



Sikkim Blockchain Policy 2025

A Framework for Responsible and Sustainable Digital Transformation

Department of Information Technology

Contents

Preamble	2
Foreword	3
Introduction	4
Glossary Of Terms	5
1. Executive Summary	6
2. Vision and Guiding Principles	6
2.1 Vision Statement	6
2.2 Guiding Principles	7
3. Strategic Pillars: A Multi-faceted Approach	7
3.1 Pillar 1: Infrastructure and Interoperability	7
3.2 Pillar 2: Talent Development and Capacity Building	8
3.3 Pillar 3: Research and Innovation Promotion	9
3.4 Pillar 4: Public-Private Collaboration and Partnerships	9
3.4.1 Fostering Public Engagement and Trust	9
3.4.2 Institutional Collaboration	10
4. High-Impact Implementation Domains and Phased Rollout	10
4.1 Phase 1: Foundational Pilots (Years 1-2)	10
4.2 Phase 2: Scale-Up and Expansion (Years 3-4)	11
4.3 Phase 3: Long-Term Vision (Year 5 and beyond)	11
5. Addressing Challenges and Mitigating Risks	12
6. Governance and Institutional Mechanisms	13
7. Monitoring, Evaluation, and Ecosystem Growth	14
8. Conclusion and Expected Outcomes	14

Preamble

WHEREAS the Government of Sikkim recognises blockchain technology as a strategic and foundational digital infrastructure for a transparent, secure, and efficient government, and

WHEREAS, the State is committed to fostering a citizen-centric, trustworthy, and digitally empowered ecosystem, in full alignment with the Government of India's vision of a "Digital India" and the Ministry of Electronics and Information Technology's (MeitY) "National Blockchain Strategy", and

AND WHEREAS, this policy serves as a testament to the State's resolve to leverage this immutable technology to enhance public service delivery, drive economic growth, and address unique regional challenges in areas such as organic agriculture and eco-tourism

NOW, THEREFORE, the Government of Sikkim hereby adopts this Blockchain Policy to provide a comprehensive framework for the responsible and sustainable application of Distributed Ledger Technology (DLT) across all sectors, thereby positioning Sikkim as a model for leveraging technology for holistic socio-economic development.



Foreword

In the spirit of "Digital India" and the progressive vision of our Hon'ble Prime Minister, the State of Sikkim stands at the cusp of a new era of digital governance. We recognise that in our journey towards a more prosperous and equitable future, embracing transformative technologies is not just an option but a necessity. The Sikkim Blockchain Policy is a testament to this commitment.

This document is the culmination of extensive consultations with a wide array of stakeholders, including domain experts, technology leaders, academic institutions, and government officials. It is built upon the foundational principles of trust, transparency, and accountability, which are inherent to the ethos of blockchain. Our approach is neither a blind leap nor a cautious crawl, it is a calculated, strategic, and citizen-centric framework designed to leverage the power of this technology to solve real-world challenges specific to our state from ensuring the authenticity of our organic produce to providing secure and tamper-proof land records.

We believe that by aligning ourselves with the national-level infrastructure and policies, we can accelerate our digital transformation journey while contributing to the larger vision of a connected and technologically advanced India. This policy provides a roadmap, but its true success will lie in our collective resolve to implement it with diligence, integrity, and a steadfast focus on serving our people.

Introduction

Blockchain technology, a form of Distributed Ledger Technology (DLT), is a paradigm-shifting innovation that moves beyond traditional centralized systems to create a decentralized and immutable record of transactions. Unlike conventional databases, which are managed by a single authority, a blockchain is a shared, secure, and verifiable ledger that is resistant to tampering and fraud. Its core properties decentralization, immutability, transparency, and cryptography make it an ideal solution for a wide range of public services where trust and data integrity are paramount.

The adoption of blockchain is a natural evolution of India's digital public infrastructure, which has already established foundational pillars like Aadhaar for digital identity, UPI for payments, and DigiLocker for document management. By integrating with these existing systems, blockchain can further enhance the security and trustworthiness of digital interactions, fostering greater confidence among citizens and businesses.

This policy outlines a comprehensive strategy for the State of Sikkim to become a leader in the responsible and sustainable application of this technology. It details a phased implementation plan, a robust governance structure, and a clear roadmap for talent development and ecosystem growth. The document serves as a guide for all government departments, industry partners, and academic institutions to collaborate on building a digital future for Sikkim where technology is a force for good.

