

# Geospatial Analyses of Mining-Induced Land Degradation Sites in Jos South Local Government Area, Plateau State-Nigeria

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**Key words:** Access to land; Geoinformation/GI; Land management; Remote sensing; Spatial planning; Geospatial Analyses; Land Degradation; Land Use Land Cover (LULC); Mining Environment; Terrain

## SUMMARY

The degraded areas within and around mining sites have raised some serious issues of great concern to the environment. Some of the major geospatial issues are the accurate delineation and usefulness of the degraded sites, and the nature of the terrain in relation to the degradation. This study thus analysed the geometrical characteristics of mining-induced land degraded areas of the Jos South LGA of Plateau State-Nigeria. The degraded sites of the study area were assessed using multi-sensor satellite imageries of Landsat 8 (2016), SPOT 5 (2012), and Quickbird-2 (2010). The onscreen digitization of the land degraded areas was carried out using the Quickbird-2 satellite imagery which was followed by the Maximum Likelihood Supervised classifications of land cover and land degradation features using the Landsat 8 and SPOT 5 imageries to determine the area of land that had been affected by mining-induced activities. The results of the study revealed that there were 235 land degraded sites with a total area of 11.58km<sup>2</sup> and covering about 2.26 % of the study area. The study also showed that the degraded sites were classified into 13 classes based on their usage (Active Mine sites, Agricultural Usage, Dormant, Fencing, Fish Stocking,

Inundated seasonally, Irrigation, Ownership, Partial inundation, Resort Centre, Tree planting, Waste dumps/Tailings and Water treatment). The results of the Land Use Land Cover (LULC) classification revealed a total land cover of 512.10km<sup>2</sup> with mine ponds occupying about 10.01km<sup>2</sup>. It was however suggested that certain land uses such as block industries, water treatment plants, and fish farms should be sited around the seasonally inundated mine pond, as well as the implementation and enforcement of the existing mining laws at all levels to safeguard the environment.

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classification revealed a total land cover of 512.10km<sup>2</sup> with mine ponds occupying about 10.01km<sup>2</sup>. The results of the terrain analyses revealed that the spatial location of the degraded sites was not determined by the altitude of the terrain because most of the degraded sites occurred as a result of mining activities that could be carried out at a high or low land. It was however suggested that certain land uses such as block industries, water treatment plants, and fish farms should be sited around the seasonally inundated mine pond, as well as the implementation and enforcement of the existing mining laws at all levels to safeguard the environment.

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