How real-world assets and tokenization bring gold on blockchain

For much of recorded economic history, gold has functioned as a cross-border store of value and settlement asset. In Islamic jurisprudence, it occupies a distinct category as a Ribawi item, subject to strict exchange conditions requiring equality and immediate settlement in gold for gold transactions. These rules were designed to prevent Riba, eliminate unjust enrichment and ensure that monetary exchange remained anchored to tangible value rather than excessive speculation. The goal was simple. Money should be backed by something real, not based on complex financial structures with no real asset behind them. LIM SAY CHEONG investigates.



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Today, gold is hardly used as everyday money in the modern financial system. It exists mostly as bullion reserves, exchange traded products or over the counter derivatives. Many of these structures create layered counterparty exposure rather than direct ownership of allocated metal. From a Shariah perspective, this distinction is critical. A claim against an institution is not equivalent to legal title over a specifically identified bar held in custody. The difference between allocated and unallocated gold is not merely technical. It determines whether the holder has proprietary rights or merely creditor status.

Real world asset tokenization offers a different approach. It connects physical assets in the real world with digital systems on the blockchain. The asset itself stays where it is, but ownership is recorded digitally on a shared ledger. In the case of gold, each token represents a specific amount of fully allocated gold stored in an insured vault. The blockchain keeps the official record of who owns the gold, while the actual metal remains safely held by a regulated custodian. When the token is transferred, ownership of the gold changes, even though the physical bar does not need to move.

It is important to distinguish this model from synthetic or derivative based gold exposure. Many digital gold products merely provide price tracking through futures contracts or unsecured claims. In such cases, the holder does not own specific bullion and may face settlement risk. Tokenized allocated gold, properly structured, represents direct beneficial ownership of identified physical bars. The token is not a derivative of gold. It is a digital representation of existing gold.

The system works using smart contracts on a blockchain network. A smart contract is a self-executing code that automatically enforces conditions that have been set in advance. In simple terms, a smart contract is a computer program that runs on its own and follows pre-agreed rules without needing someone to manually control it. When the tokens are first created, important details are built into the system. These include the total number of tokens allowed, who can create new tokens, how holders can redeem them for gold and the rules that must be followed.

Each token is connected to clear information about the gold it represents such as the bar's serial number, weight and purity. This information is securely linked to the blockchain so that the vault records cannot be quietly changed. This linkage can be secured using cryptographic hash functions that anchor off chain vault documentation to the blockchain. If anyone tries to change the vault records, the system will immediately show that something is different. This makes any tampering easy to detect on the blockchain. As a result, there is less hidden information between parties, which helps reduce uncertainty and avoid Gharar.

Before any transaction is added to the blockchain, it must be checked and approved by the network. This checking process is called a consensus mechanism. Modern systems such as proof of stake use much less energy and can handle many transactions quickly. Special participants in the network confirm that each transfer follows the rules. This prevents the same token from being spent twice and keeps the records consistent across all computers in the network. Each transaction is protected using strong encryption and digital signatures. Once it is recorded, it cannot be changed, creating a permanent and reliable record.

From an Islamic legal perspective, the central question is possession, or Qabd. Classical jurists recognized both physical and constructive possession, provided that legal control and transferability were established. In a properly structured tokenized gold framework, constructive possession is achieved when the token holder acquires enforceable rights over specifically allocated bullion and settlement is executed instantly on chain. Atomic settlement, meaning the ownership changes at the same time and cannot be taken back, all within one blockchain transaction, satisfies the requirement of immediate exchange in Ribawi transactions and prevents deferment that would contravene established jurisprudential principles.

Custody and bankruptcy remoteness are equally critical. The gold must be held in segregated accounts, legally insulated from the custodian's balance sheet. Token holders must be recognized as beneficial owners, not unsecured creditors. Independent audits should verify vault holdings, while proof of reserves mechanisms publish cryptographic attestations confirming that token supply does not exceed physical inventory. Oracle infrastructure can relay verified off chain audit data onto the blockchain, strengthening transparency and reinforcing Shariah governance through verifiable asset backing rather than reliance on institutional trust alone.

From a risk management perspective, on chain settlement reduces counterparty exposure compared to traditional bullion clearing systems. Transaction finality is achieved within minutes and compliance controls such as whitelist restrictions can be embedded directly into smart

contracts to align with regulatory requirements. In jurisdictions where digital asset frameworks are emerging, regulatory clarity further strengthens institutional confidence in tokenized asset models.

Economically, tokenized gold can function as high quality collateral within both decentralized and hybrid financial architectures. Smart contracts can automate margining, collateral substitution and redemption processes. However, Shariah oversight must ensure that secondary market activity does not introduce excessive speculation or detached leverage that undermines the asset-based foundation of the structure.

Technological sophistication alone does not guarantee compliance. Governance architecture remains decisive. Shariah boards must scrutinize issuance mechanics, custody frameworks, redemption enforceability, cybersecurity controls and risk disclosures. Legal opinions must confirm proprietary rights in relevant jurisdictions. Transparency dashboards and continuous reserve attestations should complement periodic physical audits. Alignment between code, contract and custody determines credibility.

From a Maqasid perspective, tokenized gold supports preservation of wealth, particularly in environments characterized by inflation or currency instability. By providing digitally accessible ownership of tangible assets, it reconnects financial representation with physical substance. For Muslim investors seeking alternatives to interest-based savings products, allocated tokenized gold may offer a Shariah aligned store of value that combines portability, divisibility and transparency.

The bigger meaning of this development is that it reshapes how the financial system is built. Real-world asset tokenization is not about replacing ethical finance with technology. Instead, it uses blockchain systems to make ownership clearer, settlement faster and asset-backing easier to verify. When gold is placed on the blockchain with proper legal structure and strong Shariah supervision, it is not speculation and it is not a return to the past. It becomes a modern digital way of owning real, physical wealth.

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