

IMPACT OF NIGERIA-CAMEROON LAGDO DAM AGREEMENT ON FLOOD DISASTER MANAGEMENT IN NIGERIA

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Abstract

The sovereign right of states to utilize natural resources within their territory is a recognized principle of international law; however, this right is constrained by the duty not to cause harm to other states. The transboundary nature of river basins like the Benue River, which links Nigeria and Cameroon, has led to intensified riparian conflicts due to competing interests and inadequate cooperative frameworks. This study explores the implications of the Nigeria-Cameroon Lagdo Dam Agreement on flood disaster management in Nigeria, particularly in the context of recurring floods resulting from water releases from the Lagdo Dam. The research situates the agreement within the broader historical and diplomatic relations between the two countries, shaped by colonial legacies and evolving bilateral engagements. By examining the construction and operational impact of the Lagdo Dam (1977–1982), and analyzing relevant bilateral agreements, this study evaluates how diplomatic, technical, and policy mechanisms have influenced Nigeria's disaster preparedness and flood mitigation strategies. Utilizing a multidisciplinary lens rooted in international relations, hydrogeopolitics, and disaster management, the study underscores the need for more robust transboundary water governance, equitable risk-sharing frameworks, and enhanced early warning systems. The findings aim to contribute to policy discourse on effective interstate cooperation for mitigating environmental hazards exacerbated by infrastructural and climatic dynamics in West Africa.

Keywords: Bilateral Agreements Dam, Disaster, Disaster Management, Flood, Lagdo Dam

Introduction

States possess sovereign rights to use and exploit their natural resources. On the other hand, states are held responsible for any deleterious effect their actions may have. Consequently, the right to exercise and enjoy the attributes of sovereignty over both a territory and the natural resources found on the territory is subject to a duty of care. Due to enlargement of contact and relationships between persons and nations, conflicts of interests amongst co-riparians has also become amplified. Absolute territorial sovereignty and integrity which are the two oldest legal theories for acquiring rights in international rivers utilize exclusive consideration of a state's borders to regulate individual rights in the use of the river.

The relationship between Nigeria and Cameroon dates back to pre-colonial times, the peoples in what today constitutes border communities shared common history and affinity. The advent of colonialism consequently infused arbitrary boundaries that did not respect those existing bonds, a fate complicated by the outcomes of the First World War (Agbonkhese, Yisa, Daudu 2013). At Independence a plebiscite was conducted by the United Nations to determine the fate of the trust territories of British Northern Cameroon and Southern Cameroon. Throughout history international relations have been a complex web with multiple components that are characterized by interfacing changes and continuities, which are instrumental in the dynamic nature of the discipline. For instance, diplomatic relations between states have in the main been

categorised, on the basis of states interacting or exerting influence in the relationship in the frame of unilateralism, bilateralism or multilateralism (Aribigbola, 2018).

Nigeria and Cameroon shared common historical, political and economic institutions as part of British West Africa. Both countries are located on the West Coast of the Continent. The Cameroon Lagdo Dam was built between 1977 and 1982. It is located 50 km south of the Cameroonian city of Garoua on the Benue River (Egbenta, 2014). It was intended to supply electricity and provide waters for irrigation in Cameroon. Sequel to the initiation of diplomatic relations between the two countries, several trade, economic, scientific and technical bilateral agreements were signed to guide and boost socio-cultural, political and economic interactions between them (Nwafor, 2016).

Statement of the Problem

The occurrence of flood between Nigeria and Cameroon represents a major risk to riversides populations and floodplains, in addition to causing substantial impacts on the environment, including aquatic fauna and flora, and bank erosion. As a result of disaster, the two West African nations have resolved to cooperate on building new flood-control structures, sharing weather information and relocating people from flood-prone areas in an effort to avoid further losses. Cameroon and Nigeria have engaged in a united effort through a Memorandum of Understanding (MoU) established by a joint team of water management experts from both countries to take measures to forestall the flood calamities that occurred. In 2012, waters released from the Lagdo dam caused severe and substantial damage in Nigerian territory, resulting in a large number of deaths and loss of properties. A bigger effect of the flooding was at the lower Benue river region where more than 10,000 homes were submerged for more than two weeks. This left more than 10,000 hectares of farmland flooded and the streets of Makurdi, Benue State of Nigeria occupied by crocodiles and other dangerous creatures (Ologunorisa, 2004).

Yet again, in September 2022, Cameroonian authorities opened overflow spillways at the Lagdo Dam to ease the pressure on the dam from the rising reservoir. According to officials of UN's International Organization for Migration (IOM) releasing of waters from the Lagdo Dam reservoir into the Benue River worsened the flooding downriver. In September 2022, according to the Executive Secretary of the Adamawa State Emergency Management Agency, 25 people died in Adamawa state of Nigeria and farmland was submerged due to floods caused by waters from the Dam. Flooding displaced nearly 40,000 people from their homes in parts of Northeast Nigeria since September 2022, and at least 100 people have died or been injured, according to UN officials. Therefore this study assesses the impact of Nigeria-Cameroon Lagdo Dam Agreement on Flood Disaster Management in Nigeria.

