FLOOD VULNERABILITY MAPPING OF OGBARU LOCAL GOVERNMENT AREA, ANAMBRA STATE, NIGERIA

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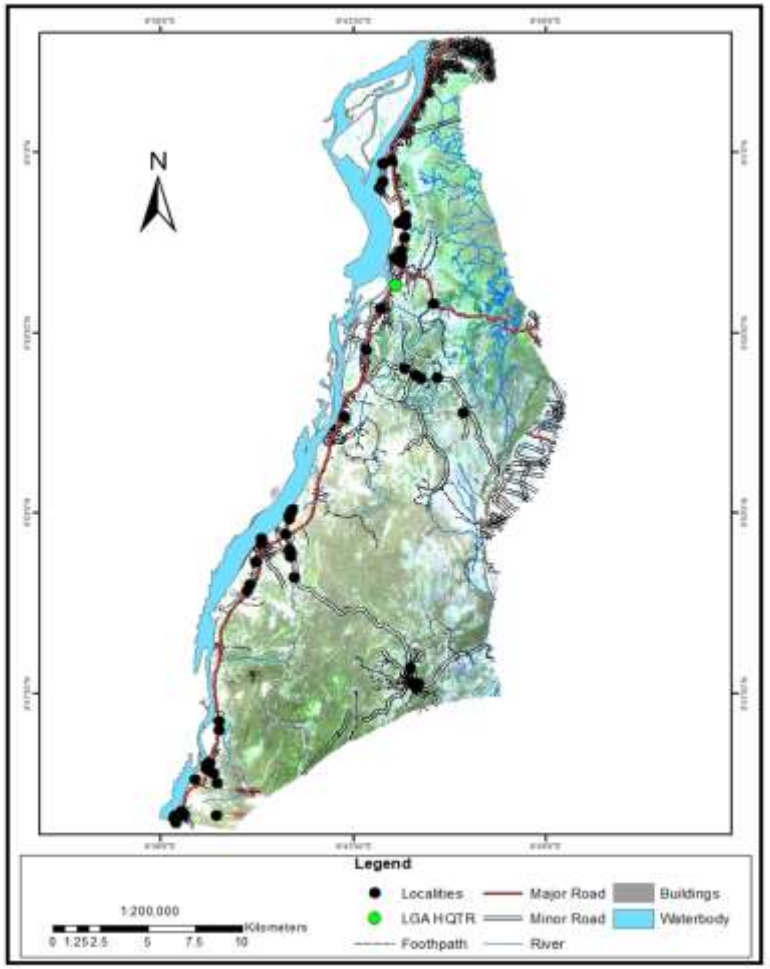
SDG 13: CLIMATE ACTION

Climate Resilience Actions for the Future

Serving Society for the Benefit of People and Planet

PRESENTATION OUTLINE

- ❑ INTRODUCTION
- ❑ STUDY AREA
- ❑ METHODOLOGY
- ❑ RESULTS AND DISCUSSIONS
- ❑ CONCLUSION



1. INTRODUCTION

- This presentation provides climate resilience action for the future, under SDG 13; Climate Action.

