Analisis pengaruh parameter pengontrol gerakan tanah dalam pemetaan zona Kerentanan gerakan tanah dengan Metode Frequency Ratio dan Statistical Index: Studi kasus Kabupaten Cilacap, Jawa Tengah = Analysis of influence landslide parameters on landslide susceptibility mapping using the Frequency Ratio and Statistical Index Methods: Case study Cilacap Regency, Central Java

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Abstrak

Tingginya intensitas atau frekuensi kejadian gerakan tanah atau tanah longsor di Jawa Tengah terlebih di Kabupaten Cilacap yang merupakan salah satu wilayah dengan frekuensi kejadian longsor yang tinggi maka diperlukan adanya upaya mitigasi bencana yang tepat untuk mengurangi resiko bencana. Sejak tahun 1998-2023 terdapat 303 kejadian gerakan tanah, data tersebut dibagi menjadi 70% data training dan 30% data testing (validasi). Sebagai upaya mitigasi, diperlukan adanya kajian terkait analisis persebaran zona rawan longsor. Kajian tersebut mencakup identifikasi faktor penyebab tanah longsor melalui metode frequency ratio dan statistical index. Faktor penyebab gerakan tanah terdiri dari tingkat kemiringan lereng, elevasi, aspek lereng, intensitas curah hujan, jenis penutup lahan, tipe litologi, kerapatan sungai utama dan anak sungai, kerapatan jalan, kerapatan kelurusan, dan data kejadian longsor. Tujuan Frequency ratio yaitu mengokorelasikan kejadian gerakan tanah dengan faktor kausatif terkait dan Statistical index dapat memberikan bobot korelasi faktor tersebut terhadap kejadian gerakan tanah. Analisis dengan kedua metode tersebut dapat memperkuat interpretasi terkait pengaruh parameter gerakan tanah terhadap kejadian gerakan tanah. Kemudian akan dilakukan uji validasi melalui analisis Grafik AUC. Pada penelitian ini, hasil analisis frequency ratio bernilai AUC 84,9 dan hasil analisis statistical index sebesar 81,5. Kedua nilai tersebut termasuk kategori baik. Sehingga diperoleh bahwa faktor penyebab gerakan tanah di Cilacap dominan dipengaruhi oleh litologi batuan, tingkat kemiringan lereng, elevasi dan aspek lereng.
.....The high intensity or frequency of land movement or landslides in Central Java, especially in Cilacap Regency, which is one of the areas with a high frequency of landslides, means that appropriate disaster mitigation efforts are needed to reduce disaster risk. From 1998-2023 there were 303 ground movement incidents, the data was divided into 70% training data and 30% testing (validation) data. As a mitigation effort, a study is needed regarding the analysis of the distribution of landslide-prone zones. The study includes identifying factors that cause landslides using frequency ratio and statistical index methods. Factors causing land movement consist of slope level, elevation, slope Aspect, rainfall intensity, land cover type, lithology, density of main river network and tributary, density of road network, Lineament density, and data on landslide events. The purpose of the Frequency ratio is to correlate ground movement events with related causative factors and the Statistical index can provide a weight for the correlation of these factors with ground movement events. Analysis using these two methods can strengthen interpretations regarding the influence of ground motion parameters on ground motion events. Then a validation test will be carried out through AUC graph analysis. In this study, the results of the frequency ratio analysis were AUC 84.9 and the results of the statistical index analysis were 81.5. Both values are in the good category. So it was found that the factors causing land movement in Cilacap were predominantly influenced by rock lithology, slope level,

elevation and slope aspect.