

INTISARI

Waduk Bener merupakan proyek strategis nasional yang dibangun di perbatasan Kabupaten Purworejo-Wonosobo untuk mendukung irigasi, pembangkit listrik, dan penyedia air baku. Namun, keberadaannya berada pada wilayah dengan karakteristik geomorfologi yang kompleks dan litologi vulkanik lapuk, sehingga memiliki kerawanan tinggi terhadap bencana longsor. Penelitian ini bertujuan untuk mengkaji dampak bencana longsor di sekitar Waduk Bener, dampak lingkungan yang dapat timbul, serta merumuskan strategi pengelolaan lingkungan berbasis pengendalian bencana untuk menurunkan potensi ancaman dari bencana tersebut. Metode yang digunakan melibatkan pemodelan potensi longsor berbasis skenario menggunakan analisis spasial dan software SAGA-GIS dengan pendekatan pemodelan *Gravitational Process Path* (GPP) yang mencakup parameter jarak jangkauan, kecepatan aliran, ketebalan material, dan volume longsor. Hasil pemodelan menunjukkan bahwa volume material longsor yang berpotensi masuk ke dalam tubuh waduk mencapai 215.621,94 m³, dengan kecepatan aliran material di beberapa jalur mencapai rentang 12-20m/s. Kondisi ini menimbulkan dampak terhadap lingkungan berupa percepatan sedimentasi, penurunan kapasitas tampung waduk, serta potensi terbentuknya gelombang impulsif akibat tumbukan material ke badan air. Dampak lingkungan yang teridentifikasi meliputi kerusakan fungsi hidrologis waduk, gangguan pada operasional sumber daya air, serta potensi dampak langsung ke masyarakat sekitar. Untuk menanggulangi dampak tersebut, dirumuskan strategi pengelolaan lingkungan berbasis pengendalian bencana longsor dengan integrasi pendekatan struktural dan non-struktural. Strategi struktural meliputi pembangunan sabo dam, drainase lereng, dan EWS. Sedangkan strategi non-struktural mencakup sosialisasi ancaman bencana kepada masyarakat, edukasi terkait tahapan penggenangan, serta monitoring jangka panjang. Penelitian ini menyimpulkan bahwa upaya pengelolaan lingkungan tersebut harus dilakukan secara proaktif sejak fase pembangunan Waduk Bener. Pengendalian longsor bukan hanya sekedar bertujuan untuk melindungi infrastruktur, namun juga untuk menjaga keberlanjutan fungsi lingkungan di kawasan sekitar waduk.

Kata kunci: Longsor, Dampak Lingkungan, Pengelolaan Lingkungan, Pengendalian Bencana.

ABSTRACT

Bener Reservoir is a national strategic project built on the border of Purworejo-Wonosobo Regency to provide irrigation, power generation and raw water supply. However, it is located in an area with complex geomorphological characteristics and weathered volcanic lithology, making it highly susceptible to landslides. This study aims to assess the damage of landslides around the Bener Reservoir, the environmental impacts that may occur, and formulate disaster control-based environmental management strategies to reduce the potential threat of such disasters. The method utilizes landslide scenario-based potential modeling using spatial analysis and SAGA-GIS software with a Gravitational Process Path (GPP) modeling approach that includes parameters of reach distance, flow velocity, material thickness, and landslide volume. The modeling results showed that the volume of landslide material that could potentially enter the reservoir body reached 215,621.94 m³, with velocity in some paths reaching a range of 12-20m/s. This condition has an impact on the environment accelerated sedimentation, a decrease in reservoir capacity, and the potential for the formation of impulsive waves due to the collision of materials into water bodies. The identified environmental impacts include damage to the hydrological function of the reservoir, disruption to water resources operations, and potential direct impacts to surrounding communities. To mitigate these impacts, an environmental management strategy based on landslide disaster control was formulated with the integration of structural and non-structural approaches. Structural strategies include the construction of sabo dams, slope drain channel, and EWS. While non-structural strategies include socialization of disaster threats to the community, education related to the stages of inundation, and long-term monitoring. This study concludes that environmental management efforts must be carried out proactively from the construction phase of the Bener Reservoir. Landslide control not only aims to protect the infrastructure, but also to maintain the sustainability of environmental functions in the area around the reservoir.

Keyword: Landslide, Landslide Potential, Environmental Impact, Environmental Management, Disaster Control.