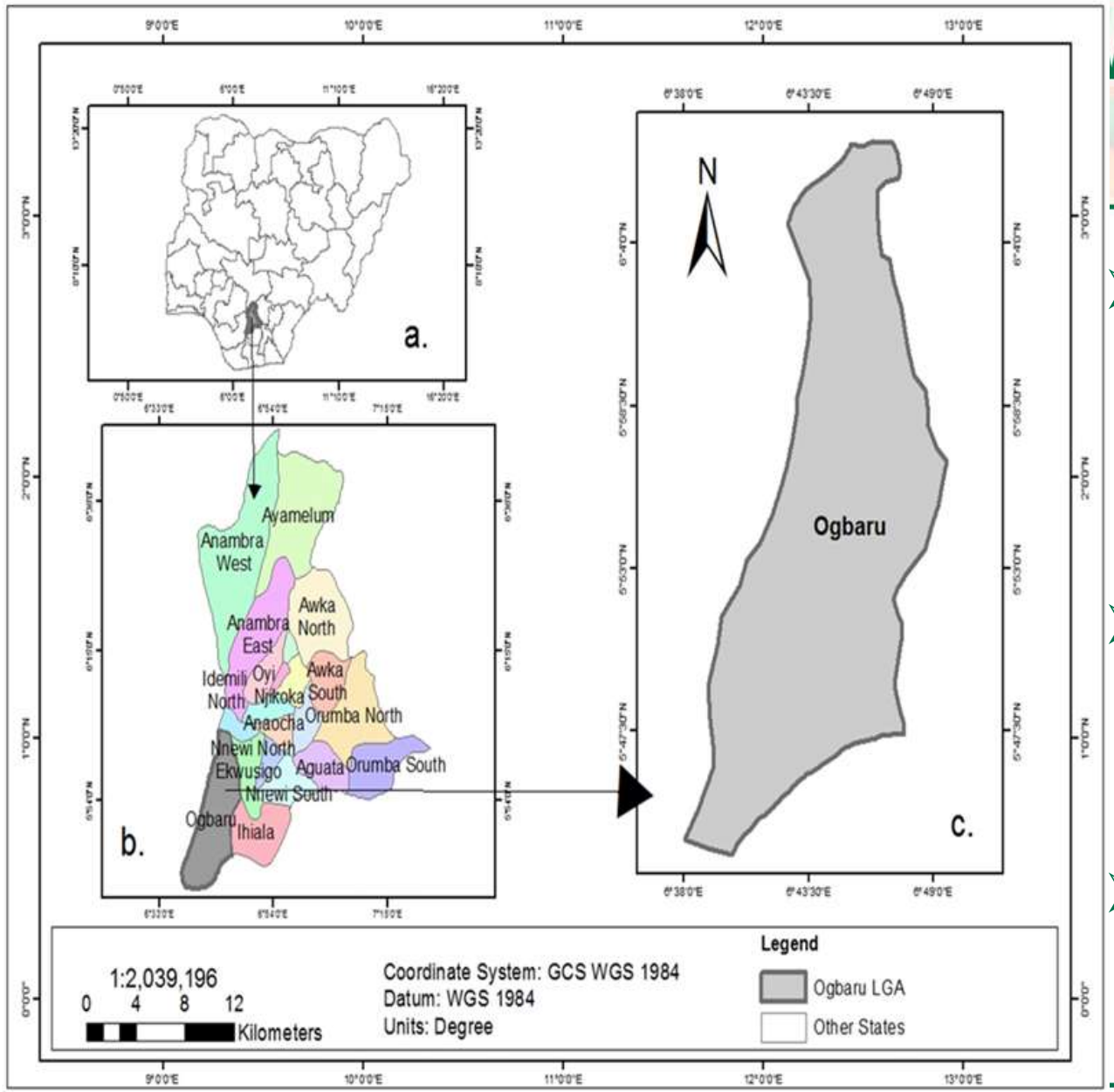
- Globally as result of climate change, flooding is a natural disaster that claims lives and properties.

- Nigeria being in Sub - Sahara and tropical region of Africa, is not exempted from Flood occurrences.

- There is need to conduct flood vulnerability study to reduce and possibly curb the harm caused by flooding.

- GIS and Remote Sensing (RS) techniques provide an application for natural disaster risks analysis, Haq et al, (2012); Jaafari et al, (2014).

- Multi-criteria decision analysis (MCDA) has been identified as an essential tool for analyzing complicated decision problems, that include incomparable data.



- Ogbaru Local Government Area is one of the twenty-one Local Government Areas in Anambra state, South-east geopolitical zone of Nigeria with its headquarters in Atani.
- It is located between latitude 6◦40”00’ N, longitude 6◦38”00’ E and latitude 5◦ 47”30’N , longitude 6◦49”00’E.
- It is located in the Niger South Hydrological Area (HA-5).

TABLE 1: DATA TYPES AND SOURCES

Name	Sheet	Date	Format	Source	Scale	Purpose
Administrative Map of Nigeria	187	1979	Digital	OSGOF	1:50,000	For boundary definition of the study area.
Satellite Imagery	Sentinel II	2021	Digital	Copernicus open access hub https://scihub.copernicus.eu/dhus/#/home	10m	For Supervised image classification
STRM DEM	n05_e006_1arc_v3.tif n06_e006_1arc_v3.tif	2021	Digital	United State Geological Survey USGS http://www.earthexplorer.usgs.gov/	30m	For generating Slope, Flow Direction, Flow Accumulation, Stream Order, Drainage Density, Distance to River, Basin, Watershed

