

Review of: "Examining the Impact of Green Finance on Carbon Emissions in India through Energy Consumption Optimization"

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Potential competing interests: No potential competing interests to declare.

This study investigates the impact of green finance on carbon emissions in India, using various models on provincial data from 2017 to 2022. Results consistently show a significant reduction in emissions, especially in northern, high-carbon, and energy-rich regions. Three pathways are identified at the national level: green technological innovation, ecological evolution of the industrial structure, and their synergy. In energy-rich regions, all pathways contribute significantly, while in energy-poor regions, the impact is mainly through green technological innovation.

The detailed comments are as follows:

1. I suggest a further description of the motivation of the article; the current one is weak.
2. The paper does not provide a detailed introduction to the model, including a description using mathematical language. The mathematical mechanism of the analytical model is discussed less in the article.
3. It is recommended to introduce the flaws of the article and possible future research directions.
4. The references should be updated with the most recent in your paper's research field of relevance. Discussion in the literature review section is useful to understand the novelty of the article. I recommend the authors to consult the following survey or empirical papers to contextualize your findings. This should help the readers to understand the novelty of your work.

[1] Xiao, Y., Lin, M. & Wang, L. Impact of green digital finance on sustainable development: evidence from China's pilot zones. *Financ Innov* **10**, 10 (2024). <https://doi.org/10.1186/s40854-023-00552-9>

[2] Liu, C., Li, W., Chang, L. *et al.* How to govern greenwashing behaviors in green finance products: a tripartite evolutionary game approach. *Financ Innov* **10**, 34 (2024). <https://doi.org/10.1186/s40854-023-00549-4>

[3] Xiaobao, P., Jian, W., Yuhui, C. *et al.* Does the carbon emission trading pilot policy promote green innovation cooperation? Evidence from a quasi-natural experiment in China. *Financ Innov* **10**, 14 (2024).

<https://doi.org/10.1186/s40854-023-00556-5>