Objectives of the Study

1. To examine the provisions and implementation of the Nigeria-Cameroon Lagdo Dam Agreement concerning flood management.
2. To assess the effectiveness of early warning and flood mitigation mechanisms established under the agreement.

3. To evaluate the impact of dam water releases on flood occurrence and disaster preparedness in Nigerian riparian communities.
4. To identify the challenges and gaps in the implementation of the Lagdo Dam Agreement in mitigating flood disasters.

Research Questions

1. What are the key provisions of the Nigeria-Cameroon Lagdo Dam Agreement regarding flood disaster management?
2. How effective have the flood early warning systems and mitigation measures been since the signing of the agreement?
3. To what extent have periodic releases from the Lagdo Dam contributed to flood incidents in Nigerian downstream communities?
4. What are the major implementation challenges of the agreement in terms of disaster preparedness and response in Nigeria?

Conceptual Framework

Concept of Flooding

Flooding is well recognized as a prevalent environmental threat, as evidenced by the extensive research conducted by Adewuyi and Olofin (2014) and Akukwe and Ogbodo (2015). Flooding is a naturally occurring event; however, human activities and interventions, such as unregulated urban development, the presence of impermeable surfaces, obstructed drainage systems, inappropriate utilisation of floodplains, deforestation, and population growth, have contributed to an escalation in the extent of damages and losses resulting from floods (Ologunorisa, 2004). Flood dangers are a natural occurrence; however, it is the actions of humans that contribute to the scale of their impact, resulting in damage and losses (Action Aid, 2006). According to Olanrewaju et al. (1995), the occurrence of flooding has emerged as a recurring peril to both property and human life in several urban and rural communities across Nigeria. Flooding occurs when there is an influx of surface water that inundates places that are typically dry or when the volume of water surpasses the usual boundaries. Floods are the most prevalent form of hazard, arising from atypical precipitation patterns, elevated tides associated with tropical cyclones, dam failures, rapid snow thaws, or even the rupture of water distribution systems. According to Etuonovbe (2011), a significant proportion of floods have adverse consequences for human populations. However, it is worth noting that floods can sometimes yield positive outcomes without resulting in catastrophic events, and they play a crucial role in sustaining the majority of river ecosystems.

Flooding is characterised by the inundation of formerly dry areas due to an excess of water. The phenomenon of land becoming submerged by water, which typically remains dry, can be observed when heavy precipitation exceeds the ability of the local drainage system to handle the excess water. According to Glago (2020), a flood is characterised as an occurrence where water surpasses its usual boundaries, as defined by the Oxford Reference Dictionary (ORD). Flood events commonly transpire when the quantity of water contained within a hydrological feature, such as a river or a lake, exceeds its maximum capacity, resulting in the discharge of

water beyond the usual boundaries of the water body. Flood events are observed over a wide range of global regions, exhibiting variations in both magnitude and consequences.

According to the projections made by the Intergovernmental Panel on Climate Change (IPCC) in 2007, it was anticipated that greenhouse gas emissions would grow by around 25–30% by the year 2030 under a business as usual scenario. This rise in emissions was expected to contribute to a global temperature increase of approximately 3°C. In continuation, it is anticipated that the occurrence, frequency, and severity of extreme weather phenomena, such as tropical cyclones, floods, droughts, and heavy precipitation events, will escalate even with minor increments in average temperatures. The frequency, severity, and impacts of floods in Nigeria have exhibited an upward trend throughout the course of time. Between the years 2011 and 2020, a total of 103 flood disasters occurred in the country, resulting in adverse consequences for a significant population of 9,501,777 individuals residing in all 36 states and the Federal Capital Territory (FCT). Tragically, these incidents led to the loss of 1,187 lives while causing substantial damage to property valued at \$904,500 (Umar & Grey, 2022).

Flood events manifest in diverse forms and exhibit differing degrees of devastation. Glago (2020) provided a comprehensive categorization of floods, encompassing many categories such as riverine floods, localised and urban floods, as well as floods of different magnitudes, including normal floods (e.g., 1-year floods), medium floods (e.g., 5-year floods), severe floods, and catastrophe floods. Floods can also be classified based on the manner in which they occur. Dodman, Bicknell, and Satterthwaite (2012) identified two types of floods in their classification: flash floods and regional floods. Flash floods are hydrological phenomena characterised by the rapid rise in water level or the submergence of formerly dry land, occurring either concurrently with or shortly after an intense precipitation event. In contrast, regional floods are characterised by prolonged rainfall over a substantial geographical expanse, leading to rapid elevation of river levels and gradual recession, thereby submerging extensive regions and incurring substantial economic repercussions (Kimball et al., 2020).