TABLE 1: DATA TYPES AND SOURCES CONTD

Annual Rainfall Data		2020	Digital (.tiff format)	CHRS DATA PORTAL PERSSIAN-Cloud Classification System (PERSSISN-CCS) https://chrsdata.eng.uci.edu/		Rainfall Map
Soil Data		2003	Digital	Food and Agricultural Organization (FAO). European Soil Data Center (ESDAC)	1:5,000,000	Soil Map

METHODOLOGY WORKFLOW

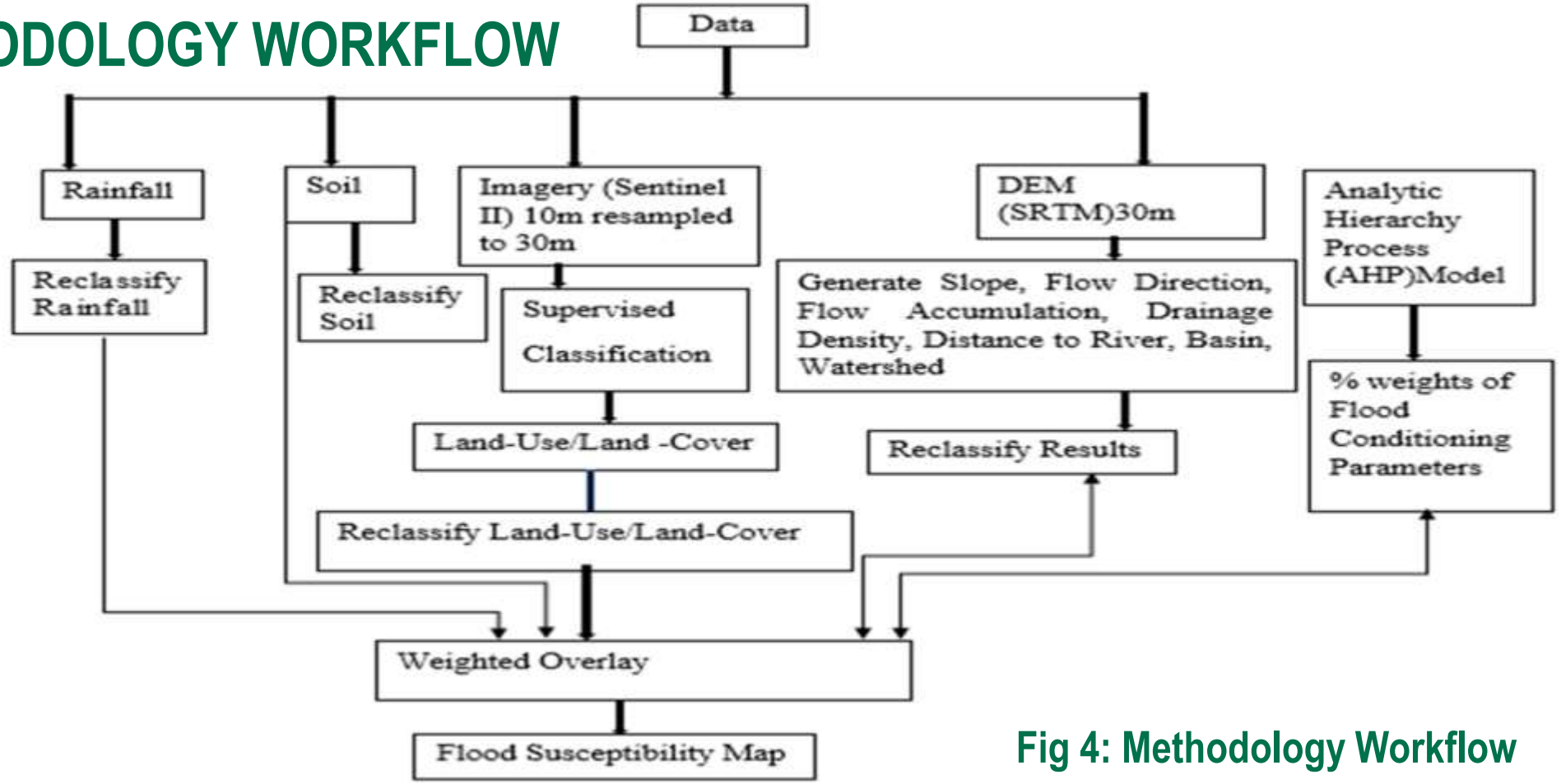


Fig 4: Methodology Workflow

FIG Working Week 2024

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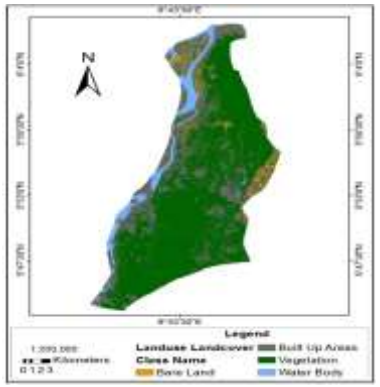
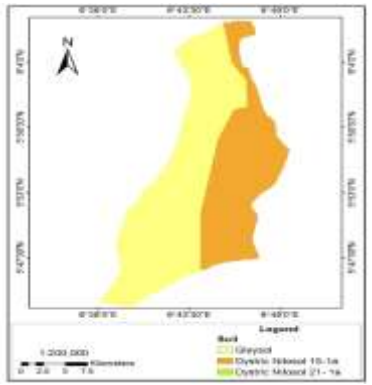
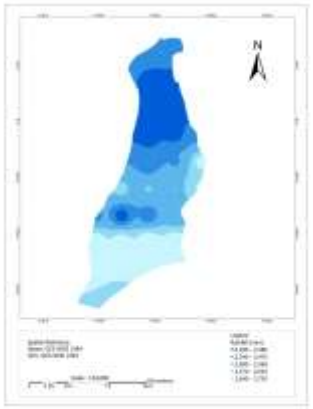


