



A Japan-sovereign Layer 1 blockchain optimised for regulated stablecoin payments

VERSION 2.0 | MAY 2026

Published by AltX Research K.K.

LEGAL DISCLAIMER

This whitepaper and its contents do not constitute an offer to sell, or the solicitation of an offer to buy, any token or security. Nothing in this document should be interpreted as a guarantee or promise of how MIZUHIKI (also referred to as the “MIZUHIKI Protocol” or “MIZUHIKI: The Japan Chain”), its tokens (if any), or any related system will develop, be utilised, or accrue value.

MIZUHIKI’s Foundation and AltX Research K.K. (together, the “Publishers”) outline only their current plans, which may change at the Publishers’ discretion. The success of these plans depends on many factors outside the Publishers’ control. Forward-looking statements necessarily involve known and unknown risks, and actual results may differ materially from those described or implied in this whitepaper.

The Publishers undertake no obligation to update this document, and readers should not place undue reliance on forward-looking statements. This whitepaper has been prepared for informational purposes only and does not constitute investment, legal, tax, or other professional advice. Recipients should seek their own advice from appropriate professional advisers.

Certain statements in this whitepaper relate to regulatory frameworks in Japan and elsewhere. These statements reflect the Publishers’ current understanding and are subject to change as laws, regulations, and supervisory guidance evolve.

CONTENTS

1. Introduction	1
2. Problem Statement	3
2.1 The Sovereignty Problem	3
2.2 The Stablecoin Issuer Economics Problem	4
2.3 One Chain, Two Solutions	5
3. Guiding Principles	6
3.1 Sovereignty	6
3.2 Security	6
3.3 Safety	7
3.4 Scalability	7
4. Sovereign Ethereum Equivalence And Architecture	8
4.1 Sovereign Ethereum Equivalence	8
4.2 Network Architecture	9
4.3 Consensus And Finality	10
5. The Paymaster And Issuer Revenue Sharing	11
5.1 The Structural Problem For Jpy Stablecoin Issuers	11
5.2 Canonical Paymaster Tooling	11
5.3 Gas Payment Flow	12
5.4 Stablecoin Issuer Revenue Sharing	12
5.5 Implications For Mizu Token Economics	13
6. Mizuhiki Compliance Suite	14
6.1 Three Modules	14
6.2 Alignment With Fsa Guidance	15
6.3 Privacy By Design	16
6.4 Continuous Compliance	17
7. Mizuhiki Identity	18
7.1 Mizuhiki Id	18
7.2 The Mizuhiki Attestor Network	18
7.3 Decentralised Identifiers And Verifiable Credentials	19
7.4 Privacy Commitments	19
8. Tokenomics	21
8.1 The Mizu Token	21
8.2 Token Supply And Allocation	21
8.3 Issuance And Rewards	23
8.4 Demand Drivers For Mizu At Launch	23
9. Validator Network And Staking Ecosystem	25
9.1 Permissioned Validator Design	25
9.2 Staking Ecosystem	25
9.3 Operator Onboarding And Transition	26

9.4 Operator Obligations And Protections	26
10. Roadmap	27
11. Governance And The Foundation For Mizuhiki	28
11.1 The Foundation For Mizuhiki	28
11.2 Altx Research K.K.	28
12. Conclusion	29

1. INTRODUCTION

Stablecoins have emerged as one of the defining use cases of blockchain technology. Global circulating supply has crossed 250 billion U.S. dollars, with monthly on-chain transfer volumes measured in the trillions. The overwhelming majority of this activity is denominated in U.S. dollars, which makes sense given USD dominance of foreign exchange activity and international settlements. However, this does not explain why on-chain activity denominated in JPY is – in effect – zero, when JPY consistently ranks among the top five foreign currencies traded off-chain (16.85 percent of FX activity as of April 2025, BIS).

The problem resolves to this: which parts of the current on-chain stack (compliance, software, and domestic regulation) are failing to support a flourishing Japan-based stablecoin economy and what must be built or revised to support it?

Japan's 2023 revision of the Payment Services Act, together with subsequent rulemaking by the Financial Services Agency and the enabling work of the trust banking sector, has produced one of the world's clearest regulatory frameworks for stablecoin issuance. Three categories of issuer are now recognised: licensed banks, trust banks acting through the specified trust model, and registered funds-transfer service providers. Each category is paired with specific prudential, custody, and consumer-protection requirements. The result is that a Japanese financial institution wishing to issue a JPY-pegged stablecoin in 2026 can do so with a degree of regulatory certainty that issuers in most jurisdictions still lack.

And yet Japan's JPY stablecoin market remains small and underdeveloped. The first trust bank-backed JPY stablecoins are scheduled to launch in 2026, and existing JPY-pegged tokens hold a tiny fraction of the circulation of their USD-denominated counterparts. This divergence between policy readiness and market outcomes points to missing infrastructure and business models tailored to Japan.

The thesis of this whitepaper is straightforward. Japan needs a Layer 1 blockchain designed specifically for regulated stablecoin payments: a chain whose validator set is onshore and accountable under Japanese law; whose compliance infrastructure is built into the protocol rather than bolted on at great cost to those building at the application layer; whose economic design addresses the structural challenges facing JPY stablecoin issuers; and whose performance characteristics – fast finality, high throughput, low cost – are tuned for everyday retail payments.

MIZUHIKI¹ is that chain. It is a public, permissioned, Ethereum-equivalent Layer 1 blockchain, validated onshore in Japan. It offers adjacent, specific tooling for sub-second deterministic finality for payments, a paymaster that allows users to pay transaction fees in compliant stablecoins, a compliance suite anchored in Japan’s national identity infrastructure, and a fee mechanism that structurally shares transaction revenue with the stablecoin issuers whose tokens circulate on the network. Taken together, these properties make MIZUHIKI the natural settlement rail for regulated stablecoin activity in Japan, and a credible template for sovereign blockchain infrastructure in other jurisdictions that share Japan’s concerns about digital sovereignty and regulatory accountability.

The remainder of this document sets out the architecture, economics, and governance of MIZUHIKI in detail. Section 2 sets the problem the chain is designed to solve; Section 3 sets the principles that have guided its design. Sections 4 through 9 describe the architecture, the paymaster and issuer revenue-sharing mechanism that is the chain’s most distinctive feature, the Compliance Suite, the identity layer, the tokenomics of the MIZU token, and the validator network. Sections 10 through 12 set out the roadmap, the chain’s positioning within the broader ecosystem, the governance arrangements under which it will operate, and the final conclusion.

Mainnet launch is scheduled for the third quarter of 2026. A public testnet, Awaji, is already live.

¹“MIZUHIKI: The Japan Chain” (hereinafter referred to as MIZUHIKI) takes its name from the traditional Japanese paper-cord craft whose knot, once tied, cannot be undone: an enduring symbol of the bonds between people, value, and trust. The project was previously known as “Japan Smart Chain” (JSC).

2. PROBLEM STATEMENT

Any argument for a new Layer 1 blockchain must begin with a clear statement of the problems it is designed to solve, and a credible claim that those problems cannot be solved adequately by existing infrastructure. MIZUHIKI addresses two such problems. They are related but distinct, and both are specifically Japanese in character.