Concept of Flood Disaster

The occurrence of flooding has been widely documented as a significant natural phenomenon with detrimental effects on various regions across the globe (Duru and Chibo, 2014). The global occurrence of flooding has experienced an upward trend primarily due to the elevation of sea levels, particularly in coastal urban areas, and alterations in annual and seasonal precipitation patterns resulting from climate change (Syaukat, 2011). These changes have led to various adverse effects, including heightened occurrences of pest infestations, diminished agricultural productivity, widespread soil erosion, and excessive water accumulation (Emaziye et al., 2013).

The quantifiable extent of flood damage resulting from a particular flood occurrence frequently serves as a catalyst for policymakers to enhance flood policy measures, typically in the immediate aftermath of such catastrophes. Flood damage encompasses a wide range of detrimental effects resulting from the occurrence of flooding. The phenomenon under consideration spans a broad spectrum of detrimental consequences for human beings, their

well-being, and their possessions, as well as for public infrastructure, cultural legacy, ecological systems, industrial output, and the competitive advantage of the impacted economy (Syaukat, 2011).

Certain types of damages can be quantified in monetary terms, while others, commonly referred to as intangibles, are typically assessed using non-monetary indicators such as the number of fatalities or the extent of ecological disruption caused by pollution. The impacts of flood damage can be further classified into two distinct categories: direct consequences and indirect effects. Direct flood damage encompasses a wide range of detrimental effects that result from the direct physical interaction between floodwater and individuals, property, and the surrounding environment. This encompasses several consequences, such as the destruction of infrastructure, economic assets, and protective barriers, as well as the impairment of agricultural yields and livestock, human casualties, immediate health ramifications, and the pollution of ecological networks (Duru and Chibo, 2014).

Indirect or consequential consequences refer to the damages that arise as a result of the flood and the subsequent disruptions to economic and social activity. The extent of the devastation can extend beyond the places that have been directly inundated. One notable illustration is the decline in economic output resulting from the destruction of infrastructure, the scarcity of energy and telecommunication resources, and the disruption of the supply chain for intermediate goods.

Additional instances include the negative impact on time utilisation and financial gains caused by traffic disturbances, the disruption of market stability subsequent to flooding events (such as increased food prices or decreased real estate prices in flood-prone areas), diminished productivity resulting in reduced competitiveness of specific economic sectors or regions, and the drawbacks associated with decreased availability of market and public services (Smith and Green 2014).

Flood Management

Flood management refers to the strategies and actions taken to prevent, reduce, or mitigate the impact of flooding on people, property, and the environment. It encompasses a variety of practices, from planning and preparedness to response and recovery. Effective flood management aims to minimize damage, protect human lives, and ensure that communities are resilient to floods. Floods can occur due to heavy rainfall, overflowing rivers, poor drainage systems, coastal storm surges, or dam failures (Lazerwitz, 2017).

Some measures could be proactively taken by both state, local government and the studies communities in order to combat the dangerous effect of flooding and bring about effective and proactive management of flood. Some of the measures include building of dams, Wing Dykes, Diversion Spillways, Afforestation and Artificial Levee: Dams are the classic hard engineering solution to flooding problems. A dam is a giant wall built across a river's channel to impede its flow. Water builds up behind the dam and forms a reservoir which can then be steadily drained at a controlled rate over time. This helps keep discharge downstream of the dam low even during prolonged heavy rainfall. Besides being highly effective at reducing the risk of flooding,

dams can also be used to generate hydroelectric power that can bring economic benefits to an area by attracting manufacturing factories or being exported to other countries (Nelson, 2011). The reservoir that develops behind a dam can be used as a drinking source or for leisure activities. Although dams are good flood control, its can as well pose a huge risk too. They store thousands of litres of water behind them so if they were to fail, they did cause wide spread of death and damage downstream as all the water is released at once. Wing Dykes are slats that are placed in a river's 0 channel at 90 to the banks. Generally they will be placed in pairs on either side of the channel with a gap between them that allows boast to pass through them behind dykes, sediment builds up and the channel is narrowed, forcing water to flow faster. This helps reduce the risk of flooding by getting water away from an area at risk of flooding as quickly as possible, preventing a buildup of water. They also aid navigation greatly. Diversion spillways are artificial channels that a river can flow into when its discharge rises. These channel move water round an area at risk of flooding and send it either back into the river but further downstream, or into another river. Spillways generally have flood gates on them that can be used to control the volume of water in the spillway. Afforestation involves the planting of trees in drainage basins to increase interception and storage while reducing surface runoff. This reduces a river's discharge and so makes it less likely to flood. Afforestation also prevents mass wasting which reduces the amount of soil entering the river and keeps the river's capacity high (Lazerwitz, 2017).

