



FLOODING AND ITS EFFECT: CASE STUDY OF PARTS OF DELTA STATE, SOUTH-SOUTH NIGERIA

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ABSTRACT

Flooding is an overflow of water that submerges land which is usually dry. It is a common natural disaster in many places where rain falls. Delta state, Nigeria is one of the thirty six states in Nigeria that has experienced intense amount of flooding. It is an oil producing state of Nigeria situated in the Niger-Delta, South-South geo-political zone of Nigeria. The state lies between latitudes $5^{\circ}00'N - 6^{\circ}30'N$ and longitudes $5^{\circ}00'E - 6^{\circ}45'E$. Studies indicate that the state has experienced the three categories of flooding; Fluvial flood, Flash flood, and Urban flood (Pluvial flood). The study highlighted the causes of flooding, its effect and challenges faced in parts of Delta State. Due to the state being prone to flooding, flood mitigation and control management processes were proposed. It is also evident that government has spent so much unplanned money in managing and providing relief materials to people who has lost their properties doing the occurrence of flood. There is an urgent need for a collaborative effect of both government and stakeholders to support town planning, engineering and other professional agencies to fight (combat) flooding in Delta State to avoid it reoccurrence and consequences.

Keywords: Flooding, Delta; Fluvial, Flash, Pluvial, Niger-Delta.

INTRODUCTION

Delta State is an oil and agricultural producing state of Nigeria, situated in the region known as the Niger-Delta, South-South geopolitical zone with a population of over six million inhabitants. The state lies between latitudes $5^{\circ}00'N$ – $6^{\circ}30'N$ and longitudes $5^{\circ}00'E$ – $6^{\circ}45'E$ with an estimated area of 762 square kilometers. The state is generally low-lying without remarkable hills. The state has a wide coastal belt inter-lace with rivulets and streams, which form part of the Niger-Delta.



Figure 1: Map of Nigeria showing location of Delta State (After Okoro, 1990)

