Quantum Mesh Blockchain (QMB) Whitepaper

Executive Summary

Quantum Mesh Blockchain (QMB) is a next-generation modular blockchain protocol engineered for scalability, privacy, fairness and sustainability.

It combines a Mesh Consensus (PoA + DPoS) model with a plugin-based modular architecture to achieve ultra-fast, low-energy transactions and real-world usability.

QMB supports both public and private transactions, allowing users to select the appropriate privacy mode for each transfer.

It empowers enterprises, developers and communities to deploy smart contracts, DeFi services, DAO governance and day-to-day payment applications—without complex infrastructure or energy waste.

Vision & Mission

Vision: To become the world's most trusted and modular blockchain ecosystem—balancing scalability, security, decentralization and inclusivity through community-powered innovation.

Mission: Deliver a blockchain that is Fast, Modular, Inclusive, Private and Rewarding, creating a transparent, equitable ecosystem for developers, investors and everyday users.

Challenges in Current Blockchains

- Excessive energy consumption in PoW-based systems.
- Fragmented, non-interoperable ecosystems.
- Complex onboarding for enterprises and developers.
- Weak governance with limited community participation.
- Lack of privacy or flexibility in transaction transparency.
- Unstable or inequitable token-economic designs.

QMB Architecture Overview

- **Core Layer:** Go-based modular blockchain core with deterministic execution.
- **Mesh Consensus:** Hybrid PoA + DPoS ensuring instant finality and decentralization.
- **Plugin Loader:** Hot-swappable modules—no hard forks required.
- **Smart Contract Engine:** Rust + WASM compiler with GUI-based Smart Contract Builder.

- **Executor Pipeline:** Dual-mode (Public/Private) transaction » plugin execution » state update flow.
- **Privacy Envelope:** Zero-knowledge-ready encryption layer enabling confidential transfers.

Dual Transaction System: Public and Private

QMB supports both public and private transactions within the same unified blockchain layer, offering flexibility for diverse user and enterprise needs.

1. Public Transactions

- Fully transparent and auditable.
- Ideal for dApps, DeFi, exchanges and enterprises requiring traceability.
- Indexed and visible via QMB Explorer with sender, receiver and amount fields.

2. Private Transactions (Confidential Mode)

- Encrypted via the QMB Privacy Envelope using ephemeral public keys (epk) and ciphertext pairs (ct_sender, ct_receiver).
- Sender and receiver masked at explorer level (masked_sender, masked_receiver).
- View-key–based selective disclosure ensures optional auditability.
- Maintains the same speed and finality as public transactions (<1 s).

3. Hybrid Model Advantages

- Users or dApps choose transaction mode (public/private) at send time.
- Transparency and confidentiality coexist in one chain.
- Enables regulated DeFi with privacy-preserving operations.
- Supports private payrolls, institutional transfers and selective audits.

In QMB, privacy is optional—not forced. The blockchain remains one network validating both transaction types under the same consensus.

DAO Governance Framework

QMB is DAO-driven with on-chain proposals, weighted voting tiers (Citizen, Validator, Council), and AI-assisted decision analytics.

Governance actions include proposal creation, voting, and automatic on-chain execution.

Rewards Distribution Mechanism

QMB features an automated, snapshot-based reward engine distributing protocol fees to holders, stakers, validators and treasury pools, while ensuring deflationary burn until 500M supply cap.

Rewards are distributed via daily, weekly or monthly cycles using a snapshot method to prevent spam and ensure efficiency.

Burn Mechanism & Deflationary Economics

Every transaction contributes to supply reduction through an auto-burn address.

Once total circulating supply reaches 500M, burn share redirects automatically to the Treasury to sustain ecosystem funding.

The burn address (0x000000000000000000000000000000000000dead) remains public and verifiable.

Real-World Payments & Merchant Utility

QMB's ultra-fast confirmation time (<1s) and minimal fees (<$0.001) enable real-world payments and financial inclusion.

Merchants can integrate QMB Pay Gateway APIs for e-commerce and POS systems.

Use cases include peer-to-peer transfers, cross-border settlements and instant Web3 micropayments.

The hybrid public/private system allows both transparent business payments and confidential settlements.

Tokenomics

Public Investors – 25%

Holders/Stakers/Validators – 20%

Burn Address – 20%

Developer Fund (5 years Vested) – 10%

Founder Fund – 5%

Marketing & Partnerships – 10%

Reserves Fund – 10%

Fees & Economic Model

QMB features a **two-layer fee system** that balances **core protocol sustainability** with **community-driven rewards.**

1. Core-Level Fee Distribution

At the protocol layer, all base transaction fees are split automatically:

- **50% Burn Address »** Permanent supply reduction until **500M circulation** is reached. After this threshold, this share is redirected to the **Treasury.**
- **30% Reward Pool »** Accrued for stakers, holders and validators.

- **10% Founder Wallet »** For leadership incentives and ecosystem stability.
- **10% Developer Wallet »** Long-term vesting, Supports salaries, application development and continuous innovation.

2. Reward Cycle Distribution (from the 30% Pool)

The reward pool is distributed in automated cycles (daily, weekly or monthly), using **snapshots to prevent spam:**

- **Stakers:** 30% (distributed using √stake weighting to reduce whale dominance).
- **Holders:** 20% (to all eligible wallets above the minimum balance).
- **Validators:** 30% (equal share or weighted by active validator voting power).
- **Treasury:** 20% (growth initiatives, partnerships, grants).

3. Governance-Driven Fee Adjustments

- DAO governance allows QMB coin holders to **propose and vote on fee changes.**
- Anti-spam measures enforce a **minimum fee floor.**

4. Benefits of the Model

- Ensures **deflationary pressure** via burning until 500M supply milestone.
- Provides **sustainable funding** for developers and founders.
- Guarantees **fair, recurring rewards** for active participants.
- Maintains **flexibility** via DAO-driven fee governance.

Compliance & Standards

QMB aligns with IEEE 2410-2019 Blockchain Standard, W3C DID Core v1.0, and ISO/IEC 27001 guidelines.

It supports dual transparency for regulatory compliance—ensuring optional auditability for private transactions while maintaining user confidentiality.

Conclusion

Quantum Mesh Blockchain unites speed, privacy, governance, and sustainability.

Its dual-mode transaction framework, deflationary model, automated rewards and privacy architecture position QMB as the next-generation financial and technological infrastructure.

QMB is not just a blockchain—it is a unified ecosystem bridging transparency, confidentiality and usability for global Web3 adoption.