

# EFFECT OF FLOODING ON THE NIGERIAN ECONOMIC GROWTH: A CASE STUDY OF LOKOJA KOGI STATE

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DOI: <https://doi.org/10.5281/zenodo.7944447>

Published Date: 17-May-2023

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**Abstract:** Over time, scientists have found that floods affect long-term economic growth. It is on this note that this study examined the effect of flooding on the Nigerian Economic Growth: A case study of Lokoja Kogi State. Other research demonstrates significant income growth differences. However, flood consequences in north central Nigeria have been little documented. Using the Theory of Planned Behaviour (TPB) to assess and plan for certain natural and man-made disasters. Comparative correlations were created using descriptive statistics, frequency tables, and percentages. The study concluded that High rainfall levels in Lokoja, Kogi State, affect farms, crop output, livestock, and food availability. We therefore, concluded that, there is high impacts of exposure to floods on the growth of gross state domestic product (GSDP) and human development index (HDI) in Nigeria cannot be over emphasized as such we recommended that the government should help the flood victims. Many victims need refuge and food. After the floods recede, they need money, water, and seeds.

**Keywords:** Effect, Flooding, Nigerian and Economic Growth.

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## 1. INTRODUCTION

About the past 20 years, natural disasters have cost over 2,440 billion USD (EM-DAT 2020). Water caused 74% of these natural disasters. Floods and storms caused 69% of financial losses, exposing over three billion people and killing 166,000. South Asia experienced 11% of global natural disasters and 12% of floods and droughts between 2000 and 2020, affecting 700 million people and 190 million acres of agricultural land (Amarnath, et al 2017). Due to the intricate interplay of social, economic, and ecological forces that mediate economic growth outcomes at various human and institutional stages, the global economic growth position and prognosis remains delicately imbalanced amid surplus food production and famine despite flooding (Holt et al, 2008).

Worldwide, disasters are becoming more common and intense. In poor nations, disasters can kill many. Natural disasters influence a nation's economy as well as its people. Floods and droughts can hinder economic development in many countries (Cavallo, et al 2013). South and Southeast Asia account for 28% of all floods in EM-DAT Database (2020) According to the FAO , 925 million more people are hungry (Hanjra, et al, 2013).

Climate change has caused Nigeria's worst floods. This has hurt human livelihood, especially food production (Behnassi et al, 2013). Due to poor environmental planning and management, floods affect low-lying communities more. After a disastrous flood, the head of Media and Public Relations of the National Emergency Management Agency (NEMA) proclaimed National Disaster in Adamawa, Taraba, Rivers, Kebbi, and Bayelsa. Niger, Kogi, Anambra, and Delta lost billions in property, including farms. Flood damage may hinder economic growth, notably on farmland and buildings in Nigeria's North Central region (Otaha, 2013).

Floods submerge dry ground with water or other fluids. The tide's influx is "flowing water" too. Hydrology studies floods, which affect agriculture, civil engineering, and public health. Land use changes like deforestation and wetlands removal, river route adjustments like levees, and bigger environmental challenges like climate change and sea level rise enhance flood intensity and frequency. Climate change's increased rainfall and extreme weather events make other drivers of flooding worse, increasing flood intensity and danger (Hirabayashi, et al 2013).

Water floods arid terrain. Heavy rainfall, ocean waves, snow melt, and dam or levee failure can cause floods. With only a few inches of water, a house can be flooded to the roof. Floods can last minutes, days, or weeks. Most weather-related natural disasters are floods (Alderman, et al 2012). Flash floods are the most dangerous because they are fast and devastating. Flash floods occur when strong rainfall exceeds ground absorption. They also develop when water floods normally dry rivers or streams, generating fast water rises. They can occur minutes after the precipitation, limiting warning and protection time.

Economic growth boosts a nation's wealth. In economic theory, the word alludes to long-term wealth growth. Growth is transformation. Growth is unequal and lopsided in both contemporary and developing economies. Health, housing, education, nourishment, social ties, respect, peace, human rights, a healthy environment, happiness. These are only a few economic growth truths (Gordon, 2017).

Nurses, doctors, home care, and teachers. Poverty, prosperity, and growth are usually measured by income. Monetary measurements have some advantages, but their abstraction is a major drawback. In the worst scenario, monetary indicators like GDP per capita are so abstract that we forget they are about access to goods and services. This article explains why economic growth is vital and how abstract monetary indicators reveal the material living conditions of people worldwide and throughout history (Das, 2019).

