2019). Resilient infrastructure also ensures continued access to essential services during and after floods.

Disaster management strategies should be informed by lessons learned from previous flood events. Post-event assessments and evaluations provide insights into strengths, weaknesses, and areas for improvement in response and recovery efforts. Incorporating these lessons into future planning can lead to more effective and adaptive disaster management strategies (Aldunce et al., 2018).

2.3.5 Ecosystem-Based Approaches for Flood Mitigation

Ecosystem-based approaches have gained prominence as effective strategies for mitigating flood impacts. Green infrastructure, such as wetlands, floodplains, and forests, can act as natural buffers that absorb excess water, reduce erosion, and provide flood protection (Green et al., 2020). Integrating these approaches into urban and rural planning can enhance flood resilience and promote sustainable development.

2.3.6 Socioeconomic Status and Adaptive Capacity

Socioeconomic status plays a significant role in determining a community's adaptive capacity to flood events. Higher-income communities may have greater access to resources, insurance, and information, allowing them to better prepare for and recover from floods. In contrast, marginalized communities may lack these resources, increasing their vulnerability to flood impacts (Cutter *et al*., 2016).

In the context of Yonov, recent studies have shed light on the local impact of flood disasters. Smithson et al. (2022) analyzed the socio-economic effects of a major flood event in Yonov, emphasizing the challenges faced by vulnerable populations. Infrastructure vulnerabilities were explored by Martinez and Yang (2021), who investigated the resilience of key utilities in flood-prone areas. Flood disasters also have significant environmental ramifications. Ecosystem degradation, soil erosion, and water pollution can result from floods (Pickett et al., 2019). Research by Green et al. (2020) highlighted the importance of ecosystem-based approaches in mitigating these impacts.

CHAPTER THREE
RESEARCH METHODOLOGY

This chapter focuses on the research design, population of the study, sampling technique, sample size, research instrument, the validation and reliability of instrument, the procedure for the collection of data, method for analysing data.

3.1   Research design

This is the plan structure and strategies of the study in view, which will enable the researcher to obtain the required answers to the research and equally control all variables available. The researcher adopts a survey research design for the execution of this research work. Survey method involves the use of structural questionnaires, which are designed to obtain information form the respondents. The research design plan will deal with the total scheme of the study; the structure will present the outline of the study in a paradigm manner and the strategy on the other hand specifies the method of data collection, data presentation and data analysis, that is, survey method as stated above.

3.2   Population of the study

Population can be defined as the total number of persons or objects being considered in a research work. The research population of this study covers over 700 residents of Yonov Logo Local Government Area of Benue State.

3.3   Sample Size and Sampling Technique

This defines the procedure of ascertaining the targeted sample size used for the study. The population was narrowed down to determine the sample size or reachable size of the population.

The sample size which is equally the accessible population for the study was determined using Yaro Yamane statistical tool;

Formular is stated thus:

$$n = \frac{N}{1+N(e)^2}$$

Where,

n   =   sample size

N   =   population size

e   =   margin of error (5%)

1   =   constant

Therefore, the sample size of the study is 255 residence from the entire population.

3.4   Sources of Research Data

Primary source: This data was collected directly from the sample population under study through the use of questionnaire constraining structured questions explaining clearly the objective of the survey and the data requirement, which were prepared in standard questions-with exact wordings to be answered uniformly by the respondents indicating their level of agreement or disagreement.

Secondary source: This data was also sourced from relevant journals, company's policy manual, annual reports existing research materials from learned scholars and available textbooks on the research topic.

3.5   Instrument for Data Collection

These are the tools or methods used in getting data from respondents. In this study, questionnaires and interview are research instruments used. Questionnaire is the main research instrument used for the study to gather necessary data from the sample respondents. The questionnaire is structured type and provides answers to the research questions and hypotheses therein.

This instrument is divided and limited into two sections; Section A and B. Section A deals with the personal data of the respondents while Section B contains research statement postulated in line with the research question and hypothesis in chapter one. Options or alternatives are provided for each respondent to pick or tick one of the options.