Glossary Of Terms

This glossary provides definitions for key terms used in this policy document to ensure clarity and a common understanding of blockchain technology and its application.

Aadhaar e-KYC: A digital service provided by the Unique Identification Authority of India (UIDAI) that allows a resident's identity to be verified electronically using their Aadhaar number, name, and demographic data.

API (Application Programming Interface): A set of rules that allows different software applications to communicate and interact with each other. In this policy, an "API-first approach" means designing systems to be easily accessible by external applications.

Blockchain: A distributed, immutable digital ledger of transactions that is duplicated and shared across a network of computer systems. Each transaction is recorded in a "block" and is cryptographically linked to the previous one, making it tamper-proof.

CoE (Centre of Excellence): A designated institutional body, often a research or academic hub, focused on driving innovation, research, and expertise in a specific technological field.

Decentralised Execution: A model where a central plan or strategy is set, but the implementation of specific projects is managed independently by various agencies or departments, allowing for flexibility and adaptability.

DigiLocker: A digital document wallet service provided by the Government of India that enables citizens to store and access certain official documents, like educational certificates and driving licenses, in a verifiable digital format.

Distributed Ledger Technology (DLT): A broader term for a digital system that records transactions across multiple computers (nodes) simultaneously. Blockchain is a specific type of DLT.

IndiaStack: A set of digital public infrastructure APIs (like Aadhaar, UPI, DigiLocker, and e-Sign) that allows governments, businesses, and startups to build solutions for a wide range of services.

MeitY (Ministry of Electronics and Information Technology): A branch of the Government of India responsible for the development of IT, electronics, and internet policies.

National Blockchain Framework (NBF): A national-level strategy and technical framework proposed by MeitY to guide the development and deployment of blockchain applications for e-governance and other sectors across India.

Permissioned Blockchain: A private blockchain network where only authorized users or entities can participate, validate transactions, and access the ledger. This is the preferred model for public service applications due to enhanced security and governance.

Smart Contract: A self-executing contract with the terms of the agreement directly written into lines of code. The code controls the execution, and transactions are traceable and irreversible.

Vishvasya Blockchain Technology Stack: A national-level, open-source technology stack developed by MeitY as a core component of the National Blockchain Framework. It provides the tools and infrastructure for building secure and interoperable blockchain applications.

1. Executive Summary

The Government of Sikkim recognises blockchain technology as a strategic enabler for its digital transformation journey. In alignment with the Government of India's "**National Blockchain Strategy**" formulated by MeitY, this policy outlines a comprehensive framework for the responsible and sustainable adoption of **distributed ledger technology (DLT)** across the state. The policy's vision is to leverage blockchain to enhance public service delivery, drive economic growth, and position Sikkim as a leader in applying this technology for ecological and administrative governance.

This framework is built on the national model of "**centralised planning and decentralised execution**," which allows for the utilisation of the secure, national infrastructure while fostering state-specific innovation. By focusing on high-impact, trust-centric applications such as agricultural supply chain traceability, land records management, and educational credential verification, the State of Sikkim aims to solve real-world problems and build public trust. The policy draws lessons from the holistic, ecosystem-building approach of Telangana and the targeted, project-focused model of Karnataka, creating a hybrid strategy tailored to the unique needs of the State of Sikkim. This document details the strategic pillars of the policy, including infrastructure and interoperability, talent development, research and innovation, and public-private partnerships. It also outlines a phased implementation roadmap, addresses critical challenges such as regulatory ambiguity and the skill gap, and sets out a clear governance structure for successful deployment. The ultimate goal is to create a digital architecture of trust that not only improves efficiency but also provides a secure and transparent foundation for a more resilient and prosperous state of Sikkim.

2. Vision and Guiding Principles

2.1 Vision Statement

To establish Sikkim as a state at the forefront of digital governance and a model for the responsible application of blockchain technology, by fostering a secure, transparent, and efficient digital ecosystem that drives economic growth and enhances the lives of its citizens.

2.2 Guiding Principles

The State of Sikkim Blockchain Policy is guided by the following principles, which are harmonised with the National Blockchain Strategy:

- **Trust and Transparency:** The policy will prioritise applications that address existing trust deficits in public services.
- **Interoperability and Scalability:** All state-level initiatives will be designed to be interoperable with the National Blockchain Framework (NBF).
- **Decentralised Execution:** The policy will adhere to the "centralised planning and decentralised execution" model.
- **Holistic Ecosystem Development:** The policy will focus on building a comprehensive ecosystem that includes not just technology, but also talent, research, and community collaboration.
- **Citizen-Centric:** The ultimate measure of success for this policy will be its positive impact on the ease of living and the delivery of services to citizens.

