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IMPACT OF LAND USE CHANGE ON DESERTIFICATION AND ITS IMPLICATIONS ON AVAILABILITY OF ARABLE LAND IN NORTHERN NIGERIA.

Abstract

Desertification is an urgent environmental problem that Northern Nigeria faces. As an ecological problem, it creates many challenges for the human community. These challenges include conflicts over grazing lands and farmlands, pollution of water sources and the air by encroaching desert wind and sand, internal displacement of people, forced migration of people, and destruction of human lives and properties. If desertification is not planned for, it impedes development and sustainability as well as attaining food security. This study examines landuse and landcover changes related to the process of desertification in the Northern border States of Nigeria (Sokoto, Zamfara, Katsina, Jigawa, Yobe, and Borno) and the implications on available arable land. A time series of Landsat imagery at a spatial resolution of 30 m was used from 1986 to 2022 at roughly ten (10) years intervals. The images were subjected to maximum likelihood classification to derive landuse and landcover datasets having builtup, cultivation, waterbody, shrubland and grassland classes. The extracted landuse datasets are used for analysing the temporal change across the period understudy. The area extent of cultivated areas within the 36 years was assessed using the land change modeller. Furthermore, the area extent of vegetation cover was evaluated using the Normalised Difference Vegetation Index (NDVI) derived from the same dataset. A pattern of vegetation loss was observed as a large expanse of vegetation cover was lost across the northwest and the northeast regions between 1986 and 2022. A general north-south reduction in NDVI value in the study area indicates a southward progression of the desert-like condition in these areas. There is also a remarkable reduction in cultivated area, a southward shift in intense cultivations, as well as a shrinking in the sizes of waterbodies. The paper finds and concludes that the impact of climate change is evident in northern Nigeria as the observed southward progression of desert-like conditions is apparent. The Federal Government should intensify efforts on various mitigation efforts against desertification in the study area.