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The Impact of Climate Change on Sustainable Development in South Africa

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Abstract

Climate change has already resulted in significant changes in the global ecological environment, such as a shortage of water resources, ecosystem degradation, aggravation of soil erosion, a sharp decline in biodiversity, and cryosphere retreat, thus exerting a significant impact on human social development and economic life. Global warming has aroused attention worldwide, because not only can it directly damage the living environment, but it can also impact social and economic development. South Africa is highly vulnerable to climate variability and change due to the country's high dependence on rain-fed agriculture and natural resources, high levels of poverty, particularly in rural areas, and a low adaptive capacity. Therefore, this paper investigates the impact of climate change on sustainable development in the South African economy from 1990 to 2020. The methodology is based on the linear and nonlinear ARDL approaches. This approach allows testing whether changes in climate change have symmetric or asymmetric effects on sustainable development. Linear ARDL is applied to check long-run and short-run relationships amongst the variables. The results suggest an asymmetric or linear relationship between climate change and sustainable development. It also shows that with rainfall increased and the temperature decreased, the climate effect on sustainable development and, also climate change was positively correlated to capital investment, while a bigger variation of temperature negatively impacted the sustainable development of the South African economy. The study shows an important implication for South African policymakers when studying the impact of climate change on sustainable development, it can aid them to understand the impact of the policies on climate change mitigation and their degree of incorporation with sustainable development goals.

Keywords: Climate, sustanability development, ARDL