3. Strategic Pillars: A Multi-faceted Approach

This policy is structured around four strategic pillars designed to create a self-sustaining and robust blockchain ecosystem within the state.

3.1 Pillar 1: Infrastructure and Interoperability

State of Sikkim will leverage the national infrastructure and expertise to avoid redundant investments and ensure a cohesive, secure, and interoperable digital landscape.

- **Sovereign Alignment with the National Blockchain Framework (NBF):** The State of Sikkim shall explicitly align and comply with the Ministry of Electronics and Information Technology's (MeitY) **National Blockchain Framework (NBF)** and its associated **Vishvasya Blockchain Technology Stack**. This alignment shall serve as the foundational principle for all state-led blockchain initiatives, ensuring national interoperability, scalability, and security compliance.

The Department of Information Technology shall be responsible for mandating and auditing compliance with NBF standards for all government projects.

- **Mandated Standards Adoption:** For all public service applications, the use of **permissioned blockchain frameworks** (such as Hyperledger Fabric, Corda, or other NBF-compliant platforms) shall be mandated.
- **API-First Integration Philosophy:** All blockchain-based systems shall adhere to an **API-first approach**, ensuring the development of open and standardised APIs. This will enable seamless third-party and startup integration, in line with the **IndiaStack philosophy**.
- **Digital Identity Integration:** Blockchain services shall be designed for interoperability with India's digital identity stack, including integration with **DigiLocker, Aadhaar e-KYC, and e-Sign**.
- **Extensible Architecture:** The NBF is designed to be extensible and supports multiple permissioned blockchain platforms.
- **Secure Sandboxing:** The state will encourage startups and academic institutions to utilise **NBFLite**, MeitY's dedicated blockchain sandbox platform, for rapid prototyping, research, and capacity building.

3.2 Pillar 2: Talent Development and Capacity Building

A significant challenge for blockchain adoption is the severe skill gap. Sikkim's policy will address this proactively with targeted, multi-stakeholder initiatives to build talent at the student, professional, and governmental levels.

- **Blockchain Centre of Excellence (CoE):** Establish a Blockchain CoE in strategic collaboration with premier institutions such as NIT Sikkim, IIT Guwahati, and IIIT Senapati. The CoE will focus on applied research and development of blockchain solutions for Himalayan-specific challenges.
- **Curriculum Integration:** The government will work with the Sikkim Board of Secondary Education to introduce blockchain technology modules in the curriculum for Classes XI and XII.

- **Government Training Programs:** To foster in-house expertise, blockchain awareness and certification will be made mandatory for officials in key user departments such as Revenue, Agriculture, and Tourism.
- **Partnerships for Skilling:** The state will partner with industry associations and technology firms to create specialised training and certification programs for the existing IT workforce and professionals seeking to reskill.

3.3 Pillar 3: Research and Innovation Promotion

The State of Sikkim can stand-in a culture of research and innovation by providing the necessary resources and incentives for groundbreaking projects.

- **Applied Research Focus:** The policy will encourage research projects focused on addressing key challenges in blockchain technology.
- **State Blockchain Regulatory Sandbox:** Establish a **Sikkim Blockchain Regulatory Sandbox** in formal consultation with MeitY. This sandbox will provide a controlled environment for startups, developers, and government departments to test innovative blockchain applications with temporary regulatory exemptions.
- **Innovation Challenges and Community Building:** Annual blockchain innovation challenges and hackathons will be organised to encourage the development of new applications.

3.4 Pillar 4: Public-Private Collaboration and Partnerships

Effective implementation requires a collaborative approach that involves all stakeholders, including government departments, private companies, and citizens.

3.4.1 Fostering Public Engagement and Trust

Building citizen confidence is paramount for the adoption of new technologies.

- **Public Awareness Campaigns:** The government will launch targeted initiatives to differentiate blockchain technology from cryptocurrencies clearly.
- **Transparency Portals (Public Dashboards):** To provide tangible proof of value and build trust, real-time public dashboards will be developed for key blockchain applications, allowing citizens to track land record transactions and verify organic product certification.

