

INTISARI

Kawasan Wisata Guci berada di Lembah Guci, sisi barat laut Gunung Slamet. Kawasan ini dikunjungi oleh ratusan ribu wisatawan setiap tahunnya karena terkenal akan wisata pemandian air panas yang bersumber dari hulu Sungai Gung. Oleh karena itu, banyak objek wisata dan hotel yang dibangun di sekitar aliran Sungai Gung. Tingginya aktivitas manusia di sekitar aliran Sungai Gung meningkatkan paparan risiko bahaya letusan gunungapi salah satunya, yaitu bahaya lahar. Lahar dapat mengalir melewati sungai-sungai di lembah gunungapi. Oleh karena itu, sebagai upaya mitigasi, perlu diketahui mekanisme aliran lahar serta model sebaran area landaan lahar di daerah penelitian.

Penelitian ini menggunakan metode pengamatan lapangan, analisis granulometri terhadap matriks endapan lahar, analisis variasi komponen endapan lahar, dan pemodelan area landaan lahar dengan fitur Laharz pada perangkat lunak ArcMap menggunakan skenario volume lahar 34.000 m³, 340.000 m³, 500.000 m³, 600.000 m³, 700.000 m³, 800.000 m³, 900.000 m³, dan 1.000.000 m³. Endapan lahar di daerah penelitian diklasifikasikan menjadi lahar tua dan lahar muda. Karakteristik endapan lahar berdasarkan pengamatan lapangan, analisis variasi komponen endapan lahar, dan analisis granulometri menunjukkan struktur masif, tidak ditemukan stratifikasi atau imbrikasi; variasi komponen endapan lahar secara umum memiliki fragmen heterogen dan matriksnya tersusun atas litik, skoria, mineral, material lempung, dan tuf; kandungan bahan halus (lanau-lempung) < 5% (endapan lahar muda). Berdasarkan karakteristik endapan lahar muda, mekanisme aliran lahar di daerah penelitian berupa aliran debris non-kohefif yang memiliki densitas besar dan bersifat erosif sehingga memiliki daya rusak cukup besar. Analisis granulometri endapan lahar muda menunjukkan nilai yang linear dan memiliki klasifikasi parameter ukuran butir seragam sehingga diinterpretasikan belum adanya transformasi mekanisme aliran lahar muda dalam jarak transportasi 1,3 km. Model area landaan lahar dengan fitur Laharz menunjukkan genangan lahar terpusat pada aliran Sungai Gung yang mampu melanda Kawasan Wisata Guci, lahan pertanian dan kawasan hutan/semak belukar. Morfologi lembah Sungai Gung yang dalam menyebabkan sebaran lateral lahar tidak signifikan dibandingkan sebaran horizontalnya (memanjang). Makin besar volume lahar yang dimodelkan makin luas area landaan lahar dan meningkatkan risiko kerugian materi daerah yang terlanda lahar.

Kata kunci: Lahar, Lembah Guci, analisis granulometri, Laharz, mitigasi.

ABSTRACT

The Guci Tourism Area is located in the Guci Valley, on the northwestern slope of Mount Slamet. This area attracts hundreds of thousands of visitors annually, renowned for its hot springs sourced from the headwaters of the Gung River. Consequently, numerous tourist attractions and hotels have been developed along the Gung River. However, the high level of human activity around the river increases exposure to volcanic eruption hazards, particularly the risk of lahars. Lahars can flow through rivers in volcanic valleys, making it crucial to understand their characteristics, flow mechanisms, and the potential inundation areas in the study region for effective mitigation.

This research uses field observation methods, granulometric analysis of lahar deposit matrices, analysis of lahar deposit component variations, and lahar inundation area modeling using the Laharz feature in ArcMap software. The modeling was conducted with lahar volume scenarios of 34,000 m³, 340,000 m³, 500,000 m³, 600,000 m³, 700,000 m³, 800,000 m³, 900,000 m³, and 1,000,000 m³. The lahar deposits in the study area are classified as old lahar and young lahar. Based on field observations, lahar deposit component variation analysis, and granulometric analysis, the lahar deposits have a massive structure with no stratification or imbrication. The lahar deposit components generally consist of heterogeneous fragments, with the matrix composed of lithics, scoria, minerals, clay material, and tuff. Fine material content (silt-clay) is less than 5% in the young lahar deposits. Based on these characteristics, the lahar flow mechanism in the study area is classified as non-cohesive debris flow, which has high density and is erosive, resulting in significant destructive potential. The granulometric analysis of the young lahar deposits shows a linear trend and a uniform grain size classification. This suggests that there has been no transformation in the flow mechanism of the young lahar within the 1.3 km transport distance. The lahar inundation area model using the Laharz feature shows that lahar flows are concentrated along the Gung River, which can impact the Guci tourist area, agricultural land, and forest/shrub areas. The Gung River valley's deep morphology limits the lahar's lateral spread compared to its horizontal (longitudinal) spread. As the lahar volume increases, the inundation area expands, raising the risk of material losses in affected areas.

Keywords: *lahar, Guci Valley, granulometric analysis, Laharz, mitigation.*