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| Abstract |  |
| Nowadays, energy utilization is crucial in driving a nation’s or a large territory’s economic progress. The focus of this proposed study delves into investigating the interconnection between economic progress and energy utilization, as well as examining the consequences of CO2 emissions in seven South American countries from 1971 to 2014. The panel model uses a cointegration method and Granger causality analysis to test the links among these factors in the chosen countries. The findings indicate a robust cointegration among the variables, notably highlighting a unidirectional long-term causality from energy utilization, CO2 emissions, and economic progress. Furthermore, a bidirectional long-term relationship between energy utilization and CO2 secretions is observed. The Long Short-Term Memory technique forecasts these regions’ economic progress, energy utilization, and CO2 emissions for the upcoming four years. Based on the empirical findings, the research suggests increasing energy utilization and renewable energy applications to stimulate economic progress in these regions while simultaneously implementing measures to reduce CO2 emissions. | |