Special Issue

The Role of Digitalization and Artificial Intelligence in Low-Carbon Energy Transition and Achieving Carbon Neutrality: Interdisciplinary Perspectives

Message from the Guest Editors

Achieving carbon neutrality requires addressing complex, interdisciplinary challenges across natural sciences, engineering, economics and management. Digitalization and intelligent systems play pivotal roles in this transformation through three key contributions: Optimization & Monitoring: Digital technologies enable real-time carbon emission tracking, dynamic indicators, and prioritization of reduction strategies across industries and regions. AI and IoT enhance precision in emission management. Business Model Innovation: Digital platforms integrate enterprises and individuals into carbon neutrality efforts, promoting sustainable consumption patterns and decentralized energy systems. Market Efficiency: Data analytics and algorithms improve carbon pricing models, transparency, and rights allocation, fostering fairer market mechanisms. Research priorities include technological integration, policy analysis, behavioral studies, and sectoral case studies. This Issue seeks interdisciplinary research on digitalization's role in low-carbon transitions, prioritizing novel methodologies and practical implications.

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Editor-in-Chief

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