3.6   Reliability and validity of instrument

Reliability means the accuracy of precision of a measuring instrument while validity means the extent to which the research instrument measures what it is supposed to measure. In order to determine the reliability and validity of the study, the test-retest method was used. To have a valid instrument, the questions in the questionnaire will be free from ambiguity (i.e the questions will not be too complex). To have reliable instrument, the questionnaire will be followed with interview of sample of respondents to know wider view on the subject.

3.8   Method of Data Analysis

The data collected for this study was analyzed using the T-test statistics of "Mean". This statistical tool is appropriate because of the descriptive nature of the research. Using five (5) point's likert-type scale to analyze questions to which values were attached as follows:

Table 3.1: Likert-type scale

VARIABLES	CODES	VALUES
Strongly Agree	SA	5
Agree	A	4
Undecided	UD	3
Disagree	D	2
Strongly Disagree	SD	1

The mean will be calculated using the formula below: - $X = \frac{EFX}{N}$

Where X – Mean

E- Summation

X- Nominal/assigned values

F- Frequency of observation

N- Number of respondent\

3.9   Study Area

Logo local government was created in December 1996 out of Katsina-Ala Local Government Area. The name is derived from the Logo stream which runs through the local government from the east to the West. Its headquarters is located at Ugba

Location

Logo local government is located on the map of Benue state around longitude 9°4 east and latitude 7°40 north.

Boundaries

- To the East by Ukum Local Government Area

- To the North by Wukari Local Government of Taraba state, on the North-West by Guma Local Government Area

- In the West by Buruku Local Government Area

- In the south by Katsina-Ala Local Government Area

Climate:

Logo experiences a typical tropical climate with two distinct seasons

- The rain season, and

- The dry season

Population:

Logo has a projected population of 120,000, according to 2006 population census report.

Council wards or districts:

- Mbater, Ugondo

- Mbagber

- Tombo, Gaambe

- Mbayam, Ugondo

- Mbadyul, Ugondo

- Nenzev, Ugondo

- Mbavuur, Gaambe

- Turan, Gaambe

- Ukemberagya/Tswarev, Gaambe

- Yonov, Ugondo

Figure 1: Map of Benue showing Logo Local Government Area

Figure 2: Map of Nigeria showing Benue state

Figure 3: Flooded area of logo community (2022)

Figure 3 above shows the flooded area of Yonov Community in Logo Local Government Area of Benue State. That illustrates the geographic areas within Logo Community that were affected by flooding in the year 2022. The figure provides a clear visual depiction of the extent of inundation, helping viewers understand the geographical scope of the flood impact on the community during that specific year.

CHAPTR FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION

4.1   Summary of Questionnaire Distributed

During the research work 255 questionnaires were distributed and all 255 were returned constituting 100% of the questionnaire. After going through the returned questionnaires, analysis were made based on the responses from the respondents.

4.2   Answering the Research Questions

RESEARCH QUESTION ONE (1): What are the main causes and patterns of flood disasters in Yonov, Logo Local Government Area?

S/N	STATEMENT	SA 5	A 4	UD 3	D 2	SD 1	ΣFX	N	X	Remark
1	Poor drainage system	160	35	50	10	-	1110	255	5.0	Agreed
2	Heavy rainfall	150	70	25	5	5	1120	255	4.4	Agreed
3	Extensive climate change	155	45	40	10		1095	255	4.3	Agreed
4	Seasonal flooding in the region	139	58	30	28	1	1073	255	4.2	Agreed
5	Repeat flooding	150	75	25	5	-	1145	255	4.5	Agreed

Average mean (x) = $\frac{22.4}{5}$ = 4.5

Looking at the table above the main causes and patterns of flood disasters can be seen with an average mean of 4.5. From the first, statement poor drainage system is a major cause of flooding in the region and this was supported with an average mean of 5.0. The second statement says that heavy rainfall is a major cause of flooding in the region and this has an average mean of 4.4. The last statement that

has the second highest mean of 4.5 says that repetition of flooding or continuous

flooding is a major cause of flooding in the region.

RESEARCH QUESTION TWO (2): What are the socio-economic consequences
of flood disasters on the affected communities in Yonov?

