Feasibility Study on Digital Asset Adoption in Ethiopia

Version 1

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1 Executive Summary

1.1 Background and Scope

This feasibility study examines the potential adoption of blockchain-based digital asset solutions in Ethiopia, with a focus on how such innovations could support small and medium enterprise (SME) financing and broader financial modernization. It is motivated by Ethiopia's recent economic reforms and digital transformation goals, and asks fundamentally whether and how digital assets can be viably introduced under current conditions. The scope of analysis is multi-dimensional, covering the market demand and ecosystem readiness, the regulatory and legal context, and the technical infrastructure and skills base needed for digital assets. Ultimately, the study aims to provide an evidence-based appraisal of opportunities and challenges, and to chart a practical path forward for implementation that aligns with Ethiopia's development strategies (e.g. *Digital Ethiopia 2025*).

1.2 Methodology

The study employed a mixed-methods approach to ensure rigor and inclusivity. This included a thorough literature review and stakeholder consultations (interviews and surveys with regulators, fintech firms, banks, and SMEs) to gather qualitative insights, alongside quantitative analysis of market data and case studies. The research also benchmarked international experiences (particularly in Africa) and reviewed official documents (policies, laws, and directives) to ground the findings in real-world context. Stakeholder engagement was iterative – preliminary findings were validated through workshops – and a gender/inclusion lens was applied in data collection and analysis to ensure the recommendations support broad-based benefits. This robust methodology provides confidence that the conclusions drawn are well-triangulated and relevant to Ethiopia's socio-economic context.

1.3 Regulatory and Legal Landscape

Ethiopia's regulatory framework for digital assets is nascent but evolving. As of the study, cryptocurrencies are not legally recognized for payments and the central bank (National Bank of Ethiopia, NBE) maintains a cautious stance. However, recent policy steps signal a tentative opening: NBE issued a ban on crypto-based transactions in 2022 but has since permitted controlled activities like licensing a few crypto mining operations in 2024. A new capital markets regulator, the Ethiopian Capital Market Authority (ECMA), was established in 2022,

laying groundwork for regulating tokenized securities. Other developments include consideration of a central bank digital currency (a "Digital Birr") and the launch of a fintech regulatory sandbox in 2024 to pilot innovations. Significant regulatory gaps remain – there are not yet specific laws for emerging areas like decentralized finance, peer-to-peer trading, stablecoins, or crypto exchanges. The study highlights the need to modernize laws (e.g. foreign exchange rules, cyber laws) to accommodate digital assets, ensure alignment with anti-money laundering and financial inclusion objectives, and provide legal clarity and consumer protection. Overall, the legal landscape is still in flux, underscoring the importance of proactive policy development and clear guidelines to enable digital asset use while safeguarding financial stability.

1.4 Ecosystem Readiness

Ethiopia's digital finance ecosystem is at an early stage but shows promise. Mobile and internet infrastructure is expanding – mobile broadband coverage is growing and digital payment networks (such as mobile money services) are in place – yet connectivity remains uneven and largely urban-centric. The country has seen rapid uptake of mobile money (e.g. Ethio Telecom's Telebirr), indicating a foundation of user readiness for digital financial services. Some pilot projects demonstrate local appetite for blockchain technology: for example, authorities have tested blockchain for coffee supply chain traceability and land registry management, signaling interest in the transparency and efficiency gains these could bring. These experiments show the *potential* of digital asset applications, though they were limited in scope. Key gaps in readiness were identified, notably the limited access to reliable internet in rural areas and generally low digital literacy in the population, which could constrain broad adoption. The fintech startup scene in Ethiopia is in its infancy but growing, and banks and microfinance institutions are beginning to explore digital innovation. Overall, the ecosystem is not yet fully primed for digital assets, but with continued investment in ICT infrastructure, expansion of mobile services, and capacity building, the foundational elements could rapidly improve.

1.5 Technical Feasibility (Platforms, Security, Skills)

The technical assessment found that appropriate blockchain platforms and robust IT infrastructure will be critical to implementing digital asset solutions. The study reviewed both public blockchain networks (e.g. Ethereum) and permissioned/private platforms (e.g. Hyperledger) to determine their suitability for Ethiopia's needs. Factors like scalability, transaction costs, and performance in low-bandwidth environments were considered. Past collaborations (such as Ethiopia's trial of blockchain in the education sector) suggest that global technology partnerships can be leveraged to access advanced platforms while building local know-how. Ensuring strong cybersecurity and data protection is highlighted as a non-negotiable requirement – any digital asset system must safeguard against fraud, hacking, and data breaches, and comply with emerging data privacy standards. Integration with

Ethiopia's digital ID systems (to enable reliable Know-Your-Customer (KYC) processes) is also seen as essential for security and trust. Another key feasibility factor is human capacity: the local pool of blockchain and cybersecurity expertise is currently limited. The study emphasizes investing in training and education, and possibly bringing in external expertise or public-private partnerships, to fill these skill gaps. In summary, technical implementation is feasible but will require careful platform selection, strengthened IT infrastructure (power and internet reliability), dedicated cybersecurity frameworks, and significant capacity building to ensure sustainability.

1.6 Risk and Compliance Assessment

A comprehensive risk matrix was developed to evaluate potential pitfalls of digital asset adoption and how to manage them. Regulatory risk is prominent – given the uncertainty and potential for sudden policy changes, there is a risk that digital asset initiatives could be stymied by unclear or shifting regulations. The study recommends mitigating this through continuous dialogue with regulators and possibly using flexible, sandboxed pilot programs that can adapt to evolving rules. Compliance and Anti-Money Laundering (AML) risk is another key concern: the anonymous or pseudonymous nature of crypto transactions could be exploited for illicit purposes. To address this, strict KYC/AML controls should be enforced in any implementation (for instance, whitelisting users in a permissioned environment, and monitoring transactions closely). Market and adoption risks were identified, including the volatility of cryptocurrencies and low public awareness or trust. Price instability could pose financial risks to users, and skepticism or lack of understanding may limit uptake. The study suggests focusing on stable-value digital instruments (such as stablecoins pegged to fiat currency) or possibly a future Central Bank Digital Currency in Ethiopia's context, to minimize volatility in early use cases. It also calls for public education campaigns to build basic awareness and trust in digital assets, so that users understand the products and risks. Finally, technical and operational risks (e.g. cybersecurity threats, system outages, or insufficient tech support) were considered. Recommended mitigations include deploying robust cybersecurity measures, starting with small-scale pilots to test system resilience, and ensuring backup systems and emergency response plans are in place. By identifying these risks upfront and proposing targeted mitigation strategies, the study provides a roadmap for a safe and controlled adoption of digital assets.

1.7 Stakeholder Mapping

Successful adoption of digital asset solutions will require coordination among a broad set of stakeholders. The study maps out all the key players and their roles:

- **Government and Regulators:** Public institutions such as the NBE, the Ethiopian Capital Markets Authority (ECMA), the Ministry of Innovation and Technology, and others are

central to enabling the environment. They will define policies, issue licenses or sandboxes, and ensure that digital asset offerings align with financial stability and consumer protection mandates. High-level government buy-in and clarity of regulatory oversight are crucial.

- **Financial Sector and Fintech:** Banks, microfinance institutions, and fintech startups are the implementers and innovators for digital assets. Banks and formal financial institutions could integrate blockchain for payments, trade finance, or custody services, while fintech and tech companies drive innovation in areas like mobile wallets, crypto exchanges, or crowdfunding platforms. Their participation will bridge traditional finance with new digital asset services, and their risk management practices will be vital to protect users.

- **SMEs and Business Community:** These are the end-users and beneficiaries of the proposed digital asset solutions. SMEs (including entrepreneurs in underserved groups) stand to gain new avenues for raising capital (e.g. through tokenized crowdfunding or asset-backed tokens) and more efficient payment/remittance options. Business associations and chambers of commerce are also stakeholders, as they can articulate the needs and concerns of the private sector and help rally support and understanding among SMEs. Ensuring that solutions are user-friendly and address real financing pain points for businesses will determine adoption at this level.

- **Development Partners and Academia:** International development agencies, donors, and NGOs (for example, organizations supporting fintech or financial inclusion programs) can provide technical assistance, funding, and knowledge to bolster Ethiopia's digital asset ecosystem. They might support capacity-building for regulators, sponsor pilot projects, or convene multi-stakeholder forums. Academic institutions and research centers also play a role in providing expertise, training local talent, and evaluating the impact of innovations.

The study underscores that collaboration across these stakeholder groups is essential. A public-private dialogue platform or working group was recommended to ensure continuous communication, align objectives, and build trust among stakeholders. By involving regulators, industry players, and end-users in the design and rollout of digital asset initiatives, Ethiopia can foster a shared ownership of the outcomes and more effectively address concerns as they arise.

1.8 Benchmarking: Lessons from Other African Countries

As part of the feasibility analysis, the study benchmarked Ethiopia's situation against peer African countries that have begun navigating digital assets, to glean lessons and best practices:

- **Nigeria:** Nigeria stands out as a regional leader in crypto adoption – as of 2023 it ranked *2nd globally* in cryptocurrency usage, driven largely by practical needs like payments and as a hedge against inflation. The regulatory journey in Nigeria offers a cautionary yet instructive tale: after initially imposing strict bans (for example, the central bank prohibited banks from servicing crypto exchanges in 2021), authorities have since moved toward engagement. By 2023, Nigeria's Securities and Exchange Commission introduced an incubation regulatory framework requiring crypto service providers to register and be monitored, which reflects a shift to a more proactive and balanced oversight approach. Nigeria has even launched a central bank digital currency (eNaira), although its uptake has been limited so far. The key takeaway for Ethiopia is the importance of regulatory flexibility – outright prohibition gave way to adaptation as consumer adoption grew, suggesting that a collaborative regulatory stance can better harness the benefits while managing the risks.

- **Kenya:** Kenya's experience illustrates the advantage of building on a strong existing digital finance ecosystem. With the widespread success of mobile money (M-Pesa), Kenya provided fertile ground for cryptocurrency and blockchain startups. Notably, firms like BitPesa (now AZA Finance) leveraged crypto to facilitate cross-border transfers, reportedly driving remittance costs down from traditional 10–15% fees to around 0.1–0.2% of transaction value. This has demonstrated blockchain's power to improve efficiency and lower the cost of financial services. The Kenyan government, while still formulating formal crypto regulations, showed early interest by forming a Blockchain & AI Taskforce (2018) and exploring blockchain applications in land registries and education. For Ethiopia, Kenya's case underscores the value of fintech innovation riding on mobile payment infrastructure and suggests that even without comprehensive crypto laws in place, useful pilot applications can be pursued under existing fintech-friendly policies.

- **South Africa:** South Africa represents a more mature financial market approach to digital assets. The country has provided legal clarity by classifying crypto assets as financial products under its existing financial sector laws, thereby bringing crypto exchanges and service providers under the oversight of the Financial Sector Conduct Authority. This clear legal definition has encouraged participation from established institutions – major South African banks have engaged in blockchain experiments (e.g. inter-bank settlement systems and custody services for digital assets) and regulators have used sandbox programs to foster controlled innovation. The South African example highlights the importance of integrating digital assets into the formal financial framework and the benefits of involving traditional financial actors to lend credibility, expertise, and risk management to the ecosystem.

- **Other Countries:** The study also noted developments in other African countries as reference points. For instance, *Ghana* is in the process of developing crypto asset regulations by 2025, *Rwanda* and *Mauritius* have established fintech sandboxes and

supportive regulatory environments, and several nations are exploring Central Bank Digital Currencies (with Nigeria's eNaira being the first live CBDC on the continent). These examples reinforce that across Africa there is a recognition of the potential of digital assets, but approaches vary from cautious experimentation to more assertive integration. Ethiopia can learn from these varied experiences by adopting a strategy that is cautious but forward-looking allowing pilots and innovation, while gradually building a regulatory framework in line with international best practices.

1.9 Monitoring and Evaluation Framework

To ensure that any implementation of digital asset solutions is outcome-oriented and accountable, the study proposes a clear Monitoring & Evaluation (M&E) framework. This framework defines what success will look like in the Ethiopian context – primarily, expanding access to finance for SMEs and catalyzing fintech innovation – and lays out key performance indicators (KPIs) to track progress. Examples of KPIs include:

- **Pilot projects launched** – the number of digital asset pilot initiatives (e.g. a tokenized crowdfunding platform or a blockchain-based remittance service) and their scale.
- **Transaction volumes and SME uptake** – the total value of funds raised or transacted through digital asset channels by Ethiopian SMEs, and the number of SMEs or users participating. These metrics would be disaggregated by size of business and by gender to ensure inclusive reach. For instance, tracking how many women-owned enterprises gain financing via new digital asset mechanisms is an important inclusion metric.
- **Regulatory milestones** – progress in the enabling environment, such as new licenses issued to digital asset providers, the establishment of sandboxes, or the enactment of specific regulations and guidelines.
- **Capacity-building and awareness** – number of stakeholders (regulators, bankers, developers, entrepreneurs) trained in blockchain and compliance, and measures of public awareness (surveys on understanding of digital assets).

The study recommends establishing baseline values for these indicators (for example, the current status of SME financing or digital payment usage) and setting target outcomes to achieve over short, medium, and long-term horizons. It also outlines mechanisms for data collection and monitoring – such as periodic surveys, project reports, and usage analytics from blockchain platforms – to be conducted on a quarterly or annual basis as appropriate. Importantly, the M&E plan includes a feedback loop: if certain indicators lag behind targets, this should trigger a review and adaptation of strategies. For example, if uptake by rural or female entrepreneurs is low, additional outreach or support could be deployed to address the gap. By defining clear metrics and an evaluation timetable upfront, the implementation of digital asset

solutions can remain focused on tangible development outcomes, and stakeholders can course-correct as needed to ensure the initiative delivers on its promises.

1.10 Conclusions and Phased Roadmap for Implementation

Overall, the study concludes that adopting digital asset solutions in Ethiopia is feasible and can yield substantial benefits – particularly for widening access to finance and spurring innovation – but it must be pursued in a phased and prudent manner given the existing constraints. The benefits (such as more efficient financing channels, increased investment, and inclusion in digital finance) can outweigh the risks if a gradual, well-regulated approach is taken. To that end, a phased implementation roadmap is recommended, breaking down actions into short-term, medium-term, and long-term steps:

- **Short Term (0–12 months):** Establish the foundational governance and experimental groundwork. This includes forming a multi-stakeholder working group or task force to steer the initiative and coordinate between government, industry, and development partners. Early awareness-raising and capacity-building workshops should be conducted for regulators and market participants. Crucially, one or two pilot projects should be launched in a controlled environment (for example, a pilot for tokenized crowdfunding or a blockchain-based SME lending platform), possibly under a regulatory sandbox or special license to allow live testing with oversight. These pilots will serve as proof-of-concept and help authorities learn by doing, while limiting exposure.

- **Medium Term (1–2 years):** Develop the supporting regulatory and institutional infrastructure and scale up successful innovations. In this phase, the insights from pilots would inform the drafting and enactment of tailored regulations – such as creating a licensing framework for digital asset service providers, clarifying tax and reporting obligations for crypto-assets, and strengthening consumer protection rules. Successful pilot projects can be expanded to broader user groups or replicated (for instance, if a crowdfunding pilot succeeds, more sectors or regions could be included). Parallelly, investments should be made in critical infrastructure: establishing a full regulatory sandbox program or innovation hub, enhancing national digital ID systems to facilitate eKYC, and upgrading ICT infrastructure where needed for reliability and security. This period may also involve encouraging traditional financial institutions to integrate or partner with fintech solutions (e.g. banks custodying digital assets or providing fiat on-ramps) to build a bridge between old and new systems.

- **Long Term (3–5 years):** Gradually integrate digital assets into the mainstream financial system once the foundations are proven. By this stage, Ethiopia could move toward institutionalizing digital asset markets – potentially establishing a national digital asset exchange or marketplace where tokenized securities, cryptocurrencies, or other digital financial instruments can be traded under proper supervision. The option of a Central

Bank Digital Currency (CBDC) (a "Digital Birr") could be revisited once the ecosystem matures, to complement the digital finance landscape. In the long term, the vision is that digital asset solutions would be an accepted and regulated part of Ethiopia's financial architecture, providing new channels for investment and inclusion. Oversight mechanisms would also be fully developed, with regulators having the tools and expertise to monitor digital asset activities as part of their routine supervisory mandate.

This phased roadmap is deliberately aligned with Ethiopia's broader development plans and the Digital Ethiopia 2025strategy, ensuring that the introduction of digital assets supports national priorities like financial inclusion, innovation, and SME development. The study stresses the importance of institutionalizing the reforms – for example, setting up a dedicated digital finance innovation unit or a public-private advisory council – to maintain momentum and coordinate actions across agencies. It also calls for continuous capacity building and stakeholder engagement throughout the rollout, so that all parties remain informed and committed.

2 Introduction to Web 3.0, Blockchain & Beyond

Web 3.0, Blockchain technology and beyond form the foundational pillars of the emerging digital asset ecosystem. This chapter introduces these technologies in accessible terms, explains how they interact to create real value, and previews key application areas. The goal is to establish a clear understanding of how blockchain-based digital assets work to lay the groundwork for understanding this feasibility study.

2.1 Blockchain Technology

A blockchain is essentially a distributed ledger shared across a network of computers (nodes). Unlike a traditional database held by one central entity, each node in a blockchain network holds a copy of the ledger, and updates are agreed upon through a *consensus* mechanism. This design enables a decentralized record-keeping system where no single party controls the data. For example, Bitcoin's blockchain allows participants worldwide to agree on valid transactions without a bank or central operator in charge. The ledger is structured as a chain of blocks, each block containing a batch of transactions and a reference (cryptographic hash) linking it to the previous block. This cryptographic linking makes the chain tamper-evident: if any detail in an earlier block is altered, its hash changes and breaks the link to all subsequent blocks. In other words, the security of the hash-linked chain ensures that once a transaction is recorded and

confirmed by the network, it becomes extremely difficult to change retroactively without the consensus of the majority of nodes.

Blockchain's combination of distributed networking and cryptography provides an immutable, append-only transaction log that all participants trust as the single source of truth. A well-known World Bank description summarizes that a blockchain is a type of distributed ledger that prevents double-spending without a trusted third party by relying on a consensus protocol to determine the canonical state of the ledger. In practical terms, this means parties can transact directly with each other and *trust the ledger* to reflect ownership and transaction history, rather than trusting an intermediary. Blockchain networks may be permissionless (open to anyone, e.g. public cryptocurrencies) or permissioned (restricted to known participants, as often considered for enterprise and government use). In both cases, the core attributes are similar: shared ledgers, cryptographic security, and consensus-based verification of new blocks. These attributes make blockchains resilient and transparent, which is why they are seen as having high potential to improve record-keeping in finance, supply chains, government registries, and beyond (World Bank, 2017).

Importantly, blockchain technology was first popularized by cryptocurrencies, but its applicability extends beyond currency. The ability to securely record any kind of transaction or data has led to experiments in diverse domains. For instance, blockchains have been piloted to improve land title registries, academic certificate verification, and supply chain traceability, leveraging the assurance that data on the chain is tamper-proof and collectively validated. In summary, a blockchain provides the infrastructure for digital assets: a shared, reliable ledger on which asset information and transactions can be recorded with integrity.

2.2 Tokenization

Tokenization is the process of creating a digital representation of an asset on a blockchain. In practice, tokenization converts rights or ownership in an asset (whether a physical asset like real estate, a financial asset like a bond, or even intangible goods) into a digital token recorded on the distributed ledger. These tokens act as transferable units of value or entitlement, backed by the underlying asset. By fragmenting ownership into tokens, historically illiquid assets can be broken into smaller, tradeable units. This fractionalization encourages the democratization of finance by lowering investment barriers and allowing a wider range of participants to own a share of valuable assets.

