

STUDI GEOMORFOLOGI PENILAIAN KERENTANAN LONGSOR DENGAN METODE HEURISTIK-STATISTIK DI DAS KAYANGAN KULON PROGO

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INTISARI

Model heuristik-statistik diaplikasikan dalam penelitian ini untuk mengetahui tingkat kerentanan longsor di DAS Kayangan Kabupaten Kulon Progo Daerah Istimewa Yogyakarta. Adapun tujuan dari penelitian ini adalah untuk mempelajari kondisi geomorfologi dan untuk mengetahui tingkat kerentanan longsor di DAS Kayangan.

Statistik bivariat berdasarkan *weights of evidence* digunakan untuk mengetahui hubungan antara longsor dengan faktor-faktor yang diyakini berpengaruh terhadap longsor. Beberapa peta tematik yang merepresentasikan faktor longsor dibuat berdasarkan cek lapangan dan teknik SIG. Hasil nilai bobot *weights of evidence* setiap faktor dipertimbangkan berdasarkan analisis geomorfologi untuk meyakinkan asumsi-asumsi heuristik yang dipakai. Observasi lapangan dan interpretasi foto udara dilakukan untuk menggambarkan kondisi geomorfologi daerah penelitian. Seluruh peta tematik kemudian diberi bobot nilai berdasarkan *weights of evidence* dan analisis geomorfologi sehingga menjadi peta kerentanan longsor.

Hasil penelitian menunjukkan bahwa kondisi geomorfologi DAS Kayangan dapat dibagi menjadi tiga yaitu zone utara, zone tengah, dan zone tenggara. Zone utara didominasi oleh proses denudasi. Pelapukan, erosi, dan longsor terjadi secara intensif di zone utara. Zone tengah terdiri atas bentuklahan struktural yang tersusun oleh batuan breksi vulkanik resisten. Zone tenggara didominasi oleh bentuklahan fluvial. Distribusi kejadian longsor sesuai dengan pembagian zone geomorfologi DAS Kayangan. Kejadian longsor terbanyak ditemukan pada zone utara DAS Kayangan. Hasil penelitian juga menunjukkan bahwa tingkat kerentanan longsor dan tipologi longsor tersebar berdasarkan kondisi geomorfologi. Analisis *success rates* digunakan untuk mengevaluasi akurasi peta kerentanan longsor DAS Kayangan. Analisis *success rates* menunjukkan bahwa tingkat akurasi model heuristik-statistik mencapai 85%.

Kata kunci: geomorfologi, heuristik-statistik, longsor, kerentanan

STUDY GEOMORPHOLOGY ON THE ASSESSMENT OF LANDSLIDE SUSCEPTIBILITY USING HEURISTIC-STATISTIC METHOD IN KAYANGAN CATCHMENT KULON PROGO

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ABSTRACT

In this research, heuristic-statistic modeling was applied to derive landslide susceptibility map of Kayangan catchment Kulon Progo District Yogyakarta Special Province. The objectives of this research were to study geomorphological condition and to evaluate landslide susceptibility area in Kayangan catchment.

Bivariate statistic based on weights of evidence was applied to evaluate the relationship between active landslide and various controlling factors of landslide. Thematic maps representing various controlling factors of landslide were generated by field check and GIS techniques. The result of weights of evidence on each controlling factor of landslide was evaluated with geomorphological condition of the study area to confirm the heuristic assumptions. Geomorphology photo interpretation accompanied by field check was applied to figure out the geomorphological condition of Kayangan catchment. All of thematic maps have been weighted based on weights of evidence and geomorphological condition into landslide susceptibility map.

The results of this research showed that geomorphological condition of Kayangan catchment can be divided into three zones. There were northern zone, middle zone and south-east zone. The northern zone was dominated by denudation processes in which weathering, erosion, and mass wasting occurred very intensive. The middle zone consisted of structural landform embodied by resistance volcanic breccias. The south-east zone was dominated by fluvial landform. The distribution of landslide had been matched with geomorphological zone of Kayangan catchment. The largest number of landslide occurrences was found in the northern zone. Moreover, the landslide susceptibility and landslide typology had been also matched with geomorphological zone of Kayangan catchment. The success rates analysis was used to evaluate accuracy of landslide susceptibility map. It showed that the accuracy of heuristic-statistic model attained 85%.

Key words: geomorphology, heuristic-statistic, landslide, susceptibility