

INTISARI

Peningkatan aktivitas ekonomi dan demografi mendorong pertumbuhan konsumsi energi yang berimplikasi terhadap tekanan lingkungan. Studi ini mengevaluasi bagaimana kepadatan penduduk, *affluence* berupa PDRB per kapita dan kuadrat PDRB per kapita, dan rasio elektrifikasi mempengaruhi konsumsi energi yang direpresentasikan melalui konsumsi listrik dan kepemilikan kendaraan bermotor di 33 provinsi di Indonesia berdasarkan pendekatan IPAT. Selain itu, penelitian ini juga menguji keberlakuan hipotesis Environmental Kuznets Curve (EKC) dalam konteks konsumsi energi di Indonesia. Penelitian ini menggunakan pendekatan kuantitatif dengan metode analisis data panel *Fixed Effect Model* (FEM) yang mengacu pada model STIRPAT (*Stochastic Impacts by Regression on Population, Affluence, and Technology*). Hasil penelitian menunjukkan bahwa kepadatan penduduk, PDRB per kapita, kuadrat PDRB per kapita, dan urbanisasi berpengaruh signifikan terhadap konsumsi listrik. Sedangkan untuk konsumsi bahan bakar melalui kepemilikan kendaraan, hanya kepadatan penduduk yang signifikan. Temuan ini mengindikasikan bahwa model *Environmental Kuznets Curve* (EKC) berlaku dalam konteks konsumsi listrik, ditunjukkan dengan hubungan non-linear antara pendapatan dan konsumsi energi. Implikasi hasil ini menunjukkan pentingnya transisi energi bersih dan kebijakan efisiensi berbasis pertumbuhan ekonomi regional.

Kata kunci: konsumsi energi, listrik dan kepemilikan kendaraan, *Environmental Kuznets Curve* (EKC), STIRPAT, *Fixed Effect Model*, data panel

ABSTRACT

The increasing intensity of economic and demographic activities has significantly driven energy consumption growth, which in turn puts pressure on the environment. This study examines how to population density, affluence from GDP per capita and squared GDP per capita, and electrification ratio on energy consumption, represented by electricity usage and vehicle ownership across 33 provinces in Indonesia by employing the IPAT framework. In addition, the study examines the validity of the Environmental Kuznets Curve (EKC) hypothesis in the context of energy consumption. A quantitative approach is employed using panel data analysis through the Fixed Effects Model (FEM) based on the STIRPAT model (Stochastic Impacts by Regression on Population, Affluence, and Technology). The results reveal that population density, GDP per capita, squared GDP per capita, and urbanization have a significant effect on electricity consumption. Meanwhile, for fuel consumption as proxied by vehicle ownership, only population density is found to be statistically significant. The findings confirm the presence of the EKC in electricity consumption, indicated by the inverted U-shaped relationship between income and energy use. These results imply the importance of implementing clean energy transition strategies and efficiency-based energy policies, especially in regions with high economic growth and population density.

Keywords: energy consumption, electricity and vehicle ownership, *Environmental Kuznets Curve (EKC)*, STIRPAT, *Fixed Effects Model*, panel data