

Verification and tracking procedures with blockchain technologies

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Mining has drawn attention with public scrutiny over objectionable practices like child labor or human rights abuse. At the heart of marketing to consumers is loyalty and a trusted brand. Consumers and companies are shaken to the core with the nightmare of sponsoring child labour. Tracking provenance of minerals to ensure that resources were sourced ethically can be challenging. Chain of custody, the record of sequence and activities of custody of minerals as they move through a supply chain and trace a material back to its origin, has been a pain point in the mining industry with current technologies unable to effectively solve the problem. Challenges are social, as well as technical, and compounded by multiple stakeholders and heavily manual processes.

Blockchain is an open immutable distributed ledger that is maintained and validated by a peer-to-peer network of computers, called nodes. It uses cryptography keys to record data and digital asset of value such as the source of diamonds, land records, due diligence certificates. Information is recorded in “blocks” designed to tamper-proof every block written previously. Because the blocks reside on a distributed network of computers, the decision to record new data is made collectively, so every copy of the blockchain grows with identical content.

Blockchain technology can alleviate and optimize the process of collecting and disseminating real-time information in an accurate and cost-effective manner because of its decentralization, transparency, immutability, and highest level of security. In the mining sector specifically, a blockchain-based chain of custody can provide unparalleled reliability in addressing operational challenges and forming (and proving) an ethical supply chain. Living real-time records of the handling and flow of raw materials can be created through all stages of transformation including physical transfer and temporary storage on site, authentication, compliance, due diligence, impact, environmental and social data.

A typical mining supply chain includes participants such as suppliers, banks, shippers, insurers, compliance authorities or local governments who would all access the same ledger. Blockchain will then allow for a collective participation on a permissioned basis and each record will be verified before it is added to the chain, increasing transparency, minimizing error and reducing corruption. Blockchain solutions enable real-time verification of chain of custody, so companies can reliably certify that their supply chain remains compliant with all due diligent requirements and does not involve slave labour, child labour, or other unethical or irresponsible practices. This real-time, accurate ledger that is approved by all participants is easier, faster and more cost-effective to manage, track and audit the entire supply chain, whether it is for provenance, compliance, payments, taxes, or any other reason.

The value of sustainability programs across the world can therefore be protected by blockchain-based applications that provide a transparent system where parties involved in overseas projects can be held accountable for their actions.

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