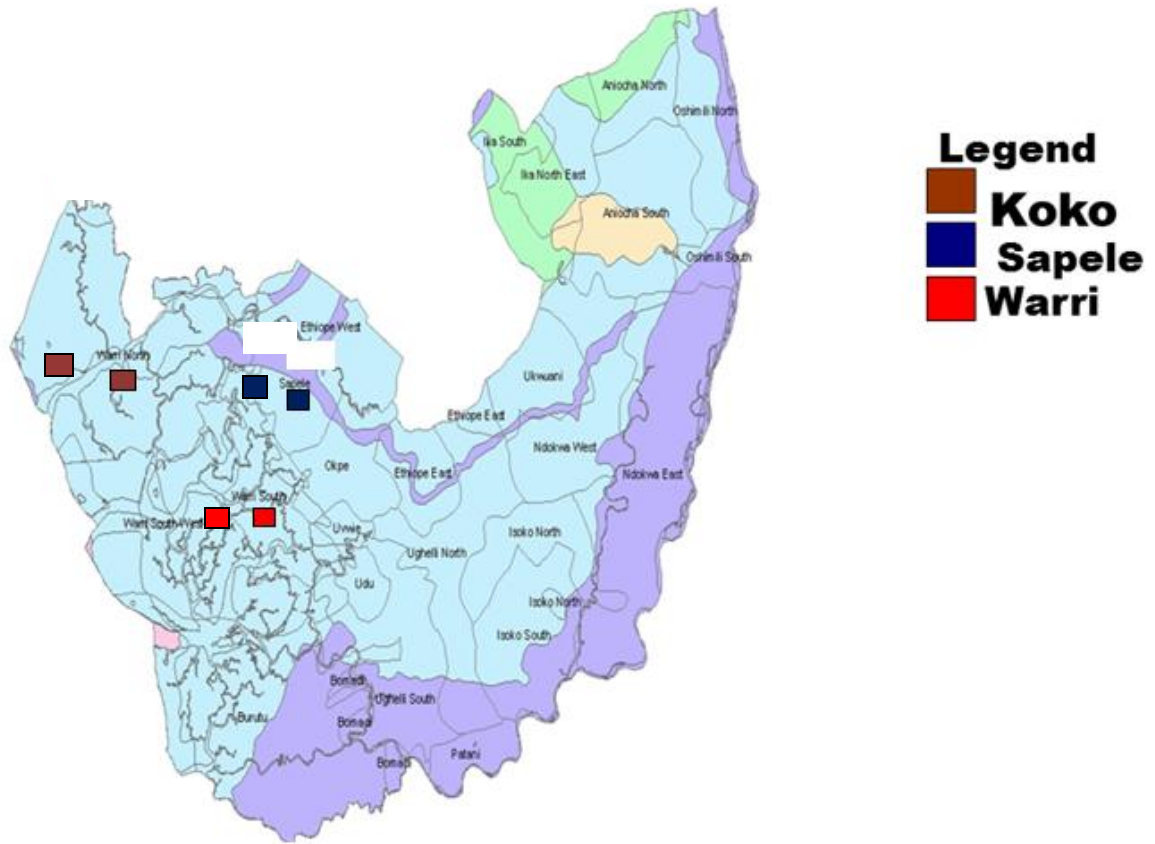


Figure 2: Map of Delta State showing the study areas (After Akinyimi, 2012)

The selected areas where flooding was studied are Koko, Sapele and Warri all in Delta State, Nigeria.

TYPES OF FLOODING IN KOKO, SAPELE AND WARRI:

Different types of flood can have different effects in terms of their impact, damage and cost, both financially and to the people who experience them. The areas under review experienced fluvial, flash, and urban flooding.

Fluvial Flooding: This usually occurs when rivers burst their banks as a result of sustained or intense rainfall. Flowroute™ flood modeling software was used to predict the depth, duration, velocity and extent of flooding.

Fluvial Flood:



Figure 3: Diagram showing a Fluvial Flood in Sapele, Delta State.

Flash Flooding: This is a rapid flooding of geomorphic low-lying areas; washes, rivers, dry lakes and basins. It may be caused by heavy rain associated with a severe thunderstorm, hurricane, tropical storm, or melt water from ice or snow flowing over ice sheets or snowfields. It also occurs when precipitation falls rapidly on saturated soil or dry soil that has poor absorption ability.

Urban Flooding: This type of flooding can also be referred to as pluvial or surface water flooding. This occurs when an extreme heavy downpour of rain saturates drainage systems and the excess water cannot be absorbed.

Reservoir Flooding: This can occur as a result of dam failure. This type of flooding is rare; however, the impact could be severe. This however was not experienced in these parts of Delta State.

Flash Flood:



Figure 4: Diagram of Flash Flood in Koko, Delta State

Urban Flood:



Figure 5: Diagram showing Urban Flood in Warri.

CAUSES OF FLOODING IN THE AFFECTED AREAS:

- *Dam failure*
- *Excessive precipitation*
- *Urbanization*
- *Channelization*
- *Deforestation and poor agricultural practices. Apart from dam failure, all other causes of flooding in*

Delta State affect the areas under study.

Challenges associated with flooding in the areas in Delta state are;

- *Difficult terrain.*
- *Lack of manpower and equipment for monitoring and Inspection.*
- *Lacking of enforcement of existing legislation.*
- *Indiscriminate dumping of refuse in the river channels.*

CONTROL OF FLOOD IN THE AFFECTED AREAS:

Structural flood defense management processes include:

- *Building of dams and flood reservoirs,*
- *Diversion of flood water through channelization,*
- *Building of levees and embankments.*

CONCLUSION

It is evident that floods had forced thousands of people from their homes while hundreds of people have lost their lives and properties what millions of naira to flooding at different times and locations in Delta State. It is also evident that government has spent so much unplanned money in managing and providing relief materials to people who has lost their properties doing the occurrence of flood. There is an urgent need for a collaborative effect of both government and stakeholders to support town planning, engineering and other professional agencies to fight (combat) flooding in Delta State to avoid its reoccurrence and consequences.

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