2.1 THE SOVEREIGNTY PROBLEM

Critical infrastructure has historically been understood to require sovereignty. Electricity grids, communications networks, transportation systems, and payments rails have been treated as extensions of national authority: subject to domestic regulation, operated by parties accountable under domestic law, and insulated from the caprice of foreign jurisdictions. As economic and financial activity migrates onto digital infrastructure, the question of digital sovereignty acquires greater and greater importance.

Existing public blockchains sit uneasily within this framework. Their validator sets are distributed across jurisdictions in ways that are often opaque. Their operators may be subject to the regulatory authority of governments whose interests are not aligned with those of any particular user base. The legal status of on-chain transactions, of the tokens they settle, and of the parties who participate in their validation is ambiguous in ways that would be intolerable in any other area of financial infrastructure.

For Japanese financial institutions, this ambiguity is a binding constraint. A bank considering whether to hold customer funds in an on-chain primitive must ask where the servers are located, which jurisdiction's regulators may compel action against them, and who would be accountable in the event of operational failure. The answers available from most existing Layer 1 networks are, at best, unsatisfactory. At worst, they are unanswerable.

The Financial Services Agency of Japan has identified three specific concerns with the use of public blockchains as infrastructure for regulated activity in Japan.²

- 1) the absence of clearly identifiable governance parties at the blockchain and application layers who can be held accountable for consumer impacts
- 2) the difficulty of enforcing anti-money-laundering and combating the financing of terrorism obligations in a permissionless setting

²The three concerns are articulated in FSA research committee materials and supervisory publications relating to public-blockchain stablecoin infrastructure. References are maintained by the Foundation and available on request.

- 3) and the absence of mechanisms for controlling circulation of regulated instruments (notably stablecoins) once they are on-chain

Each of these concerns reflects the limitations of existing general-purpose blockchains.

Each of these concerns must be addressed at the infrastructure layer if regulated Japanese stablecoin activity is to achieve mainstream acceptance and scale. This is MIZUHIKI's goal.

2.2 THE STABLECOIN ISSUER ECONOMICS PROBLEM

JPY-denominated stablecoin issuers face a structurally challenging economics problem. Japan's 2025 Payment Services Act amendment - similar to the US requirement under the GENIUS Act³ - restricts eligible reserve assets to short-duration instruments and time deposits with maturities of three months or less. However, and unlike the US stablecoin policy, the Japan FSA caps short-duration bonds to a mere 50 percent of total stablecoin backing, with the remainder locked in low-yielding demand deposits⁴.

At the Bank of Japan's current policy rate of 0.75 percent, the cap on short-duration bonds exacerbates the poor reserve economics for JPY stablecoin issuers, especially when compared to the United States. USD issuers operating under the GENIUS Act may back US dollar stablecoins with up to 100 percent of short-duration Treasuries, earning reserve yield revenues in the 3.5 to 4.0 percent target range. With Japanese rates only gradually increasing from historically low levels, the reserve yield revenues for JPY stablecoin issuers remains structurally challenging.

The implication is that any JPY stablecoin business relying on reserve yield alone operates on thin margins. A natural second revenue line for issuers would be one that emerges directly from on-chain transaction fees and scales automatically with circulation, rather than reserve balances alone.

³ Guiding and Establishing National Innovation for U.S. Stablecoins Act ("GENIUS Act"), 12 U.S.C. § 5903.

⁴ https://www.fsa.go.jp/singi/singi_kinyu/angoshisanseido_wg/gijishidai/20250731/04.pdf

2.3 ONE CHAIN, TWO SOLUTIONS

The two problems are connected. The sovereignty problem makes it difficult for regulated Japanese institutions to participate in on-chain finance at all. The economics problem makes it difficult for regulated Japanese stablecoin issuers to sustain profitable businesses even where participation is possible.

MIZUHIKI is designed to solve both.

The sovereignty problem is addressed through a Japan-sovereign validator set, a compliance infrastructure tied to Japanese national identity, and a governance architecture accountable under Japanese law (Sections 4, 6, and 12).

The economics problem is addressed through a canonical paymaster that enables users to pay gas in stablecoins and structurally shares transaction revenue with stablecoin issuers (Section 5).

The remainder of this whitepaper describes these components in detail.

3. GUIDING PRINCIPLES

MIZUHIKI's design reflects four principles. Each principle has been chosen because it responds to a specific constraint in the Japanese operating environment, and because it is additive: a chain can satisfy any one of the principles on its own, but the four principles together produce a qualitatively different infrastructure from any that presently exists.

3.1 SOVEREIGNTY

The Principle of Sovereignty states that MIZUHIKI operates within the control of Japan and beyond the influence of outside regulatory and geopolitical forces. Every validator node is located onshore in Japan and operated by an approved entity. All infrastructure for the MIZUHIKI Foundation and for AltX Research K.K. is registered in Japan. Data residency for core protocol operations is onshore. To the greatest extent practicable in a public, Internet-reachable blockchain, MIZUHIKI responds to Japanese law and Japanese supervision alone.

For every system-critical component of the MIZUHIKI network, there is a natural person or legal entity within Japanese jurisdiction who can be identified, communicated with, and, if necessary, held to account. This is the basis on which Japanese regulated institutions can build critical services on-chain with confidence.

3.2 SECURITY

The Principle of Security states that MIZUHIKI provides the quality of security users expect from a mature blockchain. MIZUHIKI is Ethereum-equivalent — a concept explained in detail in Section 4 — meaning that it inherits the continuing security improvements of the Ethereum research and engineering community, applies them under Japanese validator infrastructure, and does not fork the underlying client codebase in ways that would require independent security maintenance. Japan's engineering talent base is brought to bear at the infrastructure layer: validator operation, node hardening, and monitoring.

3.3 SAFETY

The Principle of Safety states that participants in regulated on-chain services on MIZUHIKI can transact with confidence that counterparties have been verified and that Japan's

anti-money-laundering and anti-social-forces compliance policies have been embedded at the infrastructure layer. Safety, in MIZUHIKI's design, is not something that each application must implement from first principles. It is a shared property of the network, implemented through the MIZUHIKI Compliance Suite (Section 6) and Identity layer (Section 7), and available to applications as a primitive they can compose with.

