Applying Blockchain technology in carbon credit management. Lessons for Vietnam.

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Abstract

This study examines the potential of blockchain technology to improve transparency, traceability, and trust in Vietnam's carbon credit market. The main research question addresses how blockchain can mitigate current issues such as double counting, unverifiable emission reductions, and weak ESG compliance. A qualitative methodology is employed, synthesizing international best practices and evaluating Vietnam's legal, technical, and institutional readiness for blockchain integration. Findings reveal several opportunities, including the ability of blockchain to ensure real-time data tracking and verification. However, significant constraints persist, such as regulatory ambiguity, lack of technical expertise, and cybersecurity risks. Based on these insights, the study proposes a theoretical framework and practical roadmap for blockchain adoption in carbon credit management. Policy recommendations include legal reform to clarify blockchain's regulatory status, development of technical capacity among stakeholders, and promotion of public-private partnerships. The study contributes to environmental governance by offering a strategic direction for integrating digital innovation into carbon market infrastructure, thereby supporting Vietnam's transition to a sustainable, technology-enabled carbon economy.

Key words: *Carbon credit; Blockchain; Management; ESG; Application.*