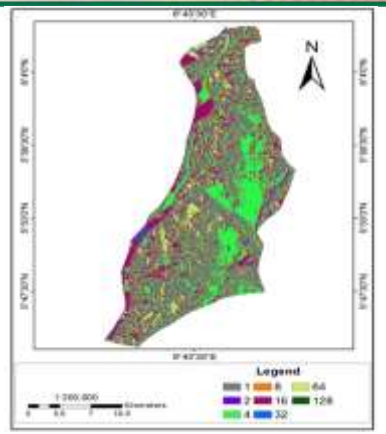
Land Use/Land Cover



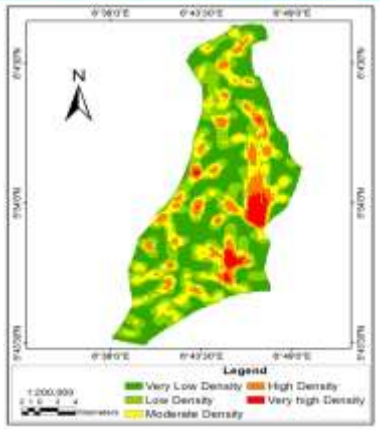
Soil



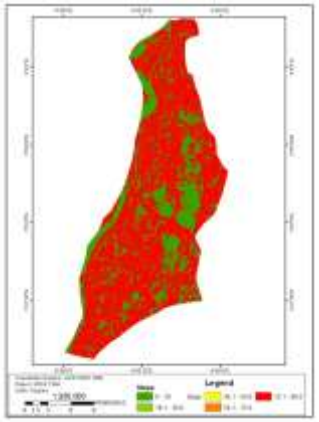
Rainfall



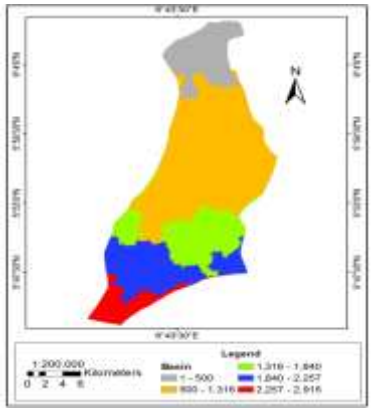
Flow Direction



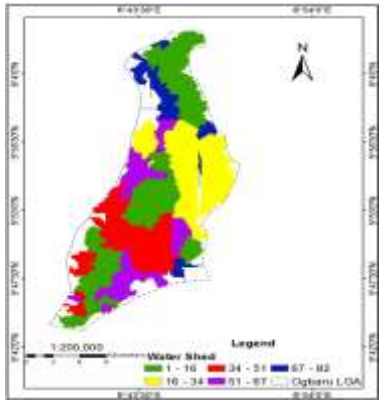
Drainage Density



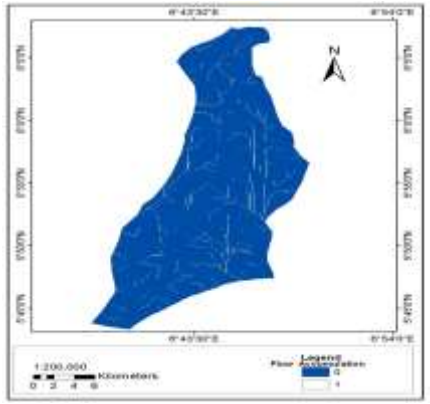
Slope



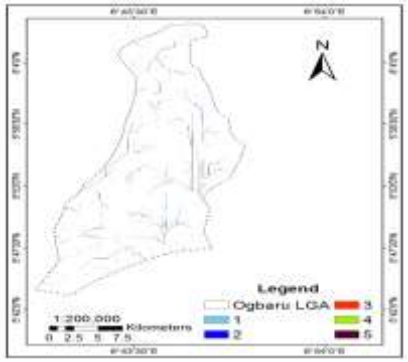
Basin



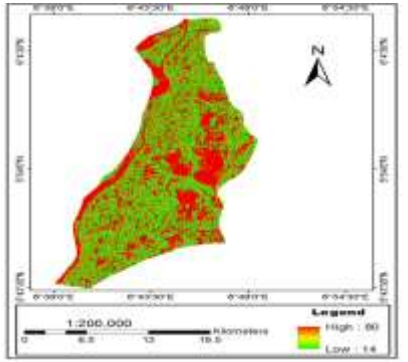
Watershed



