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## Article

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# Economy, Commerce, and Energy: How Do the Factors Influence Carbon Dioxide Emissions in Japan? An Application of ARDL Model

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**Abstract:** Carbon dioxide (CO<sub>2</sub>) traps heat from the sun, and thereby prevents oceans from becoming frozen solid to keep the earth habitable. CO<sub>2</sub> emission also stimulates global warming and increases the pace of climate change. For such contradictory influences, researchers across the globe have shown interest in examining the relationship among energy, emission, trade and commerce, focusing on different regions, including the Middle East, Africa, and Southeast Asia. Investigation from a developed country perspective is understudied. Hence, this research aims at analysing how trade and commerce, urbanisation, energy consumption, and economy affect the volume of CO<sub>2</sub> emission in Japan. The World Bank database was used to collect data for 1960–2010. The findings suggest that the inverted U-shaped relationship between economic progress and carbon emissions follows the Environmental Kuznets Curve theorem. However, per capita energy consumption has no significant impact on emission in the long run; the trade volume does not directly affect the emission of CO<sub>2</sub> in Japan. Besides,

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