

# Mapping and Suitability Analysis of Existing Electoral Polling Units in Katsina Local Government Area of Katsina State, Nigeria

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**Key words:** Access to land; Geoinformation/GI; Implementation of plans; Remote sensing; Spatial planning; Young surveyor; Suitability mapping; Electoral Polling Units; Multi-Criteria Analyses (MCA); Fuzzy logic; INEC

## SUMMARY

This research examined the mapping and analyses of existing polling units in the study area, to provide scientific criteria for citing new polling units. To achieve this goal, the attribute data of the polling units within the study area were collected from the Independent National Electoral Commission (INEC), Katsina State, and spatial data was acquired through field observation with the aid of the description of the location of the polling units, for geodatabase creation and query generation. For the suitability mapping, eight parameters criteria were extracted from INEC objectives and summarized to polling unit proximity to voters, road accessibility to INEC officials, Land use (public buildings, and open spaces), Clinic proximity, Slope, and elevation. The generated thematic maps of these criteria were standardized using the fuzzy logic approach. A weight for each criterion was generated by comparing them with each other according to their importance. With the help of these weights and criteria, a suitability map was created and reclassified into categories of suitable and unsuitable. Using geospatial techniques (multi-criteria evaluation) in IDRISI Selva software, and ArcMap 10.1. The result of the distribution of existing polling units was achieved, and the geodatabase was used to perform queries in ArcGIS using SQL. The geodatabase created showed a total number of 281 polling units with their names, ward, ID, and location. Also, the suitability map showed the region of suitability and unsuitability. The overlay map also showed that about 10 units of the 281 units were in the region of highly not suitable, 16 not suitable while about 26 fell within the fairly suitable, then the rest ranges fell within the range of highly suitable to suitable. However, in the course of this research, problems were encountered such as difficulties in locating some polling units using the addresses given. Conclusively, it is recommended that Independent Electoral Commission should adopt a scientific method in citing subsequent polling units; likewise, more polling units should be provided at wards to aid decongestion for proper

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