Afforestation has the benefit of creating new habitats for animals and improving water quality by filtering pollutants out of rain water. A levee is a low wall built at the side of a river to prevent it from flooding, it can equally serve as a place where boats can let passengers on or off etc. unlike natural levees, and artificial levees are larger and are generally constructed out of a materials like concrete that is resistant to erosion. The main advantage of an artificial levee is that it allows the flood plain to build on. Furthermore, if they did fall, like the embankments along the Mississippi in 1972, the damage from the flood would be far worse than if the embankments didn't exist. Furthermore, the government should enact laws that will guide against building of house on water ways (Olaniran, 2013).

Overview of Lagdo Dam

The Lagdo Dam was built in 1982 by a Chinese company to provide electricity, potable water and irrigate farmlands in Garoua and the Northern provinces of Cameroon. The floods which periodically sweep across the banks of Rivers Benue and Niger down to the Atlantic Ocean in Bayelsa State in Nigeria emanate from the Lagdo Lake. The dam is 308 m long, 40 m in height and 9 m thick. Its reservoir has a potential of 7.7 billion cubic metres. However, due to its aging and the silting up of its reservoir, its capacity has deteriorated over time reaching 1.6 billion m³ in 2021. The dam is located 50 km south of Garoua on the Benue River. The dam is located within the Arrondissement de Lagdo in the Département de la Benoué in the North Province. It is situated more exactly at 8°53'N 13°58'E.

The Lake, where the dam is situated, is the source of potable water, and irrigation of cotton, maize, millet, sorghum animal fodder, grazing fields and fishing in and around Garoua. The climate around Lagdo Lake is temperate, scenic, and a good holiday destination for tourists.

Research Method

This study adopts a qualitative approach to assess the impact of the Nigeria-Cameroon Lagdo Dam Agreement on flood disaster management in Nigeria. The design is suitable for providing a comprehensive understanding of the institutional, environmental, and socio-economic dynamics surrounding the agreement. Secondary data were sourced from government reports, flood incidence records, satellite imagery, academic publications, and relevant agreements or legal documents between Nigeria and Cameroon.

Theoretical framework

This study adopted Social vulnerability theory as its theoretical framework. Social vulnerability theory is propounded by O'Keefe, Westgate, and Wisner in (1970). This theory emphasizes that floods are not just a result of natural hazards, but they are also influenced by social and economic factors. Social vulnerability theory focuses on the ways in which inequality and marginalization contribute to vulnerability to disasters and always need policies and programmes that address these underlying social factors. It helps to understand how certain groups of people are more vulnerable to disasters and their impacts than others due to social, economic and political factors. In the context of flooding disasters, this theory suggests that certain populations are at greater risk of experiencing negative consequences because of their social vulnerability which may include characteristics like age, gender, racial and ethnic groups, disability and socioeconomic background of individuals (Blaikie, 2014).

The social vulnerability of a community can arise from a variety of factors like poverty, social isolation, and lack of access to resources and discrimination⁹. Similarly, people who live in low-lying areas or floodplains, are more likely to experience flooding and its associated risks and those who lack access to transportation or resources may have difficulty in evacuating or accessing emergency services during a flood. Additionally, individuals or communities who experience social marginalization or any form of discrimination may also face add-on challenges in disaster preparedness, response and recovery during flooding (Cannon, Davis, and Wisner, 1995)

The social marginalization includes linguistic and cultural barriers that may hinder communication and access to information about flood warnings and evacuation plans. It makes them highly vulnerable during flooding disasters. Moreover, the social vulnerability theory emphasises on the importance of social factors that enhance the people's vulnerability to flooding disasters. Therefore, policymakers and disaster responders need to identify vulnerable groups and try to reduce the unequal effects of flooding on different groups in the community. Social Vulnerability Theory is a concept in the field of social sciences, particularly in disaster studies and risk management. It focuses on the unequal distribution of negative impacts among different social groups during disasters or crises (Cannon, Davis, and Wisner, 1995).

Assumptions of Social Vulnerability Theory

1. **Social factors:** These include demographic characteristics such as age, gender, race, ethnicity, and socioeconomic status. People from marginalized or disadvantaged groups may face greater challenges in coping with disasters due to limited access to resources, information, or support networks.
2. **Structural factors:** These refer to the underlying social, economic, and political systems that can exacerbate vulnerability. Examples include inadequate infrastructure, lack of access to healthcare or education, and limited governmental support.

Relevance of Social Vulnerability Theory

Social vulnerability theory is crucial for understanding and addressing the disparities and challenges that certain groups face in the face of disasters and crises. Understanding the Social Vulnerability Theory helps policymakers, practitioners, and researchers develop targeted strategies to reduce vulnerability and promote resilience in communities. The theory helps us understand how certain populations or communities may be more susceptible to adverse effects due to their social, economic, or environmental conditions. This can include improving infrastructure, providing better access to resources, enhancing communication channels, and fostering social cohesion. Social vulnerability theory underscores that vulnerability to disasters is not evenly distributed across society. It draws attention to how socioeconomic factors, such as poverty, race, ethnicity, gender, age, and disability, intersect to create differential vulnerabilities. By recognizing these disparities, policymakers and practitioners can develop more equitable disaster preparedness, response, and recovery strategies.

