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## Impacts of Quarrying in Land Use/Land Cover and Drainage Patterns of Muvattupuzha River Sub-basin, Kerala With Special Reference to Landslides in Adjoining Areas

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### Abstract

Quarrying activities have been extensively carried out in Kerala, especially along the upper catchment areas of Muvattupuzha river basin. Landuse/Landcover (LULC) changes caused by quarrying can increase or decrease landslide susceptibility in mountainous areas. This study investigates the impacts of quarrying in LULC and the triggering landslides in the adjoining area. Geospatial techniques were used to identify the LULC change, by creating 1km buffer zones on each quarry locations. Landslide susceptibility areas were analyzed using the frequency ratio method in which ten influencing factors were chosen as the landslide susceptibility indices. By comparing the LULC change in the years 1967 and 2019, it is found that the drastic increase of quarry area led to the substantial change in LULC as well as the hydrologic network of the area. Landslide susceptibility map indicates that 3.94% of the study area is coming under very high susceptible zone. The study concludes that the LULC changes due to quarries were drastic and the high frequency values found near quarry locations to be one of the triggering factors for landslides in the region. This investigation is considered as a contribution to dynamic utilization of mineral extraction with reference to the impacts on the environment.

**Keywords:** Quarrying, LULC, Landslide, Frequency Ratio, Susceptibility Map, Kerala

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