

The Green Investment Paradox: Renewable Capacity, Institutional Quality, and the Limits of Productive Conversion in Morocco

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Abstract

As emerging economies race to expand renewable energy capacity, a critical question remains understudied: does installing green infrastructure automatically translate into economic growth, or does that depend on the institutions meant to convert it? Morocco offers a striking test case: despite two decades of ambitious policy, including Law 13-09 (2010) and the Noor solar complexes, the gap between installed renewable capacity and effective renewable generation has never closed, ranging from 6 to 21 percentage points and widening again since 2020 to reach 18.3 points in 2023. This study tests whether institutional quality explains this persistent gap, using two parallel Autoregressive Distributed Lag (ARDL) models estimated on annual data (2000–2023, N=24) and validated by bounds cointegration and Toda-Yamamoto causality tests. The interaction between installed capacity and institutional quality is significant and negative ($p=0.001$): renewable capacity's growth effect weakens, not strengthens, as governance improves, a result confirmed by three robustness checks. The equivalent interaction for effective consumption is weaker in the full sample ($p=0.061$) but reaches conventional significance in two of the three checks, revealing an asymmetry between investment and use. A persistent carbon lock-in effect compounds this picture: CO₂ emissions per capita remain positively and significantly linked to growth. These findings relocate the green investment paradox from a regulatory deficit to a deeper, time-varying disconnection between renewable investment and the institutional environment meant to convert it into growth, a lesson relevant to any energy-importing economy pursuing an ambitious renewable transition.

Keywords: *ARDL bounds test; carbon lock-in; green investment paradox; institutional quality; Morocco; renewable energy transition*