

INDONESIAN MINING JOURNAL	
pISSN 0854 – 9931; eISSN 2527 – 8797	Volume 28, No. 1, April 2025
Abstract Index	
DOI: 10.30556/imj.Vol28.No1.2025.1548 Dwinagara, Barlian; Akbar, Wahyu N.; Saptono, Singgih; Haryanto, Dahono; Haq, Shofa R.; Wiyono, Bagus; and Lusantono, Oktarian W. (UPN "Veteran" Yogyakarta) Comparative Assessment of Rock Slope Stability Analysis Using Generalized Anisotropic and Joint Network <i>Penilaian Perbandingan Kestabilan Lereng Batuan Menggunakan Generalized Anisotropic dan Joint Network</i> IMJ, Vol. 28, No. 1, April 2025, P. 1-15 Rock slope stability analysis in a geotechnical study is an important issue in mining engineering. Kinematic analysis is a well-known method to determine potential failures of the rock slope based on structural orientations, but it sometimes disregards the structural properties information. Structural properties are often known as the highly interpreted domains in rock slope engineering; thus, simplification was made for the analysis. Simplification may lead to vague conditions of analysis and reduce its accuracy. Therefore, the aims of this research is to assess the effect of rock structure properties such as heterogeneity, discontinuity, and anisotropic properties of the rock mass. The assessment conducted using the limit-equilibrium method employed the Generalized Anisotropic (GA) material model were compared with finite element method (FEM) using the shear strength reduction (SSR) method employing the joint network rock mass model. The analysis results show that an actual rock slope with a generalized anisotropic material model in the LEM analysis and joint network material model in the FEM analysis is stable with Safety Factor > 1, and the maximum strain model is less than the minimum strain threshold (maximum strain < 0.1). Combining rock slope stability analysis methods aims to produce accurate and representative results regarding the rock mass' condition. This research improves the interpretation of rock slope stability analyses, resulting in a more accurate estimation of the factor of safety (FOS). Keywords: slope stability, limit equilibrium method, finite element method, anisotropy, jointed rock masses	area to maintain stockpile stability. This is achieved through an analysis of soil bearing capacity and slope stability. The research was conducted at the ASTIM In Pit Dump (IPD) using actual materials. Data were obtained from direct shear tests and physical properties tests, then statistically analyzed to determine the average value, standard deviation, and minimum and maximum relative values. These data were subsequently input into geotechnical software to perform a slope stability analysis under pessimistic conditions, including water-saturated slopes with a horizontal seismicity coefficient of 0.045. The simulation results did not meet the stability criteria, yielding a safety factor of 0.647. Therefore, engineering design modifications were necessary, including widening the slope angle to 7.61°, consisting of six steps with a level height of 5 meters, a width of 30 meters, and a slope angle of 25°. This redesign resulted in a safety factor (SF) of 1.254 which meets slope stability criteria based on Bowles (1989) and a probability of failure (PoF) of 4.1%, in accordance with the Decree of the Minister of Energy and Mineral Resources No. 1827 K/30/MEM/2018. Keywords: disposal area, slope stability, slope failure probability, slope stability simulation
DOI: 10.30556/imj.Vol28.No1.2025.1628 Fahrezi, Muhammad A.; Zakaria, Zufaldi; Khoirullah, Nur and Laksana, Prima (PT Arutmin Indonesia; Universitas Padjadjaran) Landslide Probability in the East Asam Dump In Pit Area of PT Arutmin Indonesia Concession Area Asamasam Mine, South Kalimantan <i>Probabilitas Longsor Timbunan di Area In Pit Dump Asam Timur Daerah Konsesi PT Arutmin Indonesia Tambang Asamasam, Kalimantan Selatan</i> IMJ, Vol. 28, No. 1, April 2025, P. 17-29 Open pit mining involves excavation of soil and overburden, which requires a well-planned disposal	DOI: 10.30556/imj.Vol28.No1.2025.1655 Khairu Rizal, Nurkhamim and Arifudin Idrus (UPN "Veteran" Yogyakarta; Gadjah Mada University) Distribution and Correlation of Critical Minerals Pb-Zn Skarn Deposits in Cihaur Village, Sukabumi District, West Java <i>Sebaran dan Korelasi Mineral Kritis pada Endapan Skarn Pb-Zn di Desa Cihaur, Kabupaten Sukabumi, Jawa Barat</i> IMJ, Vol. 28, No. 1, April 2025, P. 31-44 This research investigates ore samples from Cihaur Village, Sukabumi District, West Java, which exhibit significant skarn alteration in limestone, is examined for its petrographic and mineragraphic features. Secondary minerals identified include pyroxene, garnet, calcite, and opaque minerals, while the primary ore minerals are chalcocopyrite (CuFeS₂), galena (PbS), and sphalerite (ZnS). Five samples were analyzed geochemical analysis using the ICP-MS method to assess the concentration of important elements including Pb, Zn, Cu, Ag, Sb, Bi, Cd, Mg, Al, Ca, Fe, and As. Element distribution patterns were examined using spider diagrams, providing insight into environmental gradients influencing mineral exploration. The study revealed a high positive correlation between Pb and Zn, suggesting co-deposition in sulfide mineralization. Pb also correlates strongly with Ag and Sb. This study confirms the considerable economic potential of the Sukabumi skarn deposits for Pb, Zn, Cu, and precious metals such as Ag. Exploration value is increased when essential minerals like Sb and Cd are present. Variations in geochemical conditions indicate the influence of magmatic intrusions and hydrothermal activity on element distribution. These results provide