Nigeria faces economic decline, stagnation, stunted growth, and recession. Sometimes these economic issues occur simultaneously. Flooding has made government essential for socioeconomic growth and development in states like Nigeria, according to this study. It emphasizes that state authorities must now regulate citizens' economic and social activities. It's obvious that government exists and is necessary in the world today.

## 2. STATEMENT OF THE PROBLEM

Flooding increases the fiscal deficit. Disaster assistance, reconstruction, and rehabilitation boost government spending. Relief efforts may burden the federal budget. Damage to assets and economic disruption could lower national output. Several scholars, including Sadeghi et al. (2009) and Noy (2009), agree that natural disasters lower gross production, especially shortly afterward. Albala-Bertrand (1993) claims that reconstruction after natural disasters may boost the economy. The multiplier effect of rehabilitation investment may offset flood damage. Floods expose old capital stock, giving the economy a chance to replace it with newer, more efficient technology (Cuaresma et al., 2008).

Researchers have found that floods affect long-term economic growth (Hartel & Liu, 2016). Other studies demonstrate significant differences in income growth (Shabnam, 2014). Despite these discrepancies, sub-national floods are becoming more severe and frequent (Parker, Martinez-Valle & derach, 2019). Creating effective adaptation and mitigation plans need sub-national impact data. Without adaptation measures, intensifying disasters can affect millions more people and slow regional economic growth and human development.

Climate change has worsened floods, which hurt food production, distribution, consumption, and economic growth (IPCC 2007). Climate change and human interference in river ecosystems increase the risk of floods along riverbeds (Klaudia, Marzena, and Aleksandra, 2018). According to Nwaobiala and Nwosu (2014), Nigerian agriculture is weather-dependent. Climate change affects agriculture, and rain-fed African countries are especially vulnerable. Despite this, agriculture has sustained livelihoods on the continent.

Studies suggested that 70% of Africans farm, 40% of export revenues come from agriculture, and one-third of Africa's national income comes from agriculture. The poorest Africans depend on rain-fed subsistence agriculture for food, work, and revenue, making them most vulnerable to climate change (Okafor, & Hope, 2018). In the globalizing world, Nigeria included, the visible climate change effect and global warming on soil fertility and agricultural productivity, particularly due to flooding, erosion, and excessive rainfall, remains an increasing challenge not only to governments (state actors) with

their multi-lateral organizations but also to numerous non-governmental organizations (NGOs) around the world (Anabaraonye, Okafor; & Chukwuma, 2019).

Most of these publications have not assessed the impact of these flooding operations in the North Central region of the country, particularly Lokoja, Kogi State, where the rivers are co-joined and a calamity waiting to burst. The outcomes chain and measuring the success of National Emergency Management Agency (NEMA) actions and the impact of changes brought about by those activities overlook beneficiaries of humanitarian efforts. This study shifts from national to sub-national assessments of natural disasters and economic growth. It specifically examines flood effects.

### 3. OBJECTIVES OF THE STUDY

This study examines how flooding affects Nigerian economic growth in Lokoja, Kogi State with the following objectives:

- i. To examines how flooding affects Nigerian economic growth in Lokoja, Kogi State.
- ii. To determine the causes of flooding in Lokoja, Kogi State.
- iii. To suggest ways to reduce floods in Lokoja, Kogi State

#### Research Questions

This study tends to answers the following questions:

- i. How does flooding affects Nigerian economic growth in Lokoja, Kogi State?
- ii. What are the causes of flooding in Lokoja, Kogi State?
- iii. What are the ways to reduce floods in Lokoja, Kogi State?

### 4. METHODOLOGY

#### Design:

#### Population of the Study

Nwankwo (1999) noted that the population of any research study is the universe of such group; of people or object which a researcher is interested. The population consists of the residents Lokoja, Kogi State, which was discovered to have 692,050 residents (KSBS, 2020).

