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Optimal power supply strategy for China towards 2050 under high renewable energy penetration

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The production and utilization of energy constitutes a significant share of global environmental costs and damages. However, considering the importance of energy for growth and development, the need for a sustainable energy transition cannot be overemphasized and this is further exacerbated by growing concerns about climate change and few cases of nuclear accidents. The purpose of this study is to quantify the impacts of a potential transition towards renewable electricity and estimate the investment requirement for achieving a low-carbon electricity generation mix. The framework developed in this study to assess the optimal technology combination is built using MESSAGE, a bottom-up energy supply optimization model. The results point to wind and solar as the most promising technologies and provide insights that a carbon tax implemented in isolation is not a cost-effective strategy for mitigation.

Biography

Presley K Wesseh is passionate about energy economics and believes that economists should take the lead in critical energy solutions. His research develops and applies econometric models, computable general equilibrium models, real options valuation models and optimization methods in order to study and explain the paradigm of electricity markets and renewable energy resources, the energy-economy-environment system and climate change, as well as the evolution and dynamics of fossil-fuels price volatility and hedging strategies. A couple of his findings have been published in reputable academic journals such as *Energy Economics*, *Energy Policy*, *Energy*, *Applied Energy*, *Journal of Cleaner Production*, *Renewable and Sustainable Energy Reviews*, etc.

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