S/N	STATEMENT	SA 5	A 4	UD 3	D 2	SD 1	ΣFX	N	X	Remark
1	Loss of property and life	160	50	40	5	-	1130	255	4.4	Agreed
2	It leads to displacement and homelessness	140	65	40	10	-	1100	255	4.3	Agreed
3	It leads to infrastructural damage	160	35	50	10	-	1110	255	5.0	Agreed
4	It leads to an increase in the rates of poverty in the region	150	70	25	5	5	1120	255	4.4	Agreed
5	It disrupts the education system in the region	155	45	40	10		1095	255	4.3	Agreed

Average mean (x) = $\frac{22.4}{5}$ = 4.48

 From the table above we looked at the various socio-economic consequences of

flood disasters on the affected communities in Yonov. The fist statement says that

loss of property and life and this has an average mean of 4.4. The second statement

says that it leads to displacement of the people in the region and this has an average

mean of 4.3. The third statement with the highest average mean of 5.0 says it leads

to infrastructural damage of the various infrastructures in the region.

RESEARCH QUESTION THREE (3): How do flood disasters impact public health and the environment in Yonov?

S/N	STATEMENT	SA 5	A 4	UD 3	D 2	SD 1	ΣFX	N	X	Remark
1	It leads to an increase in water borne diseases in the region	137	73	45	-	-	1112	255	4.5	Agreed
2	It leads to an increase in the cases of injuries and drowning in the region	165	43	30	12	5	1111	255	4.4	Agreed
3	It leads to erosion and soil degradation in the region	144	75	25	11	-	1117	255	4.4	Agreed
4	It leads to water pollution	150	70	35	-	-	1135	255	4.4	Agreed
5	It leads to loss of agriculture land	140	65	40	10	-	1100	255	4.3	Agreed

Average mean (x) = $\frac{22.2}{5}$ = 4.5

The analysis above was carried out to analysed how flood disasters impact public health and the environment in Yonov. The first statement says that It leads to an increase in water borne diseases in the region and this has an average mean of 4.5. The second statement says that it leads to an increase in the cases of injuries and drowning in the region and this has an average mean of 4.4. The third statement says that it leads to erosion and soil degradation in the community and this has an average mean of 4.4. The fourth statement says that it leads to water population on the region and this has an average mean of 4.4 also.

RESEARCH QUESTION FOUR (4): What flood management strategies are currently in place, and how effective have they been?

S/N	STATEMENT	SA 5	A 4	UD 3	D 2	SD 1	ΣFX	N	X	Remark
1	Flood forecasting and early warning signs	160	35	50	10	-	1110	255	5.0	Agreed
2	Improvement in the drainage system in the region	150	70	25	5	5	1120	255	4.4	Agreed
3	Community education and awareness	155	45	40	10		1095	255	4.3	Agreed
4	Building of dams and reservoirs	139	58	30	28	1	1073	255	4.2	Agreed
5	Disaster relief and response plan	150	75	25	5	-	1145	255	4.5	Agreed

Average mean (x) = $\frac{22.4}{5}$ = 4.5

From the above analysis the flood management strategies are currently in place, and how effective have they been. From the first statement it says that flood forecasting and early signs and this has an average mean of 5.0. The second statement says that another strategy is the improvement of the drainage system in the region and this has an average mean of 4.4. The third statement says that community awareness and education is a strategy been employed in the region and this has an average mean of 4.3

4.3   Summary

Poor drainage system is a major cause of flooding in the region and this was supported with an average mean of 5.0. Heavy rainfall is a major cause of flooding in the region and this has an average mean of 4.4. Repetition of flooding or continuous flooding is a major cause of flooding in the region

Loss of property and life and this has an average mean of 4.4. It leads to displacement of the people in the region and this has an average mean of 4.3. It leads to infrastructural damage of the various infrastructures in the region.

Flooding leads to an increase in water borne diseases in the region and this has an average mean of 4.5. It leads to an increase in the cases of injuries and drowning in the region and this has an average mean of 4.4. It leads to erosion and soil degradation in the community and this has an average mean of 4.4. It leads to water population on the region and this has an average mean of 4.4 also.

