

INTISARI

Keterbukaan perdagangan yang meningkat sebagai hasil dari globalisasi ekonomi telah mendorong pertumbuhan ekonomi global, tetapi juga meningkatkan tekanan terhadap lingkungan. Sejalan dengan isu tersebut, penelitian ini bertujuan untuk menganalisis hubungan keterbukaan perdagangan, industrialisasi, dan konsumsi energi terbarukan terhadap *ecological footprint* di negara-negara Eropa. Studi ini mengatasi masalah heterogenitas dan ketergantungan silang antarnegara dengan menggunakan data panel dan pendekatan *Cross-Sectionally Augmented Autoregressive Distributed Lag* (CS-ARDL). Hasil estimasi menunjukkan bahwa, baik dalam jangka pendek maupun jangka panjang, keterbukaan perdagangan meningkatkan *ecological footprint*, sementara konsumsi energi terbarukan secara signifikan menguranginya. Adapun pengaruh industrialisasi terhadap *ecological footprint* tidak signifikan. Selanjutnya, hasil uji kausalitas Dumitrescu-Hurlin menunjukkan adanya hubungan kausal dua arah (*bi-causal*) yang signifikan antara keterbukaan perdagangan dan *ecological footprint*. Sementara itu, konsumsi energi terbarukan dan industrialisasi memiliki hubungan kausal satu arah (*uni-causal*) terhadap *ecological footprint*.

Kata kunci: *ecological footprint*, keterbukaan perdagangan, industrialisasi, energi terbarukan, pembangunan berkelanjutan, CS-ARDL.

ABSTRACT

The increasing trade openness as a result of economic globalization has driven global economic growth, but it has also intensified environmental pressure. In line with this issue, this study aims to analyze the relationship between trade openness, industrialization, and renewable energy consumption on the ecological footprint in European countries. The study addresses the challenges of heterogeneity and cross-sectional dependence among countries by employing panel data and the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) approach. The estimation results show that, in both the short and long run, trade openness increases the ecological footprint, while renewable energy consumption significantly reduces it. Meanwhile, the impact of industrialization on the ecological footprint is not significant. Furthermore, the Dumitrescu-Hurlin causality test reveals a significant bi-directional (bi-causal) relationship between trade openness and the ecological footprint. On the other hand, renewable energy consumption and industrialization show a one-way (uni-causal) relationship toward the ecological footprint.

Keywords: *ecological footprint, trade openness, industrialization, renewable energy, sustainable development, CS-ARDL.*