The Institute of Development Economics

Research Papers

Titles: A new sectoral energy consumption linkage efficiency measurement framework Research on China's construction sector

Abstract:
This study proposes a new framework to measure the construction sector's energy consumption linkage efficiency in China (2007–2022) according to the most recent input-output tables in Asian Development Bank (ADB), analysing forward energy consumption linkage efficiency (FECLE) and backward energy consumption linkage efficiency (BECLE). The empirical findings reveal that demand-induced energy consumption (DIEC) is more significant than production-driven energy consumption (PDEC) for China's construction sector at intensity level. And in last fifteen years, China's construction sector's FECLE rose constantly, while BECLE dropped initially and then rebounded. Meanwhile, forward and backward CO2 emissions growth rates decelerated annually, aligning with efficiency improvements. Furthermore, capital investment and economic development sensitivity are pivotal factors of energy consumption changes of the construction sector in China. Economic development was critical in decelerating energy consumption growth during the periods 2007–2016 and 2011–2022. Capital investment changed from negligible influence (-0.49 %, 2007–2016) to the dominant decelerating factor (-12.35 %, 2016–2022). Three policy suggestions are introduced according to empirical results. First, prioritize clean energy transition to optimize energy structure and boost energy consumption linkage efficiency. Second, stimulate upstream sector collaboration through strategic alliances to promote BECLE growth for systematic energy conservation. Third, enhance financial mechanisms and capital investment to lead sustainable production, aligning with current ESG and carbon trading's background.

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