Tokenization can produce different types of tokens depending on the asset and purpose. Fungible tokens are interchangeable and divisible (each token has equal value, as in the case of a stablecoin or a share of stock), whereas non-fungible tokens (NFTs) are unique and indivisible (each token represents a specific unique item or claim). In both cases, the blockchain serves as the system of record that tracks token creation, ownership transfers, and embedded metadata (e.g. ownership history or asset details). By anchoring tokens to an immutable ledger,

tokenization ensures that provenance and transactions can be audited with transparency and security.

The impact of tokenization is far-reaching. In capital markets, it promises faster settlement, lower costs, and reduced counterparty risk, since tokens can be exchanged and settled instantly without complex reconciliation. It also improves accessibility: assets like infrastructure projects or real estate that once required large capital outlays can be divided into tokens affordable to smaller investors. The World Economic Forum projects that up to 10% of global GDP could be stored on blockchains via tokenized assets by 2027 (WorldEconomicForum, 2024) – a testament to tokenization's potential to transform how value is stored and exchanged globally.

2.3 Smart Contracts

If blockchain is the ledger and tokens are the digital assets, smart contracts provide the logic and rules that make digital assets *programmable*. A smart contract is essentially a program stored on the blockchain that automatically executes certain actions when predefined conditions are met. The term "contract" can be misleading – it is not a legal document by itself, but rather a piece of code (often corresponding to an agreement) that enforces rules without human intervention. As an analogy, one can think of a smart contract like a digital vending machine: it will release an item (execute an outcome) when the correct input is provided (conditions fulfilled), with no need for a shopkeeper. Similarly, on a blockchain, a smart contract might automatically transfer funds or assets when conditions coded in the contract (e.g. a payment trigger, a date, the receipt of some data) are satisfied.

Technically, smart contracts run on blockchain platforms that support general-purpose computation (most prominently, the Ethereum blockchain). They are deployed to the blockchain and assigned an address, and thereafter any authorized user or system can interact with the contract by sending transactions. The key innovation is that the contract's code will run deterministically on every node in the network, ensuring that the outcome is the same for all and is recorded on the ledger. This enables trustless automation: parties can rely on the code to execute the agreement correctly, rather than relying on a trusted intermediary or enforcement by courts. As IBM's blockchain division explains, smart contracts are typically used to automate the execution of an agreement so that all participants can be immediately certain of the outcome, without any intermediary's involvement. They can also automate workflows by triggering the next action once conditions are met (IBM, 2024).

One powerful aspect of smart contracts is their ability to interface with real-world data and events through "oracles" – trusted data feeds that report external information to the blockchain. This means contractual logic can be based on off-chain events (like commodity prices, weather data, or delivery confirmations), enabling automation of complex real-world agreements (Chainlink, 2021). However, it is important to design these carefully, since bugs or

vulnerabilities in smart contract code can have serious consequences (the code is typically immutable once deployed, and funds controlled by it can be lost if the logic is flawed). Thus, robust auditing and testing of smart contracts is a must in any serious deployment.

2.4 How the Pieces Fit Together

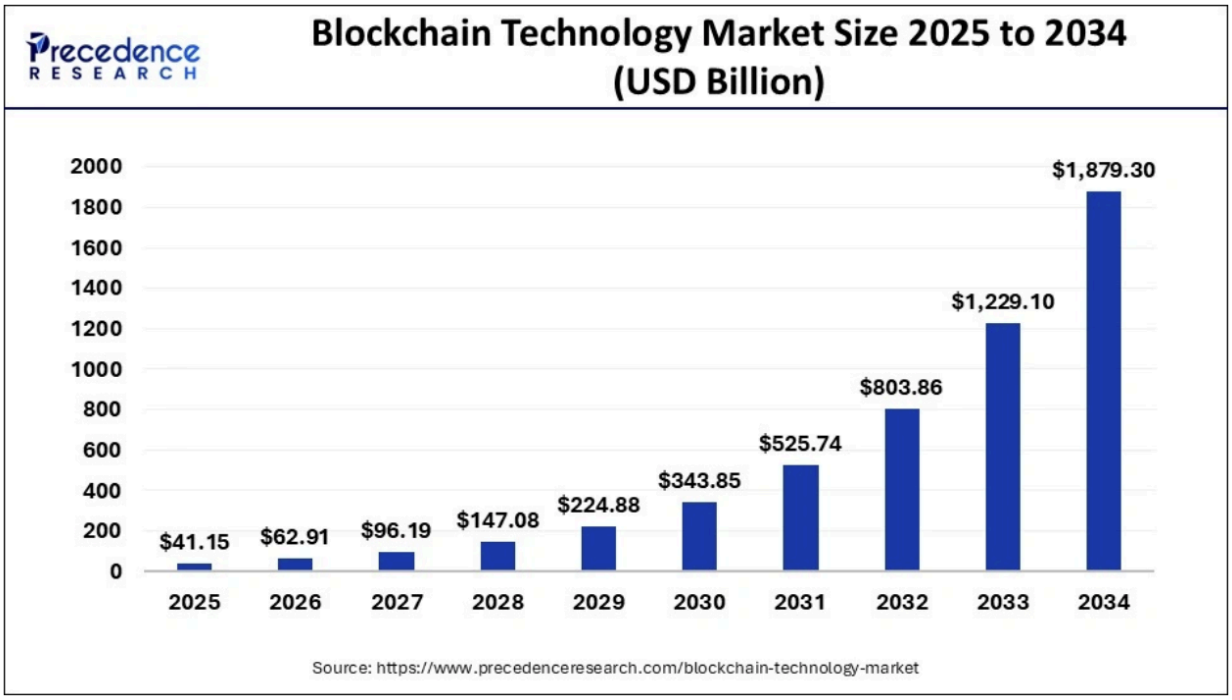
Individually, blockchain provides the infrastructure (a secure shared ledger), tokenization provides the representation of assets on that ledger, and smart contracts provide the automation and logic. Together, these elements combine to create programmable digital assets – assets that not only have a digital representation of ownership, but also embedded rules and behaviors that are executed automatically. Digital assets are the result of two powerful capabilities of modern platforms: tokenization and programmability. Tokenization encapsulates an asset into a digital token envelope, while programmability attaches the asset's behavioral rules to that token, typically via smart contracts. The outcome is an asset that can essentially "run itself" under certain conditions – for example, a tokenized bond could automatically pay its coupon to token holders on scheduled dates, and prevent transfers to ineligible investors by design. Moreover, because everything is software-driven, integration with other emerging technologies is possible – for example, IoT devices could feed data to trigger smart contracts (imagine an agricultural commodity token that releases payment when a grain shipment's IoT sensor confirms delivery), and AI analytics could monitor on-chain data for risk management.

It is worth noting that while this vision is powerful, practical implementation requires addressing challenges of legal recognition, regulatory approval, technology risks, and user adoption. Later chapters of this study will delve into these issues in Ethiopia's context. Nonetheless, the fundamental takeaway is that programmable digital assets can bring new efficiency and transparency to markets. They create a world where assets are not inert entries in a registry, but active digital instruments that can interact, conditionally transfer, and even reason based on coded logic. This lays a foundation for innovative financial solutions, especially in environments with underdeveloped traditional market infrastructure.

2.5 Market Size & Numbers

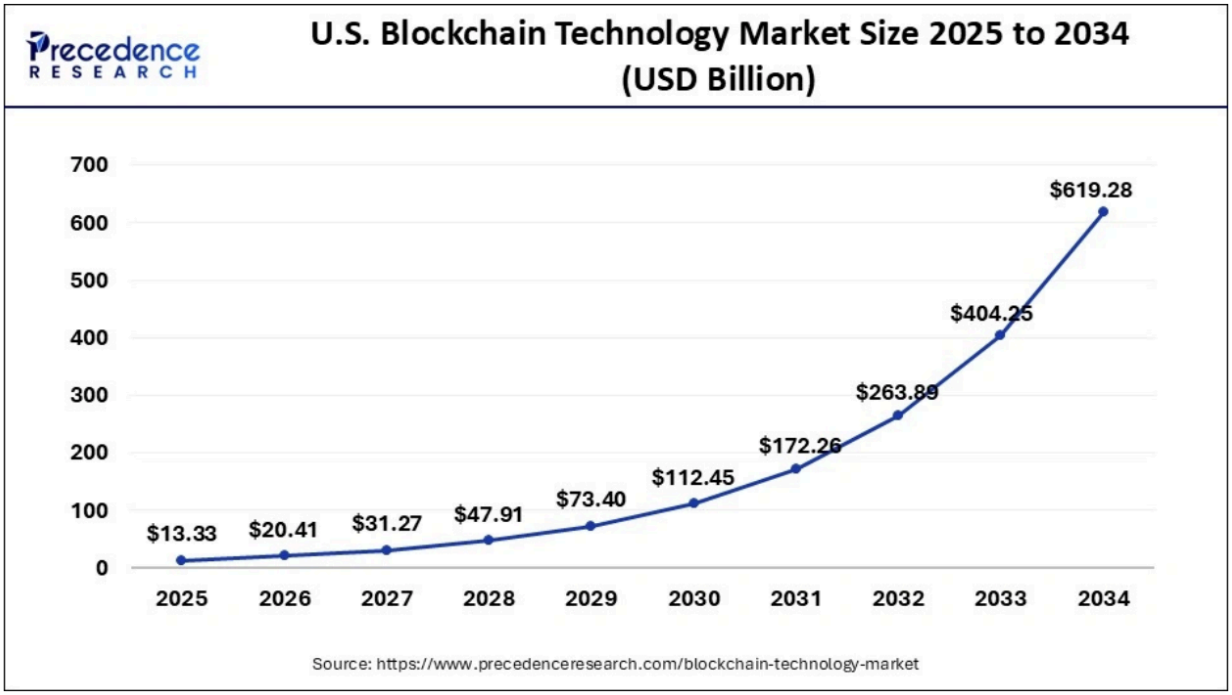
The following forecasts and graphs on blockchain, tokenization and smart contracts, are just one set among many, each built on different assumptions, data, and methodologies. They are meant to give a directional sense of the growth potential, not a definitive prediction, and should be weighed alongside other reputable analyses.

2.5.1 Blockchain



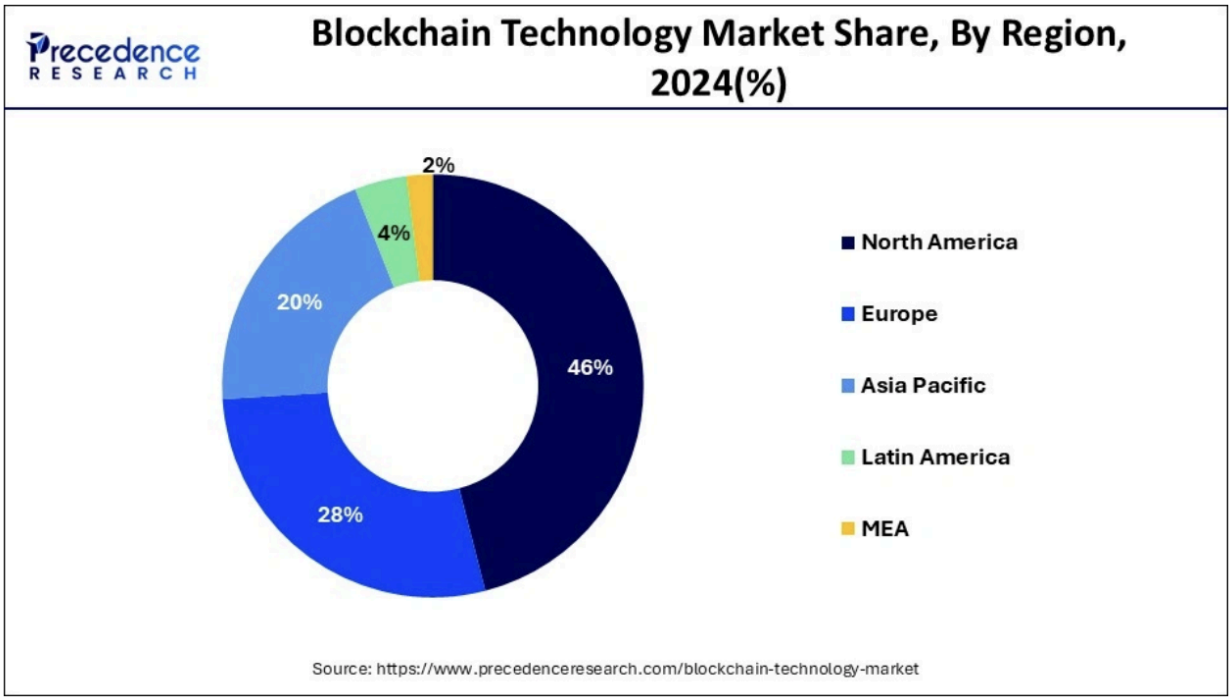
Source: Precedence Research, 2025

The chart depicts an acceleration from USD 41.15B in 2025 to USD 1,879.30B by 2034, implying an approximate 53% CAGR over nine years. It signals a steep expansion curve consistent with early-stage, infrastructure-driven technology cycles.



Source: Precedence Research, 2025

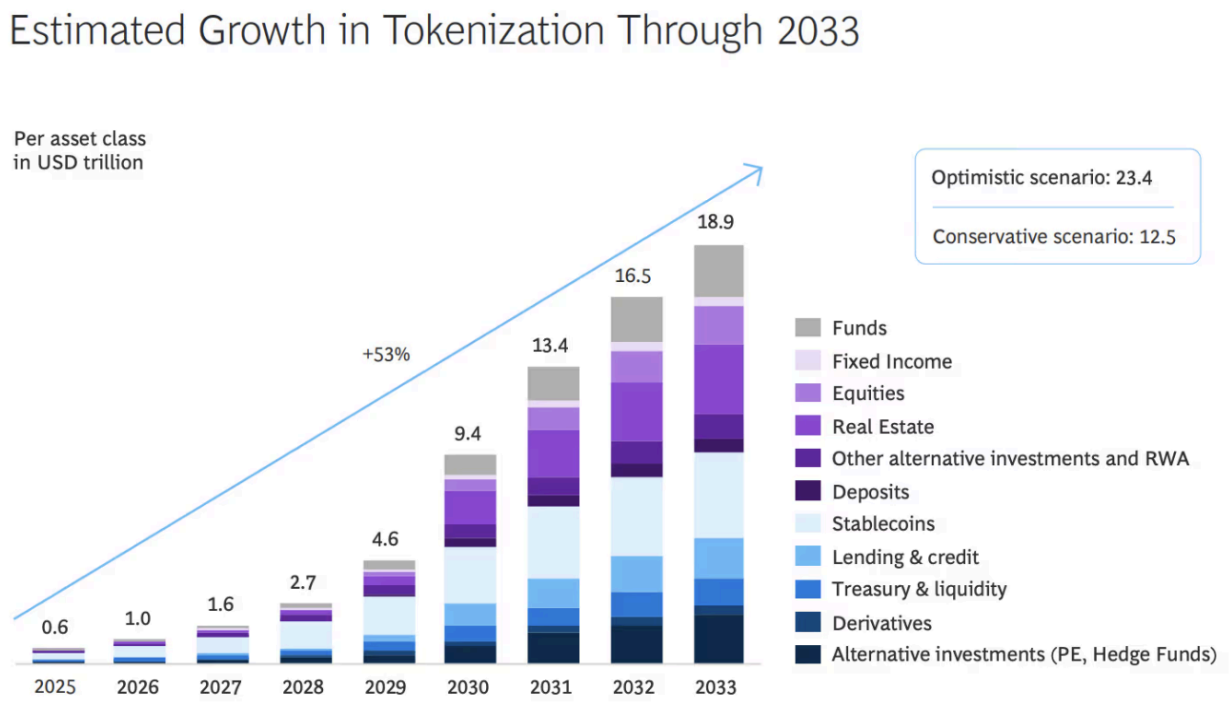
The U.S. segment rises from USD 13.33B in 2025 to USD 619.28B in 2034—also about a 53% CAGR—indicating the U.S. remains a major demand center for blockchain solutions. This trajectory underscores sustained enterprise and financial-market adoption across the decade.



Source: Precedence Research, 2025

Regional shares are led by North America (46%), followed by Europe (28%) and Asia-Pacific (20%), with Latin America (4%) and MEA (2%) smaller at present. The split highlights a transatlantic core today, while leaving room for catch-up growth in APAC and emerging regions.

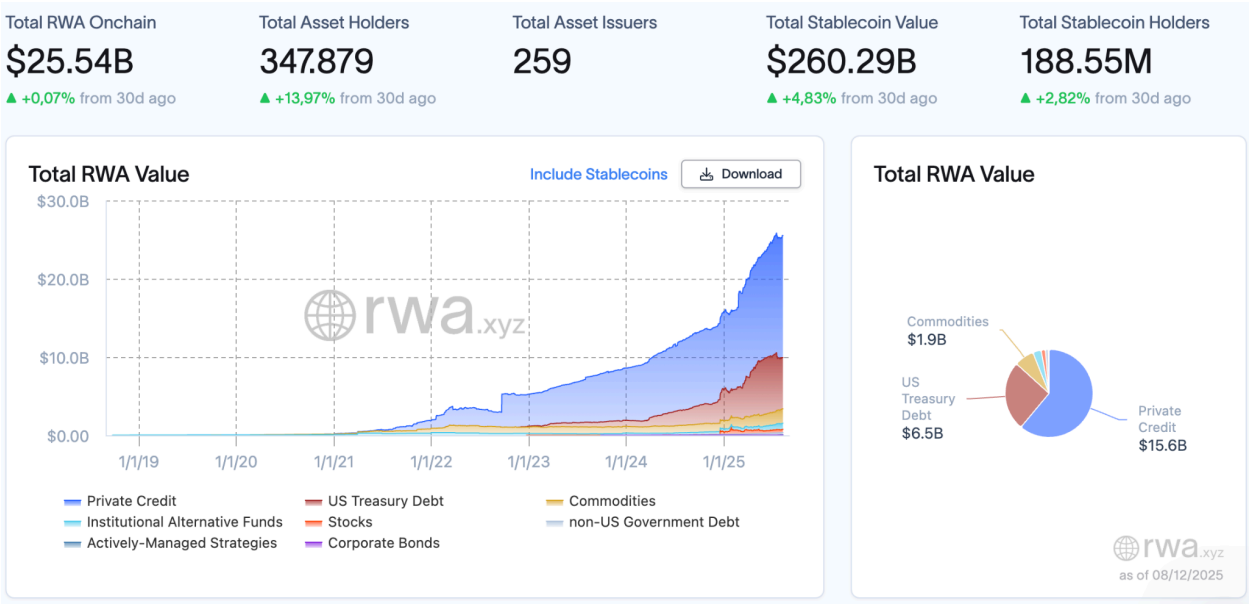
2.5.2 Tokenization



Tokenized asset market growth forecast (Ripple, BCG)

Source: CoinDesk 2025

The chart projects the tokenized-asset market to reach about $18.9 trillion by 2033, spanning categories from fixed income and equities to real estate and other RWAs. It also frames a range between an optimistic $23.4T and a conservative ~$12T scenario, implying roughly a 53% average annual growth rate into the early 2030s.



