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Nexus between digital economy, environmental technology, and carbon dioxide emission: The role of environmental policy and green industrial transformation**Hayat Khan***Zhejiang University of Science and Technology, China*

Climate change represents a grave challenge to the global economy, environment, and societal well-being, endangering their long-term sustainability. In response to this urgent issue of climate change that threatens both economic and social sustainable development, the study emphasizes the significance of environmental policy, environmental technology, and digital economy as fundamental factors in addressing the climate change crisis. Governments adopt strict environmental policy measures and to reduce greenhouse gas emissions by integrating digital economy into renewable energy is critical for promoting global low carbon development. This research draws upon data from 34 OECD countries spanning the period between 1999 and 2020, utilizing two step system GMM model for analysis. The results show that digital economy and environmental policy are effective in reducing climate change impacts in the form of CO₂ emissions while environmental technology and green industrial transformation significantly rise carbon dioxide emission. The non-environmental factors like trade and FDI are negatively associated and thereby promotes environmental protection by reducing CO₂ emissions. The interactive effect of environmental technology and environmental policy exert a positive effect on carbon emission. Based on these findings, the study advocates for the implementation of rigorous policy measures by OECD economies to enforce environmental policies and by integrating digital economy and environmental technology into renewable energy in order to ensure compliance and foster sustainable practices across countries.

Biography

Hayat Khan is an influential scholar and researcher specializing in the intersection of digital economics, environmental technology, and carbon dioxide emissions. His work explores how the digital economy and advanced environmental technologies can drive reductions in greenhouse gas emissions. Through a detailed examination of environmental policies and green industrial transformation, Khan's research offers valuable insights into how integrating digital tools with sustainable practices can foster significant advancements in environmental protection. His contributions are pivotal in shaping strategies for a greener future amidst the growing challenges of climate change.