LANDSLIDE SUSCEPTIBILITY MAPPING, PART OF COORG REGION, KARNATAKA

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Introduction:

Landslide susceptibility mapping in the Coorg region of Karnataka has been a focal point due to its rugged topography and the associated risk of landslides. Previous studies, notably the work by Shetty and Reddy (2019) and the Karnataka State Natural Disaster Monitoring Centre (KSNDMC) report of 2018, have laid the foundation for understanding and assessing landslide susceptibility in this area. The terrain's geological diversity, ranging from rugged hills to varied soil compositions, creates a dynamic landscape prone to instability. With the aim of contributing to this ongoing research, our project focuses on a specific 10 km² area within Coorg, leveraging assessment of terrain attributes and field work to develop a comprehensive Landslide Susceptibility Map.

Objectives:

Our primary objectives include preparing a detailed landslide inventory map using satellite imagery and fieldwork, as well as compiling thematic layers for geological, topographic, and environmental conditions. Specifically, we aim to employ the Information Value Method to create a Landslide Susceptibility Map (LSM) categorized into five zones ranging from very low to very high susceptibility. Through these objectives, we seek to enhance understanding of landslide susceptibility in the Coorg region and provide valuable insights for risk assessment and mitigation efforts.

Methodology:

The methodology involves a systematic approach integrating satellite imagery analysis and field surveys. Satellite images are used to delineate land cover types, while field surveys provide ground truth data for validation and calibration. Thematic layers for geological, topographic, and environmental conditions are prepared by integrating data from various sources, including geological maps, digital elevation models, and land use/land cover data. The Frequency Ratio (FR) method is employed to assess landslide susceptibility, analyzing the correlation between historical landslide occurrences and terrain attributes such as slope, aspect,

elevation, lithology, and proximity to roads and rivers. The derived Landslide Susceptibility Index (LSI) map is then classified into five zones based on susceptibility levels.

Conclusion:

The culmination of our methodology has yielded promising results, with the developed Landslide Susceptibility Map providing valuable insights into areas at risk within the Coorg region. Through meticulous analysis of terrain attributes and historical landslide data, we have identified key factors influencing landslide susceptibility, enabling the categorization of the study area into five susceptibility zones. These findings underscore the significance of terrain characteristics and land use patterns in determining landslide susceptibility. In conclusion, our project contributes to the ongoing efforts to mitigate landslide risks in the Coorg region, providing stakeholders with valuable information for informed decision-making and disaster risk management.

Innovation:

The innovation in our project lies in the integration of advanced geospatial and environmental techniques to develop a comprehensive Landslide Susceptibility Map tailored to the Coorg region. By leveraging state-of-the-art methodologies and data sources, we aim to provide a detailed assessment of landslide susceptibility, aiding in effective risk assessment and mitigation strategies.

Scope for future work:

Moving forward, there are several avenues for future research and development in landslide susceptibility mapping. This includes incorporating additional data sources such as rainfall intensity, soil moisture, Geotechnical investigations and seismic activity to enhance the accuracy of the susceptibility model. Furthermore, ongoing monitoring and validation of the Landslide Susceptibility Map will be essential to assess its effectiveness and reliability over time. Collaborative efforts with local authorities and stakeholders will be crucial in implementing risk reduction measures and enhancing community resilience to landslides in the Coorg region. Additionally, research into innovative technologies and methodologies for landslide prediction and early warning systems can further strengthen disaster preparedness and response efforts.