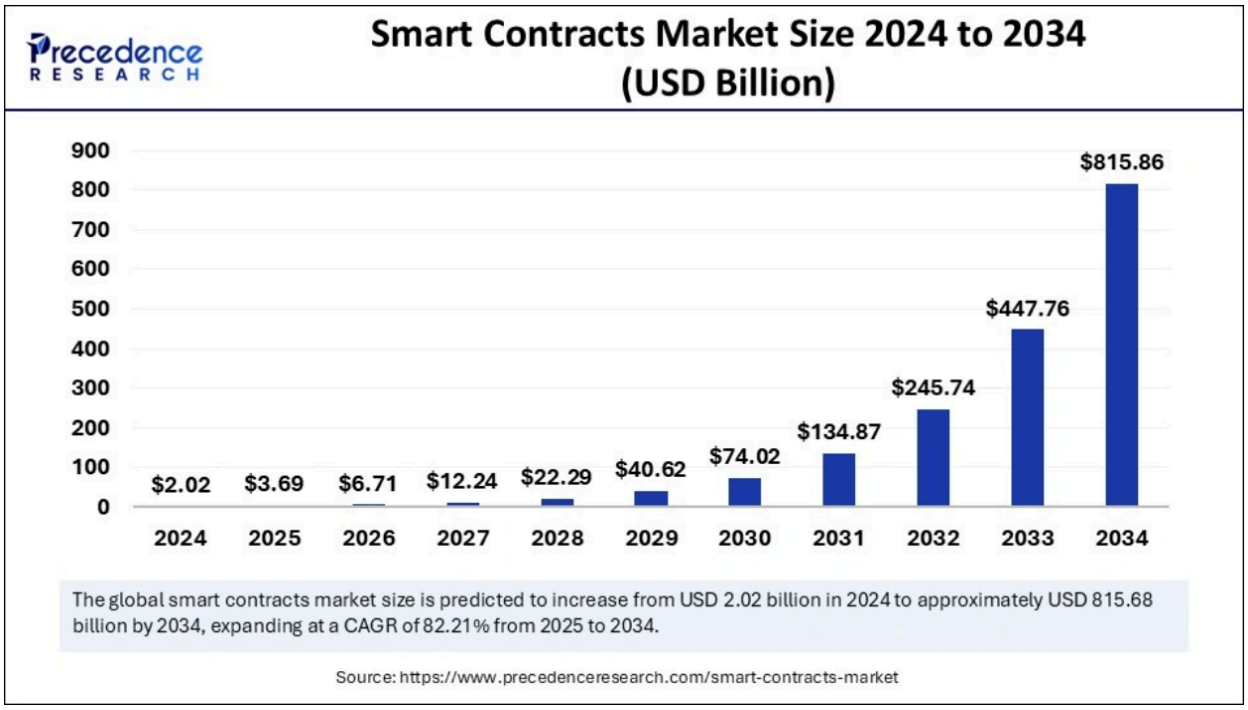
Source: RWA.xyz, 2025

As of Aug 12, 2025, RWA.xyz shows $25.54B of tokenized RWAs on-chain (excluding Stablecoins), alongside 347,879 asset holders and 259 issuers. The area and pie charts indicate private credit as the largest segment ($15.6B), followed by the U.S. Treasury debt ($6.5B) and commodities (~$1.9B). One can see a nearly exponential growth in RWA's.

Source: RWA.xyz, 2025

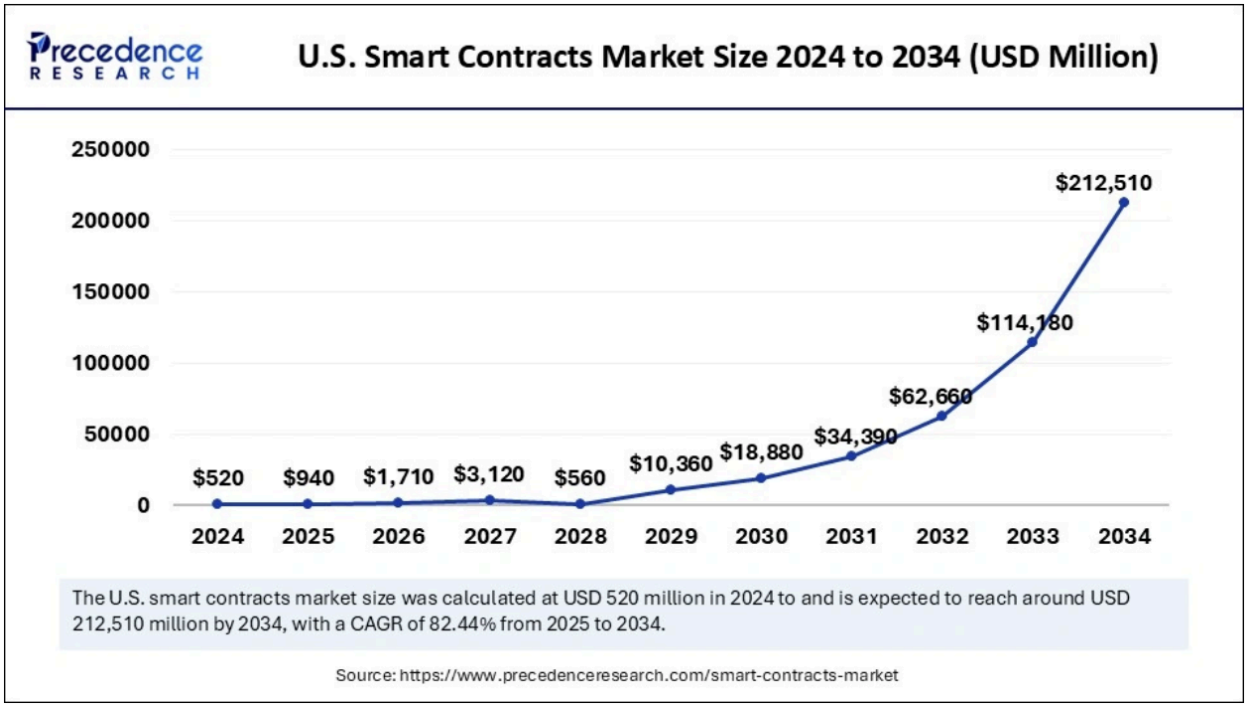
When stablecoins are included, the total tokenized-asset value is dominated by stablecoins (~$260.3B), dwarfing non-stablecoin categories. Even so, private credit remains the leading non-stablecoin slice at roughly $15.6B, with smaller shares in Treasuries, corporate bonds, and other niches.

2.5.3 Smart Contracts



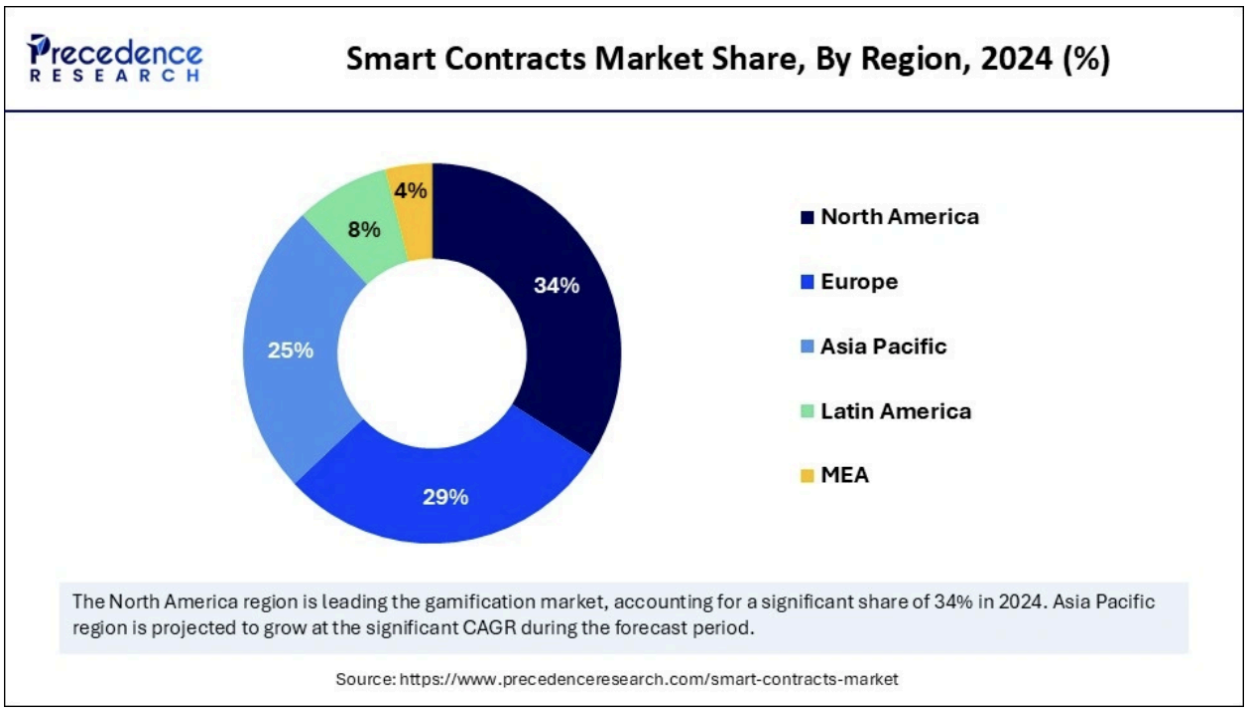
Source: Precedence Research, 2025a

The column chart indicates a rise from USD 2.02B in 2024 to USD 815.86B by 2034, implying a very rapid expansion. The captioned methodology suggests an ~82% CAGR (2025–2034), pointing to a steep, compounding adoption curve across industries.



Source: Precedence Research, 2025a

The U.S. series starts at USD 520M in 2024 and targets roughly USD 212.51B by 2034, reflecting a similarly high implied CAGR (~82%). Despite short-term fluctuations in early years, the path is exponential from the early 2030s as enterprise and financial use cases scale.



Source: Precedence Research, 2025a

Regional shares are led by North America (34%), followed by Europe (29%) and Asia-Pacific (25%), with Latin America (8%) and MEA (4%) smaller but present. The split suggests a transatlantic lead today, while APAC has meaningful catch-up potential as infrastructure and regulation mature.

2.6 Key Application Areas

A multitude of use cases are emerging for blockchain-based digital assets. This section highlights five of the most prominent generic application domains, each exemplifying how the core components (blockchain, tokenization, smart contracts) interact to create functional, efficient, and transparent systems. These use cases span payments, lending, investment, supply chains, and fundraising. For each scenario, we describe how the technology enables new capabilities beyond what was possible with traditional systems.

2.6.1 Cross-Border Payments & Remittances

Traditional cross-border payments (e.g. remittances sent by migrant workers) are often slow and costly. Transactions pass through multiple correspondent banks and clearinghouses, incurring fees that average around 6–7% of the amount sent (Ante Lennart, 2024). Many recipients in developing regions lack access to affordable banking, so they rely on cash agents and money transmitters, further adding friction and delay.

Stablecoins, which are blockchain-based tokens pegged to fiat currencies (like USD or EUR), offer a faster and cheaper alternative for cross-border value transfer. A sender can purchase a stablecoin and transfer it directly to a recipient's blockchain wallet anywhere in the world. The transaction settles within minutes (or seconds) on the blockchain, at a fraction of the cost of a wire transfer. The recipient can then redeem the stablecoin for local currency or use it directly if merchants accept it. Because stablecoins maintain a steady value (1 stablecoin ≈ 1 unit of fiat), they are well-suited for payments and savings without the volatility associated with other cryptocurrencies.
Blockchain's role here is as the always-on global transaction network. Tokenization comes into play by creating the stablecoin token (often backed by reserves of the underlying currency). Smart contracts manage the issuance and redemption of stablecoins – for example, only minting (creating) new tokens when an equivalent amount of fiat is deposited with the issuer, and automatically enforcing the peg through supply adjustments or collateral mechanisms. These technologies combined enable near-instant, low-cost transfers. Proponents note that stablecoins can *"enable quicker and more affordable international payments"* and even extend financial services to over a billion unbanked people by bypassing traditional banks (World Economic Forum, 2025). Early real-world usage has supported this: communities facing unstable local banking systems have used USD-pegged stablecoins via mobile apps for daily commerce and remittances, with markedly lower fees and faster access to funds (World

Economic Forum, 2024). In summary, cross-border stablecoin payments demonstrate how a blockchain token (the stablecoin) governed by smart contract rules (pegging and transfer logic) can drastically improve the efficiency and inclusiveness of global payments.

2.6.2 Decentralized Finance (DeFi) Lending Platforms

Access to credit is limited by intermediaries and infrastructure. Borrowers traditionally rely on banks or microfinance institutions, which may exclude those without credit history or collateral. Lending across borders or outside banking hours is difficult under the conventional system. The lending process also involves layers of intermediation (brokers, underwriters, custodians) that add cost and complexity.

Decentralized Finance (DeFi) lending uses smart contracts on blockchain to connect lenders and borrowers directly in a peer-to-peer network. In a DeFi lending platform (such as Aave, Compound, etc.), users can deposit digital assets (e.g. cryptocurrency or stablecoins) into a smart contract "liquidity pool." Borrowers can take loans from these pools by providing other digital assets as collateral. Interest rates are set algorithmically based on supply and demand, and payments are handled automatically by the smart contract. There are no traditional banks involved; the smart contract acts as the lender, enforcing terms and managing collateral.
The interplay of technologies is clear: blockchain provides the shared ledger where all loans and collateral are tracked transparently, while tokenization turns both the lent funds and collateral into on-chain tokens that the smart contracts can control. Smart contracts handle loan issuance, calculate interest, and enforce collateral requirements (automatically liquidating collateral if its value falls below the loan threshold). This effectively replaces the intermediating function of a bank with automated code. The result is a system where anyone with internet access can lend or borrow digital value globally, 24/7, often at more competitive rates.
Notably, because smart contracts are permissionless and open-source, DeFi lending platforms can be more inclusive. Small businesses or individuals who lack credit history but have digital assets can secure loans by tokenizing their assets as collateral. Lenders are attracted by the typically higher yields and the transparent, real-time risk management (e.g., you can see the total collateral backing a loan pool on-chain). The trade-off is that, in the current state of DeFi, most loans are over-collateralized (e.g., requiring $150 of collateral for a $100 loan) since there is no traditional credit evaluation. Even so, the efficiency gains are significant: a loan can be originated or repaid via a couple of blockchain transactions without paperwork or delays, and interest is accrued and distributed programmatically. DeFi lending showcases blockchain's ability to create an open financial market where code, rather than institutions, intermediates lending.

There are also possibilities to work with banks and institutions instead of working against them. DeFi lending can integrate banks as trusted partners. In practice, lending pools can be limited to verified customers; banks handle identity and compliance checks, provide deposit and

withdrawal services, and keep collateral in secure, insured custody, while smart contracts calculate interest, enforce collateral thresholds, and settle transactions around the clock. Banks can also originate real-world loans (for example, SME invoices or trade-finance claims), bundle them, and issue on-chain claims against the expected cash flows keeping the safest share themselves and offering the riskier shares to informed investors. To stabilise the system, banks supply high-quality liquid assets (such as tokenised Treasury bills) and co-sign independent price feeds and emergency safeguards. Standardised reporting links on-chain activity to bank ledgers and supervisory metrics. This cooperative model preserves consumer protection and oversight while delivering DeFi's speed, transparency, and global reach.

2.6.3 Tokenized Real Estate & Infrastructure Investment

Investment in large-scale assets like real estate or infrastructure projects has traditionally been restricted to wealthy investors or institutions. High unit costs (e.g., the price of an entire building) and long lock-in periods make these assets illiquid and inaccessible to most individuals. Even when investment vehicles exist (such as Real Estate Investment Trusts, or infrastructure funds), they involve layers of fees and complex settlement processes. There is also often a lack of transparency in how funds are used or how project revenues are shared.

Tokenization of real estate and infrastructure addresses these issues by creating digital shares of physical assets. A property or project can be placed into a legal vehicle (such as a special purpose entity), which then issues tokens on a blockchain corresponding to shares in that asset. Investors worldwide can purchase however many tokens they want, thereby owning a fraction of the asset. Smart contracts can be programmed to automatically distribute rental income, dividends, or revenue share to token-holders on a periodic basis. They can also enforce transfer restrictions to comply with securities laws (for example, whitelisting accredited investors or respecting holding periods), all through code.

This use case leverages the full stack of technologies: the blockchain ledger records who owns each fraction of the asset (ensuring a tamper-proof cap table), tokenization fractionalizes the asset into tradable units, and smart contracts manage investor rights and obligations. The advantages are substantial. Liquidity is enhanced – historically illiquid assets can be traded on secondary markets as easily as cryptocurrencies, potentially unlocking trillions in value (World Economic Forum, 2024a). Access is broadened – smaller investors can participate in asset classes that were formerly out of reach, improving capital formation and democratizing wealth creation. Efficiency is improved – settlement of token trades is near-instant, and administrative overhead (e.g., updating ownership records, distributing cash flows) is largely automated by the smart contract, reducing fees. A World Bank report notes that blockchain-based systems can significantly cut transaction and issuance costs, making it viable to finance projects in new ways (World Bank, 2023).

For example, consider a tokenized commercial building: each token represents a square foot of ownership. Tenants pay rent in fiat which is converted to a stablecoin and fed into the building's smart contract. The contract then prorates the rent and sends each token-holder their share of the income, say monthly, in a transparent and auditable fashion. If a token-holder wishes to exit, they can sell their tokens on a digital asset exchange (subject to any regulatory restrictions coded in). Such a scenario was not easily achievable before – it combines the tangibility and cash flow of real assets with the fluidity of digital markets. A recent World Economic Forum paper highlighted that tokenization offers a new model of digital asset ownership enhancing transparency, efficiency and accessibility in markets like real estate. It effectively bridges the gap between real assets and digital finance.

2.6.4 Supply Chain Finance & Agricultural Trade

Small suppliers, such as farmers or manufacturing SMEs, often face a working capital gap. They deliver goods up the chain (to exporters, processors, retailers) but wait long periods for payment, or struggle to get loans against their in-transit goods or pending invoices. Banks are hesitant to lend to these suppliers due to lack of reliable data on the goods' status and high perceived risk. The result is a liquidity crunch that hampers production and growth. Moreover, supply chain transactions are plagued by opacity – it is hard for a financier to verify the provenance, movement, or quality of goods in real time, which increases risk and costs.

Supply chain finance on blockchain uses tokenization and smart contracts to turn supply chain assets (like warehouse receipts, purchase orders, or crops in the field) into digital collateral that can be financed, while leveraging blockchain's transparency to reduce risk. For instance, agricultural commodities can be tracked on a blockchain from farm to warehouse to port. At each step, IoT devices or authorities can record data (quantity, quality, location) to the blockchain. Once a product (say a batch of coffee beans) is registered, a token representing a claim on that batch can be created. A farmer holding that token – essentially a digital warehouse receipt – can use a smart contract platform to sell it or borrow against it. Lenders (which could be banks, fintech companies, or even individuals via a DeFi platform) provide funds, knowing that the token's underlying asset is real and verifiable (since every movement and inspection of the coffee is on the ledger). When the coffee is ultimately sold in the market, the smart contract automatically directs a portion of the sale proceeds to repay the lenders. This kind of structure uses the supply chain itself as collateral, turning physical inventories or future receivables into trusted digital assets.
The interplay of the technologies is as follows: the blockchain ledger connects all participants (farmers, cooperatives, buyers, financiers) and acts as a single source of truth for the status of goods. Tokenization creates tradeable digital instruments (the tokens could be classified as electronic warehouse receipts or invoice tokens). Smart contracts handle the conditional logic – for example, only allowing the token to be redeemed by the buyer once payment is made, and automatically paying financiers (minus any agreed discount) when that event occurs. This

reduces the need for trust. Because all parties can *"verify the status and quality of the goods"* on-chain, the risk of fraud or default is reduced. Lenders are more willing to provide capital knowing that, say, the grain stored in a warehouse is indeed there and hasn't been double-pledged. This increased trust can translate into lower interest rates or fees for suppliers, since the risk premium comes down when transparency goes up. Additionally, blockchain can streamline paperwork (e.g., bills of lading, certificates) through digitization, which speeds up the process of securing financing.
A practical illustration comes from pilots in agriculture: smallholder farmers have used blockchain platforms to tokenize crops (like coffee beans) and secure financing against them before harvest. The platform's smart contracts released funds to farmers when sensors confirmed crop delivery to a warehouse, and later ensured repayment to lenders once the export sale happened. By cutting out layers of middlemen and providing real-time data, such solutions mitigate rural credit risk and reduce reliance on usurious local lenders. In summary, blockchain-based supply chain finance aligns incentives across the value chain – buyers get a stable supply, farmers get paid faster, and financiers get new investable assets – all enabled by tokenization of real-world flows and the enforcement of agreements via smart contracts.