Liability of Cameroon for Downstream Damage by Waters from its Lagdo Dam

In mid-September 2022, the National Emergency Management Agency (NEMA) issued a warning that up to 13 states in Nigeria would experience flooding. The director general of NEMA, explained that Nigeria Hydrological Services Agency (NIHSA), informed them that the Lagdo Dam operators in the Republic of Cameroon had commenced release of waters from the Lagdo Dam reservoir on 13th September 2022. He explained that the released waters flow down to Nigeria through River Benue and its tributaries thereby inundating riparian communities, with serious consequences on states and communities along the courses of rivers Niger and Benue. The projected serious consequences is invariable in that Nigerian states downstream the River Benue drainage basin are usually flooded whenever water is released from the Lagdo reservoir (Omorogbe, 2022)

Purposes for building dams vary. Some are built to generate hydro-electric power, or to store and divert water for irrigation, water supply, or flood control. It is inevitable for river flow to be affected by construction of dams for any of these purposes. This also adversely affects existing water rights of riparian states. Consequently, dams have become a major source of tension between riparian states, particularly, over the rights and obligations of the riparian states in respect of the shared rivers (Okonkwo et al. 2022).

Another largely unexpected, menace from large dams is that though most are built in the expectation of reducing or controlling downstream flooding, many have had the reverse effect.

This is particularly so during times of heavy rains, when reservoirs become filled. With the filling of the reservoirs, its operators, faced with the risk of catastrophic failure of their dam as it overfills, make emergency releases of great volumes of water that inundate and overwhelm downstream areas. In respect of the River Benue, apart from the dams on some its tributaries, the Lagdo Dam, upstream in Cameroon, is the only dam along the river's entire stretch from Cameroon to Lokoja. The Lagdo Dam has modified the River Benue basin significantly. Most of the flood events experienced in Nigeria are traceable to release of large volumes of water from the Lagdo Dam. The responsibility of States to ensure that activities within their jurisdiction or control do not cause damage to other states or areas beyond the limits of their national jurisdiction is undoubted. Violations of this generally accepted rule inevitably results in injuries (Ibrahim, & Nwankwo, 2023).

Certainly, it may be argued that the building of a dam is inherently legal for a State, as an exercise of its sovereign territorial rights. On the other hand, these activities are legal only to the extent that they remain within the existing standards of care required to prevent harmful effects on neighbouring states. Fundamentally, in such a situation, the framework of the classical responsibility for a wrongful act remains. Since the lawfulness of an activity depends on the manner of performing it, and on the presence of obligations established under the cover of a general duty of cooperation, particularly in the field of harmless use of territory, international liability, then, must be seen as a liability for activities prohibited by international law (Nwodo, and Ahmed, 2023).

Cameroon's legal right, in exercise of its sovereign competence over its territory to construct and operate the Lagdo Dam remains unassailable. Its construction and use of the dam is not only legal, it is also peaceful. Mere use of the dam does not attract any legal consequence. There is no complaint in Nigeria that the dam's use has restricted the quantity of water available for downstream use. There is also no complaint of environmental degradation or pollution as a result of uses to which the dam is put. Nigeria's complaint revolves around imprudent release of waters from the dam by its operators. In this regard, the fact of the release of large volumes of water, at such times and in such manner that downstream flooding and inundation is the inevitable and natural consequence is undisputed (Nwodo, and Ahmed, 2023). It is also undoubted that the result of the release of large volumes of water from the dam is the inundation of Nigerian territory by floods, destruction of towns and villages, destruction of farms and other economic assets, large scale deaths by drowning, and social disruptions. The wrongful act is undisputed, Causation is clear, Injury is established. The question now is what Cameroon's international obligation in the light of all these should be? At the very least, the first step for Cameroon to take is to ensure that the imprudent release of waters from its Lagdo Dam ceases. This is in accordance with the rule that the State responsible for any internationally wrongful act is under an obligation to cease that act, if it is continuing. Thus, existence of legal consequences for the state that did the wrongful act, does not release that state from the initial obligation to have refrained from committing that act. This implies that the existence of legal consequences for breach of an obligation is consistent and parallel to the duty

of performing the obligation and is not mutually exclusive. This rule is replicated in the UN Water Convention which establishes that a watercourse State, in utilizing an international watercourse in its territory, if significant harm is caused to another watercourse State, the State whose use causes such harm shall take all appropriate measures to eliminate or mitigate such harm (Okonkwo et al. 2022).

Although Cameroon is not party to this Convention and has not acceded to it, so that the Convention may not be binding on it, nevertheless, to the extent that the Convention does not create new law, but rather reflects customary international law, Cameroon is bound by the principles. In order to give effect to obligation to cease the injurious act, it is not necessary to take down the dam or in any manner, impair its operational efficiency. All that is required is to manage the dam more efficiently, and ensure that the release waters from the reservoir is not left off until it approached criticality (Aliyu, and Olofin, 2019).

