FACULTY OF SCIENCE
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Title :   Multiple Linear Regression Analysis of Carbon Emissions and Economic-Related Factors in Thailand

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Major :   Statistics

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ABSTRACT

This research aims to study factors affecting carbon dioxide (CO_2) emissions in Thailand and develop a forecasting model for CO_2 emissions. The study employs multiple linear regression analysis using secondary data from the Energy Policy and Planning Office (EPPO) under the Ministry of Energy. A total of 15 independent variables were analyzed, categorized into 4 factors: 1.) Demographic factors, including Thailand's population, Number of foreign tourists arriving in Thailand and The number of unemployed persons 2.) Energy factors, including Power generation by type of fuel and Production of crude oil 3.) Economic and agricultural factors, including Leading economic indicator, Quota for animal killing, Export value of agricultural products, Import value of agricultural products, and Approved construction cargo area 4.) Transportation factors, including Domestic aircraft moment, Total weight of air-transported cargo, Commercial vehicle sales, Passenger car sales, and Motorcycle sales. The data spans from January 2015 to December 2023, covering 108 months for each variable. The results from multiple linear regression analysis revealed that at a 0.05 significance level, five factors significantly affect CO_2 emissions: Power generation by type of fuel, Domestic aircraft moment, Production of crude oil, Passenger car sales, and Motorcycle sales. All variables showed moderate positive correlations with CO_2 emissions, indicating that as these five variables increase, CO_2 emissions tend to increase as well in the forecasting.