2.6.5 Tokenized SME Fundraising - ICO & STO

Small and medium-sized enterprises (SMEs) often struggle to raise capital. Traditional equity or bond issuance is costly and cumbersome, involving investment banks, regulatory filings, and often listing on an exchange – processes only feasible for larger firms. Bank loans are an alternative, but as noted earlier, many SMEs lack collateral or credit history, resulting in a "missing middle" where they are too large for microfinance but too risky for commercial banks. The outcome is that many viable SMEs cannot obtain the growth capital they need, limiting economic expansion and innovation.

Tokenized securities offer a way for SMEs to directly raise funds from a broad investor base by issuing digital tokens that represent equity shares, debt instruments, or revenue-sharing rights. Using blockchain, an SME can conduct a Security Token Offering (STO) – analogous to a mini IPO – but at a fraction of the cost and complexity of a traditional offering (World Bank, 2023). The company's ownership or bond is encoded into tokens (with appropriate legal structuring to comply with securities laws), and these tokens are sold to investors for funding (possibly in exchange for stablecoins or other payment tokens). Smart contracts manage the token issuance (e.g., ensuring no more than an authorized number of tokens are created) and enforce investor rights: for equity tokens, they might automatically distribute dividends or give voting rights; for debt tokens, they could pay interest coupons and principal on schedule.

The benefits of this approach stem from removing intermediaries and adding programmability. Cost reduction: By issuing tokens on a blockchain, SMEs bypass many layers of intermediaries (underwriters, central securities depositories, transfer agents) since the blockchain itself

handles registration of ownership and transfer of tokens. This can reduce issuance costs significantly, making smaller offerings economical. Global investor access:Tokens can be bought by any investor (retail or institutional) who meets the criteria coded in the smart contract (e.g., whitelisted as accredited if required), potentially attracting capital beyond local borders. 24/7 trading on digital asset marketplaces also means investors have liquidity, which can make them more willing to invest in SME tokens compared to untradeable private equity. Transparency and compliance: All token transactions are on-chain, and smart contracts can be programmed to ensure compliance (for example, preventing transfers that would breach ownership concentration limits or automatically enforcing lock-up periods).

For SMEs, tokenization opens up new financing pathways. Instead of being limited to bank loans or venture capital, a small company could issue a tokenized digital bond to community investors, with the smart contract paying a yield from the company's revenues each quarter. Or it could sell equity tokens to supporters, who then trade those tokens on secondary markets, effectively creating liquidity for what would normally be a private stock. These scenarios are increasingly being piloted. Regulators in several jurisdictions have created sandboxes for SME-focused security token platforms, and early results indicate improved inclusion. The World Bank observes that DLT platforms can allow SMEs to raise funds in a more direct peer-to-peer manner, potentially filling financing gaps by *"enabling new forms of asset securitization"* and lowering barriers to investment. In fact, *"capital-raising through Security Token Offerings"* is cited as one of the most common blockchain applications in finance (World Bank, 2023), highlighting its relevance for SMEs.

It's important to note that while the technology makes these processes more efficient, legal and regulatory frameworks still apply. Investor protection, disclosure, and governance need to be addressed in any tokenized offering. However, the direction is clear: tokenized SME fundraising has the potential to streamline how small businesses access capital, by leveraging blockchain's global reach and smart contracts' automation to create digital securities that are both compliant and convenient. This in turn could fuel entrepreneurship and job creation by connecting capital with businesses that were previously underserved.

To situate tokenized SME fundraising within established practice, it is useful to distinguish two issuance formats Initial Coin Offerings (ICOs) and Security Token Offerings (STOs) without implying a hierarchy. Both can be structured with KYC/AML, disclosure, and transfer controls, and both can be effective for raising funds. They differ primarily in legal characterization and investor rights. ICOs typically issue utility tokens conferring access or usage within a network; they are suited to demand-side financing (e.g., pre-selling services, mobilizing user communities) and can be executed comparatively quickly, though their regulatory treatment depends on jurisdiction and the economic reality of the offer. STOs issue digital securities (equity, debt, or revenue-share) under securities law, with explicit investor rights, suitability rules, and trading on compliant venues. They usually require more upfront process but can attract institutional and sophisticated investors. Instrument choice should follow the financing

objective (working capital vs. adoption incentives), target investor base, jurisdictional constraints, and governance capacity. In many cases, the formats are complementary when sequenced and kept distinct in rights, documentation, and trading venues. This framing underscores that tokenization provides a flexible toolkit, rather than a single model, for SME capital formation.

2.7 Summary

Blockchain, tokenization, and smart contracts together form a powerful toolkit for reimagining assets and transactions in a digital, decentralized manner. Blockchains provide the trusted, shared data layer; tokenization creates digital units of value that can freely move on this layer; and smart contracts add an automation layer, embedding business logic into asset flows. Through these components, we get programmable digital assets that can self-execute rights and obligations, enable fractional ownership, and facilitate peer-to-peer exchange with less friction and more transparency than traditional systems.

Across diverse use cases – from cross-border remittances to DeFi lending, from real estate investment to supply chain finance and SME capital-raising – we see common themes. Efficiency gains are unlocked as processes become automated and disintermediated. Inclusion and access are improved by lowering barriers (for example, allowing smaller transactions or reaching unbanked populations). Transparency and trust are strengthened because participants share a single source of truth and can rely on code-enforced rules instead of opaque institutions.

These advantages, however, come with new challenges: the need for robust regulatory frameworks, cybersecurity considerations, and the importance of thoughtful design to protect users. Chapter 1 has laid the conceptual foundation by explaining the technologies and their potential. In the chapters that follow, we will delve deeper into market dynamics, technical feasibility, regulatory environments, and risk factors. The insights outlined here – particularly the ability of blockchain-based systems to create more functional, efficient, and transparent financial and asset management models – will serve as a basis for analyzing real-world viability. In summary, digital assets backed by blockchain, tokenization, and smart contracts represent a paradigm shift in how value can be created, managed, and exchanged, setting the stage for a more inclusive and innovative financial ecosystem.

3 Overview & Purpose

3.1 Background: 'Decent Work for a Just Transition' and SME Development in Ethiopia

This feasibility study is written within the German-supported "Decent Work for a Just Transition" special initiative in Ethiopia, implemented by GIZ and partners. Launched under the "Invest for Jobs" program of Germany's Federal ministry for Economic Cooperation and Development (BMZ), the initiative (running from 2022 to 2027) aims to stimulate sustainable economic growth and create high-quality jobs, with particular focus on women and environmental sustainable sectors (GIZ, 2025a).

In Ethiopia, this translates into support for small and medium-sized enterprises (SMEs) as drivers of employment. The non-profit development organization sequa gGmbH plays a key role as an implementing partner, facilitating business growth and job creation among Ethiopian SMEs by improving their competitiveness and productivity (GIZ, 2025b). A specific emphasis is placed on woman-owned businesses and enhancing women's employability through targeted training programs (GIZ, 2025b). This gender-inclusive approach aligns with the initiative's broader goal to ensure that new economic opportunities and "decent work" benefits are shared equitably, supporting Ethiopia's commitments to women's economic empowerment.

In practice, the project provides integrated support to SMEs and investors. It works to improve the business climate and investment conditions while delivering firm-level assistance to local enterprises. According to GIZ, the program helps SMEs with management training, adoption of innovative processes, market linkages, and investment readiness, including advisory on loan applications and networking with potential investors (GIZ, 2025a). This comprehensive approach is designed to address the myriad constraints that Ethiopian SMEs face – from bureaucratic hurdles to lack of market access – thereby enabling them to grow and generate employment (GIZ, 2025a). By strengthening SMEs, the initiative aims to contribute to long-term income growth and job creation in Ethiopia's private sector (Invest for Jobs, 2024). Notably, these efforts advance gender inclusion, as increasing the competitiveness of women-led SMEs and improving women's workforce skills are seen as critical to inclusive development (sequa gGmbH, 2025).

Overall, the project's background is rooted in the agenda of promoting decent work, inclusive growth, and a "just transition" in Ethiopia's economy, in line with national development priorities around job creation and social equity.

3.2 Innovative Financing Sub-Component: Exploring Blockchain-Based Tools

Within the broader SME support initiative, a dedicated sub-component focuses on "Innovative Financing" solutions to expand SME access to finance. This feasibility study is a key activity under that sub-component, investigating the potential of blockchain-based financial tools – such as digital assets and tokenization – to improve financing options for Ethiopian businesses. The rationale for this focus emerges from the recognition that traditional financing in Ethiopia has left a "missing middle" gap for SMEs. Conventional banks and microfinance institutions rarely serve SMEs due to perceived risks, lack of collateral, and high transaction costs (Invest for Jobs, 2024). In fact, fewer than 1% of Ethiopian SMEs have bank loans, while around 70% rely on personal funds as their main source of startup capital (Invest for Jobs, 2024). These figures underscore chronic credit constraints. SMEs are often unable to meet strict collateral requirements, and as a result they face very high loan rejection rates (Invest for Jobs, 2024). This financing shortfall impedes enterprise growth and job creation, motivating the search for alternative financing channels beyond the traditional banking system (Kumar et al., 2023).

Blockchain and digital assets present a promising avenue to bridge this financing gap. Globally, emerging evidence suggests that distributed ledger technologies can lower barriers to financial services by enabling peer-to-peer transactions, transparent record-keeping, and new forms of asset securitization (EBRD, 2024). These technologies do not depend on legacy banking infrastructure, making financial services potentially more accessible and affordable for underserved groups (Mirbabaeva, 2024). In the context of Ethiopia, the project's innovative financing component is exploring how tokenization, digital currencies, and decentralized finance (DeFi) might expand credit and funding access for SMEs.

3.3 Ethiopia's Financial Sector Context and Recent Reforms

This initiative coincides with a period of significant change in Ethiopia's financial sector. Historically, Ethiopia's financial system has been tightly controlled and underdeveloped: for decades there was no stock market, private credit to GDP was low, and banking was dominated by one state-owned bank and 32 private banks operating under conservative rules.

However, since 2019 the government has embarked on a Homegrown Economic Reform agenda to liberalize and modernize the economy, including the financial sector. A landmark development has been the reform of Ethiopia's capital market. In 2021, Ethiopia enacted a Capital Markets Proclamation to establish a regulatory framework for securities markets, and in 2022 the Ethiopian Capital Market Authority (ECMA) was created. These steps paved the way for the launch of Ethiopia's first stock exchange. In early 2025, the Ethiopian Securities Exchange (ESX) was officially inaugurated – a historic milestone in the country's financial history (FSD Africa, 2025). The ESX, backed by public and private investors (including Ethiopia's

sovereign wealth fund and international partners), is expected to "revolutionise the nation's capital markets" by providing new avenues for businesses to raise equity and debt financing. For instance, plans are underway for major state-owned enterprises (Ethio Telecom, Ethiopian Airlines, etc.) and private companies to list on the exchange, which could broaden financing options beyond bank loans (African Business, 2024). The government hopes that a functioning capital market will mobilize domestic savings, attract foreign investment, and spur growth of the private sector (Clynch, 2024). Importantly, it could open new funding streams for SMEs – e.g. through corporate bond issuance or eventually SME board listings – although that may materialize only once the market matures and if smaller firms can meet listing requirements.

Accompanying the capital market reform are parallel financial reforms aimed at liberalization and stability. In 2023–2024, Ethiopia took steps to open its banking sector to foreign competition and to modernize financial regulation. As noted, in July 2024 the central bank moved to a more market-determined exchange rate (floating the birr) to alleviate forex shortages and align with IMF program criteria (Endeshaw, 2024). The currency float, while causing a sharp one-time devaluation, is part of efforts to unify the exchange rate and improve macroeconomic stability. Additionally, the National Bank of Ethiopia (NBE) has been upgrading prudential regulations and consumer protection rules to prepare for a more complex financial system (World Bank, 2024). The World Bank in late 2024 approved a USD 700 million Financial Sector Strengthening Project to support these reforms – including modernizing NBE's supervisory capacity and restructuring state-owned banks – reflecting international confidence in Ethiopia's financial liberalization (World Bank, 2024). Furthermore, the entry of foreign banks (expected after new banking legislation) and the growth of fintech (e.g. mobile money services like Telebirr, launched in 2021) are set to increase competition and innovation in financial services (ITA, 2023). In sum, Ethiopia's financial sector context is one of transition, moving from a closed, state-led model toward a more open and diversified system. The capital market reforms in particular create a timely backdrop for this study – as Ethiopia builds the infrastructure for stock and bond markets, it is also an opportune moment to consider leapfrogging into digital asset markets and web 3.0 technologies that could complement the traditional financial architecture. The government's reform agenda emphasizes expanding access to finance for businesses and investors; thus, exploring blockchain and digital assets as alternative channels aligns with Ethiopia's strategy to leverage digital innovation for economic development (FDRE, 2020).

The convergence of these trends – an opening economy, regulatory innovation, and growing interest in digital finance – provides the contextual rationale for this feasibility study. The study assumes that any introduction of digital asset mechanisms would need to dovetail with ongoing reforms and institutions (such as ECMA and NBE) to ensure consistency with national financial stability and development goals.

3.4 Objectives and Scope of the Feasibility Study

Given the above background, the purpose of this feasibility study is to rigorously assess whether and how digital assets and blockchain technology can be adopted to enhance SME financing in Ethiopia, and to chart a practical path forward. The study is multi-dimensional, examining market, regulatory, and technical aspects in depth. First, it will evaluate the market landscape – including current demand for digital financial services, the level of crypto/digital asset usage in Ethiopia, potential use cases (such as tokenized crowdfunding, digital trading of commodities, or blockchain-based remittance channels), and the readiness of the ecosystem (fintech startups, financial institutions, mobile money penetration, internet access) to support digital asset solutions. Second, it will review the regulatory and legal framework, analyzing existing laws and policies (e.g. financial regulations, foreign exchange rules, technology and cyber laws) to identify regulatory gaps or barriers that would need to be addressed for digital asset implementation, as well as alignment with Ethiopia's financial inclusion and anti-money laundering objectives. Third, the study will assess technical feasibility, which covers the available technology infrastructure (telecommunications, payment systems, digital ID infrastructure), the suitability of various blockchain platforms, data security and privacy considerations, and the capacity needs (skills and knowledge) in both public and private sectors to implement and maintain digital asset systems securely. In addition, the study will look at risk management (identifying risks like cybersecurity, fraud, or financial instability and proposing mitigation measures).

The overall objective is not merely academic; it is to produce actionable insights that inform decision-makers in Ethiopia. By the end of the study, a feasibility analysis will have been completed across the market, regulatory, and technical domains, answering the fundamental question: "What is the viability of adopting digital assets for SME financing in Ethiopia under current and near-future conditions?" Based on this analysis, the study will put forward a practical implementation roadmap. This roadmap will outline phased steps for piloting and scaling digital asset solutions (for example, a pilot issuance of a tokenized bond for an SME fund, or the creation of a regulatory sandbox for crypto-assets), along with regulatory requirements. The roadmap is intended to be aligned with Ethiopia's national strategies, such as the Digital Ethiopia 2025 strategy and the Ten-Year Development Plan, which prioritize digital innovation, financial inclusion, and SME development as key enablers of economic growth (FDRE, 2020). In essence, the study aims to provide Ethiopian stakeholders – government regulators, financial institutions, the business community, and development partners – with a clear evidence-based appraisal of the opportunities and challenges of digital asset adoption. This will help ensure that any move towards blockchain and digital finance is done in a responsible, secure, and inclusive manner, complementing other financial sector reforms. By articulating where the market stands, what regulatory adjustments are needed, and what technical groundwork must be laid, the feasibility study will serve as a roadmap to guide next steps. Ultimately, the findings and recommendations are expected to support Ethiopia in harnessing digital assets as a tool for expanding SME access to finance and reconsidering

digital assets in the policy framework, thereby contributing to the country's broader goals of economic modernization and job creation.

summary

4 Methodology and Data Sources

- Describes the approach for the study, including an inception phase with literature review of existing reports and preliminary stakeholder consultations to refine key questions.

- Details a mixed-methods strategy: qualitative interviews and surveys with key stakeholders (regulators, fintech firms, banks, SMEs) alongside quantitative analysis of market data and case studies.

- Specifies data sources such as official policy and regulatory documents (e.g., NBE directives, ECMA regulations), industry reports, blockchain adoption indices, and regional benchmarks.

- Outlines the timeline and work plan (as per the Inception Report), ensuring stakeholder engagement at each stage and validation of findings through workshops.

- Emphasizes methodological rigor – triangulating data from multiple sources and applying a gender/inclusion lens in data collection (e.g., disaggregating survey data by gender).

5 Demand and Usage Trends in Ethiopia

Ethiopia's digital asset market is still nascent but growing rapidly, mirroring patterns seen in other developing countries. Globally, crypto adoption is being led by emerging economies in Africa and Asia, where people use digital assets for practical needs like payments, remittances, and inflation hedging rather than speculation (Ethiopian Business Review, 2024). In Africa, cryptocurrency transaction volumes remain a modest share of the world (about 2.7% of global volume, ~$125 billion on-chain in the past year (Ethiopian Business Review, 2024)). Yet growth has been remarkable, driven by grassroots usage – for example, Nigeria received $59 billion in crypto value in 2023–24 despite regulatory crackdowns, and an estimated 33% of Nigerians now own or use cryptocurrency (Ethiopian Business Review, 2024). This reflects a broader

trend of rising individual interest in digital assets across developing markets. Ethiopia has generally trailed regional leaders like Nigeria, Kenya, and South Africa in formal crypto metrics, but recent indicators suggest interest is accelerating.

5.1 Ethiopia's Quiet Surge in Demand

Despite an official ban on crypto transactions since 2022, Ethiopia is "quietly becoming one of the most dynamic crypto markets in Africa," ranking #26 globally in Chainalysis' 2024 Crypto Adoption Index (Kamau, G., 2025). This placed Ethiopia second in Africa for grassroots crypto adoption, behind only Nigeria (Henriques, B., 2024). Crucially, Ethiopia was "crowned the fastest growing crypto market in Africa for retail-sized stablecoin transfers," with 180% year-over-year growth in small stablecoin transactions (Henriques, B., 2024).