3.4 SCALABILITY

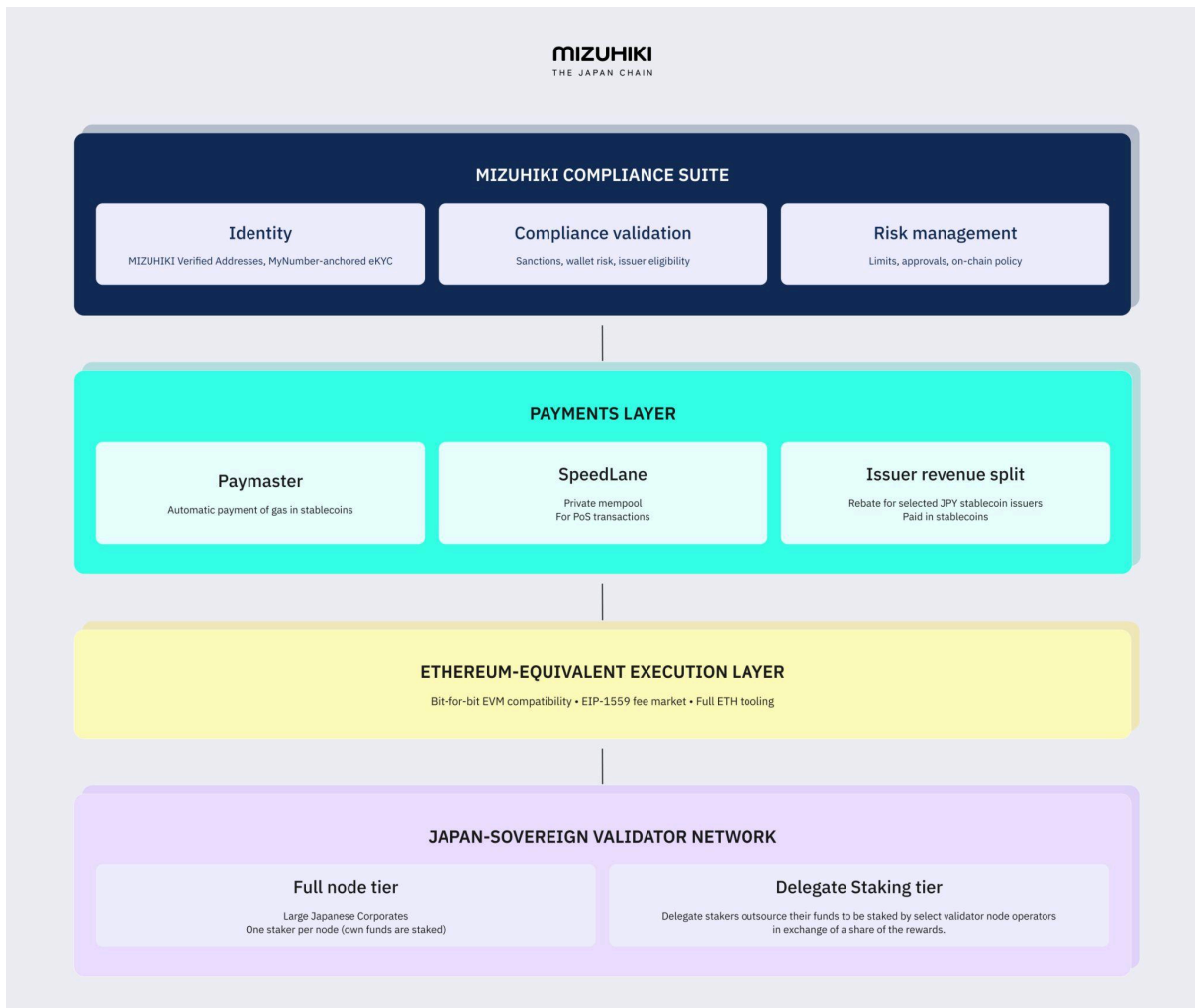
The Principle of Scalability states that MIZUHIKI is designed to meet the transaction needs of a growing user base, with performance characteristics appropriate for consumer payments. The chain targets sub-second deterministic finality, with fee levels low enough to support everyday retail use cases. Where vertical scaling meets its limits, MIZUHIKI can support Layer 2 frameworks that allow specialised execution environments to settle against MIZUHIKI while inheriting its sovereignty properties.

Scalability is not, in MIZUHIKI's view, an end in itself. A chain that can process high transaction volumes but cannot answer the sovereignty or compliance questions asked of it by Japanese regulators is of little use in this market. The principle is therefore stated last, and deliberately: MIZUHIKI is designed first to be sovereign, secure, and safe, and then to scale in service of those properties rather than at their expense.

The four principles are, in practice, a single commitment: that regulated Japanese economic activity can move onto public, programmable, composable infrastructure without sacrificing any of the properties that regulated activity depends on. The remainder of this whitepaper sets out the architecture that realises this commitment.

4. SOVEREIGN ETHEREUM EQUIVALENCE AND ARCHITECTURE

MIZUHIKI’s architecture reflects a single choice: to take Ethereum’s continuing technical progress as the baseline, and to deploy it on infrastructure whose operators, server locations, and legal accountabilities are all on Japanese soil. This section sets out what that choice means in practice, why it was made in preference to forking Ethereum or building from first principles, and how the resulting system is organised.



4.1 SOVEREIGN ETHEREUM EQUIVALENCE

MIZUHIKI is built on the principle of Sovereign Ethereum Equivalence: a deployment of the Ethereum protocol that keeps pace with future security, scaling, and technology innovations of Ethereum mainnet, but on validator client infrastructure that is all known, named, and located onshore in Japan.

The analogy MIZUHIKI offers is to the spectrum of computational service offerings in enterprise computing, ranging from shared cloud services at one end, through co-located dedicated resources, to fully on-premises infrastructure for the most sensitive use cases at the other. MIZUHIKI is a public, permissioned blockchain — anyone may read its state, deploy contracts on it, or transact on it — but its validation is permissioned and specifically “on-premises” in Japan.

Ethereum Equivalence maintains bit-for-bit compatibility at the execution layer: every opcode, every call, every transaction that would execute on Ethereum mainnet executes identically on MIZUHIKI. Developers can deploy existing smart contracts, use existing tooling (Foundry, Hardhat, MetaMask, ethers.js, viem), and rely on existing standards (ERC-20, ERC-721, ERC-4337) without modification.

What differs is not the execution environment but the validator set beneath it.

4.2 NETWORK ARCHITECTURE

MIZUHIKI’s architecture comprises three main components, each of which is described more fully in the sections that follow:

- **The Blockchain layer**, consisting of selected Validator Client Operators located onshore in Japan, running a Proof of Stake consensus protocol (Section 9).
- **The Compliance Suite**, a set of modular, opt-in protocols providing identity verification, regulatory validation, and internal risk management for applications that require them (Section 6).
- **The Payments Layer (feat MIZUHIKI SpeedLane and Paymaster)**, a custom-built execution layer designed for fast, in-store PoS payments for stablecoins. Private payments are also considered a priority, opt-in feature of the payments layer, in particular for corporate payments. SpeedLane provides private endpoints for certain transaction types that allow retail stores to achieve deterministic finality in under one second. All MIZUHIKI block builders prioritise transactions in the private SpeedLane mempools, allowing settlement guarantees ahead of the six second block time.

Each of these layers is designed to be composable with the others, so that application developers can build against MIZUHIKI at whichever level of abstraction serves their needs.

4.3 CONSENSUS AND FINALITY

MIZUHIKI operates a Proof of Stake consensus protocol, validated by a permissioned set of Validator Client Operators located in Japan. With a smaller and more geographically colocated validator set than Ethereum Mainnet, **MIZUHIKI will start with a block time of six seconds** (half of Ethereum Mainnet), while actively looking to safely reduce finality times alongside Ethereum protocol upgrades focussed on improving block time and finality speeds⁵.

For retail payments, the SpeedLane layer targets deterministic sub-second finality for stablecoin transactions. Retail payment use cases including point-of-sale acceptance, require confirmation times indistinguishable from those of card or payment apps. Each permissioned node operator will run a customised block builder that prioritises transactions submitted to the private SpeedLane mempool(s). This customisation is only achievable since the MIZUHIKI validator set is completely permissioned; permissionless blockchains are not able to offer sub-second deterministic finality to a subset of transactions in the same way.

MIZUHIKI SpeedLane is designed to offer payments participants the same confirmation experience they expect from existing payment infrastructure, while preserving the settlement properties of a public blockchain.