#### Sample Size and Sampling Technique

The study considers targeted number of respondents out of the total population. The sample size for this study was determined using the convenience sampling technique to randomly select 100 participants from the total population (Sedgwick, 2013). The model for this research is adopted from Efobi and Osabuohien (2011) and the model is in the form;

$$Y = a + bx + \mu \dots\dots\dots (1)$$

where

- Y = Dependent variable
- A = Constant
- B = Coefficient of the Independent variable
- X = Independent Variable and
- $\mu$  = Error Term

However, in writing the model equation, the following symbols were used to denote their respective variables; these are;

ECG = Economic Growth

RLT = relationship between flood and economic growth

NCF = the nature and major causes of flooding

EFF= effects of flooding

SOL = Solutions to controlling the challenges of flooding

$$ECG = \beta_0 + \beta_1 RLT_{it} + \beta_2 NCF_{it} + \beta_3 EFF_{it} + \beta_4 SOL_{it} + e_{it}$$

**Where;**

$\beta_0, \dots, \beta_n$  = coefficients

$e$  = error term = 0.05

$it$  = the variation (i) of specific attribute over a specific period of time (t).

All variables are measured using the Likert scale (Likert, 1932)

### Method of Data Collection

For the purpose of this study, data was collected from the primary and secondary sources. The primary sources incorporated detailed data from structured questionnaire and interview conducted with respondents of the Local government area. The secondary source of data consisted of data from internet sources, textbooks, journals, newspapers, magazine and periodicals.

### Technique for Data Analysis

The collected data was analysed using the descriptive statistics, with the aid of frequency tables and percentages, comparative relationships were established. SPSS was used for other analyses. The descriptive statistics was deduced from the data. Regression and Correlation models will be used to diagnose and establish the relationships between the independent variables (IVs) and dependent variable (DV) for the stated hypotheses at 0.05% level of significance.

## 5. DATA PRESENTATION AND RESULTS

**Table 1: Personal Information of Respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	67	64.28
Female	53	35.72
<b>Total</b>	120	<b>100.0</b>
<b>Marital Status</b>	<b>Frequency</b>	<b>Percentage</b>
Single	43	35.72
Married	60	50.0
Separated	17	14.28
<b>Total</b>	120	<b>100.0</b>
<b>Age</b>	<b>Frequency</b>	<b>percentage</b>
20-35	77	64.28
36-50	21	17.86
Above 55	21	17.86
<b>Total</b>	120	<b>100.0</b>
<b>Education</b>	<b>Frequency</b>	<b>percentage</b>
Above Degree level	9	7.66
Degree level	12	10.2
Diploma level	21	17.86
WAEC/SSCE	77	64.28
<b>Total</b>	120	<b>100.0</b>

From table 1, 64.28% of respondents were male and 35.72% were female. Table 5.2 reveals that 50% of respondents were married, 35.72% were single, and 64.28% were between 20 and 35. Table 5.3 shows that 17.86% were between 36 and 50, and 17.86% were above 50. Most responders were 20–35 years old. Table 5.4 reveals that most respondents (64.28%) have WAEC/SSCE, 17.86% have diploma, 10.2% have degree, and 7.66% have above degree. WAEC-educated respondents predominate.

Table 2: Responses on Research Questions

S/N	STATEMENT	SA		A		UD		D		SD		Total		Meam/ Remark
	<b>Likert Scale</b>		<b>5</b>		<b>4</b>		<b>3</b>		<b>2</b>		<b>1</b>	<b>15</b>	<b>3</b>	<b>Benchmark</b>
	<b>the relationship between flooding and economic growth in Lokoja, Kogi State</b>													
<b>1</b>	Flood destroys agricultural produce and food causing inflation rise	47	235	35	140	<b>15</b>	45	<b>17</b>	34	<b>6</b>	6	<b>120</b>	<b>460</b>	<b>3.8</b>
<b>2</b>	Flood disaster often brings about the for more spending to rebuild destroyed	55	275	32	128	<b>12</b>	36	<b>15</b>	30	<b>6</b>	6	<b>120</b>	<b>475</b>	<b>4.0</b>
	<b>the causes of flooding and economic growth in Lokoja, Kogi State</b>													
<b>3</b>	flood in Lokoja, is as a result of natural cause or human cause. Natural cause in form of heavy or torrential rains, ocean storms and tidal waves usually along the coast.	52	260	35	140	<b>13</b>	39	<b>16</b>	32	<b>4</b>	4	<b>120</b>	<b>475</b>	<b>4.0</b>
<b>4</b>	dam failure, over flowing of major rivers, coastal storms, ignorance of warning from <i>Nigeria</i> meteorological	51	255	36	144	<b>13</b>	39	<b>13</b>	26	<b>7</b>	7	<b>120</b>	<b>471</b>	<b>3.9</b>
<b>5</b>	rapid urbanisation, poor spatial planning and poor solid waste management,	44	220	37	148	<b>15</b>	45	<b>16</b>	32	<b>8</b>	8	<b>120</b>	<b>453</b>	<b>3.8</b>
	Another factor is government's poor response to the flood disaster in the country.	55	275	32	128	<b>12</b>	36	<b>15</b>	30	<b>6</b>	6	<b>120</b>	<b>475</b>	<b>4.0</b>
	<b>the effects of flooding and economic growth in Lokoja, Kogi State</b>													
<b>6</b>	damage to property, destruction of crops, loss of livestock, and deterioration of health conditions owing to waterborne diseases and low economic growth	47	235	34	136	<b>16</b>	48	<b>17</b>	34	<b>6</b>	9	<b>120</b>	<b>462</b>	<b>3.9</b>
<b>7</b>	recurring every year, in various states of the federation. Just this year, Nigeria has recorded over 600 deaths to flood.	52	260	36	144	<b>12</b>	36	<b>14</b>	28	<b>6</b>	6	<b>120</b>	<b>474</b>	<b>4.0</b>