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Source: Chainalysis, 2024

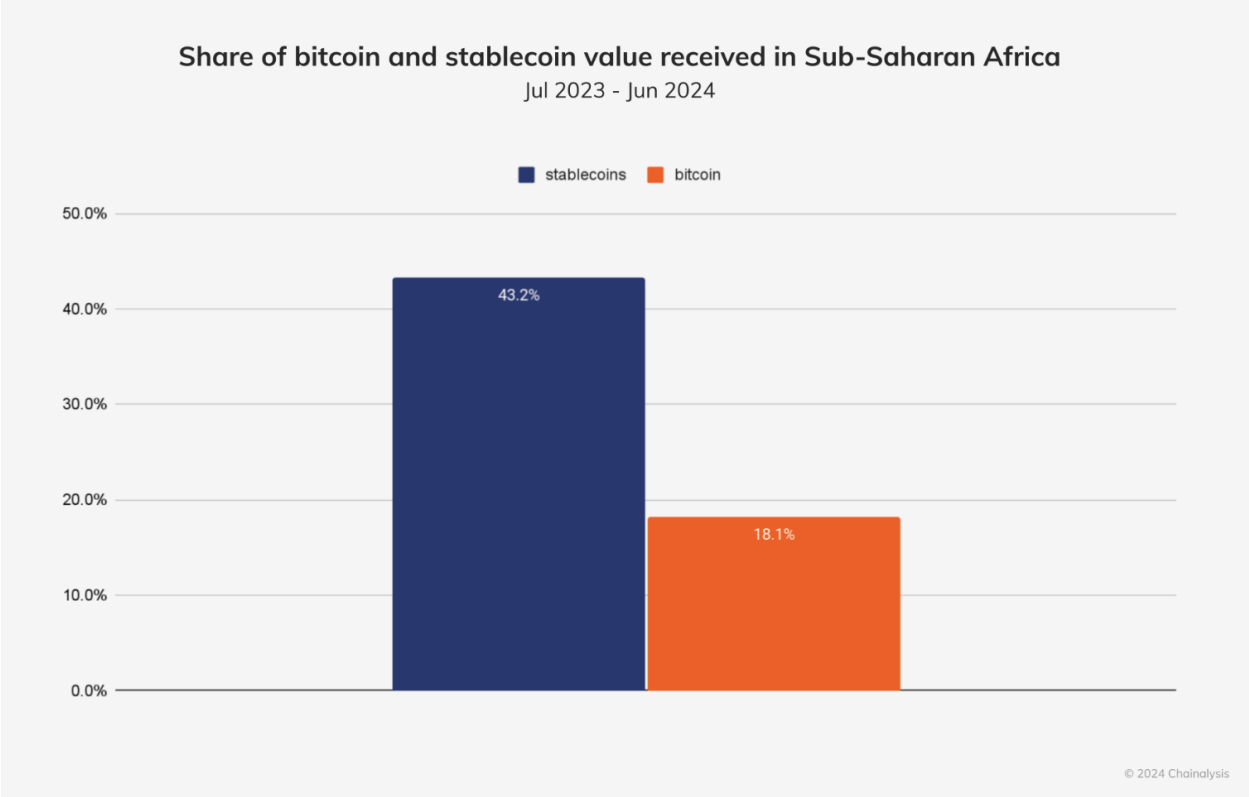
The surge coincided with a sharp 30% devaluation of the Ethiopian birr in mid 2024, which drove up inflation and eroded confidence in the local currency (Kamau, G., 2025). In response, many Ethiopians turned to stablecoins (digital tokens pegged to USD) as an alternative store of value and medium of exchange. A further trend involves converting stablecoins (e.g., USDT) into cash birr via peer-to-peer channels to secure better FX rates. While this parallel market

(black market) is illegal, it seems to be informally tolerated by the government. Retail stablecoin transfers in Ethiopia spiked following the devaluation (Kamau, G., 2025). By mid-2024, more merchants and freelancers in Ethiopia were transacting in Tether (USDT) as a de facto dollar substitute, and local traders used stablecoins to skirt foreign exchange shortages and maintain business with overseas partners (Kamau, G., 2025). This pattern – using crypto to solve everyday financial pain points – echoes trends in other African nations. For instance, Nigerians routinely use USDT/USDC stablecoins to escape naira volatility and pay for groceries and cross-border trade (Kamau, G., 2025). In Ethiopia, the demand for stable USD-value assets is similarly strong amid currency instability.

As corroborating context, independent reporting and policy analysis indicate that dollar-linked stablecoins in Sub-Saharan Africa are increasingly used for payments and savings rather than speculative trading, especially where currencies are volatile and USD access is scarce. African Business highlights expanding use for cross-border and domestic transactions and notes a correlation between currency devaluations and rises in small stablecoin transfers; it cites Ethiopia's July 2024 birr float (≈30% depreciation) alongside increased stablecoin activity and identifies Ethiopia as the region's fastest-growing market for retail-sized stablecoin transfers (≈180% YoY) (African Business, 2025). Complementing this, the Center for Global Development observes that stablecoins are gaining traction in African economies with currency instability and limited dollar availability, and estimates they account for roughly 43% of the region's overall crypto transaction volume, while cautioning that widespread adoption could entail fiscal risks (e.g., digital dollarisation and tax-base erosion) (Gupta S., 2025).

5.2 Key Demand Drivers in Ethiopia

Several structural factors are creating *demand* for digital assets in Ethiopia, even if formal utilization remains limited. One major driver is macroeconomic instability. The birr's steep depreciation and double-digit inflation have undermined confidence in holding wealth in local currency (Kamau, G., 2025). Stablecoins offer a convenient hedge against this instability, effectively "dollarizing" savings and transactions in a country where accessing foreign currency is difficult. Indeed, stablecoins now make up ~43% of Africa's crypto transaction volume, as businesses across the continent seek dollars to pay suppliers and hedge volatility (Chainalysis, 2024).



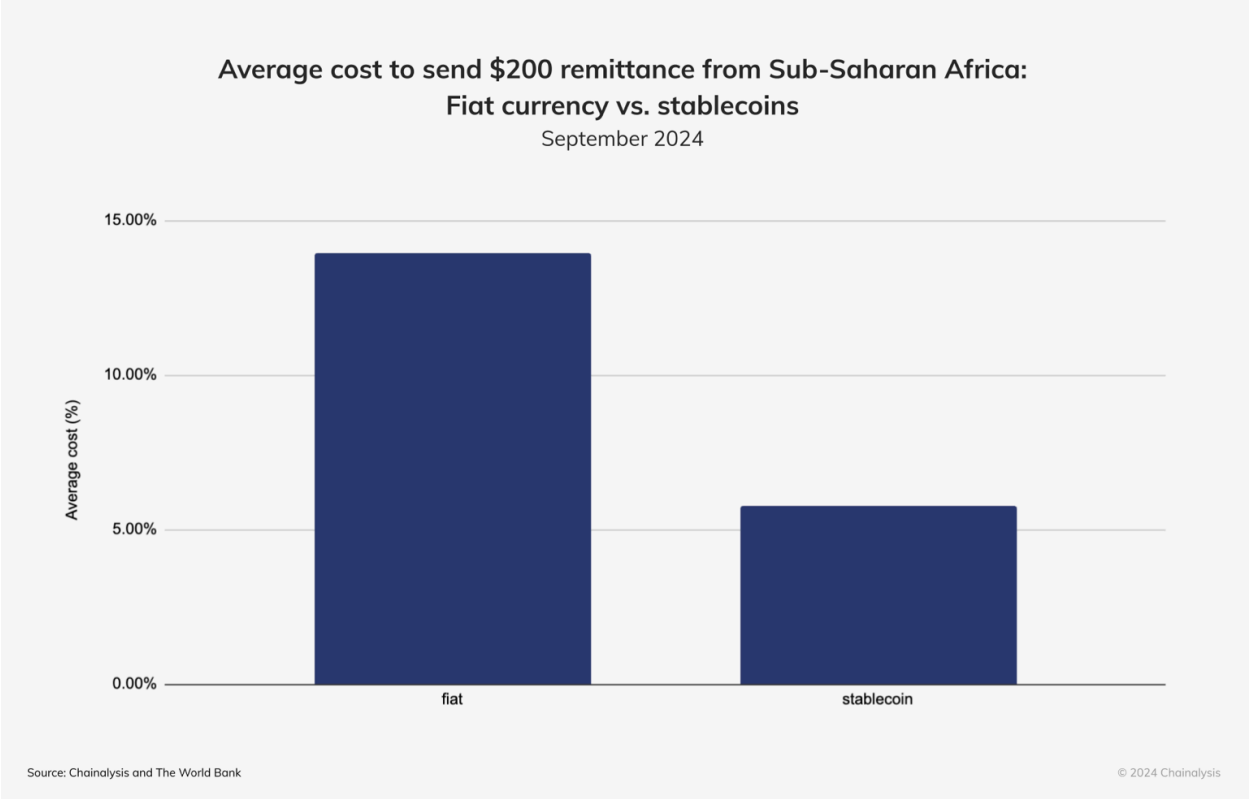
Source: Chainalysis, 2024

Ethiopia's ongoing forex shortage (common to 70% of African countries) has pushed businesses to seek stablecoins as a *proxy for USD*, allowing importers to buy goods and settlers to pay providers without relying on scarce bank forex (Chainalysis, 2024). Another key driver is the lack of access to credit and formal finance. Fewer than 1% of Ethiopian SMEs have bank loans, with ~70% relying on personal funds for startup capital. Strict collateral requirements and conservative bank policies have left a huge financing gap. This "missing middle" in credit creates latent demand for alternative financing channels. Digital assets – from crypto lending platforms to tokenized crowdfunding – attract interest as potential ways to raise capital outside traditional banks (as noted by Ethiopia's *Invest for Jobs* program). Likewise, only around a third of adults in Ethiopia have a bank account (far below the global average), meaning most people rely on cash or informal mechanisms. This financial exclusion drives interest in peer-to-peer and informal digital finance. For example, young entrepreneurs and members of the diaspora are reportedly trading crypto peer-to-peer (often via mobile apps or social networks) to mobilize funds and send payments, despite the regulatory gray area. Informal finance channels like the hawala system are well-entrenched in Ethiopia; crypto is now augmenting these channels by enabling value transfer outside of banks. Notably, even after the National Bank of Ethiopia (NBE) outlawed crypto transactions in 2022, the government found that individuals continued to engage in crypto activities, prompting a shift toward monitoring and eventual regulation (Ishida, S. & Yoshida, Y., 2024). By late 2022, authorities required crypto operators to register with INSA (the cybersecurity agency), recognizing the growing usage

(Ishida, S. & Yoshida, Y., 2024). This policy change led to a *"notable increase in crypto users – over 1.8 million individuals are now engaging in crypto activities"* in Ethiopia as of 2024 (Ethiopian Business Review, 2024). While many of these users remain underground, the figure (roughly 1.5% of Ethiopia's population) indicates significant grassroots demand in spite of legal ambiguities.

5.3 Stablecoins and the Informal Market

Stablecoins have emerged as the digital asset of choice in Ethiopia's informal crypto market. People "don't care about crypto" for its own sake – they care about what it enables (Chainalysis, 2024). In Ethiopia, stablecoins enable basic economic functions that are otherwise constrained: *preserving savings* from birr inflation, *facilitating trade* by converting birr to digital dollars, and *sending/receiving remittances* cheaply. For instance, Ethiopian freelancers have started accepting payment in USDT from foreign clients to avoid delays and losses in conversion (Kamau, G., 2025). Similarly, some merchants source inventory by swapping birr to stablecoins (via brokers or P2P platforms) to pay overseas suppliers, bypassing capital controls (Kamau, G., 2025). All of this happens illegally – crypto use for payments is officially prohibited (the birr is the only legal tender) (Ishida, S. & Yoshida, Y., 2024), and there are no licensed exchanges in Ethiopia yet. As a result, most trading occurs on informal networks or foreign platforms, often in cash-based peer transactions. This raises concerns around consumer protection and illicit use, but it also highlights genuine market needs that the formal system isn't meeting. Remittances are a case in point: Ethiopia received nearly $5 billion in remittances in 2022, with fees averaging ~5–8%. Crypto provides a faster, cheaper channel. Many diaspora Ethiopians have begun sending stablecoins to their families (who convert them informally), saving on fees and circumventing forex controls. In Nigeria, such stablecoin remittances have become mainstream – stablecoins now account for a large share of transfers under $1,000, and using stablecoins cuts remittance costs by ~60% compared to traditional methods (Chainalysis, 2024).



Source: Chainalysis, 2024

A similar dynamic is likely unfolding in Ethiopia on a smaller scale, given high remittance costs and the spread of mobile money. In summary, demand for digital assets in Ethiopia is rooted in unmet financial needs: a hedge against currency devaluation, access to credit and capital, affordable payments, and inclusion of the unbanked. While actual usage remains mostly informal and below the radar, the strong growth in stablecoin activity and the estimated 1.8 million crypto users point to a burgeoning market. This demand-side interest forms the foundation for potential digital asset use cases that could be harnessed if appropriate platforms and regulations develop.

5.4 Challenges Tempering Adoption:

It should be noted that Ethiopia's crypto adoption, while growing, faces significant hurdles. The regulatory ban means there is *no official infrastructure* – no local exchanges, no consumer protections, and a risk of enforcement action. Users operate in a legal gray area, which constrains larger-scale or institutional uptake. Moreover, low internet penetration (especially in rural areas) and limited digital literacy restrict the reachable market for now. These factors keep most crypto activity on the fringes, dominated by tech-savvy youth and diaspora returnees. Nonetheless, the clear grassroots demand evidenced by informal trading and stablecoin usage suggests that, if regulations are eased and platforms made accessible, Ethiopia could quickly

catch up to other African countries in digital asset adoption. The following section explores how that demand could translate into concrete use cases, leveraging blockchain to address Ethiopia's financing challenges in a more structured and legal manner.

6 Potential Use Cases in Ethiopia

This chapter explores five blockchain-based digital asset use cases relevant for Ethiopia's development: cross-border payments, DeFi lending, tokenized real estate and infrastructure, supply chain finance in agriculture, and tokenized SME fundraising. Each use case addresses key economic and structural challenges in Ethiopia.

For instance, blockchain-enabled cross-border payment solutions can reduce high remittance costs and ease foreign exchange constraints. DeFi lending platforms target the lack of credit for small businesses by connecting borrowers to diaspora and other global investors. Tokenizing real estate and infrastructure assets can unlock capital for development projects despite Ethiopia's restrictive land policies. In agriculture, blockchain-based supply chain finance can help farmers overcome financing bottlenecks. Finally, tokenized SME fundraising offers small enterprises a new way to raise capital by issuing digital tokens directly to investors.

By leveraging digital assets and decentralized technology, these innovative solutions aim to support inclusive growth, improve transparency, and unlock new financing channels. They promise to broaden access to financial services for underserved groups, increase trust through transparent and automated transactions, and mobilize investment (including diaspora funds) into key sectors of Ethiopia's economy.

6.1 Cross-Border Payments in Ethiopia

6.1.1 Foreign Currency Shortages and Depreciation

Ethiopia faces a chronic scarcity of foreign exchange, which severely constrains cross-border payments. Official forex reserves plunged below $1 billion in late 2023 – less than two weeks' import cover (UNDP, 2024). This dollar scarcity drove a yawning gap between official and parallel exchange rates: by early 2024 the birr traded around 110 per USD on the black market, roughly double the official rate of ~56 birr (UNDP, 2024). Such distortion reflects acute FX shortages that deter formal international transactions, as businesses and individuals struggle to obtain hard currency through official channels. The birr's steady depreciation (accelerated by a ~30% devaluation in mid-2024 as the currency was partially floated) has further altered payment behavior (African Business, 2025). A weaker birr makes imports costlier and erodes local savings, prompting many Ethiopians to seek alternatives to holding value in birr. It also affects remittances: when the birr was overvalued at an artificial rate, much of the diaspora's

money bypassed official channels in search of better exchange rates. Indeed, until recently a significant portion of remittances flowed through informal avenues (hawala brokers or in-kind transfers) that offered near-market rates, in contrast to the under-valued official rate (UNDP, 2024). This meant lost foreign currency to the formal financial system.

The government has begun reforming the FX regime to narrow this gap – notably the July 2024 move toward a market-driven rate aimed to curb the parallel market (Addis Stanard, 2024). Early results have been mixed. On one hand, official remittances surged to an unprecedented $6 billion in FY2023/24, a 50% jump from the previous year (Ethiopian Diaspora Service, 2024). Observers attribute this to improved confidence and incentives for diaspora to use legal channels once the exchange rate became more realistic and new diaspora-focused banking products were introduced. On the other hand, the fundamental shortage of FX persists – evidenced by importers still facing weeks or months of delays to obtain dollars from banks, and a lingering (if smaller) birr premium on the street. This persistent dollar crunch creates fertile ground for alternative cross-border payment methods outside the official system.

6.1.2 Inefficiencies in Traditional Channels

Conventional cross-border payment channels in Ethiopia – banks, wire services, and money transmitters like Western Union – are not only limited by FX rationing but also tend to be slow and costly. International transfers must wend through correspondent banks and clearing houses abroad, incurring fees and delays at each step. Global remittance fees average about 6–7% of the amount sent, and transfers can take several days to settle. In Ethiopia's case, additional frictions arise from strict foreign currency controls and bank procedures. Businesses needing to pay foreign suppliers often require letters of credit or advance approval from the central bank, adding bureaucracy and wait times. For small remittances, many recipients in rural Ethiopia lack easy access to bank accounts, so they rely on cash agents or forex bureaus – further adding fees and inconvenience. In short, the traditional system has high transaction costs and latency at odds with the urgent needs of households and enterprises for timely, affordable international payments.

Moreover, the official channels have not always delivered competitive exchange rates to recipients. Until the recent reforms, a dollar remitted through a bank or MTO would be converted at the official rate (e.g. 50–60 birr per USD), whereas the recipient could get nearly double that buying power if they received funds via informal channels at the parallel rate (UNDP, 2024). This discrepancy gave senders and receivers a strong incentive to seek underground routes despite the risks. The upshot was a significant informal remittance economy operating in the shadows – effectively a private hawala network where diaspora dollars are swapped for birr outside of banks. While this minimized costs and maximized birr for recipients, it also meant Ethiopian authorities lost visibility and control over a large share of cross-border flows. It is in addressing these pain points – high fees, slow delivery, and FX leakage – that blockchain-based solutions promise a compelling value proposition.

6.1.3 Emergence of Stablecoins in Informal Use

In this context of currency instability and payment inefficiency, Ethiopian individuals and businesses have increasingly turned to stablecoins on an *informal* basis. Stablecoins are digital tokens (usually pegged 1:1 to the US dollar) that can be transacted globally on blockchain networks. Over the past two years, stablecoins like Tether (USDT) have quietly become the medium of choice for many Ethiopians dealing across borders. Inbound remittances are one use-case: instead of sending money through a remittance company, some diaspora members now send USDT (or similar USD-backed crypto) to intermediaries or family members in Ethiopia. The recipients exchange these tokens for birr on the informal market – often via Telegram or WhatsApp groups or brokers in Addis – obtaining a much better rate than they'd get officially (UNDP, 2024). This practice essentially replicates hawala through crypto: the diaspora sender purchases USDT with dollars abroad and a local broker buys that USDT with birr at an agreed (parallel) rate to provide cash to the end recipient. By using stablecoins as the transfer vehicle, parties avoid formal FX controls and enjoy near-instant settlement.

Outbound trade payments have also emerged. Facing difficulty accessing bank forex, importers and even some freelancers are using stablecoins to pay suppliers and contractors overseas. For example, an Ethiopian business needing to import machinery may source birr from local buyers to purchase USDT, which it then transfers directly to the foreign supplier's crypto wallet. The supplier, in turn, redeems the USDT for hard currency in their locale. This allows commerce to continue despite capital controls. Reports confirm that by 2024 local merchants and traders were converting birr to USDT via brokers or peer-to-peer platforms to skirt foreign exchange shortages and keep goods flowing. In effect, stablecoins have become a *shadow dollar* system lubricating both remittance inflows and import-related outflows. Notably, this usage spiked after the July 2024 devaluation of the birr; Chainalysis identified Ethiopia as Africa's fastest-growing market for retail-sized stablecoin transfers following that ~30% drop in the currency (African Business, 2024). Stablecoin transaction volume in Ethiopia rose by roughly 180% year-on-year, reflecting how quickly users embraced digital dollars amid currency uncertainty (African Business, 2024). By mid-2024, more Ethiopian freelancers and tech-savvy merchants were reportedly transacting in USDT as a de facto substitute for hard cash.

