ABSTRACT

This thesis analyzes the relationship of technological innovation, economic growth, and energy consumption on CO_2 emissions in Indonesia during the period 1980 - 2020. The ARDL bounds test for cointegration and Error Correction Model were applied to time series data to establish long-run and short-run relationships. To investigate the evidence for the environmental Kuznets curve (EKC) hypothesis in Indonesia, the turning point of the EKC curve in Indonesia was calculated.

It was found that technological innovation has a negative relationship with CO_2 emissions. Economic growth exhibits a non-linear relationship with CO_2 emissions. Primary energy consumption is positively related to CO_2 emissions, and no evidence was found to support the existence of a turning point in Indonesia's EKC curve at present. Numerous studies have analyzed the determinants of an increase of CO_2 emission in Indonesia. This thesis builds upon previous research by exploring technological innovation as a means to reduce CO_2 emissions. The ARDL and ECM research methods were selected due to their advantages in producing more accurate estimations for data with limited samples.

In conclusion, the findings suggest that policymakers should prioritize sustainable development by leveraging technological innovation. Technological innovation can be used to reduce CO_2 emissions through increased production efficiency and the adoption of green technologies in everyday lives. Renewable fuels also provide an alternative to primary energy sources that contribute to CO_2 emissions. The increase in CO_2 emissions in Indonesia underscores the need for policymakers to focus on emission reduction without sacrificing economic growth. Indonesia is encouraged to achieve economic growth while considering environmental degradation and utilizing the latest technologies and renewable energy sources.

Keywords: CO_2 emission, technological innovation, EKC hypothesis, energy consumption, ARDL