Having ceased repetition of the internationally wrongful act for which it is responsible, Cameroon is under another obligation to offer appropriate assurances and guarantees of non-repetition, if circumstances so require. This inevitably leads to a duty to offer to full reparation to Nigeria for the injury Nigeria and its citizens suffered as a result of the wrongful act. Cameroon is under an obligation to make full reparation for the injury caused by the internationally wrongful act. Any violation by a state of an obligation of whatever origin gives rise to state responsibility and thus to the duty of reparation. Although, possibly not exclusive, the obligation to make reparation for the damage caused by its violation of law remains a vital consequence of engagement of a State's responsibility (Aliyu, and Olofin, 2019).

In the *Chorzov Factory Case*, the PCIJ, explained that the essential principle contained in the notion of an illegal act is that reparation must, as far as possible, wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or if it is not possible, payment of a sum corresponding to the values which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it - such are the principles which should determine the amount of compensation due for an act contrary to international law. In other words, an illegal act violates the rule of law, and also violates the interest protected by the law. Restoration encompasses the reestablishment of the legal situation before the action and compensation for the damage incurred (Nwodo, and Ahmed, 2023).

At times, these aims are achieved by material compensation for the damage caused. Often, compensation is accompanied by apologies by the responsible State, addressed to the Victim State, by which satisfaction is deemed to have been given. In respect of injury caused to the person or damage caused to property, material restitution or money payment and restoration of the legal situation are interwoven. From the foregoing, it is clear that three basic forms of reparations exist on commission of internationally wrongful acts. These are: restitution, compensation and satisfaction. Any combination is possible. Though, the quality of reparations may vary qualitatively, they are not retributive. Restitution, i.e. returning to previous condition

restitution in integrum as far as possible is given priority. In most situations, restitution might be impossible of attainment. If restitution is impossible, compensation will be paid. This involves recompense in damages for monetarily assessed damage. If despite the existence of moral damage or injury, restitution or compensation are impossible, the reparation is performed in the form of satisfaction, which entails public acknowledgment of the breach, an expression of regret, formal apology or a promise that the wrongful act will not be repeated (Egbenta, 2014).

The question now is what Cameroon must do. Clearly, construction and operation of the Lagdo Dam are in lawful exercise of sovereign powers. Use of the dam for hydro-electricity power generation and irrigation are lawful uses. These do not form any basis for Cameroon's breach of international law. However, Cameroon, in operating the dam in such a negligent and careless manner as to cause substantial, recurring damage and injury to the lower riparian is in breach of international law. The first duty on Cameroon is to discontinue operation of the dam in such a manner as to cause downstream damage. This duty is not dependent on the existence of a complaint by Nigeria. This duty to cease being the cause of further injury is automatic upon proof that injury is the effect of the current mode of operating the dam. Consequently, Cameroon has an immediate, irrefutable and mandatory duty to desist from causing flooding in Nigerian territory by its imprudent, rash and uncontrolled release of waters from its Lagdo Dam. In this regard, international law requires that a State responsible for the internationally wrongful act is under an obligation, to cease that act, if it is continuing; and, to offer appropriate assurances and guarantees of non-repetition, if circumstances so require (Kimball, 2020).

Thereafter, the issue of reparations for already caused damage will arise. This will depend on a demand from Nigeria. Although a state responsible for an internationally wrongful act is under an obligation to make full reparation for the injury caused by the internationally wrongful act, it is not required to volunteer reparations. It is lawful to await a demand for reparations from the injured state, with details of the damage caused and the monetary or other value of the damages. In this regard, on this particular issue, it is lawful for Cameroon to await a formal demand from Nigeria. Where there is no demand for reparations from Nigeria, an obligation by Cameroon to make reparations will not arise (Glago, 2020).

Result and Discussion

The provisions and implementation of the Nigeria-Cameroon Lagdo Dam Agreement concerning flood management

The Nigeria–Cameroon Lagdo Dam Agreement represents a critical bilateral understanding intended to coordinate actions over the management of water releases from the Lagdo Dam in northern Cameroon. This agreement is particularly vital because the Benue River, into which the dam discharges water, flows directly into Nigeria, affecting several downstream communities in Adamawa, Taraba, Benue, Kogi, and other states. The analysis of findings on the provisions and implementation of this agreement reveals significant gaps in coordination, communication, and infrastructural readiness on the Nigerian side.

Eze and Johnson (2021) argue that while the spirit of the agreement embodies regional cooperation, the implementation mechanisms are weak and uncoordinated. For instance, the National Emergency Management Agency (NEMA) and the Nigeria Hydrological Services Agency (NIHSA) are often left to respond reactively rather than proactively, largely due to insufficient real-time data sharing between the two nations. Their study reveals that Cameroon does not always give sufficient lead time between water release and notification, undermining Nigeria's capacity for early response.

