Penilaian Kerawanan Longsor pada Ruas Jalan di Kecamatan Kaligesing, Kabupaten Purworejo, Provinsi Jawa Tengah

INTISARI

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Penelitian ini dilakukan untuk mengidentifikasi faktor-faktor yang mempengaruhi kejadian longsor di ruas jalan Kecamatan Kaligesing. Tujuan dari penelitian ini adalah (1) menganalisis sebaran spasial titik longsor pada ruas jalan Kaligesing; (2) menganalisis tipe longsor yang terjadi; (3) menganalisis tingkat kerawanan longsor pada ruas jalan di Kaligesing menggunakan pendekatan *Frequency Rasio* (FR); dan (4) merumuskan rekomendasi mitigasi longsor yang sesuai di Kaligesing berdasarkan tingkat kerawanan longsor yang teridentifikasi.

Metode penelitian yaitu pengumpulan data melalui survei lapangan dengan pendekatan *purposive sampling*. Survei lapangan dilakukan untuk mengidentifikasi sebaran titik longsor di sepanjang ruas jalan. Data longsor diamati berdasarkan tipe dan dimensi longsor. Sebanyak 12 faktor dianalisis sebagai determinan kerawanan longsor, meliputi arah hadap lereng, elevasi, geologi, kemiringan lereng, kelengkungan, derajat hemeroby, *Topographic Wetness Index* (TWI), jarak dari sungai, jarak dari jalan, curah hujan, tekstur tanah dan agregat tanah. Analisis faktor determinan dilakukan dengan pendekatan spasial secara kuantitatif menggunakan FR. Wawancara mendalam (*in-depth* interview) dilakukan kepada masyarakat dan stakeholder sebagai informan kunci untuk mengidentifikasi kondisi sosial, persepsi risiko serta upaya mitigasi longsor yang telah dilakukan.

Hasil penelitian menunjukkan bahwa: (1) terdapat 82 titik longsor dengan pola mengelompok; (2) tipe longsor dominan yaitu tipe mendatar/ translational dengan variasi dimensi yang ekstrem; (3) tingkat kerawanan longsor pada ruas jalan di daerah penelitian terdiri dari sangat tinggi (73 km), tinggi (70,77 km), sedang (0,07km), rendah (0 km) dan sangat rendah (0,03 km) dengan faktor pemicu signifikan yaitu curah hujan dan model FR yang memiliki kemampuan baik dengan nilai *Area Under Curve* (AUC) sebesar 0,75 untuk *training set* dan 0,71 untuk *testing set*; dan (4) kolaborasi antara aspek struktural dan non-struktural dapat menciptakan sistem mitigasi bencana yang adaptif, kontekstual dan berbasis pemberdayaan masyarakat.

Kata kunci: Kerawanan longsor, jalan, *frequency ratio*, Kaligesing

Landslide Susceptibility Assessment of Road Sections in Kaligesing Sub-district, Purworejo District, Central Java Province

ABSTRACT

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This research was conducted to identify factors that influence the occurrence of landslides on road sections in Kaligesing Sub-district. The objectives of this research are (1) to analyze the spatial distribution of landslide points on Kaligesing roads; (2) to analyze the characteristics of landslides that occur; (3) to analyze the level of landslide susceptibility on road sections in Kaligesing using FR approach; and (4) to formulate appropriate landslide mitigation recommendations in Kaligesing based on the identified landslide susceptibility level.

The research method is data collection through field survey with purposive sampling approach. Field survey was conducted to identify the distribution of landslide points along the road. Landslide characteristics data were observed based on landslide type and dimension. A total of 12 factors were analyzed as determinants of landslide susceptibility, including slope direction, elevation, geology, slope, curvature, hemeroby degree, Topographic Wetness Index (TWI), distance from river, distance from road, rainfall, soil texture and soil aggregate. Determinant factor analysis was conducted using a quantitative spatial approach using Frequency Ratio (FR). In-depth interviews were conducted to the community and stakeholders as key informants to identify social conditions, risk perception and landslide mitigation efforts that have been conducted.

The results showed that: (1) there are 82 landslide points with clustered pattern; (2) the dominant landslide type is horizontal/translational type with extreme dimensional variation; (3) the landslide susceptibility level on road sections in the study area consists of very high (73 km), high (70.77 km), medium (0.07km), low (0 km) and very low (0.03 km) with significant trigger factor which is rainfall and FR model which has good capability with Area Under Curve (AUC) value of 0.75 for training set and 0.71 for testing set; and (4) Collaboration between structural and non-structural aspects can create an adaptive, contextual and community empowerment-based disaster mitigation system.

Keywords: *landslide susceptibility, road section, geospatial, frequency ratio, Kaligesing*