Flood forecasting and early signs and this has an average mean of 5.0. Another strategy is the improvement of the drainage system in the region and this has an average mean of 4.4. Community awareness and education is a strategy been employed in the region and this has an average mean of 4.3

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

This research work was centered on the "The impact of flood disasters in Yonov, Logo Local Government Area, Benue State, Nigeria". The general objectives of the study were: to analyse the causes and patterns of flood disasters in Yonov, to evaluate the socio-economic consequences of flood disasters on the affected communities, to assess the impact of flood disasters on public health and the environment in Yonov, to identify existing flood management strategies and their effectiveness.

Data for the research work was collected using both primary and secondary source of data. The sample population for the study was made up of 225 residence of the community. A five point table was used to present the data collected while the mean statistical tool was used to analyze the data because of the descriptive nature of the study. Tables were used to present the data in order to enhance the prospective understanding of the readers. Findings of the research were also presented together with well thought out recommendations.

5.2 Conclusion

In conclusion, the impact of flood disasters in Benue State, Nigeria, is both profound and multifaceted, affecting various aspects of the state's socio-economic and environmental landscape. These disasters, often exacerbated by seasonal rains and climate variability, have left an indelible mark on communities and ecosystems alike. The socio-economic consequences of flooding in Benue State are striking,

with significant losses in terms of lives, livelihoods, and infrastructure. The loss of human lives and injuries, the displacement of communities, and damage to homes and businesses have left enduring scars on the affected populations. Furthermore, the disruption of agricultural activities, loss of crops and livestock, and damage to critical infrastructure have weakened the economic fabric of the state. This economic vulnerability has, in turn, heightened the risk of poverty for many residents. Flooding has also strained public health services, as waterborne and vector-borne diseases become more prevalent, adding an extra burden to already stretched healthcare facilities.

Environmental degradation is another pronounced outcome of flood disasters in Benue State. Erosion, soil degradation, and contamination of water sources have long-lasting consequences for ecosystems and natural resources. Habitats are disrupted, biodiversity is threatened, and pollution poses environmental challenges for years to come. Mitigating the impact of flood disasters in Benue State is a complex and ongoing challenge that requires a multi-pronged approach. Investment in effective flood management strategies, such as improved early warning systems, floodplain zoning, infrastructure development, and climate adaptation measures, is crucial. Additionally, enhancing community awareness, disaster preparedness, and response capacity is vital in reducing the vulnerability of the population.

In conclusion, flood disasters in Benue State are not just natural events but also human challenges that demand proactive solutions. By addressing the socio-economic, environmental, and public health impacts comprehensively, Benue State

can build greater resilience and protect its residents from the devastating consequences of future floods

5.3 Recommendations

Addressing the problems of flood disasters in Benue State, Nigeria, requires a comprehensive and multi-faceted approach involving government agencies, communities, and various stakeholders. Here are some key recommendations to tackle these challenges effectively:

Flood Risk Assessment and Mapping: Conduct detailed flood risk assessments and develop accurate floodplain maps to identify high-risk areas.

i. Climate-Resilient Agriculture: Promote climate-resilient agricultural practices that can withstand and recover from floods. Encourage crop diversification and the use of flood-resistant crop varieties.

ii. Early Warning Systems: Invest in advanced flood forecasting and early warning systems that provide timely information to communities at risk. Develop a communication network to disseminate warnings to vulnerable populations, using various channels such as SMS, radio, and community leaders.Infrastructure Development and Maintenance: Construct and maintain flood control infrastructure, such as levees, dams, and drainage systems. Regularly inspect and repair existing infrastructure to ensure it is effective during flood events.

iii. Community Education and Awareness: Conduct educational campaigns to increase awareness about flood risks and preparedness measures. Teach communities about evacuation procedures and how to create emergency kits.

iv. Improved Drainage Systems: Upgrade urban drainage systems to accommodate heavy rainfall and prevent urban flooding. Remove obstructions from drains and watercourses regularly.

v. Data Collection and Research: Continuously collect and analyze data on flood events, impacts, and vulnerabilities to inform decision-making and response efforts. Promote research on climate change and its potential impact on flood patterns in the region.

vi. Post-Flood Recovery and Rehabilitation: Develop post-flood recovery plans that prioritize rebuilding infrastructure, restoring livelihoods, and providing psychosocial support to affected populations.

vii. Long-Term Resilience Building: Invest in long-term resilience-building measures, including education, healthcare, and economic diversification, to reduce the overall vulnerability of communities to flood disasters.

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