

## **PREFACE**

Earth has its own life cycle in which rocks are born, grow old, die, and then re-emerge in our planet's melting core. Landslides are a natural occurrence. A landslide is typically a slow movement, but an exceptional natural event (such as consecutive torrential rains) or anthropic effects can accelerate it. Every year, landslides caused thousands of victims and deaths, as well as hundreds of billions of dollars in damages and environmental losses. As a result, identifying and mitigating landslide-prone areas is critical.

Engineers, geologists, and land use planners need a landslide susceptibility map to prevent and mitigate landslide hazards in the area. This paper examines the susceptibility of landslides in the Almora district of Uttarakhand. According to geological perspective, Almora locale is bumpy one—in the midst of Shivalik reaches and high Himalayas. Making it one of the most vulnerable areas to landslides.

Topographical, geological, and remote sensing data were collected and processed in this study using Arcmap and ArcGIS Pro software. Eight Causative factors were taken into account for this study were- slope, aspect, LULC, NDVI, roads, streams, lineaments and rainfall. These factors were reclassified by assigning a particular score on a scale of 1-9, with 9 being the safest score and 1 being highly susceptible. Weighted overlay analysis was performed on these factors to get a Landslide Susceptible map of the district which was then overlaid with landslide points occurrence of the past in order to confirm the results.

The susceptibility map classified the study area into three susceptible zones: high, moderate and low. The landslide occurrence was used to validate the results of the susceptibility mapping. The verification results showed a 77 percent accuracy rate. The validated results showed good agreement between the occurrence of landslides and the susceptibility map of the area. The weighted overlay vulnerability map has been validated for landslide hazard, mitigation, and land use planning for future construction in the area.