Every MIZUHIKI validator node is operated onshore in Japan, by a Japanese legal entity, on hardware meeting published security and availability standards. The Foundation specifies a minimum specification for validator infrastructure — including processor, memory, storage, network, and physical security requirements — and a minimum operational specification — including uptime commitments, incident response, key management, and disclosure obligations. Validator operators agree to Foundation-published governance terms as a condition of operating a node.

⁵ <https://ethereum.org/roadmap/single-slot-finality/>

5. THE PAYMASTER AND ISSUER REVENUE SHARING

A blockchain optimised for stablecoin payments must solve two economic problems that general-purpose Layer 1 networks do not. The first is on the user side: consumers and merchants cannot be expected to hold a speculative native token simply to pay transaction fees. The second is on the issuer side: at Japan's current reserve yields, issuing a JPY-pegged stablecoin is not, by itself, an attractively profitable business.

MIZUHIKI's paymaster addresses both problems simultaneously – it is a distinctive architectural feature of MIZUHIKI and a prerequisite to become a key default settlement rail for JPY-denominated stablecoin transactions in Japan.

5.1 THE STRUCTURAL PROBLEM FOR JPY STABLECOIN ISSUERS

Any JPY stablecoin issuer relying on reserve yields alone will have limited revenues in the modern near-zero interest rate environment in Japan, compared to USD stablecoin issuers. As such, JPY issuers would benefit from a second revenue line that is tied to transaction volume rather than reserve balances.

MIZUHIKI proposes a clean solution: a canonical paymaster that seamlessly enables stablecoins to be used to pay on-chain transaction fees and a built-in mechanism to share a portion of this stablecoin-based fee revenue with the stablecoin issuers.

5.2 CANONICAL PAYMASTER TOOLING

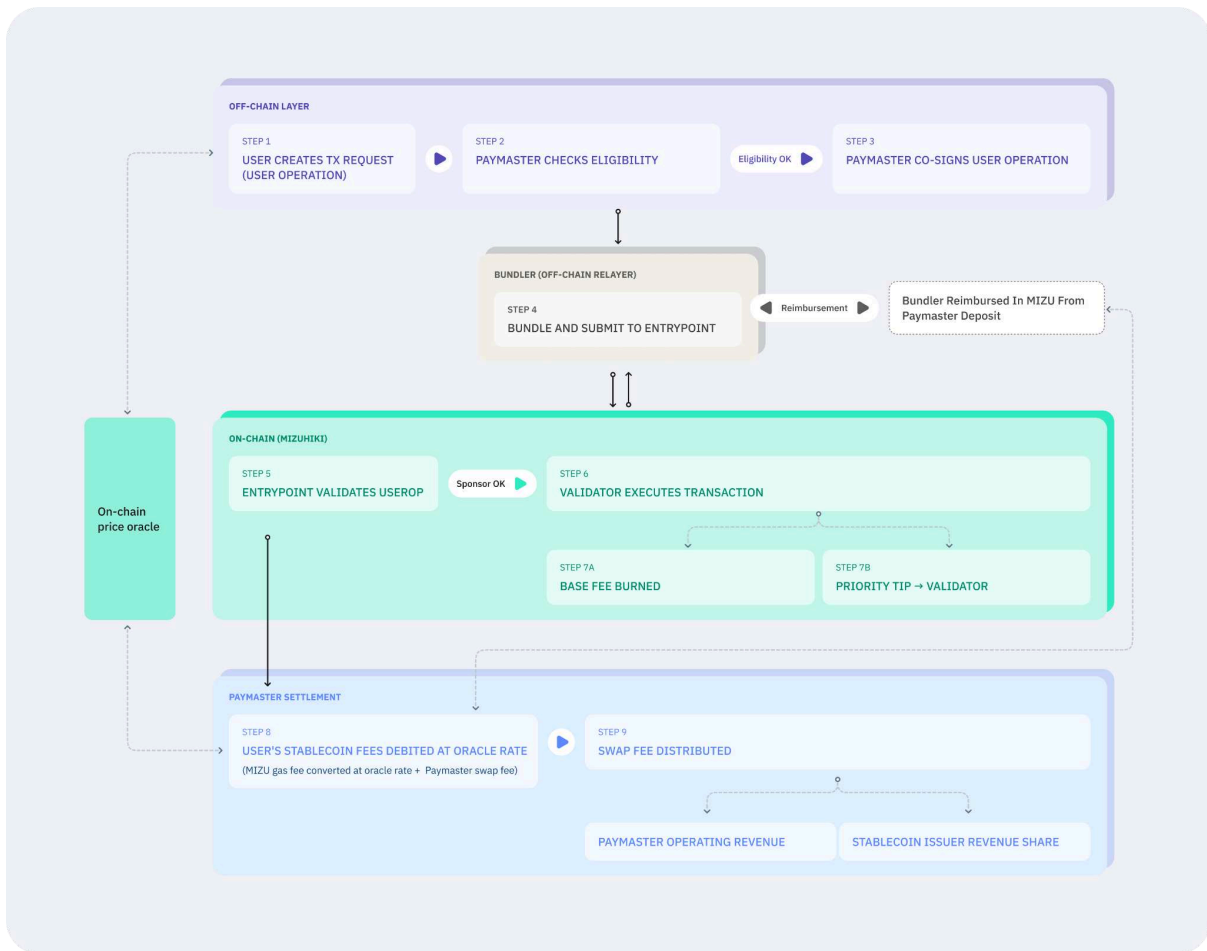
MIZUHIKI implements a canonical paymaster to be used as a first touch point for retail-facing applications, in particular, for stablecoins. The MIZUHIKI paymaster allows users to seamlessly transact stablecoins and other supported tokens **without** holding the native MIZU token on MIZUHIKI, which simplifies the onboarding and overall user experience for non-native crypto users.

In practical terms, a user transacting in a compliant stablecoin on MIZUHIKI never needs to hold MIZU. A Paymaster contract sponsors the transaction against the user's stablecoin balance. Gas settlement occurs in MIZU at the validator layer, with the Paymaster handling the conversion via protocol-managed liquidity.

5.3 GAS PAYMENT FLOW

A typical transaction on MIZUHIKI proceeds in the following sequence:

1. **The user signs a UserOperation** specifying the transaction to execute and the stablecoin denomination in which fees will be paid. No native MIZU is required of the user.
2. **The Paymaster checks eligibility** against Compliance Suite rules — eligible stablecoin, policy limits, and any issuer- or application-imposed restrictions on the sender.
3. **With eligibility confirmed**, the Paymaster co-signs the UserOperation, committing to settle gas in MIZU on the user's behalf against its on-chain deposit.
4. **An off-chain bundler aggregates co-signed operations** and submits them to the EntryPoint contract on MIZUHIKI. The bundler is reimbursed in MIZU from the Paymaster's deposit, so it never needs to hold the user's stablecoin.
5. **The EntryPoint validates the UserOp**, verifying the user signature, the Paymaster co-signature, and that the Paymaster's deposit covers the maximum gas cost before allowing execution.
6. **The validator executes the operation.** EIP-1559 fee mechanics apply: a base-fee component and an optional priority-fee component, both denominated in MIZU at the protocol layer.
7. **Protocol fees settle in MIZU:** a) The base fee is burned, removing MIZU from circulation and preventing collusion between validators and users, consistent with Ethereum's EIP-1559 design, and b) The priority tip flows to the block-producing validator, preserving the staking yield that underwrites validator security.
8. **The user's stablecoin balance is debited by the Paymaster** at the on-chain oracle rate, covering the MIZU-denominated gas fee plus a Paymaster swap fee.
9. **The swap fee is distributed:** a share is routed on-chain to the stablecoin issuer whose token was used to pay for the transaction, with the remainder accruing to the Paymaster as operating revenue.