a solid foundation for further exploration to delineate mineralization zones in the region. Keywords: critical minerals, mining, geochemical, distribution, correlation	DOI: 10.30556/imj.Vol28.No1.2025.1595 Juniah, Restu; Ambarita, Novitasari; Syarifudin; Zakir, Syaifudin; Rahmi, Hisni; and Amanda Ridho R. (Sriwijaya University; Jambi University) Technical and Economic Assessment on Environmental Quality Management of Coal Stockpile for Environmental Sustainability <i>Penilaian Teknis dan Ekonomis Kualitas Pengelolaan Lingkungan Stockpile Batubara untuk Lingkungan Berkelanjutan</i> IMJ, Vol. 28, No. 1, April 2025, P. 53-72
DOI: 10.30556/imj.Vol28.No1.2025.1539 Wiratama, Jarot; Khadafi, Muhammad R.; Zahar, Wahyudi; Rahmi; Sa'ban, Yanuar F.; and Marlinda, Lenny (University of Jambi) The Effect of Hydrothermal Process on Increasing Heating Value and Reducing Moisture Content of Low-Rank Coal <i>Pengaruh Proses Hidrotermal Terhadap Peningkatan Nilai Kalor dan Penurunan Kadar Air pada Batubara Peringkat Rendah</i> IMJ, Vol. 28, No. 1, April 2025, P. 45-52 As a low-rank coal, brown coal is characterized to have high water content. It is required a method to improve coal quality that can be used for effective coal utilization. One of the methods is to apply thermal dewatering technology which focuses on improving the quality of low-rank coal using water medium and autoclave. The purpose of this study was to determine the effect of coal to water ratio (w/v) and the effect of particle size of a low rank-coal on water content and calorific value using the hydrothermal method. Coal was processed under hydrothermal conditions at 150 °C for 60 min. For a mixture of 100 g of 25 mesh coal and 50 mL of water, the calorific value and water content after the hydrothermal process reached 5,849 kcal/kg and 5.10% (adb), respectively. While for a mixture of 100 g of 40 mesh coal and 50 mL of water, the calorific value and water content after the hydrothermal process reached 5,789 kcal/kg and 4.94% (adb), respectively. The calorific value obtained increased from the initial value of 3,296 kcal/kg and the water content decreased from the initial value of 44.34% for the coal condition before hydrothermal process. It can be concluded that the hydrothermal process with heating without oxygen carried out by a hydrothermal reactor could increase the calorific value of low-rank coal and reduce water content. Keywords: hydrothermal; low-rank coal; calorific value; water content	Coal mining has positive impacts in the form of increasing the national economy and people's income. However, it also has negative impacts, including the decrease of environmental quality such as air, soil, and noise, as well as the potential for spontaneous combustion. The research was conducted to assess the technical and economic aspects of environmental management at coal stockpiles in the Tarahan Port Unit of PT Bukit Asam Tbk to support environmental sustainability. The technical assessment of stockpile environmental management was carried out by comparing observation results with the Environmental Management and Monitoring Plan Document (RKL/RPL) and Indonesia's applicable Environmental Quality Standards. The economic assessment focused on the cost of environmental monitoring and management by observing the discrepancies between the planned and realization in the first and second quarters. The technical assessment results show that environmental management at the stockpile has been implemented effectively. Air quality parameters and noise levels remain below the established standards, soil quality is classified good as indicated by vegetation growth, and no spontaneous combustion occurred during the observation period. The economic assessment revealed a discrepancy of 2.02% between the planned cost of IDR 121,183,548 to the actual realization of IDR 123,641,668. This increase was attributed to the construction of a dust reduction system and an operational chimney for the 2X8 MW Steam Power Plant, through the use of Electrostatic Precipitators. The study recommends a detailed inventory of environmental cost plans and potential cost escalation to anticipate risk factors. It also highlights the need for regular maintenance of machines that are known to frequently produce emissions. These efforts are expected to reduce the emissions and lower the costs of environmental management and monitoring. Keywords: assessment, technical, economic, environmental management, stockpile