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Title: Role of digital financial inclusion in lowering carbon emissions across Indian States

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Abstract: Digital Financial Inclusion (DFI) plays a crucial role in broadening access to formal financial services and fostering sustainable development. This has been recognised as an important instrument in achieving the United Nations Sustainable Development Goals (SDGs). This study systematically examines the impact of digital financial inclusion on carbon dioxide (CO2) emissions across 20 Indian states from 2014 to 2024, using panel data. A composite index of DFI has been developed utilizing various factors of Digital Financial Inclusion that signify financial access, usage, and digital penetration. The empirical results consistently demonstrate that higher levels of digital financial inclusion are associated with reduced CO2 emissions, as evidenced by the use of Fixed Effects, Random Effects, Panel-Corrected Standard Errors (PCSEs), and the Generalised Method of Moments (GMM). While economic activity, energy demand, and urbanisation contribute positively to emissions levels, advancements in literacy, capital expenditure, and innovation efforts lead to a decrease in environmental degradation. The findings suggest that digital financial inclusion plays a significant role in fostering environmental sustainability by facilitating efficient financial transactions, supporting green financing, and encouraging the adoption of cleaner technologies. The findings indicate a critical need to strengthen the digital financial infrastructure and implement inclusive financial policies to achieve sustainable and low-carbon development across Indian states.



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