Moreover, Okonkwo et al. (2022) found that even when early warnings are issued, Nigeria lacks the necessary flood management infrastructure to mitigate the effects. For example, the Dasin Hausa Dam which was proposed as a buffer dam downstream of the Lagdo Dam to absorb excess water has remained uncompleted for decades. The absence of this critical project has left communities downstream vulnerable to annual flood disasters. The researchers emphasized that the agreement's effectiveness is limited not just by bilateral cooperation, but also by Nigeria's own infrastructural and institutional weaknesses.

An assessment by UNEP (2020) also indicates that while both Nigeria and Cameroon are signatories to several international water management protocols, including the *Helsinki Rules on the Uses of Waters of International Rivers*, the bilateral implementation remains inadequate. The report notes that joint monitoring commissions exist in name but are rarely operationalized, with meetings occurring infrequently and without actionable resolutions. This has hindered the development of coordinated flood control frameworks and joint emergency response mechanisms.

Furthermore, Ibrahim and Nwankwo (2023) analyzed satellite data and flooding patterns from 2012, 2020, and 2022 years in which Cameroon released water from the Lagdo Dam and found a clear correlation between the releases and severe flooding in Nigeria. However, they also observed that Nigeria's internal floodplain planning, such as zoning laws and urban encroachment regulations, are often flouted, compounding the impact of the releases. This implies that while the agreement's lapses contribute to the problem, domestic governance failures also play a major role.

Despite these challenges, some efforts have been made to improve cooperation. For instance, in 2021, the Nigeria-Cameroon Transboundary Water Commission was reactivated, with technical teams from both countries tasked to improve hydrological data sharing and early warning systems. However, as Nwodo and Ahmed (2023) note, the commission is under-resourced and lacks the political will for sustained action. They suggest that funding, staffing, and political commitment must be improved if the agreement is to be effectively implemented.

The effectiveness of early warning and flood mitigation mechanisms established under the agreement.

The effectiveness of early warning and flood mitigation mechanisms under the Nigeria–Cameroon Lagdo Dam Agreement has been widely questioned by scholars and policy analysts. The mechanisms, which were intended to enable proactive communication and disaster preparedness, have largely fallen short of expectations, particularly on the Nigerian side.

Several studies show that while early warning systems exist in theory, in practice they are either poorly implemented or ineffective due to institutional, technical, and infrastructural limitations. According to Aliyu and Olofin (2019), although Cameroon occasionally notifies Nigeria ahead of Lagdo Dam water releases, the warnings are often too short or vague to prompt effective mitigation. Nigerian agencies like the National Emergency Management Agency (NEMA) and the Nigeria Hydrological Services Agency (NIHSA) are frequently informed with minimal lead time, limiting their ability to alert downstream communities or implement evacuation plans. This was evident during the 2012 and 2022 floods, which caused extensive damage and displacement in Adamawa and Benue states. Eze and Johnson (2021) argue that the lack of real-time data exchange and digital monitoring systems between the two countries undermines the early warning mechanism. They found that most notifications are manual and relayed through diplomatic or bureaucratic channels, delaying response actions. In contrast, countries like Rwanda and South Africa have adopted automated, community-integrated alert systems that link meteorological data with mobile communication networks. Moreover, Ibrahim and Nwankwo (2023) show through their research that many affected communities in Nigeria either do not receive warnings at all or are not trained on how to interpret them. Their findings indicate a critical gap in public education, with most residents unaware of the significance of water release alerts. As such, early warnings rarely translate into actual preventive action at the grassroots level. In terms of mitigation infrastructure, Okonkwo et al. (2022) highlight that the failure to construct the Dasin Hausa Dam intended to absorb excess water from the Lagdo Dam remains a major missed opportunity in Nigeria's flood mitigation strategy. Without this buffer dam, floodwaters flow unchecked into Nigerian towns and farmlands. They conclude that early warning systems, while crucial, cannot replace the need for physical infrastructure and long-term planning.

The impact of dam water releases on flood occurrence and disaster preparedness in Nigerian riparian communities.

The release of water from the Lagdo Dam in Cameroon has had a profound impact on flood occurrences in Nigerian riparian communities, particularly along the Benue River. Numerous studies have found a direct correlation between dam water discharges and downstream flooding in Nigerian states such as Adamawa, Taraba, Benue, and Kogi. Aliyu and Olofin (2019) emphasize that during major water releases, especially in 2012 and 2022, the absence of a buffer dam on the Nigerian side significantly exacerbated the flood impact. These floods resulted in the destruction of homes, farmlands, and critical infrastructure, displacing thousands of residents and causing severe socio-economic disruptions.

