

ABSTRACT

This study investigates the relationship between economic growth and deforestation in Indonesia within the framework of the Environmental Kuznets Curve (EKC), emphasizing the role of economic, structural, and socio-demographic factors in shaping forest loss dynamics. As one of the countries with high deforestation rates, Indonesia faces a fundamental trade-off between economic expansion and environmental sustainability. However, the relationship is inherently non-linear and dynamic, requiring an empirical approach capable of capturing both non-linearity and persistence in deforestation. This study aims to test the validity of the EKC hypothesis and identify key determinants of deforestation in Indonesia.

Using panel data from 33 provinces over the period 2014–2024, this study applies the Two-Step System Generalized Method of Moments (GMM) estimator to address endogeneity issues and account for the dynamic nature of deforestation. Deforestation is proxied by forest cover loss, while explanatory variables include GDP per capita and its squared term, extractive forestry investment, forest fire area, palm oil production, number of mining firms, population, and human development index.

The findings reveal a significant inverted U-shaped relationship between economic growth and deforestation, supporting the EKC hypothesis in the Indonesian context. Economic growth initially increases deforestation through scale effects, but reduces it at later stages through structural transformation and improved efficiency. Deforestation also exhibits strong persistence over time. Furthermore, extractive investment, forest fires, and palm oil expansion significantly exacerbate deforestation, whereas human development and population are associated with lower deforestation levels. These results highlight the importance of structural economic transformation and strengthened environmental governance in achieving sustainable forest management.

Keywords: deforestation, economic growth, Environmental Kuznets Curve, dynamic panel GMM