



INTISARI

Penelitian ini menganalisis hubungan jangka pendek, jangka panjang, dan kausalitas antara produksi batubara, pertumbuhan ekonomi (PDB), dan emisi CO₂ di Indonesia selama periode 1981–2023. Hasil analisis menunjukkan bahwa dalam jangka pendek terdapat hubungan linear positif antara konsumsi energi dan produksi batubara. Hubungan non-linear teridentifikasi antara pertumbuhan ekonomi dan produksi batubara, di mana kontraksi ekonomi menyebabkan penurunan produksi yang lebih tajam dibandingkan dengan peningkatan produksi saat ekonomi tumbuh. Emisi karbon juga memiliki pengaruh negatif terhadap produksi batubara akibat tekanan regulasi lingkungan. Dalam jangka panjang, PDB berhubungan positif secara linear dengan produksi batubara, sementara emisi karbon menunjukkan hubungan negatif, mencerminkan dampak kebijakan dekarbonisasi dan transisi energi. Uji kausalitas mengungkap bahwa produksi batubara memengaruhi konsumsi energi dan emisi karbon, serta dipengaruhi oleh dinamika pertumbuhan ekonomi domestik dan global. Temuan ini memberikan implikasi penting bagi perumusan kebijakan energi berkelanjutan di Indonesia.

Kata kunci: produksi batubara, pertumbuhan ekonomi, emisi karbon, ARDL, kausalitas, transisi energi



ABSTRACT

This study analyzes the short-term, long-term, and causality relationships between coal production, economic growth (GDP), and CO₂ emissions in Indonesia over the period 1981-2023. The analysis shows that in the short term there is a positive linear relationship between energy consumption and coal production. A non-linear relationship is identified between economic growth and coal production, where economic contraction leads to a sharper decline in production compared to an increase in production as the economy grows. Carbon emissions also have a negative influence on coal production due to environmental regulatory pressures. In the long run, GDP is linearly positively related to coal production, while carbon emissions show a negative relationship, reflecting the impact of decarbonization and energy transition policies. Causality tests reveal that coal production affects energy consumption and carbon emissions, and is influenced by domestic and global economic growth dynamics. These findings provide important implications for the formulation of sustainable energy policies in Indonesia.

Keywords: coal production, economic growth, carbon emissions, ARDL, causality, energy transition