

Blockchain-Enabled Land Registration for Transparent Land Governance in Zimbabwe.

Bothwell Mukomachirendo and Munashe Mhembere (Zimbabwe)

Key words: Access to land; Land management; Security of tenure; decentralized land registry; blockchain technology; smart contracts

SUMMARY

Land remains central to Zimbabwe's socio-economic landscape, yet its administration is hampered by institutional fragmentation, corruption, and unreliable recordkeeping that undermine tenure security and public confidence. The absence of coordination among agencies such as the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development, the Deeds Office, and local authorities has perpetuated inefficiencies, duplicated records, and opaque land allocation practices. This study proposes the conceptual design and evaluation of a blockchain-enabled land registration architecture to improve transparency, accountability, and data integrity within Zimbabwe's land governance system. Adopting a design science research methodology, the study will develop a permissioned blockchain prototype incorporating smart contracts, off-chain data storage, and role-based access controls to simulate core registration processes, including parcel verification, ownership transfer, and transaction auditing. The system architecture and interactions among user roles, Administrator, Land Inspector, Conveyancer, Buyer, and General User, will be modelled using UML diagrams and scenario-based simulations to assess the system's functional feasibility. It is anticipated that the blockchain system will demonstrate potential to strengthen record integrity through immutability, reduce opportunities for fraudulent alterations, and enhance traceability across institutions. Furthermore, the research expects to reveal how decentralized consensus mechanisms could streamline administrative workflows and foster trust among stakeholders in digital land governance. The discussion will interpret these outcomes in light of existing institutional and policy frameworks, identifying key enablers and barriers to adoption. The study concludes that a blockchain-based approach, if effectively implemented and supported by appropriate legal and institutional reforms, could provide a transformative pathway toward a transparent, efficient, and citizen-centric land administration system in Zimbabwe. The findings are expected to contribute both to academic discourse on digital land governance and the practical design of secure, interoperable land information infrastructures suitable for developing contexts.

Blockchain-Enabled Land Registration for Transparent Land Governance in Zimbabwe. (13941)
Bothwell Mukomachirendo and Munashe Mhembere (Zimbabwe)

FIG Congress 2026
The Future We Want - The SDGs and Beyond
Cape Town, South Africa, 24–29 May 2026