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Land Use Land Cover Change Analysis of Nashik City Using Remote Sensing and GIS Techniques

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Abstract: *Rapid urbanization has significantly transformed land use and land cover patterns in growing Indian cities. Nashik City, one of the fastest-developing urban centers in Maharashtra, has experienced considerable spatial expansion over the last two decades. This study presents a comprehensive Land Use Land Cover (LULC) analysis of Nashik City using Geographic Information Systems (GIS) and remote sensing techniques. Multi-temporal satellite imagery obtained from Landsat datasets was processed and classified using supervised classification methods in QGIS and ArcGIS environments. LULC maps were generated for different years to identify spatial and temporal changes in agricultural land, built-up areas, forests, barren land, and water bodies.*

The results indicate a steady increase in built-up areas accompanied by a reduction in agricultural and forest land due to population growth and infrastructure development. Accuracy assessment confirmed reliable classification performance. The study highlights the importance of GIS-based LULC analysis for sustainable urban planning, environmental conservation, and disaster risk management. The findings provide decision-support information for planners and policymakers to promote balanced urban growth in Nashik City.

Keywords: Land Use Land Cover, GIS, Remote Sensing, Urbanization, Nashik City, Change Detection, Sustainable Planning

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