- **Startup Incentives:** The government will provide a package of incentives for blockchain startups, including **tax rebates, grants for proof-of-concept projects, and preferential procurement policies.**

3.4.2 Institutional Collaboration

- **Liaison with MeitY:** A dedicated liaison office will be established to coordinate with MeitY, ensuring alignment with the national strategy.

4. High-Impact Implementation Domains and Phased Rollout

The State of Sikkim will adopt a phased, project-based implementation model, prioritising applications that solve immediate problems and leverage Sikkim's unique strengths.

4.1 Phase 1: Foundational Pilots (Years 1-2)

The initial phase will focus on developing and piloting solutions in high-impact domains where trust, transparency, and Sikkim's core economic interests are of paramount importance.

- **Organic Certification & Agri-Exports:** A flagship pilot project will establish a blockchain-enabled verifiable certification system for Sikkim's organic produce. This system will be integrated with national bodies, such as the Agricultural and Processed Food Products Export Development Authority (APEDA), and global export authorities to provide immutable proof of origin, quality, and organic authenticity. This will enhance the global "Sikkim Organic" brand, ensure fair premiums for farmers, and streamline export processes.
- **Property and Land Records Management:** Building on the success of other state pilots, a blockchain-based system for property and land records will be developed. This system will provide a secure, immutable digital record of land ownership, reducing fraud, disputes, and administrative burden.
- **Tourism & Eco-Permits:** A pilot will be launched to issue verifiable digital trekking permits, and eco-tourism passes. This will help manage tourist footfall sustainably, preserve fragile ecosystems, and establish a transparent and efficient system for both tourists and administrators.

- **Public Distribution System (PDS):** A transparent blockchain-based supply chain management system for the ration supply chain will be piloted to track the movement of goods from warehouses to beneficiaries, significantly reducing leakages and ensuring efficient delivery of services.

4.2 Phase 2: Scale-Up and Expansion (Years 3-4)

Building on the success of the initial pilots, this phase will focus on scaling up the proven applications and expanding into new, strategic domains.

- **Hydropower & Carbon Credits:** The framework will be expanded to include blockchain-based platforms for green energy trading and carbon credit tracking. This will leverage Sikkim's hydropower potential, create new revenue streams, and ensure compliance with India's carbon neutrality targets by providing transparent and auditable environmental accounting.
- **Educational Credential Verification:** The pilot for academic certificates and transcripts will be scaled across all state institutions, eliminating document fraud and streamlining verification for employers and higher education institutions.
- **Disaster Relief Tracking:** Given Sikkim's vulnerability to earthquakes and landslides, a blockchain-based ledger for aid distribution will be developed. This will ensure accountability and transparency in relief operations, guaranteeing that help reaches the intended beneficiaries efficiently during crises.
- **Healthcare and Patient Records:** A pilot project will be initiated for the secure management of Electronic Health Records (EHRs), ensuring patient data privacy while allowing for seamless, secure data sharing among authorised medical professionals.

4.3 Phase 3: Long-Term Vision (Year 5 and beyond)

The final phase will involve the deep integration of blockchain technology across various sectors and the exploration of advanced applications.

- **Digital Identity Management:** The state will explore a blockchain-based system for secure and portable digital identities, built on the learnings from national and state-level digital ID initiatives.¹
- **Asset Tokenisation:** The policy will explore the tokenisation of physical and intellectual assets, including land and agricultural produce, to unlock new economic opportunities and provide a secure, transparent platform for transactions.
- **Broad-Based E-Governance:** A full-scale integration of blockchain into a wide array of citizen services, creating a pervasive architecture of trust for all government interactions.

5. Addressing Challenges and Mitigating Risks

The policy recognises several challenges that must be addressed for successful adoption.

- **Legal and Regulatory Readiness:** The State Government proposes to proactively work towards creating a legally enabling environment. It proposes to initiate the process of reviewing and, where necessary, amending relevant State laws, including the **Registration Act, 1908** and the **Indian Stamp Act, 1899**, with a view to enabling the recognition of **digital land transactions and the legal enforceability of smart contracts**.^{1 2}
- **Data Protection Compliance:** All blockchain initiatives shall be designed and implemented in complete alignment with the **Digital Personal Data Protection Act, 2023 (DPDPA)**. **Privacy-by-design** principles shall be mandated.
- **Technical Roadblocks:** The state will continue to support research into new solutions to ensure its applications can handle large transaction volumes.
- **Public Perception:** The policy will actively work to combat the negative association of blockchain with cryptocurrencies and fraudulent activities.