The user experience is in-line with modern payments: sign once and pay in the currency you hold, without the need for a separate gas token. In general, the user need not even know that a blockchain is involved, that account abstraction exists, or that MIZU is the underlying settlement token. **This complete abstraction of the native token from the payments user experience is a prerequisite for mainstream retail payments at scale.**

5.4 STABLECOIN ISSUER REVENUE SHARING

MIZUHIKI routes a portion of on-chain transaction fees denominated in a given stablecoin back to that stablecoin's issuer.⁶

⁶The precise share is subject to MIZUHIKI's Foundation governance and may be parameterised by issuer tier. See Section 11 (Governance).

The intended effect is to encourage regulated JPY stablecoin issuance in the persistent low-rate environment. A secondary effect, beneficial to issuers, is that their issuance revenue scales with transaction volume, not solely with yield on the reserve balance.

By consequence, incumbent issuers may be energised by business plans that encourage network effects - such as payments and point incentives - similar to existing card networks today.

5.5 IMPLICATIONS FOR MIZU TOKEN ECONOMICS

The paymaster does not weaken MIZU's role in the network. On the contrary, every stablecoin transaction on MIZUHIKI creates demand for MIZU at the settlement layer through three distinct channels.

Base fees continue to burn. Every transaction, regardless of the stablecoin used at the user interface, results in MIZU being destroyed. This creates deflationary pressure on MIZU supply that is directly proportional to network activity.

Validators continue to earn in MIZU. Priority fees and validator rewards flow to validators denominated in MIZU. This preserves the staking yield that underwrites validator security and maintains the alignment between validator incentives and network activity.

Paymaster liquidity is MIZU-backed. The conversion layer between user-facing stablecoin gas and protocol-level MIZU settlement requires MIZU liquidity, provisioned by the Foundation and MIZUHIKI-approved market makers. MIZU therefore functions as the reserve asset of the network's fee market, even while end users transact exclusively in stablecoins.

The net effect is that MIZU captures value from transaction volume even when end users never hold the token directly. Holders benefit from network activity without the network's growth being gated by end-user willingness to hold a speculative asset — a trade-off that has materially constrained payment adoption on other general-purpose Layer 1 networks.

6. MIZUHIKI COMPLIANCE SUITE

Compliance has, historically, been a property of applications rather than of blockchains. Each application that wants to serve regulated customers must build, maintain, and engage its own Know Your Customer, anti-money-laundering, and transaction-monitoring stack. The result is a fragmented and expensive compliance landscape in which every developer reinvents a function that is substantively identical from one application to the next, and in which small variations in implementation produce real regulatory risk. For Japan, whose regulated institutions place a high weight on compliance rigor, this state of affairs has been a persistent obstacle to on-chain adoption.

The MIZUHIKI Compliance Suite takes the opposite approach. Rather than treating compliance as an application-layer concern, **MIZUHIKI provides compliance primitives at the platform layer**, available to every application on the chain as a shared resource. The cost of compliance does not disappear, but it is paid once, by the network, rather than redundantly by each application.

The Compliance Suite is provided free of charge to users and projects building on MIZUHIKI. It is modular and opt-in: applications may use all of its components, some of them, or none, as their use case and regulatory obligations require.

6.1 THREE MODULES

The Compliance Suite consists of three modules, each of which serves a distinct function and each of which may be adopted independently.

MIZUHIKI Identity provides eKYC-verified identity to any address on MIZUHIKI. A user who completes eKYC through a licensed MIZUHIKI Attestor receives a soulbound token, attesting that the holder of the relevant private key has undergone the specified verification procedure in Japan. No personally identifiable information is stored on-chain; all personal data is held by the Attestor or by the user, and is presented selectively to applications on demand through zero-knowledge or standard verifiable-credential mechanisms. Identity is described in detail in Section 7.

MIZUHIKI Compliance provides third-party compliance validation for regulated activities on MIZUHIKI. It surfaces on-chain compliance signals and proofs — sanctions screening, wallet risk scoring, issuer eligibility, transaction-monitoring feedback — through a hybrid on-chain/off-chain architecture that applications can query without building their own monitoring infrastructure. MIZUHIKI Compliance is designed to be interoperable with

existing global compliance providers (Chainalysis, Elliptic, TRM) as well as with Japan-specific data sources, so that applications obtain a unified compliance view from a single on-chain endpoint.

MIZUHIKI Risk Management provides on-chain enforcement of operational and transactional control policies that applications or institutional users wish to impose on their own activity. Transaction limits, asset gating, multi-party approvals, geographic restrictions, and time-based controls can be codified as on-chain policies and enforced automatically. This module is distinct from MIZUHIKI Compliance: Compliance enforces external regulatory obligations, while Risk Management enforces internal institutional controls. Both are necessary for institutional deployment; neither substitutes for the other.

6.2 ALIGNMENT WITH FSA GUIDANCE

The Financial Services Agency of Japan has, in its published research and policy work, articulated three specific concerns about the use of public blockchains as infrastructure for regulated activity. MIZUHIKI’s architecture has been designed to address each of these concerns directly, not as a retrofit but as a primary design criterion. The table below maps each concern to the MIZUHIKI components that address it.

FSA CONCERN	MIZUHIKI COMPONENT	MECHANISM
Governance and accountable parties: While there is no single point of failure, the party responsible for the entire system remains unclear	Japan-sovereign validator set; MIZUHIKI Foundation	MIZUHIKI maintains a public environment accessible to anyone, while limiting the validators responsible for network consensus building to highly reliable corporations within Japan. This design eliminates governance risks stemming from "unclear responsibility" and "disorderly node participation," which are problems in permissionless networks, thereby achieving operations that balance transparency and accountability.
AML/CFT enforcement	MIZUHIKI Identity; MIZUHIKI Compliance	Every verified user is anchored to eKYC via MyNumber or equivalent attestation. MIZUHIKI Compliance

FSA CONCERN	MIZUHIKI COMPONENT	MECHANISM
		surfaces sanctions, PEP, and wallet-risk signals on-chain. Applications gate regulated interactions with soulbound tokens rather than relying on off-chain claims.
Circulation control	MIZUHIKI Risk Management; Paymaster eligibility gating	Protocol-level policy enforcement allows issuers and applications to enforce transfer limits, holding restrictions, and approval requirements. Paymaster eligibility is restricted to compliance-validated stablecoins, giving the network itself a lever for circulation control on regulated instruments.

It is important to state that the Compliance Suite does not substitute for the compliance obligations of an application or an issuer operating on the chain. The Compliance Suite provides the infrastructure against which applications can build their own compliance programmes, and to do so in a way that directly addresses the three concerns the FSA has identified.

