GEOSPATIAL ANALYSIS OF THE SPATIO-TEMPORAL GROWTH OF FEDERAL CAPITAL CITY, ABUJA, NIGERIA

BY

MOHAMMED, A; AKPU, B. (benyb4real@gmail.com) & YUSUF, R.O. Department of Geography, Ahmadu Bello University, Zaria, Kaduna State Nigeria

ABSTRACT

The movement of the Capital of Nigeria to Abuja in 1991 triggered the rapid urbanization process in the area and presently, it is said to be one of the fastest growing cities in the world. This rapid growth has mounted pressure on the city, and the surrounding settlements thereby threatening the limited resources. This paper therefore applied Remote Sensing, Geographic information Techniques and Shannon's Entropy model to analyze the spatio-temporal growth of the Federal Capital City, Abuja, Nigeria. The data used include: Landsat TM (1992), Landsat ETM+ (2002) and Landsat ETM+ (2014). The datasets were processed and classified into Landuse and Landcover classes using Supervised classification technique with Maximum Likelihood Algorithm. The built-up areas were extracted and the extent and rate of growth over the study period were determined. Shannon's Entropy Model was used to determine the pattern of urban expansion by dividing the area into zones. The study revealed that the built-up (urban) area increased from about 9,016hectares in 1992 to 16,841.6 hectares in 2014, growing at the rate of 3.95% annually. The relative entropy value increased steadily giving a value of 0.1458 in 2014. The Entropy increased by 24.0% between 1992 and 2014. The findings further show that areas with low Entropy values were found in zones 14 and 15 while high values were in zones 2 and 3. This study therefore, recommends that the urban land development should be directed towards the southern part of the city since it is less developed than the northern part.

Keywords: Urban growth; Cities; Geospatial techniques; Shannon's Entropy; Spatio-temporal