

**EFFECTS OF ENERGY CONSUMPTION, RENEWABLE ENERGY AND
ECONOMIC GROWTH ON CO₂ EMISSIONS IN THREE SELECTED
ASEAN COUNTRIES**

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MASTER OF SCIENCE UNIVERSITI MALAYSIA TERENGGANU

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Development and urbanization in a country has shown that economic growth is very important for developing countries, but rapid economic activity in a country is not an indicator of the development of a dynamic and sustainable economy. Recently, studies on the linkages between energy consumption, economic growth and climate change revealed that environmental degradation occurs in tandem with energy use and economic growth. Therefore, this study aims to investigate the causal relationship between energy consumption, economic growth, carbon dioxide emissions and renewable energy by using time series data from 1980-2011 in three selected ASEAN countries namely Malaysia, Indonesia and Singapore. In addition, this study aims to investigate the existences of EKC hypothesis in Malaysia, Indonesia and Singapore. The method of Vector Error Correction Model (VECM) is used to examine the causality between the variables. The causality result shows evidence of unidirectional causality from energy consumption to carbon dioxide emissions, from carbon dioxide emissions to economic growth, from economic growth to renewable energy and from energy consumption to renewable energy in Malaysia. Meanwhile, the results of causality in Indonesia show that there were

unidirectional causality runs from renewable energy to carbon dioxide emissions, economic growth and energy consumption. In Singapore, there are unidirectional causality runs from economic growth to carbon dioxide, energy consumption and renewable energy. Besides, there is unidirectional causality runs from energy consumption to renewable energy. In addition, the findings also indicated that EKC hypothesis is not valid in this study. These findings suggest the needs for alternative energy use in order to reduce the carbon dioxide emissions. Therefore, the improvements of policy implications are very important to ensure sustainable economic growth that does not adversely affect the environment.