

Assessing the Impact of Renewable Energy Consumption on CO2 Emissions in Indonesia: An ARDL Approach

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Abstract

Indonesia, as a developing country, has the ambition to implement structural changes to achieve increased economic growth, one of which is through enhancing economic activity. However, this increase tends to be accompanied by a rise in its primary externality: CO2 emissions. Amid the current global climate change crisis, CO2 emissions are a key factor contributing to this issue, as they have the highest concentration in the atmosphere. Therefore, the purpose of this study is to explore the relationship between renewable energy consumption and CO2 emissions in Indonesia. This research utilizes the ARDL (Auto-Regressive Distributed Lag) method with secondary data on CO2 emissions, GDP, population growth, agricultural land, and renewable energy consumption in Indonesia from 1990 to 2020. The estimation results indicate that GDP and renewable energy consumption have a negative effect on CO2 emissions, while agricultural land and population growth have a positive effect on CO2 emissions.

Keywords: CO2 emission, renewable energy consumption, ARDL, Indonesia