<b>8</b>	Flooding has worsen food insecurity, inflation in Nigeria	53	265	33	132	<b>12</b>	36	<b>16</b>	32	<b>6</b>	6	<b>120</b>	<b>471</b>	<b>3.9</b>
	<b>the feasible solutions towards controlling flooding to enhance economic growth in Lokoja, Kogi State</b>													
<b>9</b>	construction of more dams at strategic locations to check flooding	48	240	40	160	<b>12</b>	36	<b>14</b>	28	<b>6</b>	6	<b>120</b>	<b>470</b>	<b>3.9</b>
<b>10</b>	Government agencies like NEMA must ensure a proactive measure in disaster management most especially flooding	42	210	41	164	<b>8</b>	24	<b>23</b>	46	<b>6</b>	6	<b>120</b>	<b>450</b>	<b>3.8</b>

Table 2 shows that flooding destroys agricultural products and food, leading inflation to rise at 3.8; flood disasters generally require extra spending to replace wrecked infrastructures at 4.0; and Lokoja's floods are natural or human-caused. Natural causes include heavy or torrential rains, ocean storms, and tidal waves along the coast at 4.0; dam failure, overflowing major rivers, coastal storms, and meteorological ignorance at 3.9; rapid urbanization, poor spatial planning, and poor solid waste management at 3.8; and the government's poor response to the flood disaster at 4.0. Damage to property, crops, cattle, waterborne infections, and sluggish economic growth are among the effects. 3.9; annual in various federation states. Floods killed nearly 600 Nigerians this year. 4.0; Nigerian flooding has increased food insecurity and inflation. 3.9. More dams at strategic sites can reduce floods at 3.9, and government agencies like NEMA must be proactive in disaster management, especially at 4.0.

**Table 3: Correlation relationship between variables**

Correlations		ECG	RLT	NCF	EFF
ECG	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	120			
RLT	Pearson Correlation	.987**	1		
	Sig. (2-tailed)	.000			
	N	120	120		
NCF	Pearson Correlation	.966**	.968**	1	
	Sig. (2-tailed)	.000	.000		
	N	120	120	120	
EFF	Pearson Correlation	.964**	.960**	.944**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	120	120	120	360

\*\* . Correlation is significant at the 0.01 level (2-tailed).

From table 3, all factors are statistically substantially connected with 0.00, below the 0.05 threshold. The Independent Variables (IVs)—relationship between economic growth and floods, nature and key causes of flooding, effects of flooding—and the Dependent Variable (DV)—economic growth—are directly associated.

**Table 4: Regression Analysis**

Regression is used to model and analyze the dependent-independent relationship. It evaluates two or more variables' connection.

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.989 <sup>a</sup>	.98	.979	.170	.837

a. Predictors: (Constant), NCF, EFF, RLT

b. Dependent Variable: ECG

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	343.541	3	114.514	3981.675	.000 <sup>b</sup>
	Residual	7.363	256	.029		
	Total	350.904	259			

a. Dependent Variable: ECG

b. Predictors: (Constant), NCF, EFF, RLT

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	.056	.038		1.464	.144
	RLT	.694	.043	.699	15.961	.000
	EFF	.116	.036	.119	3.213	.001
	NCF	.177	.033	.180	5.424	.000

a. Dependent Variable: ECG

To determine how economic expansion affects Nigerian flooding, the hypothesis must be investigated. R-value shows correlation between dependent and independent variables. .98 is a good value for further analysis.

