

Efficacy of Remote Sensing Application in Monitoring the Effectiveness of Afforestation Project in Northern Nigeria

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Abstract : After the United Nation Convention on Desertification (UNCD) in 1977 which was preceded by extensive, regional, and local studies, and consultations with numerous scientists, decision-makers, and relevant institutions. Global Plan of Action to Combat Desertification (PACD) was formulated, endorsed by member Countries. The role of implementing PACD was vested with Governments of countries affected by desertification. The Federal Government of Nigeria as a signatory and World Bank funded and implement afforestation project aimed at combating desertification between 1988 and 1999. This research, therefore, applied remote sensing techniques to assess the effectiveness of the project. To achieve that a small portion of about 143,609 hectares was curved out from the project area. Normalized Difference of the Vegetative Index (NDVI) and Land Use Land Cover were derived from Landsat TM 1986, Landsat ETM 1999 and Nigeria Sat 1, 2007 of the project area. The findings show that there was an increase in cultivated area due to the project from 1986 through 1999 and 2007. This is further buttressed by the three NDVI imageries due to their high positive pixel value from 0.04 in 1986 to 0.22 in 1999 and to 0.32 in 2007 These signifies the gradual physical development of Afforestation project in the area. In addition, it was also verified by histograms of changes in vegetation which indicated an increased vegetative cover from 60,192 in 1986, to 102,476 in 1999 and then to 88,343 in 2007. The study concluded that Remote Sensing approach has actually confirmed that the project was indeed successful and effective.

Keywords : afforestation, desertification, landsat, vegetative index, remote sensing

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