Flow Accumulation



Stream Order

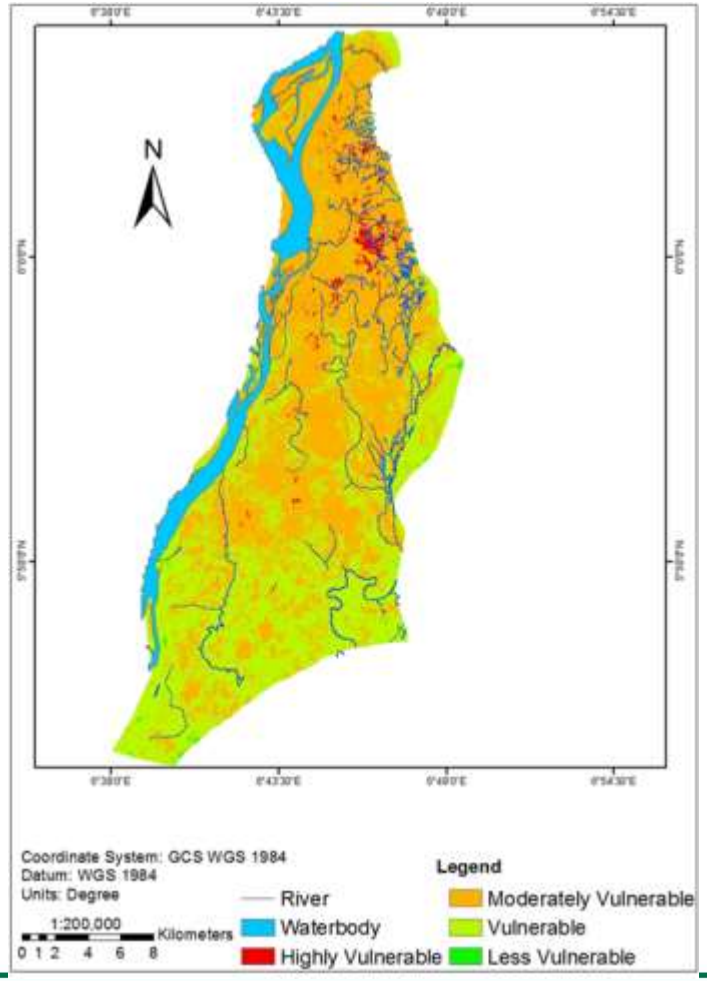


DEM

ORGANISED BY

The thematic maps for factors contributing to flood shown excluding the DEM

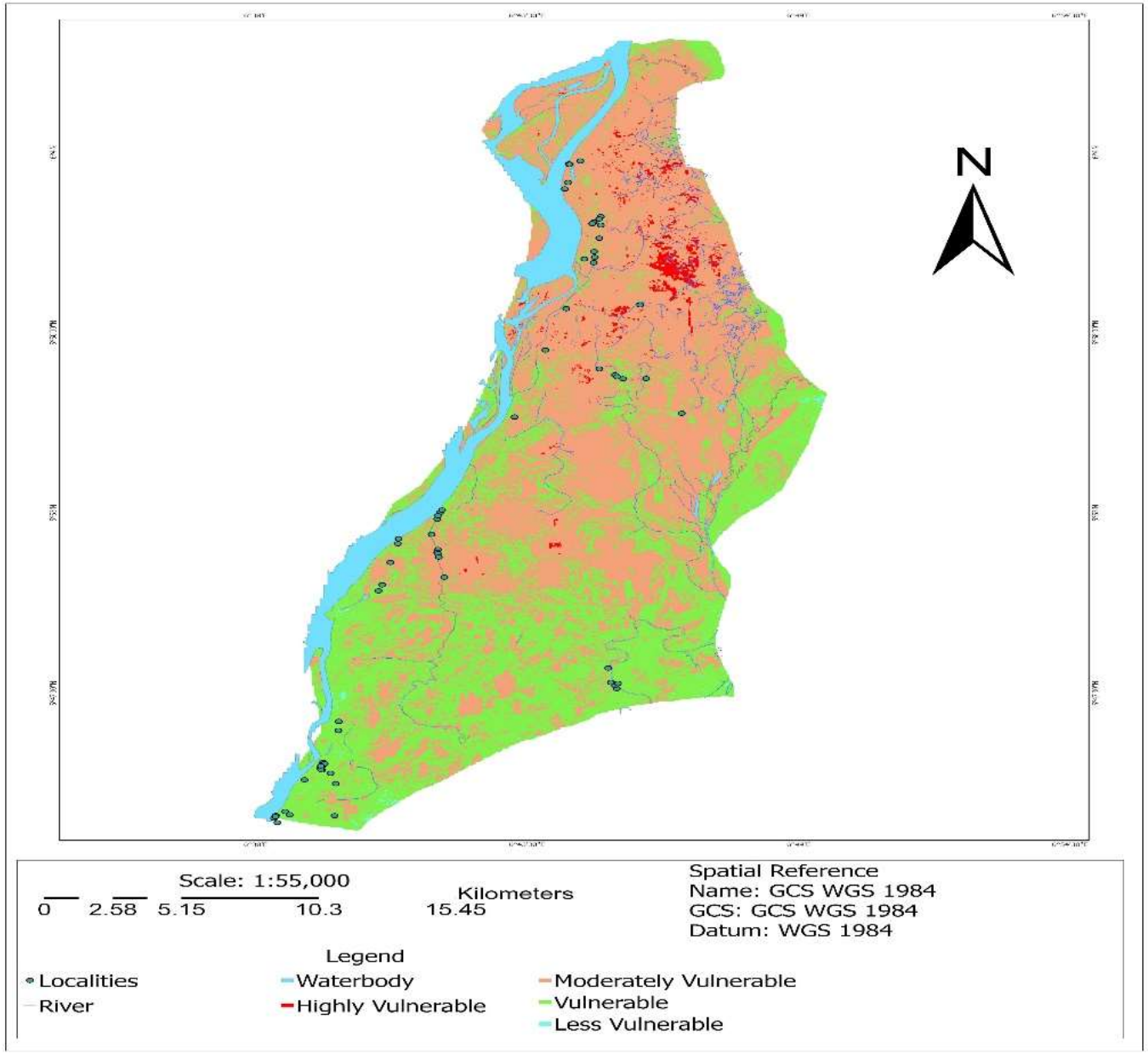
PLATINUM SPONSORS



- The contributing percentage for the factors are Rainfall (28%), distance to river (20%), slope (15%), basin (6%), flow accumulation (5%), flow direction (2%), drainage density (8%), watershed (3%) land use/land cover (3%), and Soil (9%).

- The analysis reveals that rainfall contributed more to flooding than other factors considered in the model followed by distance to river, slope, soil and basin. Rainfall and slope influences the direction of the runoff or subsurface drainage. Furthermore, the slope has dominant control of the surface flow.
- Based on the map, a total of thirty-six settlements in the LGA were prone to flood.