Crucially, people are not adopting crypto-assets for speculation or novelty, but for practical needs. As one analysis noted, "people don't care about crypto – they care about what it enables". In Ethiopia's case, stablecoins have enabled three key functions that were otherwise constrained: preserving value (hedging against birr inflation by holding USD-pegged tokens), facilitating trade (bridging the FX gap to pay international partners), and transferring funds (remitting money quickly at better rates). Importantly, this all remains informal – crypto use for payments is officially prohibited, so these transactions occur peer-to-peer without involvement of banks. Despite (or because of) the legal ban, a "gray market" for stablecoins has flourished to meet unsatisfied demand for foreign currency. Estimates suggest that stablecoins

now make up nearly 43% of all crypto transaction volume in Africa, with usage shifting from speculative trading to payments and savings in countries where local currencies are volatile. Ethiopia exemplifies this trend of "grassroots dollarization" via stablecoins, given its severe dollar squeeze. The informal crypto market here is dominated by USD-backed coins rather than Bitcoin or other volatile assets – underscoring that the motivation is transacting in a stable value unit, not crypto per se.

6.1.4 Benefits of Blockchain-Based Solutions

The rise of stablecoin use hints at the potential benefits of blockchain-enabled cross-border payments for Ethiopia. First, there is a speed advantage. Stablecoin transfers settle within minutes on public blockchain networks, whereas bank wires or remittances can take days (especially if compliances or intermediary banks hold up the transaction). Ethiopian users have found that a transfer which might take a week through a bank can be completed in, say, 10–20 minutes via a stablecoin wallet (BitKE, 2025). This near-instant settlement is invaluable for families needing quick access to funds or businesses trying to turn around international deals under tight deadlines.

Second, cost efficiency is a major draw. Sending stablecoins incurs minimal fees – often just a small network transaction cost, which on efficient blockchains (like Tron or Solana) is only a few cents. In contrast, sending money through traditional channels from, for example, the US or Europe to Ethiopia involves wire fees, forex spreads, and agent commissions that can easily total 5–10% for retail-sized amounts. By bypassing correspondent banks, stablecoin payments drastically cut these fees. Even accounting for the informal broker's margin when converting stablecoins to birr, the net cost tends to be lower than formal remittance fees, meaning more of each dollar sent reaches the recipient. Lower costs are particularly beneficial for Ethiopia's large migrant-remittance corridors, where many transactions are small and frequent. Cheaper transfers also discourage the use of risky cash couriers or unlicensed brokers, as digital alternatives become economically attractive.

Third, FX efficiency and access to hard currency improve through stablecoin channels. From the sender's perspective, purchasing a USD-pegged token is tantamount to accessing US dollars without needing a local bank's permission. For the Ethiopian end-user, receiving that token (and cashing it out via informal exchange) effectively yields the parallel-market USD value. This can significantly beat the deal they would get if they withdrew money via a bank at the official rate. In other words, stablecoins help bridge the foreign currency gap – they allow diaspora dollars and overseas payments to flow in *at a market-clearing rate* even when official mechanisms are rationed. Businesses using stablecoins can source inventory or inputs from abroad that they otherwise might have had to forgo due to lack of official FX. In aggregate, this can support economic activity (e.g. keeping store shelves stocked) that would languish if

reliant solely on central bank allocations. Stablecoins thus act as a pressure valve in Ethiopia's FX-strapped economy, improving liquidity in international transactions (albeit outside the purview of regulators). They can also extend financial access: any Ethiopian with a smartphone and internet can technically receive a stablecoin payment directly, without needing a bank account or ID verification at an agent. This peer-to-peer accessibility aligns with the broader financial inclusion goals, by potentially reaching unbanked recipients in remote areas – so long as they eventually have a way to convert or spend the digital token.

Finally, transparency and security on blockchain rails are potential advantages if harnessed properly. Each stablecoin transaction is recorded on an immutable ledger, which in a regulated setting could be monitored to ensure compliance. Users benefit from self-custody and cryptographic security (reducing risks of theft or loss associated with carrying cash). Of course, in the current *unregulated* usage in Ethiopia, these benefits are not fully realized – indeed, users face counterparty risk dealing with informal brokers. But under a proper framework, blockchain-based remittance channels could offer not just faster/cheaper service, but also better oversight than opaque informal networks. For example, a licensed Ethiopian fintech could issue a birr-stablecoin or integrate a mainstream stablecoin, allowing diaspora to send tokens that are transparently redeemed in Ethiopia's financial system. This would marry the efficiency of crypto rails with consumer protections and AML checks, addressing regulators' concerns.

6.1.5 Regulatory Constraints and Informal Practices

The enthusiasm for stablecoins in Ethiopia must be understood against the backdrop of strict legal limitations. Cryptocurrencies are officially not recognized as a means of payment in Ethiopia – the central bank (NBE) explicitly banned the use of "virtual currencies" for domestic transactions in 2022, reiterating that the birr is the only legal tender. There is no formal regulatory framework yet for digital asset exchanges or remittance using crypto, and current laws effectively render the buying or selling of crypto for payment purposes an illegal act. The government's stance stems from concerns over capital flight, money laundering, and loss of monetary control. If people transact in unofficial digital dollars, authorities fear it could undermine the birr and complicate macroeconomic management (for instance, by enabling unrecorded outflows of capital). These are valid concerns – indeed, a Center for Global Development brief warned that widespread stablecoin adoption might weaken African public finances by eroding usage of local currency and bypassing exchange controls.

Despite the prohibition, Ethiopia's experience highlights a clear gap between policy and practice. The realities of the market – severe FX shortages, high remittance needs, and new technology availability – have led to a thriving underground usage of stablecoins. People and businesses are effectively "voting with their feet," using digital assets informally to solve immediate problems, even though doing so is against the rules. This situation is comparable to past patterns with the hawala system: when formal mechanisms don't meet demand, informal

ones arise. The difference now is the technology; blockchain rails allow these transfers to happen faster and at scale.

For policymakers, this presents both a challenge and an opportunity. On one hand, the government cannot easily enforce a blanket crypto ban when there is grassroots uptake driven by genuine economic needs. On the other hand, the benefits of blockchain-based cross-border payments – speed, cost reduction, greater FX flexibility – are clearly aligned with Ethiopia's development and financial inclusion goals if they can be harnessed in a safe manner. The task, then, is to reconcile the informal innovation with formal regulation. Ethiopia is already taking tentative steps in this direction: officials have indicated a crypto regulatory framework is in development (to be finalized by 2025) and have even begun licensing a few crypto mining and exchange operations on a pilot basis (AInvest, 2025). For now, however, crypto payments remain unambiguously illegal, meaning any stablecoin remittance or trade payment operates in a legal gray zone. Participants accept the risk of potential penalties because the alternative – sticking solely to official channels – is often impractical or prohibitively costly for them.

6.1.6 Summary

In summary, the cross-border payments use case for digital assets in Ethiopia is compelling: it directly addresses the country's foreign currency woes and remittance inefficiencies. Stablecoin-based transactions offer *faster, cheaper, and more FX-efficient* payments that are already being demonstrated informally in the market. The Ethiopian diaspora and local traders have shown strong demand for these solutions, as evidenced by the surge in stablecoin activity amidst depreciation and currency controls. The key going forward will be bringing such mechanisms into the formal fold. If Ethiopia can craft enabling regulations – for instance, allowing licensed fintech providers to facilitate blockchain remittances or perhaps piloting a "digital birr" backed by hard currency reserves – it could leverage this trend to boost foreign currency inflows, reduce black-market reliance, and lower the cost of cross-border transactions for its citizens. The current environment thus makes a strong rationale for exploring blockchain-based cross-border payment systems, not as a speculative venture, but as a practical tool to enhance Ethiopia's payment infrastructure and resilience in the face of forex constraints. Policymakers will need to balance innovation with safeguards, but the experience on the ground to date suggests substantial upside if stablecoin and similar solutions can be integrated lawfully into Ethiopia's financial ecosystem.

6.2 Decentralized Finance (DeFi) Lending Platforms

6.2.1 Financing Gaps for SMEs and Underserved Individuals

Access to credit remains a critical bottleneck for small and medium enterprises (SMEs) and low-income individuals in Ethiopia. This leaves a financing gap. Several factors drive these

financing gaps. High collateral requirements imposed by banks discourage many borrowers. Small firms report being deterred from even applying for loans due to excessively high collateral requirements. It has been common for Ethiopian banks to demand collateral worth 200–300% of the loan value (often in land or cash) to mitigate risk (Alibhai, Salman et al., 2019). Such onerous terms effectively exclude entrepreneurs who lack property or fixed assets – a category that disproportionately includes women and youth (Alibhai, Salman et al., 2019). Moreover, the majority of Ethiopia's workforce is employed in the informal sector, without formal financial records or credit history. Lenders have limited ability to assess creditworthiness in the absence of comprehensive credit bureaus or collateral registries, and thus resort to conservative lending practices (e.g. requiring land titles) (Alibhai, Salman et al., 2019). This information asymmetry leaves otherwise-viable small businesses unable to obtain loans simply because they lack formal documentation or collateral.

6.2.2 Limitations of Banks and Microfinance Institutions

Ethiopia's financial infrastructure, while growing, has not fully bridged these gaps. The banking sector is dominated by a few large institutions. Until recently, regulatory constraints limited competition – for example, private banks had to channel a portion of their loanable funds into government bonds, and foreign banks were barred from entry. Commercial banks traditionally favor established corporate clients and view the SME segment as high-risk and less profitable, resulting in a "*missing middle*" phenomenon. Microfinance institutions (MFIs), on the other hand, focus on the smallest micro-enterprises and rural households, but even the largest MFIs face liquidity and capacity constraints. Most MFIs in Ethiopia cannot mobilize substantial deposits and instead rely on donor or government lines of credit to fund loans. This limits their outreach and the ticket size of loans they can provide. As a result, small and mid-sized businesses fall between the cracks – too large for microfinance, but not well-served by commercial banks.

The lending methodologies of traditional institutions also contribute to inefficiencies. Banks and MFIs still largely use manual, paper-based processes and "relationship lending" approaches. Loan approvals can be slow and bureaucratic, often requiring extensive paperwork and physical branch visits. Products are highly standardized, with little innovation tailored to SME needs (e.g. flexible repayment schedules or inventory financing remain limited). Because distribution channels rely on urban branch networks, rural entrepreneurs and those in the informal sector may be excluded due to simple geographic and procedural barriers. In summary, Ethiopia's conventional lenders – constrained by collateral-based risk management, limited competition, and underdeveloped credit infrastructure – are not fully addressing the financing needs of SMEs and underserved individuals. This context sets the stage for exploring alternative models that could complement the existing system.

6.2.3 DeFi Lending Platforms as an Alternative Model

Decentralized Finance (DeFi) lending protocols represent a novel, technology-driven approach that could help broaden access to credit. Globally, DeFi lending platforms (such as *Aave, Compound,* and others) use blockchain smart contracts to directly connect lenders and borrowers in a peer-to-peer marketplace. In these platforms, users deposit digital assets (cryptocurrency or tokenized fiat currency) into a pooled fund, and borrowers can take loans from the pool by posting other digital assets as collateral. Interest rates are typically set dynamically by algorithm based on supply and demand for funds, and payments and collateral management are handled automatically by smart contract code. There is no need for a traditional bank to intermediate the transaction – the code itself enforces loan terms (including automatic collateral liquidation if its value falls too low) and records all transactions on an open ledger. This results in a system where *"anyone with internet access can lend or borrow digital value globally, 24/7, often at more competitive rates"*.

Relevance to Ethiopia's credit constraints:

DeFi's openness and automation could, in theory, lower some barriers that SMEs and individuals face. Because these platforms are permissionless, a borrower does not need an extensive credit history – if they possess some digital asset that can be tokenized as collateral, they can access a loan. For instance, an Ethiopian small business owner could potentially tokenize a valuable asset (even something like a piece of equipment or future crop receipts, if those were digitized) and borrow stablecoins against it, without going through the lengthy scrutiny of a bank loan committee. Lenders worldwide might be willing to fund such loans in exchange for attractive yields, which are algorithmically determined and transparently monitored on-chain. The global pool of liquidity in crypto markets – if tapped responsibly – is significant, and could provide capital to credit-starved sectors that local banks deem too risky. In fact, new DeFi initiatives are already moving in this direction: protocols like Goldfinch have built models to offer "loans without over-collateralization" by assessing real-world borrowers, thereby *bringing crypto liquidity to the real world* (Mercy Corps Ventures, 2021). This has enabled emerging market lenders to access funds for productive on-lending. For example, Goldfinch provided a $5 million pool to Tugende (an East African asset finance company), allowing thousands of motorcycle taxi drivers in Uganda and Kenya to purchase bikes on credit (Mercy Corps Ventures, 2021). Such cases hint at the potential for DeFi platforms to channel global investor funds into local SME lending in regions like Ethiopia, bypassing some of the traditional friction in obtaining foreign capital.

It is important to note that most current DeFi lending still relies on over-collateralization – typically requiring borrowers to lock in digital assets worth more than the loan value (e.g. 150% of the loan). This model, common in platforms like Aave or Compound, addresses the lack of credit screening by using excess collateral as a safety buffer. While this limits default risk, it

also means that purely on-chain DeFi in its present form may not solve the problem of *unsecured* lending for Ethiopian SMEs (who may not have any digital assets initially). However, the key innovation is the *automation and openness* of the system: loans can be disbursed and repaid almost instantaneously, with low transaction costs and transparent rules. If paired with appropriate mechanisms to represent real-world assets on-chain (e.g. tokenized invoices, inventory, or even community-based trust scores), DeFi lending could evolve to serve creditworthy borrowers who lack traditional collateral. In essence, these platforms offer a *complementary* channel – one that sidesteps many brick-and-mortar constraints – through which financing might reach underserved borrowers in Ethiopia. The global experience with DeFi thus provides a use case rationale: it demonstrates that lending can occur efficiently without conventional banks, and it invites local innovators to adapt this model to Ethiopia's context (for example, by creating liquidity pools denominated in stablecoins but linked to Ethiopian loan portfolios).

6.2.4 Partnership Models with Banks and MFIs

Rather than positioning DeFi lending in opposition to traditional institutions, a feasible approach in Ethiopia is to integrate DeFi platforms with banks and microfinance providers as partners. Given the trust and regulatory status that established financial institutions enjoy, they could act as gateways that connect customers to decentralized lending pools in a compliant way. International experience suggests that such hybrid models are viable. For instance, banks in some markets have explored restricting DeFi lending pools to *verified customers*, where the bank performs Know-Your-Customer (KYC) identity checks and compliance, while the on-chain smart contract handles the fund matching, interest calculations, and collateral enforcement. In this setup, Ethiopian banks or MFIs could onboard their SME clients onto a DeFi platform, essentially outsourcing the back-end loan processing to blockchain while retaining front-end relationship management. The bank would ensure borrowers meet necessary credit assessments or development objectives, possibly provide partial guarantees or co-investment, and then leverage the DeFi pool to fund the loan. This kind of partnership allows the strengths of each party to be utilized: the bank/MFI brings local market knowledge, borrower vetting, and legal recourse mechanisms, whereas the DeFi protocol provides speed, automation, and access to a global pool of lenders/investors.

Concrete opportunities for such collaboration in Ethiopia could include pilot programs where a microfinance institution tokenizes its loan portfolio (or future receivables) and sells a portion of it to global investors via a blockchain platform. The National Bank of Ethiopia and other regulators could oversee these pilots under a sandbox framework, ensuring that consumer protections are in place. A precedent for this exists in the idea of banks issuing on-chain claims against real-world loans: for example, a bank can bundle SME loans or invoices and issue a token that represents a share in the cash flows of that portfolio. The bank might keep the safest tranche of this portfolio on its books and offer the higher-yield (higher-risk) tranche to DeFi liquidity providers, who are willing to fund SMEs for a return. Smart contracts would

automate interest payments to the token holders and enforce loss-sharing rules, while the bank services the loans and handles any default recoveries off-chain. Such cooperative models preserve the role of traditional lenders in customer interaction and risk mitigation, but deliver DeFi's advantages in terms of efficiency and reach. In Ethiopia's context, partnering with banks and MFIs is crucial not only for compliance, but also to overcome practical hurdles (such as limited internet literacy or trust issues) by using familiar institutions as anchors. Rather than replace microfinance, DeFi lending platforms could augment their capacity – for example, by providing additional liquidity to an MFI that has more credit-worthy borrowers than it can currently finance, or by enabling diaspora investors to participate in lending to Ethiopian SMEs through a regulated channel.

6.2.5 Risks and Regulatory Considerations

Any introduction of DeFi lending into Ethiopia's financial ecosystem must carefully address the risks of unregulated markets. At present, Ethiopia has a cautious stance on cryptocurrencies and decentralized finance. The National Bank of Ethiopia has not authorized cryptocurrency use for payments, and a formal regulatory framework for digital assets is in development. This means that, today, any DeFi activity would be operating in a gray area at best. Regulatory gaps around decentralized peer-to-peer lending and crypto-assets pose significant challenges – authorities are concerned about money laundering, fraud, and the difficulty of enforcement when transactions involve anonymous wallets. These concerns are valid: globally, DeFi platforms have suffered high-profile exploits and security failures. Without proper oversight, Ethiopian users venturing into unregulated DeFi markets could be exposed to fraud (e.g. Ponzi schemes or rug pulls) or could inadvertently violate capital controls by moving funds in and out via crypto. Furthermore, macroeconomic stability is a consideration – large-scale adoption of stablecoins or crypto loans might complicate the central bank's ability to manage liquidity and foreign exchange if left unchecked.

However, rather than dismissing DeFi, Ethiopian regulators and policymakers should examine ways to harness its benefits within a supervised framework. A possible path forward is the creation of "regulated DeFi" sandboxes or consortia. In such a scenario, only licensed financial institutions or verified fintech firms would be permitted to interact with DeFi lending pools on behalf of customers, ensuring all parties are identified and transactions recorded. The regulatory framework now being formulated emphasizes compliance with Anti-Money Laundering (AML) and KYC requirements for any crypto-related services. This suggests that Ethiopia is aiming for a model where blockchain innovations are accepted under oversight – for example, authorities might allow tokenized lending instruments if they are issued by a regulated entity like a bank or a crowdfunding platform in possession of a special license. Over time, this could evolve into a licensed DeFi lending platform specifically serving Ethiopia, perhaps with the Birr or a future digital Birr (CBDC) integrated as one of the lending currencies. Such a platform would operate under Ethiopian law, provide recourse for borrowers and lenders, and

maintain transparency for regulators (through oracles and reporting that link on-chain activity with off-chain monitoring).

6.2.6 Summary

In conclusion, DeFi lending platforms offer a compelling *use case rationale* for filling Ethiopia's SME financing gap: they illustrate how blockchain, tokenization, and smart contracts can enable more inclusive and efficient lending markets. In the Ethiopian context, these platforms should be viewed as a complement to banks and microfinance – a way to extend credit to underserved segments by leveraging global capital and automation, while partnering with local institutions to manage risks. The approach moving forward would involve cautious experimentation: pilots and sandboxes to test DeFi lending with real Ethiopian SMEs, development of legal guidelines for digital asset lending, and capacity-building for regulators to understand on-chain activity. If successfully implemented, regulated DeFi lending could unlock new financing for entrepreneurs and communities currently left behind, thereby contributing to Ethiopia's broader goals of financial inclusion and private-sector growth, all while maintaining financial stability and consumer protection.

6.3 Tokenized Real Estate & Infrastructure Investment

6.3.1 Ethiopia's Real Estate Boom and Investment Barriers

Ethiopia's real estate sector – especially in Addis Ababa – has experienced a construction boom in recent years, with rapid urbanization fueling demand for housing and commercial space. The capital's relative stability and economic opportunities have attracted migrants and investors, including a large Ethiopian diaspora that continues to pour capital into Addis Ababa's property market. Real estate prices have soared despite political instability, as limited land supply and high construction costs push values upward. On paper, real estate development in Ethiopia appears highly profitable given sales prices often double construction costs, but significant hurdles temper this opportunity (Ethiopian Real Estate, 2023).

