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## SHAPING A GREENER FUTURE: ASSESSING THE ENVIRONMENTAL IMPACT OF GREEN FINANCE AND INTERNATIONAL TRADE ON ECOLOGICAL FOOTPRINTS IN BELT AND ROAD INITIATIVE (BRI) NATIONS

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### **Abstract**

This study advances the literature on environmental economics, sustainability, and innovation by examining how green finance and international trade influence the ecological footprint (EF) of Belt and Road Initiative (BRI) countries, with a focus on the mediating role of foreign aid and the moderating role of eco-technology. Drawing insights from the Environmental Kuznets Curve and Dependency Theory, we construct models to establish these relationships. Using data from 121 BRI countries spanning 2000 to 2022, the econometric analysis provides robust evidence that green finance and exports significantly reduce EF, whereas imports contribute to increased EF. Additionally, a U-shaped relationship is identified between green finance, international trade, and EF, indicating that environmental degradation initially worsens before improving as sustainability measures strengthen. The mediation analysis reveals that foreign aid significantly amplifies the positive impact of green finance and trade on EF reduction, supporting its role in financing sustainable development initiatives. Furthermore, eco-technology serves as a crucial moderating factor, enhancing the effectiveness of green finance and sustainable trade practices in mitigating environmental damage. These findings emphasize the urgent need for BRI countries to implement comprehensive sustainability policies, including strengthening environmental regulations, expanding green financing mechanisms, promoting eco-friendly trade policies, leveraging foreign aid for sustainable projects, and investing in advanced technological innovations. A coordinated policy approach that integrates financial, technological, and regulatory frameworks will be essential for reducing EF, fostering sustainable economic growth, and achieving long-term carbon neutrality goals in BRI nations.

*Key words:* BRI countries, ecological footprint, environmental regulations, foreign aid, green financing, international trade, SDG 13, technological innovation

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