¹ **Registration Act, 1908:**

The Registration Act, 1908 establishes the legal framework for the registration of immovable property and related instruments, primarily through physical documentation and manual or semi-digital registration processes. A review may be necessary to assess how digitally native records, blockchain-based land registries, and automated transaction mechanisms can be recognised within the existing statutory framework.

² **Indian Stamp Act, 1899:**

The Indian Stamp Act, 1899 governs the levy and collection of stamp duty on instruments and links legal validity to duly stamped documents in prescribed formats. As smart contracts and blockchain-enabled transactions introduce automated and programmable instruments, a review may be required to evaluate stamp duty applicability, valuation, and enforceability in digital transaction environments.

6. Governance and Institutional Mechanisms

A dedicated institutional structure, with clear accountability, is essential for the policy's successful implementation.

- **Nodal Agency:** The **Department of Information Technology, Government of Sikkim**, shall be formally designated as the **Nodal Agency** for all blockchain initiatives under this policy.
- **Sikkim Blockchain Steering Committee:** A high-level Steering Committee shall be constituted to provide strategic direction and oversight. The Committee shall comprise representation from:
 - ❖ **Chair:** Chief Secretary / Minister-in-Charge of IT.
 - ❖ **Members:** Secretaries/Heads of key stakeholder departments (IT, Revenue, Agriculture, Education, Tourism, Power).
 - ❖ **Academic Experts:** Representatives from premier academic institutions (e.g., NIT Sikkim, Sikkim University).
 - ❖ **Industry Experts:** Nominated representatives from industry associations (e.g., NASSCOM) and leading technology firms.
- **Roles and Responsibilities of the Steering Committee:** The Committee shall be responsible for:
 - ❖ Providing strategic guidance and approving annual action plans.
 - ❖ Overseeing the implementation of pilot projects and ensuring alignment with the National Blockchain Framework (NBF).
 - ❖ Recommending policy and regulatory changes to the state legislature.
 - ❖ Allocating funds and approving incentives for research, development, and startups.
 - ❖ **Mandating Quarterly Review Meetings:** The Committee shall meet quarterly to review progress against stated goals and metrics. A summary report of these reviews shall be submitted to the Chief Secretary and the Minister-in-Charge of IT.

Liaison with MeitY: The Nodal Agency (Department of IT) shall establish a dedicated cell to serve as the liaison office for continuous coordination with MeitY, ensuring that Sikkim's initiatives remain aligned with the national strategy and benefit from central government support.

7. Monitoring, Evaluation, and Ecosystem Growth

A robust framework for monitoring and evaluation is crucial for measuring the policy's impact, ensuring accountability, and fostering a vibrant ecosystem.

- **Sikkim Blockchain Adoption Index (BAI):** The nodal agency will develop and maintain a quantitative BAI to track key performance metrics such as service delivery efficiency, citizen adoption, economic and governance impact, and ecosystem development.
- **Annual Sikkim Blockchain Summit:** To showcase progress, foster collaboration, and position Sikkim as a leader in the space, the government will organise an **Annual Sikkim Blockchain Summit** in Gangtok.
- **Phased Reviews and Reporting:** The Steering Committee will conduct bi-annual reviews of all pilot projects and initiatives against the milestones outlined in the phased implementation roadmap (Section 4).

8. Conclusion and Expected Outcomes

The state of Sikkim Blockchain Policy is not merely a technical document, it is a strategic blueprint for a future defined by trust, transparency, and innovation. By adopting a "lead by example" approach and focusing on core public services, the government can provide robust proof of the technology's effectiveness.

The successful implementation of this policy is expected to yield the following outcomes:

- **Improved Governance:** A reduction in fraud and corruption, increased efficiency in government service delivery, and enhanced public trust.
- **Economic Growth:** The creation of a vibrant local technology ecosystem, attracting investments, and generating high-skilled jobs.
- **Enhanced Citizen Experience:** More secure, convenient, and transparent access to essential services.
- **Global Recognition:** The establishment of Sikkim as a forward-thinking state, setting a precedent for the responsible and ethical application of emerging technologies.

This framework provides the necessary guidance and support to realise this vision and create a nationwide ecosystem for a more secure, transparent, and trusted digital India.

