Special Issue

Integrating Blockchain and Internet of Things (IoT) for Sustainable Industry 4.0

Message from the Guest Editors

In sustainable industry 4.0 systems, the Internet of Things (IoT) enables real-time data acquisition and operational automation. However, ensuring data integrity, traceability, and trust across distributed industrial environments remains a significant challenge. To improve the scalability, performance, and robustness of blockchain-loT integrated systems, critical research efforts are needed in key technical areas, including the following: lightweight blockchain consensus protocols tailored to resource-constrained IoT scenarios; efficient task offloading and edge collaboration strategies with blockchain-based verification; low-overhead privacypreserving transmission mechanisms for blockchainmediated data exchange; blockchain-enabled adaptive routing, topology control, and access management that support sustainable networking by reducing redundant transmissions, balancing energy loads, and minimizing network-wide carbon intensity: Al-enhanced architectures for blockchain-loT convergence; and approaches that integrate green communication infrastructures to enable energy efficient and environmentally sustainable operations.

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Deadline for manuscript submissions

31 December 2026



Sustainability

an Open Access Journal by MDPI

Impact Factor 3.3 CiteScore 7.7



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Editor-in-Chief

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