6.3 PRIVACY BY DESIGN

A central commitment of the Compliance Suite is that no personally identifiable information is exposed on-chain. The MIZUHIKI Compliance Suite is built on the decentralised identity primitives described in Section 7, under which personal data is held by the user (or by a licensed Attestor on the user’s behalf) and disclosed to applications selectively, through verifiable presentations, such as soulbound tokens, that reveal only the claims an application legitimately needs. Users retain the ability to revoke consent, to abstract credentials from their underlying identities, and to limit application access to the specific attributes required for the interaction at hand.

This is a deliberate departure from the prevailing practice on existing public chains, where every application that requires user verification typically collects and stores its own full copy of user personal data on a backend database. This standard has led to a limited ability to use privacy-preserving protocols that help keep an entity's on-chain activity (such as

assets under management or financial positions) private. Privacy is essential not just for large trading companies, publicly listed companies, financial traders, but also for general personal safety of individuals. On the other hand, using privacy-preserving protocols without providing KYC information to the protocol can result in affiliation with illicit entities, who seek on-chain privacy for adverse reasons.

MIZUHIKI's architecture treats the current rigid information-sharing pattern as both inefficient and privacy-hostile. The solution we seek is a single compliant verification, portably attested and selectively disclosed, which is safer for the user, cheaper for the ecosystem, and helps to solve legitimate on-chain privacy.

6.4 CONTINUOUS COMPLIANCE

MIZUHIKI is committed to driving down the cost of compliance through programmatic, continuous, adherence to up-to-date regulations. Where a compliance check today requires an application to implement its own periodic re-screening, MIZUHIKI's infrastructure will increasingly support automatic re-attestation, automated policy updates driven by evolving regulatory guidance, and composable compliance components that applications can assemble into the exact compliance posture their activity requires. The intention is that, over time, the cost of compliance for a new application on MIZUHIKI should approach zero — not because compliance obligations are reduced, but because the infrastructure that supports them has been paid for once and is shared across the network.

7. MIZUHIKI IDENTITY

The MIZUHIKI Identity layer is the foundational primitive of the Compliance Suite, and the primitive on which much of MIZUHIKI’s sovereign, compliance-first posture depends. This section describes how MIZUHIKI Identity works, how it relates to global standards for decentralised identity, how it integrates with Japan’s national identity infrastructure, and how it preserves user privacy while enabling institutional compliance.

7.1 MIZUHIKI ID

MIZUHIKI ID is a verifiable credential issued to a user’s MIZUHIKI address by a trusted onshore MIZUHIKI Attestor. It attests that the user controlling the private key for the relevant address has undergone a specified KYC and screening procedure in Japan, and is therefore eligible to interact with regulated on-chain applications on MIZUHIKI. The credential takes the form of a verifiable presentation⁷ or, equivalently, a soulbound token bound to the user’s address. MIZUHIKI ID is currently in testing on the Awaji testnet, with mainnet deployment planned for the network’s mainnet launch in mid-2026.

For natural persons resident in Japan, MIZUHIKI ID is anchored to the MyNumber card — Japan’s government-issued digital identity infrastructure⁸ — through an eKYC process operated by qualified entities. For institutional users, MIZUHIKI ID is anchored to corporate registry verification and to the identity of the institution’s authorised representatives. In both cases, the underlying personally identifiable information never enters the blockchain. What enters the blockchain is a cryptographic attestation that the identified procedure was successfully completed.

7.2 THE MIZUHIKI ATTESTOR NETWORK

MIZUHIKI Attestors are a Japan-sovereign network of compliant, licensed entities authorised by the Foundation to issue MIZUHIKI ID credentials. Attestors establish a “root of trust” that binds a natural or legal person’s off-chain identity to their on-chain MIZUHIKI address.

⁷Verifiable Credentials Overview, W3C Group Note, October 2024.
Available at <https://www.w3.org/TR/vc-overview/>.

⁸MyNumber (マイナンバー) is the individual number system introduced by the Japanese government in 2015 and the associated MyNumber card provides a secure digital identity that has been adopted widely across public and private services.

The Attestor model separates the functions of identity verification (performed by Attestors under appropriate licensing) and application-level interaction (performed on-chain by users). This allows applications to rely on a shared, high-quality identity signal without themselves becoming custodians of user personal data, and it allows users to manage their identity portably across applications without repeatedly submitting their personal information.

7.3 DECENTRALISED IDENTIFIERS AND VERIFIABLE CREDENTIALS

MIZUHIKI ID is built on the Decentralised Identifier (DID)⁹ and Verifiable Credential¹⁰ standards published by the World Wide Web Consortium. A DID is a digital identifier structured as a URI, containing information on how the documents referred to by the identifier may be resolved and verified. A Verifiable Credential is a cryptographically signed attestation made by an Attestor about a subject (the user) with respect to one or more claims (“has completed KYC in Japan,” “is over 18,” “is an accredited investor,” and so on). Credentials can be presented to relying applications in the form of Verifiable Presentations, which may contain the full credential, a subset of its claims, or a zero-knowledge proof of claim validity.

7.4 PRIVACY COMMITMENTS

The MIZUHIKI Identity architecture rests on three privacy commitments. First, no personally identifiable information is written to the MIZUHIKI chain; all such information is held off-chain by the user or by an Attestor operating under a clear custodianship relationship. Second, applications receive only the specific claims they need for the interaction at hand; a user proving that they have completed KYC in Japan does not need to reveal their name, address, or national identity number to the relying application. Third, users retain the ability to revoke consent and to withdraw application access to their credentials at any time.

⁹Decentralized Identifiers (DIDs) v1.0, W3C Recommendation, July 2022.
Available at <https://www.w3.org/TR/did-core/>

¹⁰Verifiable Credentials Data Model, W3C Recommendation, with Zero-Knowledge Proofs section.
Available at <https://www.w3.org/TR/vc-data-model/>

8. TOKENOMICS

The economic architecture of MIZUHIKI is designed to serve three objectives simultaneously: to secure the network through validator incentives, to support the paymaster and fee market as described in Section 5, and to align the long-term interests of token holders with the growth of the network itself. This section sets out the native MIZU token, its supply and allocation, its issuance schedule, and the fee mechanism that ties network activity to token economics.

8.1 THE MIZU TOKEN

MIZU is the native token of MIZUHIKI. It serves two functions. First, it powers the execution of transactions on the network: every transaction, regardless of how the user pays its fees at the user interface, is ultimately settled in MIZU at the validator layer. Second, it secures the network: validators stake MIZU and receive rewards, in MIZU, for their role in validating the network.

8.2 TOKEN SUPPLY AND ALLOCATION

The initial supply of MIZU is 500,000,000 tokens, distributed across five groups at genesis. Each allocation is subject to vesting conditions and unlock schedules, which are to be publicised prior to MIZUHIKI mainnet launch.

GROUP	ALLOCATION	MIZU TOKENS
Investors (AltX Research)	25%	125,000,000
Team	25%	125,000,000
Foundation – Ecosystem and Growth	20%	100,000,000
Validators	20%	100,000,000
Public Sale	10%	50,000,000
Total	100%	500,000,000

In-line with other global “Stablecoin L1s” such as Plasma¹¹ or Stable¹², MIZUHIKI’s token allocation reflects two explicit priorities. First, a substantial share of supply is held in Foundation treasury, to be deployed in service of the ecosystem over time rather than distributed at launch. Second, the allocation to the MIZUHIKI team and investors (AltX Research) have been set to attract the top caliber of investment and fintech professionals. MIZUHIKI’s goal is not to just provide and maintain the sovereign L1 blockchain infrastructure, but to become the mainstream payment rails in Japan, which requires a deep focus on integration with Japan’s largest corporations and payment distribution networks.