Despite some attempts at disaster preparedness, findings show that the level of readiness in many affected communities remains low. Eze and Johnson (2021) report that early warnings from Cameroonian authorities often come late and are poorly disseminated, limiting the time available for effective community response. Moreover, even when information is received, most local governments lack the resources and capacity to coordinate evacuations or provide

relief. This highlights the gap between federal-level flood monitoring systems and actual preparedness at the grassroots level, where the consequences of flooding are most felt.

Furthermore, Ibrahim and Nwankwo (2023), through geospatial analysis and field surveys, found that many Nigerian riparian settlements are situated in flood-prone zones with little to no flood defenses. Their findings confirm that dam releases, coupled with high seasonal rainfall, lead to repeated annual flooding, yet the absence of floodplain zoning laws and urban planning enforcement worsens the situation. The study concludes that unless Nigeria improves its disaster preparedness framework through community sensitization, improved hydrological infrastructure, and stronger institutional coordination flood disasters linked to Lagdo Dam releases will continue to threaten lives and livelihoods.

The challenges and gaps in the implementation of the Lagdo Dam Agreement in mitigating flood disasters.

The implementation of the Nigeria–Cameroon Lagdo Dam Agreement has faced numerous challenges that have limited its effectiveness in mitigating flood disasters. One of the primary challenges identified is the lack of a legally binding and detailed operational framework guiding water releases and emergency responses. According to Aliyu and Olofin (2019), the agreement largely remains informal, with no enforceable clauses to ensure timely notification or coordinated action between the two countries. This has led to inconsistent communication during critical periods, especially when the Lagdo Dam must release excess water.

Another major gap lies in weak institutional capacity and coordination within Nigeria. Eze and Johnson (2021) report that agencies such as NEMA and NIHSA often receive late or insufficient information, which hampers their ability to activate early warning systems or mobilize relief efforts. Furthermore, there is minimal synergy between federal, state, and local governments, resulting in fragmented responses to flooding. Local governments, which are closest to the affected communities, typically lack funding, training, and infrastructure to implement evacuation or flood defense plans.

Finally, Ibrahim and Nwankwo (2023) highlight the absence of critical mitigation infrastructure, such as the long-proposed Dasin Hausa Dam, which was meant to act as a buffer for Lagdo Dam water releases. Without this structure, Nigerian flood-prone areas remain vulnerable to uncontrollable floodwaters. Their findings also point to poor community-level awareness and engagement in disaster risk reduction efforts. In summary, the combination of an informal agreement, institutional weaknesses, poor infrastructure, and limited community resilience constitutes a major barrier to effective implementation of the Lagdo Dam Agreement in flood disaster mitigation.

Conclusion

In international law, sovereignty is a basic principle. It encompasses the fullness of authority and dominion accruing to a territorial sovereign, and which it is permitted to exercise both within its local territory and in international law. During the early stages of the formation of the theory of sovereignty, it designated unrestricted and absolute power within a jurisdiction. Currently, sovereignty no longer entails the classical notion of power by a local sovereign to

exercise unrestricted authority within his domain and therein to dictate outcomes to others. On the other hand, under the current concept of sovereignty, the emphasis is on the responsibility of the local sovereign to exercise sovereign power in accordance with what is perceived as the best interest of the global community.

Under current customary international law, while a state may exercise its sovereign authority and powers within its territoriality, it must be careful to ensure that the effect and consequences of such exercise of powers do not reverberate or resound within the territory of another sovereign. To do so would be to violate the territorial integrity of the sovereign in whose territory, the consequences and effects of the act are felt. The lawfulness of the act causing the harm or damage is irrelevant within this construct of responsibility. This paper in founding a theory of Cameroon's liability for downstream damage in Nigeria caused by release of waters from Cameroon's Lagdo Dam establishes that notwithstanding the lawfulness of the construction and use of the dam in Cameroon as a lawful exercise of sovereign powers, to the extent that the imprudent and careless management of the dam has caused, and is causing damage in a downstream state, the basis for Cameroon's international liability is activated.

Recommendations

1. This study recommended that both Nigeria and Cameroon formalize and revise the existing Lagdo Dam Agreement into a binding bilateral treaty with clear provisions for joint flood management. This should include specified protocols for dam release schedules, mandatory early notification timelines, and shared responsibilities for flood risk mitigation and infrastructure development.
2. The Nigerian government should invest in community-based and digital early warning systems, integrating real-time weather and hydrological monitoring with SMS alerts and radio announcements in local languages. These systems must be backed by capacity-building programs for local governments and community leaders to enhance rapid response and preparedness.
3. There is a need for the construction of the long-proposed Dasin Hausa Dam and other buffer infrastructure in Nigeria to reduce the impact of floodwaters from Lagdo Dam. Additionally, floodplain zoning laws should be enforced to prevent settlement and agricultural activity in high-risk areas.
4. Strengthening institutional coordination and policy implementation is crucial. This can be achieved by establishing an intergovernmental task force between Nigerian agencies (NEMA, NIHSA, SEMAs) and Cameroonian authorities to ensure better data sharing, mutual accountability, and coordinated emergency responses.

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