

TOWARDS SUSTAINABLE FLOOD RISK MANAGEMENT FOR  
URBAN DEVELOPMENT IN GOMBE METROPOLIS, NIGERIA

**RARE**

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## Abstract

Natural hazard such as flooding has been on increase in recent years throughout the world and Nigeria has not been an exception to these global extreme hydrological eventualities. Gombe Metropolis being one of the urban areas of Nigeria shares the same experiences of flood disasters. The metropolis has experienced a dramatic population growth since its inception in 1996. As a result, land use covers such as forest, grassland vegetation, barren land, farmlands were transformed into the built-up environment. This human action might have played a significant role in the increasing sealing effect of the land surface causing a reduction in infiltration capacity and increased the rate of runoff and floods. Approaches and efforts by both public and government to prevent and mitigate the floods occurrences have not been fully successful. Thus, this research strives to explore, examine and identify the impact of urban development and the left-over consequence bred vis-à-vis flooding. The research, however, examined the impact of urban development and the increasing seasonal floods. It also assessed the nature of flood risk on the major downstream areas and the success of the current flood risk control measures in mitigating flood risk in Gombe Metropolis. Basically, field survey such as questionnaire survey and Geographical Information System (GIS) analysis is carried out to find answers to the research questions. The primary data was processed using Statistical Package for Social Science (SPSS). The Remote Sensing data was generated through extraction of information from remote sensing and GIS analysis using proximity and overlay analysis tools. The results of the analysis reveal a significant relationship between urban development and flood risk. The increasing sealing effect of the built environment increases the rate of runoff and the subsequent floods. Furthermore, uncontrolled urban development, narrow and inefficient drainage facilities, poor solid waste management, increasing constructions of buildings on floodplains, as well as poverty play a significant role for the frequent seasonal floods and floods risk in Gombe Metropolis.

**Keywords:** Flood Risk, Urban Development, Geographic Information System, Gombe Metropolis and Risk Management.