Investors (AltX Research) (25%)

Building and launching an L1 requires significant investment of time and resources. MIZUHIKI is supported by major Japanese and international investors. The AltX Research allocation of 125,000,000 tokens is set aside as an incentive for MIZUHIKI investors and allows AltX to continue to access external capital to build and grow MIZUHIKI.

Team (25%)

The Team allocation is set aside as an incentive for the MIZUHIKI founders, developers, and core team members to recognize their contributions and align their interests with the project’s long-term success and growth.

The vesting schedule of the team allocation is to be publicised before mainnet launch.

Ecosystem & Growth (20%)

Of the initial token supply, 20% will be allocated to the Foundation treasury to be specifically earmarked for the ecosystem and growth. This allocation is designed to support the growth and development of the MIZU token ecosystem by funding community-driven projects, events, and initiatives.

Validators (20%)

20% of the genesis supply (100,000,000) is earmarked for validator operator stakes. At launch, a minimum of 10% will be staked and locked indefinitely.

Public Sale (10%)

Of the initial token supply, 10% will be earmarked for eventual sale to the public on international and domestic exchanges. The Public Sale portion is the share of tokens that

¹¹ <https://www.plasma.to/docs/get-started/xpl/tokenomics>

¹² <https://docs.stable.xyz/en/reference/tokenomics>

will be offered in tranches over time, providing access and liquidity to the MIZU tokens. These tokens are not vested as public sales will be conducted through exchange listings and offerings.

8.3 ISSUANCE AND REWARDS

Staking rewards in MIZU are paid to validators for securing the network. Rewards comprise two components: a per-block reward (new issuance), and a transaction-fee component (paid by the transacting user), reflecting priority fees collected on network activity. Base fees are also paid by transacting users, but are burned by the protocol, which has a secondary effect of decreasing supply inflation produced by the block rewards.

Block Rewards (Consensus Layer)

The target annual reward rate (non-compounding) for validators, is approximately 14.5% at network launch, declining over time to 10% as the staked amount of MIZU tokens increases.

The block reward has been carefully chosen to balance compensation to validators for securing the network and tempering excessive issuance.

The token projected supply inflation rate from block rewards will be 1.4% in the first year of mainnet. Over time, as more tokens are staked, the total block rewards will increase, but the annual inflation rate is modelled to never exceed 2.0%.

Priority & Base Fees (Execution Layer)

Each transaction pays a base fee, set by the protocol as a function of recent block fullness, and an optional priority fee, determined by the user to encourage timely inclusion. Both components are denominated in MIZU at the protocol layer.

8.4 DEMAND DRIVERS FOR MIZU AT LAUNCH

Demand for MIZU arises from two main structural sources at launch.

Staking demand: Validators and Stakers must acquire and lock MIZU to earn network rewards. The 20% of genesis allocation earmarked for validators represents a considerable part of the total value locked, and offers an attractive yielding position for MIZU token holders.

Transaction demand: The gas token for all transfers, transactions and smart contract deployment is MIZU. For retail-facing users, paymasters will be used as default so that the end-user does not need to buy/hold MIZU directly. The Foundation and other approved marketplaces will facilitate payment of gas in stablecoins and will provision pool(s) of MIZU over time. For crypto-native users, MIZU token can be used for payment of gas fees. These users must hold/spend MIZU to deploy smart contracts, bridge tokens, etc.

9. VALIDATOR NETWORK AND STAKING ECOSYSTEM

The validator network is the infrastructure through which MIZUHIKI’s sovereignty, security, and consensus properties are actually delivered. This section describes how that network is structured, how validators are admitted and operated, and how the broader staking ecosystem beyond the core operator set is designed to function.

9.1 PERMISSIONED VALIDATOR DESIGN

MIZUHIKI’s permissioned Validator Client Operators – also referred to as validator operators or validators – are all located onshore in Japan.

This composition is itself a sovereignty property: the parties responsible for validating the network are visible, reputable, and directly accountable under Japanese law. This is a substantively different security model from that of general-purpose public chains, and it is the appropriate security model for a chain whose purpose is to host Japanese regulated activity.

9.2 STAKING ECOSYSTEM

MIZUHIKI’s intention is to drive a robust staking and ownership ecosystem, in which millions of Japanese companies and individuals can participate in network security through delegate staking against the core operators, or through retail staking offerings made available by those operators and approved staking service providers.

Among the Validator Client Operators, MIZU allocates staking capacity across two tiers, reflecting different modalities of participation:

STAKING MODEL	ENTITY TYPE	STAKERS PER NODE	TARGET APR (YEARS 0–5)
Full Node Operator	Large Japanese Companies	1	~14%
Delegated Staking	<ul style="list-style-type: none"> Financial services / strategic partners Operators offering retail access 	Multiple	~12%

The exact distribution across the tiers will evolve with the network's maturity. The design intent is that, over time, a meaningful share of MIZU's staked supply will be held by Japanese retail participants — making MIZUHIKI not only a sovereign chain in the validator sense, but also a chain with broadly distributed economic ownership within Japan.

9.3 OPERATOR ONBOARDING AND TRANSITION

Validator operators are admitted to MIZUHIKI through a multi-stage process: application against published Foundation criteria, technical assessment of their infrastructure, legal and governance review, a signed operator agreement, and the acquisition of the minimum required stake. The Foundation maintains a transparent record of applicants, their status, and the reasoning for admission or deferral.

For the initial months of mainnet operation, the Foundation, working with AltX Research and its infrastructure partners, will operate all initial validator nodes directly, under the terms of the admitted-operator agreement. This initial phase is intended to ensure network stability through launch, to permit live validation of operational procedures, and to provide cleanly observable uptime data to counterparty operators who have committed to take over nodes on a phased schedule.

