

Conditional Efficiency of Climate Finance: Natural Capital as a Determinant of Sustainability in 74 Countries

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Abstract

This research analyzes the efficiency of climate finance (CF) in improving national sustainability, challenging the premise that financial capital produces uniform results without considering pre-existing structural assets. A panel of 74 countries (2010–2024) is used, and two-way fixed-effects specifications and Mundlak-Chamberlain models are employed to integrate data from the OECD-DAC Rio Marker System with the FAO Sustainability Index. The results show that climate finance (CF) does not exhibit a significant linear association with sustainability in global models; however, a critical moderating effect linked to natural capital is identified. The study establishes a threshold of 54.9 points on the Nature's Contributions to People (NCP) index: below this level, climate finance does not achieve tangible sustainability returns. Given that 27% of the countries analyzed fall below this threshold, the evidence suggests a failure in ecological absorption capacity. For international financial management, these findings imply that the restoration of natural assets is not an alternative, but a strategic prerequisite for ensuring a return on climate investment. The study proposes a paradigm shift in resource allocation, prioritizing the resilience of natural capital as a safeguard for financial effectiveness.

Keywords: Climate Finance, Sustainability Investment, Absorptive Capacity, Natural Capital, Panel Data Econometrics, Moderation Effects