Both local and foreign investors face steep barriers in Ethiopia's real estate market. First, asset prices are prohibitively high relative to local incomes, and mortgage financing is virtually non-existent – as of late 2023, most banks had stopped issuing new housing loans and historically required 50% down payments (Ethiopian Real Estate, 2023). This means property purchases often demand large up-front cash (a high ticket size), putting real estate out of reach for most Ethiopians and limiting participation to wealthy individuals or diaspora buyers. Second, real estate in Ethiopia is illiquid. There are no real estate investment trusts (REITs) or active secondary markets, so an investor's capital is locked into a physical asset that can take

months to sell. Third, the legal framework imposes constraints: land in Ethiopia is state-owned and can only be leased, not sold outright. Foreign ownership was previously restricted, limiting access to Ethiopia's growing urban housing market. The new policy removes these barriers, creating legal clarity and ownership rights for non-citizens. This builds confidence and invites new capital into the country. As part of this new framework, a minimum investment threshold of $150,000 has been set for foreign nationals seeking to own residential property. This benchmark was established based on current market conditions and aims to ensure that foreign investment supports quality housing development and sustainable growth (Metropolitan, 2025). Moreover, land administration and title registration have historically been cumbersome and unreliable, undermining investor confidence. Title deed transfers incur high taxes (6% of property value), leading some buyers to avoid formal registration (Ethiopian Real Estate, 2023). Past scandals – such as failed developments that took diaspora pre-payments – have revealed a lack of investor protections in the sector, contributing to trust deficits. In effect, Ethiopia holds vast "dead capital" in informal or under-utilized real estate assets that owners cannot easily leverage or sell. Unlocking this capital and lowering the entry barriers for investors are key challenges.

6.3.2 Tokenization of Real Estate: Fractional Ownership and Liquidity

Tokenization offers a promising solution to many of the above constraints by converting real estate ownership rights or revenue streams into digital tokens on a blockchain (Uzsoki, D. & Rahim, S., 2023). In essence, a property (or shares in a property-holding entity) can be represented by hundreds or thousands of fractional tokens, which investors can purchase in small denominations. This fractional ownership dramatically lowers the entry cost for investment: for example, instead of needing $100,000 to buy an entire condominium, a diaspora investor or even a local cooperative could buy $100 worth of tokens representing a fraction of that condo's value. For Ethiopia, where viable investment options are few and wealth is often tied up in illiquid assets, such fractionalization could democratize access to the real estate market and give ordinary Ethiopians and diaspora members a stake in the country's property boom (Uzsoki, D. & Rahim, S., 2023). The Ethiopian government has explicitly sought to boost diaspora investment in housing; tokenized real estate offers a vehicle to channel diaspora funds into projects like apartments and commercial buildings by lowering barriers to entry.

In addition to accessibility, liquidity would improve. A tokenized property can be traded on secondary markets or peer-to-peer platforms far more easily than selling physical real estate. An investor needing to exit can sell their tokens (subject to regulations) without forcing a sale of the entire property. This injects much-needed liquidity into Ethiopia's real estate sector, making it more attractive to investors who previously balked at long lock-in periods. Furthermore, blockchain-based tokens bring transparency and trust. Each token transaction is

recorded on an immutable ledger, providing clear ownership records and reducing fraud. In fact, Ethiopia has already piloted a blockchain-based land registry to secure title records. Once land and property titles are reliably digitized, issuing digital tokens linked to those rights becomes feasible. This could mitigate the title insecurity that has plagued the market by assuring investors that their token represents a valid, government-recognized claim on the property or its income.

Diaspora Engagement: Tokenization specifically enables greater diaspora participation. Members of the Ethiopian diaspora, who often wish to invest back home but struggle with legal barriers or lack of trusted local partners, could invest through regulated digital platforms from abroad. For instance, a real estate developer in Addis could conduct a Security Token Offering (STO) – selling tokens that represent shares in a new housing development – and diaspora investors worldwide could participate online. They would receive returns in the form of rental income or a share of eventual sale proceeds, distributed automatically via smart contracts. Such a model was piloted in Mozambique by the Web3 project Empowa, which in 2022 sold NFTs (non-fungible tokens) to crowdfund affordable housing construction. Empowa raised about $300,000 via NFTs to finance 30 climate-resilient homes for low-income families, with the NFTs entitling global investors to a share of rental payments as the families leased-to-own their homes (Adegboye, A., 2023). This blockchain-based approach not only brought in foreign capital for social housing but also recorded tenants' payment histories on-chain to build their credit profiles. The Empowa case demonstrates how tokenization can enable blended finance: combining impact investment from abroad with local housing needs. Ethiopia could pursue a similar model at scale for its huge affordable housing gap – for example, tokenizing portfolios of lease-to-own condominiums or rental units, where diaspora investors purchase tokens to fund construction and earn modest returns, while tenants gain home ownership over time. By leveraging blockchain's global reach, Ethiopia can tap diaspora capital in a more secure, transparent manner, avoiding the trust issues that hampered earlier diaspora schemes (like the Renaissance Dam bonds). Notably, global precedents for tokenized real estate are growing: properties have been successfully sold via blockchain marketplaces in markets like the UAE and UK, and Nigeria's regulators in 2024 approved Africa's first platform for tokenized real estate assets to "give unprecedented access to wealth-building to millions" of investors (Mercy Corps Ventures & Empowa 2024). These examples highlight how tokenization can unlock idle capital tied in real estate by turning it into investable, divisible digital assets. For Ethiopia, the approach could convert dormant property equity into active capital for development, while providing collateral options for entrepreneurs (e.g. an SME could tokenize a building it owns to raise a loan against those tokens).

6.3.3 Infrastructure Finance Needs and Constraints in Ethiopia

Beyond real estate, Ethiopia faces an acute need for investment in infrastructure – from energy and transport to industrial parks and water systems – yet struggles to fund these capital-intensive projects. Decades of public investment (often with external loans) drove

strong growth, but today the government is constrained by high debt and limited budget resources. Ethiopia's infrastructure financing gap remains substantial, especially as the country pursues ambitious projects like universal electrification, new road corridors, railways, and large industrial parks. Traditionally, many projects have relied on external financiers (e.g. Chinese loans for railways and industrial parks, or multilateral development banks for power plants). The government has also sought private sector and diaspora contributions. In 2011 it floated a diaspora bond to help fund the Grand Ethiopian Renaissance Dam, an enormous hydropower project, appealing to patriotic sentiment. However, Ethiopia's past diaspora bonds were not as successful as hoped – uptake was limited, in part due to trust deficits and lack of liquidity for investors (EUDiF, 2021). Investors who did purchase these bonds had no easy exit (they had to hold to maturity) and often earned below-market returns, reducing the appeal.

More broadly, attracting private investment into Ethiopian infrastructure has been difficult. Key hurdles include: Foreign exchange and repatriation risks (investors worry they cannot get profits out in hard currency due to Ethiopia's FX controls and shortages), regulatory and institutional gaps (until recently Ethiopia lacked a robust Public-Private Partnership framework, and permitting processes are slow and complex), and perceived risks around governance and contract enforcement. According to a 2025 UNDP analysis, bringing in private capital is hindered by forex challenges, an underdeveloped regulatory environment, and overly cumbersome funding procedures – leading to a "stop-and-go" pattern on projects like solar and wind farms with lengthy negotiations and frequent delays (UNDP, 2025). In short, despite a huge infrastructure need, the current financing model cannot easily mobilize new sources of capital. Ethiopia is not alone in this: many African countries face similar gaps and are exploring innovative financing (e.g. Kenya's pioneering of green bonds, Nigeria's infrastructure debt fund). Ethiopia's government, too, is trying to foster PPPs and has earmarked bond proceeds for infrastructure (e.g. using domestic bond sales to fund industrial parks, sugar factories and power transmission). But more inclusive investment mechanisms are needed to truly narrow the gap.

6.3.4 Tokenization of Infrastructure: New Investment Models

Tokenization could provide a novel route to finance infrastructure by enabling fractional, transparent, and potentially global investment in projects or their revenue streams. In practice, this would mean issuing digital tokens that represent a stake in an infrastructure asset (equity in a project company) or entitlement to a portion of its future cash flows (debt repayments, revenue share from a toll road or power plant). By lowering the minimum investment size and using blockchain rails, tokenization can crowd in capital from a wider pool: domestic retail investors, diaspora, and even international individuals who might not meet the usual accredited-investor thresholds (Uzsoki, D. & Rahim, S., 2023). For example, to finance a solar mini-grid project, an Ethiopian issuer could sell $50 or $100 tokens to thousands of diaspora

members, rather than seeking a few million-dollar checks from banks. This *democratization* of infrastructure finance aligns with the core value proposition of tokenization – breaking up large illiquid assets into bite-sized units that more people can own (Uzsoki, D. & Rahim, S., 2023).

Several benefits arise from applying tokenization in Ethiopia's infrastructure context:

- **Increased Capital Mobilization:** Tapping diaspora savings and smaller investors can supplement traditional funding. Ethiopia's diaspora sends over $5 billion in remittances annually; even a fraction of this channeled into tokenized bonds or equity for projects could significantly contribute to new roads or power facilities. Tokenized offerings could also attract foreign crypto investors interested in emerging-market infrastructure, effectively bringing in new sources of FX. Notably, the World Bank has been exploring tokenized infrastructure financing and finds that it could unlock new private capital if regulatory hurdles are addressed (Uzsoki, D. & Rahim, S., 2023).

- **Blended Finance and Risk Sharing:** Tokenization can be combined with more conventional funds to achieve blended finance structures. For instance, a development bank or government might provide a first-loss guarantee or anchor investment in a project, making it less risky, and then invite the public (via tokens) to contribute the remaining capital. Smart contracts could automate interest or revenue distribution to token holders. Diaspora investors, motivated by both returns and patriotism, might accept slightly lower returns or higher risk if they know the project (say a wind farm or new railway) benefits their home country – especially if there is transparency on how funds are used. Transparency, in fact, is a major advantage: blockchain can provide real-time tracking of invested funds and project performance data (e.g. energy output of a solar plant), building investors' trust that money isn't being mismanaged. This could mitigate the trust deficit that has hampered PPP deals (UNDP, 2025).

- **Liquidity and Exit Options:** Infrastructure investments are typically long-term and illiquid (a 20-year toll road concession, for example). Tokenization, coupled with secondary trading platforms or decentralized finance (DeFi) protocols, could allow an investor to sell their stake partway through the project. While still an emerging practice (and subject to securities laws), the prospect of tradable infrastructure tokens makes the asset class more attractive. Early examples in other markets (e.g. tokenized bonds for sustainable infrastructure) have shown faster settlement and broader distribution than traditional bonds(Uzsoki, D. & Rahim, S., 2023). Even if trading is initially limited to accredited investors due to regulation, over time a successful track record could lead to wider retail trading, fulfilling the promise of liquidity in previously illiquid assets (Uzsoki, D. & Rahim, S., 2023).

- **Diaspora Participation and Impact:** Perhaps most significantly for Ethiopia, tokenized infrastructure could formally engage the diaspora at scale. Instead of soliciting donations or low-yield bonds, the government or private issuers can offer diaspora

communities market-based investments with competitive returns and a direct line-of-sight to development impact. A diaspora member in the US could use a smartphone to purchase tokens that fund, say, a hydroelectric project, and later receive quarterly stablecoin dividend payouts derived from the project's electricity sales. This model would convert the diaspora's sentimental commitment into sustainable investment. Countries like Nigeria have already taken steps in this direction – e.g., Nigeria's SEC approved a digital platform in 2024 to tokenize assets including infrastructure, aiming to enable Nigerians (at home and abroad) to co-own large projects such as mechanized farms and even transport hubs via blockchain (Nigerian Tribune, 2024). Ethiopia could similarly leverage its diaspora, one of Africa's largest, by offering well-structured, transparent tokenized investments linked to national priorities like renewable energy or industrial parks.

Of course, tokenization is not a magic bullet. As global studies note, the value proposition will only be realized if the tokens are credibly backed by real assets and governed well (Uzsoki, D. & Rahim, S., 2023). In infrastructure, projects often take years to become profitable (if at all), so investors must understand the long-term and risky nature of these tokens. Nevertheless, by widening the investor base and digitizing the investment process, tokenization could *complement*Ethiopia's other financing strategies. It aligns with the government's push for digital innovation and financial inclusion, offering a way to leapfrog traditional capital markets (which are nascent – Ethiopia is only now establishing a stock exchange (Ethiopian Real Estate, 2023) and go straight to next-generation financing platforms.

5.3.5 Regulatory and Implementation Considerations

Implementing real estate and infrastructure tokenization in Ethiopia will require careful attention to regulatory and legal frameworks.

Securities Law: Tokenized shares or debt are by definition securities, and thus fall under the purview of Ethiopia's new Capital Markets Authority (ECMA). The ECMA, established after the 2021 capital markets proclamation, is responsible for overseeing digital asset securities such as financial instruments (National Bank of Ethiopia & Capital Markets Authority, 2025). However, detailed regulations specific to security tokens are still evolving. Globally, one of the main barriers to tokenized finance is the lack of clear regulation – projects often must restrict token sales to accredited investors to comply with old rules (Uzsoki, D. & Rahim, S., 2023). Ethiopia will need to update its laws or issue directives to recognize digital token offerings (STOs or tokenized funds) in order to protect investors while enabling innovation. Positive steps have been taken, but explicit provisions for asset-backed tokens would provide much-needed legal certainty. Additionally, foreign investment rules must adapt: if diaspora or foreign individuals buy Ethiopian infrastructure tokens, the law should clarify their rights to any returns in foreign

currency and ability to trade those rights. Capital controls and forex rules may need relaxing for such programs to succeed, otherwise the tokens would be effectively illiquid for non-residents.

Land and Title Law: Since real estate tokenization relies on underlying property rights, Ethiopia's land laws and registries must be modernized. The government's pilot of a blockchain-based land registry is a promising foundation. Expanding digital title registry nationwide would facilitate tokenization by ensuring that each token is tied to a verifiable, unencumbered property right. Legal reforms might be required to allow fractional interests in property. One practical approach is to use Special Purpose Vehicles (SPVs): for example, an SPV company holds the property lease title, and issues tokens representing shares in the SPV. This circumvents the prohibition on direct land sale while giving economic exposure to the asset. Still, investor protection is paramount – token holders must have clearly defined claims on revenues or assets in case of default. Strengthening property and contract enforcement (through courts or arbitration) will be necessary so that token investors (many of whom may be remote) trust the system. Additionally, insurance or guarantees (as mentioned in the Nigeria case (Nigerian Tribune, 2024)) can be used to enhance confidence in tokenized offerings.

Technology and Market Infrastructure: To support trading and liquidity, Ethiopia would need to allow licensed digital asset exchanges or marketplaces. These could be domestic platforms under ECMA oversight or partnerships with global exchanges that list Ethiopian tokens. Ensuring compliance with anti-money laundering (AML) and know-your-customer (KYC) rules is crucial, especially given the cross-border nature of many token investors. The National Bank of Ethiopia will also have a say: currently it forbids cryptocurrency use for payments (National Bank of Ethiopia & Capital Markets Authority, 2025), but tokenized investments could be seen separately as securities. Coordination between regulators (ECMA, NBE, and potentially the Ministry of Innovation and Technology which supervises blockchain pilots (National Bank of Ethiopia & Capital Markets Authority, 2025)) will be needed to create a sandbox for tokenization projects. Ethiopia might draw lessons from countries like Nigeria, which through its SEC's Regulatory Incubation program allowed real-estate token platforms under close monitoring Nigerian Tribune (2024), or Kenya, which is developing frameworks for crowdfunding and has experimented with mobile-based bond sales.

Finally, it must be acknowledged that tokenization will not automatically "democratize" finance unless regulations permit broad participation. Many early tokenized infrastructure deals globally have been limited to wealthy investors due to private placement rules (Uzsoki, D. & Rahim, S., 2023). Ethiopian authorities should aim to strike a balance: open the door for wider participation (including diaspora and retail investors) but with prudent limits and disclosures to manage risks. Investor education will also be important, so that people understand that tokens are not guaranteed and can fluctuate in value. If these legal and educational pieces are put in place, Ethiopia could position itself as a regional innovator in digital assets – using tokenization to bridge the gap between its development financing needs and the capital of its people at home and abroad.

6.3.6 Summary and Outlook

Tokenizing real estate and infrastructure could be a game-changer for Ethiopia, turning the country's booming but illiquid property market and hefty infrastructure agenda into investable opportunities. By allowing fractional ownership, tokenization lowers investment barriers and enables wider participation, including by the diaspora and ordinary citizens who can invest small sums. In real estate, this means unlocking "dead capital" from land and buildings – transforming untitled or underutilized properties into sources of financing for owners and new assets for investors. In infrastructure, it means injecting fresh capital into projects that drive development, through innovative crowd-investment models that spread both the risks and benefits more broadly. The potential benefits – increased liquidity, transparency, and inclusion – align well with Ethiopia's digital ambitions and need for sustainable financing pathways.

However, realizing these benefits requires navigating practical challenges. Ethiopia will need to modernize laws to recognize and protect tokenized asset offerings, digitize its land registries and strengthen property rights, and build the trust of investors through clear governance and perhaps guarantees. Early pilots (for example, tokenizing a diaspora housing fund or a renewable energy project) could be pursued within a regulatory sandbox to demonstrate proof of concept. If successful, Ethiopia would not only mobilize new funds but also signal to the world that it is open to responsible financial innovation. In summary, tokenization of real estate and infrastructure represents a feasible and policy-relevant tool to channel investment into Ethiopia's growth priorities. It leverages technology to solve local problems – high investment thresholds, low liquidity, and funding gaps – by *making assets divisible, tradable, and accessible*. With the right support, this approach could help Ethiopia crowdsource its development like never before, turning diaspora enthusiasm and domestic savings into concrete assets on the ground. The experience of other markets shows the concept is sound, but Ethiopia's implementation will need to be tailored to local legal and economic realities. If done carefully, tokenization can complement conventional financing and truly unlock new capital for Ethiopia's real estate and infrastructure future.

6.4 Supply Chain Finance & Agricultural Trade

6.4.1 Inefficiencies in Agricultural Export Supply Chains

Ethiopia's export-oriented agricultural supply chains – from coffee and oilseeds to flowers and livestock – remain highly fragmented and paper-driven, leading to significant inefficiencies. Millions of smallholder farmers and cooperatives feed into layers of traders and exporters, with

information often lost or distorted at each handoff. Documentation is largely manual, generating laborious paper trails that slow down transactions (Demere, M. et al., 2024). For example, export processes (e.g. quality certifications, customs forms) are frequently handled on paper or standalone systems, requiring physical approvals that add days or weeks to cycle times. Traceability is very limited under these legacy systems: a single shipment of coffee may aggregate beans from *thousands* of small farmers, making it nearly impossible to trace each lot's origin or farming practices (IFC, 2023). This lack of end-to-end visibility undermines quality control and trust – buyers cannot easily verify which farm a product came from or whether it was handled properly. It also means producers often do not know where their goods go or why delays occur. Logistics pose additional challenges: moving goods from farm to port is hampered by infrastructure gaps and coordination failures. Transport from Addis Ababa to the Port of Djibouti, for instance, faces security problems, poor road conditions, and even theft, all of which can delay shipments (Demere, M. et al., 2024). These holdups ripple back through the chain, causing spoilage for perishable goods and missed delivery windows for exporters.