R-square shows the total dependent variable variance explained by the independent variables. .98 is a good number, indicating that the model can determine the link. Studies often use 95% confidence intervals or 5% significance levels. Thus, p-value should be <0.05. The table shows.000. All variables are significant. RLT= link between flood and economic growth, NCF= nature and principal causes of flooding, EFF= impacts of flooding on ECG= economic growth.

## 6. DISCUSSIONS OF FINDINGS

This study focuses on the effect of flooding on the Nigerian Economic Growth, a study of Lokoja, Kogi State. The study argues that the connections between floods and economic growth are very relevant, particularly in developing countries like Nigeria where economic growth has been highly threatened by flood events which through directly and indirectly also affects agricultural farmlands. Evidence in the literature exists on the pathways by which floods can affect economic growth (Pacetti et al., 2017; Cooper et al., 2019), with the recent floods witnessed in some states in Nigeria, it is important that government begins to finding a lasting solution. As anticipated, food inflation rose to 10.2 per cent due to a shortage in food supply as part of the effect of flooding. In addition, transporting harvested products to the markets has become more difficult and expensive as most of the roads are flooded and now impassable (Oluwaseyi 2022). However, with a focus on Lokoja, Kogi State, the study posted that most direct influence of flood due to high rainfall levels which has a physical flood impact and damage to farms, crop yields, livestock, and decreasing the overall food availability in a location (Afifi et al., 2014; Cooper et al., 2019). For example, in rain-dependent agricultural economies, erratic rainfall causing unexpected



floods can create devastating effect on the economic growth of the people and their livelihoods. The study is divided into six chapters.

Floods ruin crops and food, generating inflation and economic growth. It was shown that floods require higher spending to rehabilitate facilities. Lokoja floods are natural or manmade. Dam failure, overflowing main rivers, coastal storms, ignorance of Nigeria meteorological warnings, fast urbanization, inadequate spatial planning, and poor solid waste management. Moderate to severe winds over water, uncommon hightides, tsunamis from undersea earthquakes, dams, levees, retention ponds or lakes, and other water-retaining infrastructure failures are other sources of flooding, according to Shabnam (2014). Pervious surfaces and other natural and man-made risks that degrade soil and vegetation that absorb rainfall can worsen flooding.

Damage to property, crops, cattle, and health due to waterborne infections and sluggish economic growth occur annually in several states of the federation. Nigeria has seen over 600 flood deaths this year, worsening food insecurity and inflation. However, building more dams in strategic areas to reduce floods is part of the solution, and government agencies like NEMA must be proactive in disaster management, especially flooding. This study also supported earlier conclusions (Anabaraonye, Okafor, & Olamire, 2019).

## 7. CONCLUSION

In conclusion, the idea of economic growth includes living conditions of the people and the often determined by the level of inflation. The impacts of exposure to floods on the growth of gross state domestic product (GSDP) and human development index (HDI) in Nigeria cannot be over emphasised. In Nigeria, food insecurity is a severe and expanding issue and has affected the cost of living of the people. According to reports, in 2021, seven out of ten Nigerians would not have enough to eat (Ibukun, & Adebayo, 2021). This is made worse by yearly flooding. Recently, flooding has also attacked many food-producing states in the North Central zone including Lokoja, Kogi State and other states along the river banks. Many houses, schools, shops were said to have been submerged. Staples like rice, cassava, plantain, yam and many others have also been destroyed. Livestock are not spared. Many people were displaced as they are now in various Internally Displaced Persons (IDP) camps. Floods started to occur in Nigeria by the end of September 2022. Over 600 individuals have already passed away, and millions have been displaced.

## RECOMMENDATIONS

The following recommendations were suggested from the findings;

- i. There is every need for government to assist victims of this flood disaster. For many of them, the immediate need is shelter and food. They also need financial assistance, potable water, and seeds to start off again when the floods recede.
- ii. State Emergency Management Agencies (SEMA) and the National Emergency Management Agency (NEMA) have a strong role to play in helping the victims to mitigate the effects of this crisis. NEMA could be useful for targeting better interventions that achieve faster economic growth and enhanced resilience against natural disasters.
- iii. Therefore, the information available for identifying spatially targeted interventions addressing mitigation and adaptation to floods is still not adequate, government should involve a more holistic and data driven approach to finding a lasting solution and provide assistance to the victims in the state.
- iv. There is need for government and stakeholders' collective effort in finding a permanent solution to this menace. The Federal Government, for instance, should ensure the dredging of major rivers which contribute to this flooding.

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