Fig 16: Flood vulnerability Map of Ogbaru LGA



- Green dots signifies the localities

Figure 17: Localities affected by Flood in Ogbaru LGA, Anambra State, Nigeria

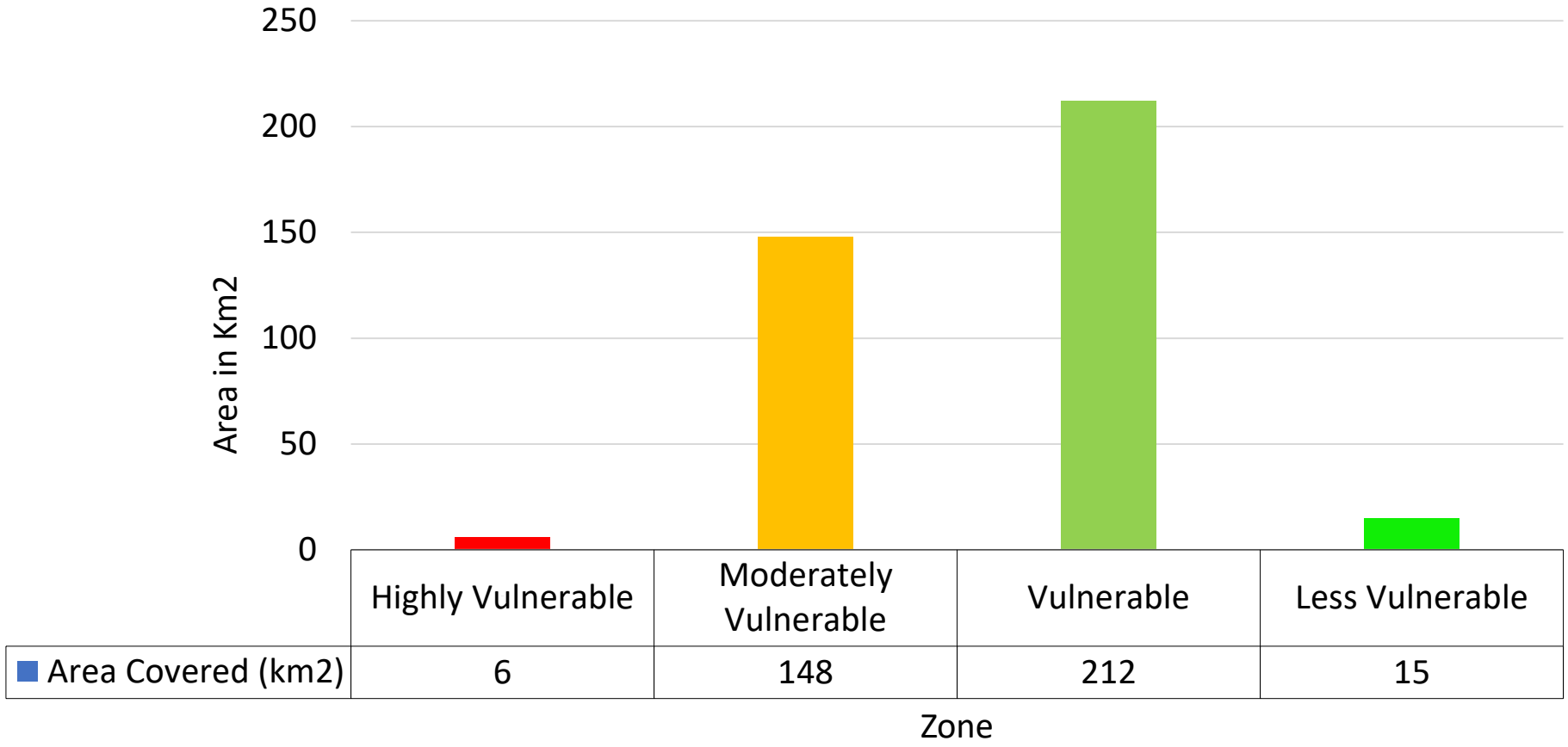


Fig 17: Area of Flood Vulnerability Zones in Ogbaru LGA

❑ CONCLUSION

- The study provides mitigative measures towards adaptation and resilience to climate change.
- It depicts the impact of flood as one of the factors of climate change.
- It is an important element of early warning systems or strategies for deterrence and mitigation of future flood situations since it identifies the most prone areas.
- The work is also an important approach for urban planning.

THANK YOU

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PRESENTER