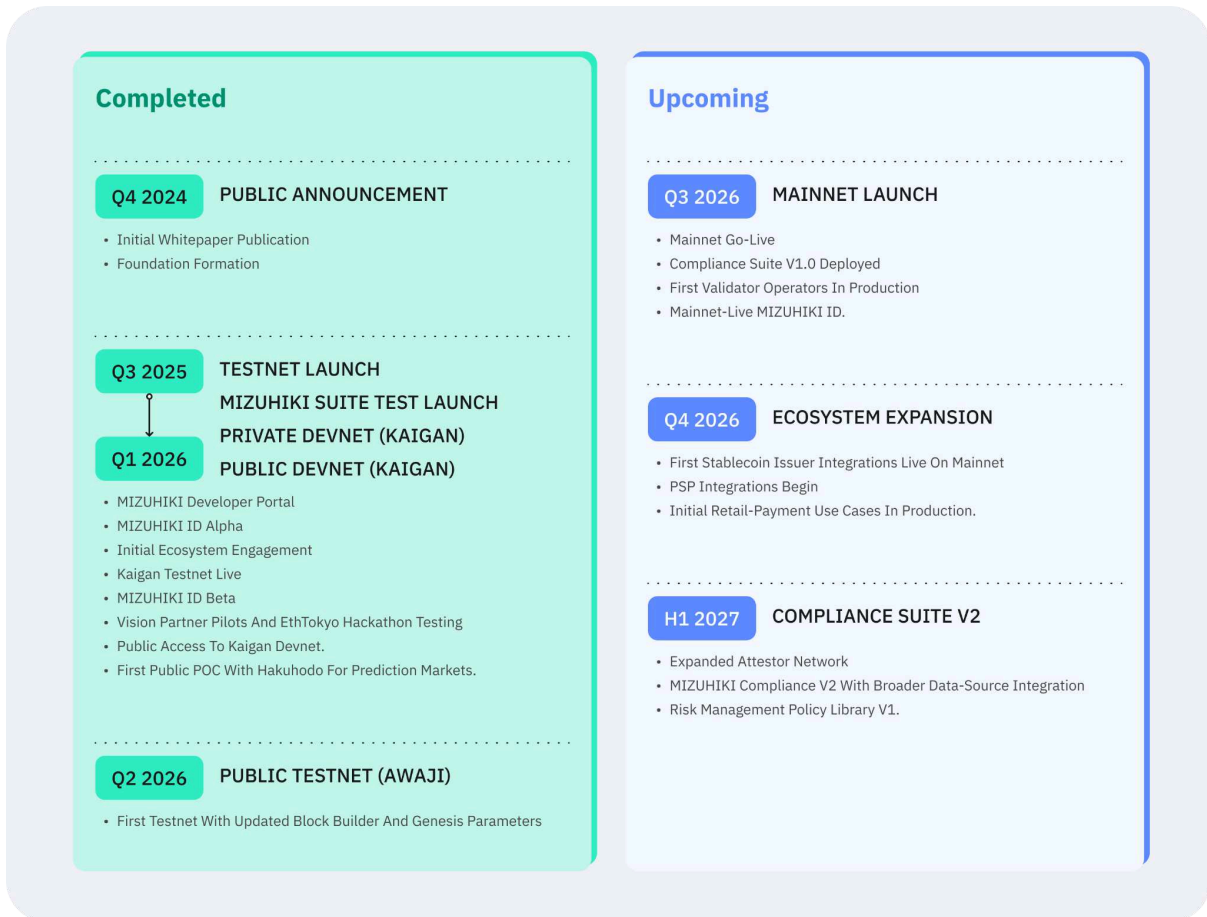
9.4 OPERATOR OBLIGATIONS AND PROTECTIONS

Validator operators accept explicit obligations: uptime commitments, security standards, incident reporting, disclosure of operational location and beneficial ownership, and compliance with Foundation-governed operational policies. Operators may incur protocol-defined penalties – that is, may lose a portion of their staked MIZU – for provable misbehaviour or for sustained failure to meet operational obligations. In severe cases, operators are slashed - this includes penalties and a forced exit: as all node operators are institutions, slashing events are expected to be rare. Both penalty and slashing conditions are defined narrowly and transparently by the protocol, and follow the same mechanisms/rules defined by Ethereum Mainnet. There is no discretionary power to slash operators outside these defined conditions.

In exchange for these obligations, operators receive predictable MIZU rewards, protection under the Foundation's governance documents, and access to the operational support the Foundation provides to its validator network.

10. ROADMAP

MIZUHIKI’s development has proceeded in clearly defined phases, each building on the work of the preceding one. The table below summarises progress to date and planned work through the end of 2027.



PHASE	PERIOD	PRINCIPAL MILESTONES	STATUS
Whitepaper v1.0	Q4 2024	Public announcement. Initial whitepaper publication. Foundation formation.	Delivered ▾
Developer Preview	Q3 2025	MIZUHIKI developer portal. MIZUHIKI ID alpha. Initial ecosystem engagement.	Delivered ▾
Private Devnet (Kaigan)	Q3 2025	Kaigan testnet live and public. MIZUHIKI ID beta in production. Initial application pilots with Vision Partners and testing with EthTokyo hackathon participants	Delivered ▾

PHASE	PERIOD	PRINCIPAL MILESTONES	STATUS
Public Devnet (Kaigan)	Q1 2026	Public access to the Kaigan devnet. First public POC with Hakuodo for prediction markets.	Delivered ▾
Public Testnet (Awaji)	Q2 2026	First testnet with updated block builder and genesis parameters.	Delivered ▾
Mainnet Launch	Q3 2026	Mainnet go-live. Compliance Suite v1.0 deployed. First validator operators in production. Mainnet-live MIZUHIKI ID.	Planned ▾
Ecosystem Expansion	Q4 2026	First stablecoin issuer integrations live on mainnet. PSP integrations begin. Initial retail-payment use cases in production.	Planned ▾
Compliance Suite v2	H1 2027	Expanded Attestor network. MIZUHIKI Compliance v2 with broader data-source integration. Risk Management policy library v1.	Planned ▾

11. GOVERNANCE AND THE FOUNDATION FOR MIZUHIKI

11.1 THE FOUNDATION FOR MIZUHIKI

MIZUHIKI's Foundation is a general incorporated association (*ippan shadan houjin*) registered in Japan. The Foundation holds stewardship of the MIZUHIKI protocol, of the Foundation-allocated portions of MIZU supply described in Section 8, and of the ecosystem programmes that support the network's growth. The Foundation's charter limits its activities to the advancement of the MIZUHIKI network and the ecosystem around it. It does not engage in commercial activities that would put it in competition with applications or operators on the network.

The Foundation is governed by a board drawn from technology, financial, and governance backgrounds, with a mandate to exercise its stewardship functions in accordance with published Foundation policies and in the interests of the network as a whole.

11.2 ALT X RESEARCH K.K.

AltX Research K.K. is a Japanese *kabushiki kaisha* (stock company) that serves as the core technology contributor to the MIZUHIKI protocol. AltX Research operates independently of the Foundation; its relationship with the Foundation is governed by a published contributor agreement setting out the scope of its protocol development work, the intellectual property arrangements under which that work is contributed to the network, and the economic terms (reflected in its token allocation) under which AltX Research is compensated for its ongoing contribution.

12. CONCLUSION

Japan is in an unusual position. The regulatory framework for stablecoins is clear. The country's industrial base, consisting of trading houses, banks, telecommunications carriers, retailers, and government institutions, contains both the scale and the disposition to bring regulated on-chain activity into everyday use. Yet, the challenging economics of JPY stablecoin issuance remains the largest barrier to achieving tangible on-chain, regulated activity in Japan. Without a yen-denominated stablecoin, payments and trading use cases remain blocked.

A public chain built for Japanese regulated activity, validated onshore under Japanese law, with compliance primitives at the platform layer, and with economic design that reflects the specific challenges facing JPY stablecoin issuers, is the missing piece. Each of the architectural choices for MIZUHIKI described in this whitepaper — sovereign validation, Ethereum equivalence, the paymaster, the Compliance Suite, the Identity layer, the tokenomics — reflects a specific view about what this infrastructure needs to do.

Mainnet launches in the third quarter of 2026. The Awaji testnet is live now, the developer portal and the MIZUHIKI ID beta are available for integration and evaluation. Issuers, payment service providers, system integrators, and enterprises planning regulated stablecoin activity are invited to engage through the MIZUHIKI's vision partner programme.

Our objective is to make MIZUHIKI the default settlement rail for regulated stablecoin payments in Japan. The broader thesis of this whitepaper is that sovereign public chains built on Ethereum-equivalent foundations will become the standard infrastructure of regulated digital finance, and that MIZUHIKI is the first serious example of that category.