Another major pain point is the absence of reliable data on sustainability and compliance, which is increasingly critical in global markets. Importing countries and buyers are demanding evidence of environmental and social standards (ESG) – such as proof that coffee or livestock exports are deforestation-free or meet labor standards – but Ethiopia's current supply chains struggle to provide this information. Small farmers lack the tools and resources to collect complex compliance data (IFC, 2023), and there is no unified digital system to capture metrics like carbon footprint or fair-trade certification across the chain. As a result, Ethiopian exporters risk exclusion from high-value markets. Notably, the EU's new deforestation regulation requires coffee importers to trace products to their exact farm of origin. With Ethiopia's fragmented, opaque chain, some European buyers have already begun shifting orders to other countries that have better traceability systems (IFC, 2023). This trend threatens Ethiopia's export earnings and smallholder livelihoods. In summary, the country's agricultural trade logistics are beset by disjointed actors, slow manual processes, lack of traceability, and minimal ESG visibility – all contributing to delays, lost revenues, and eroded competitiveness in international markets.

6.4.2 Working Capital Bottlenecks and Long Payment Cycles

These structural inefficiencies are compounded by severe financing bottlenecks along the agricultural value chain. Despite agriculture accounting for roughly 32% of Ethiopia's GDP and nearly 80% of export earnings, the sector receives only a tiny fraction of formal credit (NBE, 2025). In fact, as of 2023/24 an estimated 2% of total demand for agricultural finance is being met – just ETB 52 billion out of a needed ETB 2,582 billion (NBE, 2025). This chronic credit gap leaves most farmers, cooperatives, and agribusiness SMEs starved of affordable working capital. Smallholders typically lack the collateral or credit history that banks require. Ethiopian

banks have traditionally demanded exorbitant collateral (often 200%+ of loan value, usually in land or cash), a bar that the vast majority of small farmers and rural entrepreneurs cannot meet (NBE, 2025). Moreover, the cost and risk of serving dispersed rural clients are high – factors like long distances, weak rural banking networks, and unpredictable weather risks make lenders reluctant to extend credit (NBE, 2025). As a result, farmers and small agribusinesses overwhelmingly rely on informal, expensive financing or simply go without. Many end up selling their produce to local middlemen at disadvantageous prices for quick cash, because they cannot afford to wait for payment through formal channels (AgUnity, 2021). This "sell low for cash now" dynamic traps farmers in a cycle of low margins and under-investment in productivity.

Long payment cycles in the export supply chain further exacerbate liquidity problems. It is not uncommon for a smallholder or cooperative to deliver crops or livestock up the chain and then wait weeks or even months for final payment. For example, a coffee farmer may deliver cherries to a processor or cooperative during harvest, but only receive the bulk of their payment after the coffee is processed, exported, and sold abroad – a process that can span several months. During this time, the farmer has to cover living costs and prepare for the next planting with little cash on hand. Such delays arise from lengthy export procedures and the time it takes for overseas buyers to pay Ethiopian exporters (often 30-90 days after shipment). With credit hard to come by, these delays create a serious working capital crunch for producers and local SMEs. They struggle to buy inputs for the next season or expand their operations, perpetuating low yields and income instability. Indeed, small suppliers around the world face this issue: they deliver goods but then wait extended periods for payment, as banks are hesitant to lend against in-transit goods or pending invoices. Ethiopia is a prime example of this pattern. The lack of trust and data in the supply chain means financiers perceive lending to farmers or unconfirmed orders as too risky, so suppliers are left to shoulder the financing gap themselves. In sum, Ethiopia's agricultural exporters, processors, and farmers are caught in a liquidity squeeze – with minimal access to formal credit, high collateral hurdles, and slow payment turnarounds draining their cash flow. These bottlenecks stunt the growth of agribusinesses and limit farmers' ability to scale up production or improve quality (since they can't afford needed investments in seeds, equipment, or certifications).

6.4.3 Foreign Exchange Challenges in Trade Operations

Overlaying these issues is Ethiopia's well-documented foreign currency shortage, which affects all aspects of trade. Agricultural exporters earn vital hard currency for the country, yet they too are constrained by foreign exchange (FX) controls and scarcity. Until recently, exporters were required to convert the majority of their export proceeds to local currency within a very short period, starving them of dollars needed to pay for inputs or logistics. For instance, prior to late 2024, firms had to surrender 50% of export earnings within 30 days (the remainder could be

kept slightly longer) – a rule many in the horticulture and coffee sectors found *unworkable* given the need to import farm inputs and equipment over longer cycles (Addis Fortune, 2024). This policy was eased in November 2024, when the central bank began allowing exporters to retain 50% of their foreign currency indefinitely (selling the other 50% immediately) instead of forcing conversion within one month (Serrari Group, 2024). The reform was designed to give exporters more flexibility and liquidity to reinvest in operations (Serrari Group, 2024). Sectors like coffee and floriculture, which together contribute nearly $2 billion in annual exports, are expected to benefit from having more ready access to their own hard currency earnings (Serrari Group, 2024).

Even with these improvements, however, Ethiopia's broader FX crunch continues to pose challenges. The country's dollar reserves remain low, and import needs (for fertilizer, fuel, machinery, packaging materials, etc.) far outstrip supply. Importers and manufacturers often struggle to obtain foreign currency, resulting in delays or cutbacks in production. An exporter of roses or sesame may have buyers abroad, but if they cannot secure dollars to purchase greenhouse supplies or processing equipment, their business will suffer. The acute shortages in recent years have led to backlogs – companies waiting months for letters of credit or being unable to import crucial inputs, which in turn hurts their ability to fulfill export orders. Currency volatility adds another layer of risk: the Ethiopian birr has seen high inflation and periodic devaluations. A deal negotiated in birr can lose value by the time payment is made, discouraging farmers from forward contracts in local currency and eroding exporters' profit margins when converting earnings. Some exporters have resorted to hedging through informal means or even retaining a portion of earnings offshore (despite regulations) to protect against devaluation. International investors and buyers also view Ethiopia's FX situation as a risk premium – one study noted that Ethiopia could attract much larger agribusiness investments *"if the challenges around foreign currency access are addressed."* (Agyekumhene, C. et al., 2022). In other words, the difficulty of moving money into and out of Ethiopia, and uncertainty about currency conversion, can deter foreign buyers from long-term contracts or financing arrangements with Ethiopian suppliers.

The foreign exchange constraint also incentivizes *informal workarounds* that have their own risks. As discussed in Section 5.1, the burgeoning use of cryptocurrency (stablecoins) by the diaspora and traders is one response to rigid FX controls. In the export context, there are anecdotal reports of merchants using stablecoins or offshore accounts to settle trade transactions outside of official channels to avoid delayed bank processes. While this can ease individual deals, it exists in a legal gray area and underscores that the formal system is not fully meeting market needs. Overall, foreign currency shortages and controls act as a brake on Ethiopia's agricultural trade: they limit producers' ability to import inputs timely, complicate payment arrangements, and introduce uncertainty and extra cost at nearly every step. Any new solution aimed at improving supply chain finance must therefore contend with Ethiopia's FX environment – ideally finding ways to bring in more hard currency (e.g. via diaspora investment)

and to reduce the frictions of currency conversion in trade transactions, all while staying within (or helping to evolve) the regulatory framework.

5.4.4 Blockchain-Based Supply Chain Finance: Improving Transparency, Traceability and Liquidity

Blockchain and digital asset technology offer a compelling way to tackle these entrenched problems by tokenizing the agricultural supply chain and its financial flows. The core idea is to use a blockchain platform as a shared ledger for all parties – farmers, cooperatives, transporters, banks, buyers – so that the status of goods and related documents is recorded in real time and transparently accessible to authorized participants. By doing so, one can turn physical agricultural products and trade receivables into *trustworthy digital assets* that can be financed and traded more easily. In practical terms, as soon as a batch of produce (say 20 tons of coffee) is harvested and delivered to an approved warehouse or processing center, a digital token can be created on the blockchain to represent a claim on that specific batch. This token functions like an electronic warehouse receipt or an invoice for goods-in-transit. Because the blockchain record is tamper-proof and updated with each supply chain event (e.g. quality inspections, storage conditions, shipments), any stakeholder can verify that the underlying asset – the coffee – indeed exists in the stated quantity and quality. IoT sensors or mobile data uploads can feed information like weight, moisture content, location, and certification status onto the ledger at each step.

With this infrastructure in place, small suppliers can unlock badly needed liquidity by leveraging their on-chain assets. A farmer or cooperative holding a token for their crop can use it to obtain financing *immediately*, rather than waiting until after export. For instance, through a smart-contract platform, the cooperative could sell that token or borrow against it to get an advance payment (perhaps in the form of a stablecoin or digital birr) from a financier. The financiers in such a system could be traditional banks and microfinance institutions, or new actors like fintech lenders, diaspora investors, and even international buyers participating via the blockchain network. What gives lenders confidence to provide funds is the *transparency of the collateral*: all parties can see that the coffee batch is real, stored securely, and has not been double-pledged or tampered with, because every movement and ownership transfer is logged on-chain. This greatly reduces the risk of fraud and default, lowering the risk premium that lenders usually add. In effect, the supply chain itself becomes collateral – a dynamic form of collateral that is constantly validated by data. A smart contract governing the token can be programmed with the financing terms: for example, it may stipulate that the token (which represents the coffee) *can only be redeemed by the overseas buyer once payment is made in full*. When the coffee is eventually sold to the foreign buyer, the blockchain can automatically release a portion of that sale proceeds to repay the lenders who financed the farmer, minus any agreed fees. This automated settlement ensures that lenders are paid back first out of the actual trade revenue, which aligns incentives and reduces manual intervention.

Such a blockchain-based supply chain finance system directly addresses the pain points outlined earlier. First, it injects trust and transparency: every actor sees a single source of truth about inventories, shipments, and payments, mitigating disputes and information asymmetry. Small farmers gain visibility into where their product is and can track the status of payment, alleviating the uncertainty that breeds distrust (as evidenced by farmers in Jimma who were unsure why buyers delayed payments) (AgUnity, 2021). In pilot projects, giving farmers access to immutable records of transactions has even increased their bargaining power, as they can prove delivery volumes and quality, preventing its misrepresentation by intermediaries (AgUnity, 2021). Second, the approach short-circuits the long payment cycle by providing liquidity as soon as goods are delivered and verified. In a real-world example, smallholder farmers have used a blockchain platform to tokenize crops (e.g. coffee) and secure financing *before* harvest is completed. Smart contracts on the platform released funds to farmers the moment a sensor confirmed the crop's delivery to a warehouse, rather than after the eventual export sale. This meant farmers got paid at harvest time (when their need for cash is highest) instead of months later, while lenders were repaid automatically once the export sale occurred. Transaction speeds are accelerated across the board: digitizing documents like bills of lading and quality certificates on the blockchain can eliminate weeks of waiting for paperwork to be couriered or verified, thereby reducing port and customs delays.

Crucially, blockchain's traceability features tackle the ESG and compliance gaps in Ethiopia's supply chains. By recording the journey of goods from farm to port, including GPS coordinates of farms and timestamps of each custody transfer, the system can provide auditable proof of origin. This directly helps with regulations like the EU Deforestation Regulation – each tokenized batch of coffee or sesame could carry attached data showing the farm plot (and confirming it isn't from a prohibited area) along with certifications (organic, fair trade, etc.) logged by authorized agencies. Buyers and regulators could instantly query the blockchain for this information, vastly simplifying due diligence. In essence, the export product comes with a digital "passport" of its history. That level of traceability not only ensures compliance but can also fetch price premiums from sustainability-conscious buyers. It opens opportunities for ESG-linked financing (for instance, a lender might offer better rates for crops verified as climate-friendly) and for carbon credit or impact tokenization down the line. The immutable ledger of how a crop was produced and transported builds trust with international partners. It is telling that Ethiopian officials have already piloted blockchain for coffee traceability to certify origin and quality – a sign that digitizing the supply chain is viewed as key to remaining competitive in exports. By integrating financing into such traceability systems, Ethiopia could create a virtuous cycle: transparency reduces risk, which lowers financing costs and attracts more capital, which in turn helps producers grow more and better quality output. Studies of similar pilots abroad are encouraging: a recent blockchain trade experiment by a global commodity firm significantly speeded up payments to farmers, demonstrating that cutting out paper and using shared digital ledgers can reduce transaction times from days to hours. In summary, tokenized supply chain finance can transform Ethiopia's agricultural trade by making the invisible visible – turning bags of coffee, loads of livestock, or tons of sesame into digital

assets that can be tracked, verified, and financed in real time. This leads to faster payments for producers, improved trust and data for all stakeholders, and a more resilient supply chain that meets global standards. Buyers get more reliable, transparent sourcing; farmers get paid promptly and fairly; financiers get new investable assets with lower risk. The entire chain becomes more efficient and investable once underpinned by a secure digital infrastructure.

6.4.5 Engaging Diaspora, International Buyers, and Financial Institutions

One of the most powerful aspects of a blockchain-based trade finance platform is its ability to open up new pools of capital and participants to Ethiopia's agricultural sector. By tokenizing commodities and invoices, investment in the supply chain is not limited to local banks or a few large buyers – it can be democratized and globalized in a controlled manner. The Ethiopian diaspora, international commodity buyers, and impact-focused investors can all play roles in this digital ecosystem, bringing in much-needed foreign exchange and funding.

Diaspora investors are a natural constituency to leverage. Ethiopia's diaspora already sends over $5 billion in remittances each year, reflecting both their financial strength and desire to support the homeland. Tokenized agricultural assets present a channel for diaspora engagement beyond traditional remittances or occasional diaspora bonds. For example, an Ethiopian living in the US could use a licensed online platform to purchase tokens that represent a stake in a shipment of coffee or a batch of sesame seeds destined for export. Their investment (in hard currency) would provide working capital to farmers immediately, and when the goods are sold internationally, the diaspora investor would receive their principal plus a return, paid out via the smart contract. This model lets diaspora members earn a return while also directly supporting Ethiopian farmers, marrying profit with impact. Because everything is transparent on-chain, diaspora investors can see exactly which cooperative or community they are funding and track the progress of the goods, addressing the trust issues that plagued earlier diaspora investment schemes. (In the past, some diaspora-targeted projects – e.g. real estate or infrastructure bonds – failed to gain traction due to lack of transparency and doubts about how funds were used. A blockchain system provides real-time accountability.) Indeed, tokenization can enable the diaspora to participate in Ethiopia's growth at a much larger scale: rather than soliciting donations or low-yield bonds out of patriotism, the government or agritech startups could offer market-based instruments that appeal to diaspora investors' sense of purpose *and* return. Studies suggest diaspora investors might accept slightly lower returns or higher risk if they know their money is going into a project with social impact back home – for instance, financing a coffee collective or a warehouse expansion – especially if the process is easy and trustworthy. By tapping even a fraction of the diaspora's wealth (recall the $6 billion surge in formal remittances in 2023/24), Ethiopia could bring in significant foreign exchange to fuel export growth. Importantly, these flows would come through formal channels

if structured properly (e.g. via regulated security tokens or crowdfunding exemptions), thus complementing official reserves rather than bypassing them.

International buyers and traders would also benefit and can contribute in a tokenized supply chain finance system. Major coffee roasters, sesame importers, or flower wholesalers overseas often have a strong interest in securing stable supply with consistent quality. With greater transparency into the Ethiopian supply chain (via on-chain data on farming practices, quality metrics, and certifications), these buyers could be more confident in extending *pre-harvest financing or forward purchase agreements*. On the blockchain platform, a buyer could effectively pre-pay for a commodity by purchasing its token upfront – providing the exporter/farmers with liquidity – and then redeem that token for the actual goods upon delivery. This is akin to traditional trade finance (like pre-export advances or letters of credit) but can be done more directly and faster on a digital platform. For example, a European coffee company could send a stablecoin payment to a cooperative's wallet as soon as a batch of coffee is graded and tokenized, rather than waiting until the coffee physically arrives in Djibouti or Europe. In return, the company holds the token guaranteeing ownership of that coffee. They gain assurance of supply (the coffee is reserved for them and tracked) and verification of its origin and ESG attributes, which they can in turn convey to consumers or regulators. Such integration of buyers builds trust and partnership: instead of adversarial price haggling, the relationship shifts to co-investment in the supply chain. International buyers also bring in foreign currency directly to producers through these mechanisms, reducing reliance on local banks for trade credit. Some global commodity houses have already piloted blockchain-based trades where financing was provided on-platform by the buyers' banks, significantly shortening the payment cycle for farmers. Ethiopia's exporters could similarly partner with their overseas clients to transact on-chain, ensuring quicker payment and possibly better pricing (as fewer intermediaries are involved).

Local financial institutions – banks, microfinance, and cooperatives – would remain crucial players but with enhanced roles. Rather than seeing blockchain trade finance as a threat, banks could use it as a tool to lend more securely to agriculture. For instance, an Ethiopian bank could integrate with the platform to provide loans against warehouse tokens, knowing that the collateral is trackable and that repayment will be automated from export proceeds. This can lower the banks' risk and administrative cost for agricultural lending, making them more willing to serve small clients they used to avoid. It also gives banks new fee-based business (e.g. acting as settlement agents or custodians for digital assets) in an eventual regulated framework. There is also potential for public-private programs: international development banks or impact funds might join the platform to co-fund loans or guarantee tokenized assets, blending their capital with market investors to spur rural lending. Ethiopia's government, for its part, could incentivize adoption by offering partial guarantees on tokenized warehouse receipts or by using the diaspora funds raised through tokens to complement its own export promotion efforts.

ESG and sustainability-linked investment can be a natural byproduct of this ecosystem. Diaspora and foreign investors could choose to fund tokens that correspond to, say, organic coffee or climate-resilient crops, knowing that the blockchain will verify the product's attributes. This could channel more money into sustainable practices – for example, a green fund might buy tokens from farmers who follow zero-deforestation guidelines, directly rewarding and financing those who meet ESG criteria. Over time, a rich dataset of on-chain information about farming practices, carbon footprint, and community impact could be leveraged to issue green bonds or carbon tokens tied to the agricultural sector, unlocking yet another tier of investment.

In summary, a tokenized supply chain finance approach broadens the tent of who can support Ethiopia's agriculture. It creates a bridge between small rural producers and global capital: diaspora members can be lenders or investors motivated by both profit and homeland development; foreign buyers can become proactive partners financing the upstream supply they rely on; and local financial institutions can increase their agricultural portfolio with better safeguards. All of these contributions bring in foreign exchange and investment to the sector, helping to ease the forex constraints mentioned earlier. The key is that blockchain provides the transparency and security to make such multi-party arrangements feasible at scale – something that was exceedingly difficult with paper records and opaque chains. By leveraging these new sources of financing, Ethiopian farmers and exporters can reduce their dependency on exploitative middlemen and costly informal credit, and instead plug into a more efficient, trust-based network of stakeholders. This *inclusive financing* could stimulate rural entrepreneurship, improve farmers' incomes, and strengthen Ethiopia's position in global markets through more reliable supply chains and compliance with international standards.

6.4.6 Legal and Regulatory Considerations

Implementing blockchain-based supply chain finance in Ethiopia will require careful attention to the legal and regulatory framework. On the one hand, Ethiopia has already put in place some building blocks for digital and asset-backed finance; on the other hand, significant updates will be needed to fully enable and recognize tokenized assets in trade. A foremost consideration is the legal status of tokenized commodities and receivables. Essentially, when a digital token represents a physical asset (like a sack of coffee in a warehouse), the law must acknowledge that token as a valid title or claim on that asset. Ethiopia's recent efforts with warehouse receipts are a stepping stone in this regard. The National Warehouse Receipt System (NWRS) and the Movable Property Security Registry (MPSR) have been introduced to let farmers and agribusinesses use commodities and other movable assets as loan collateral (NBE, 2025). Loans are already being disbursed against warehouse receipts (including those issued via the Ethiopian Commodity Exchange), which are then registered as security in the collateral registry (NBE, 2025). However, agricultural assets still form a tiny fraction of formally recognized collateral – less than 1% of total registered assets by value (NBE, 2025). This implies that while the legal tools exist, they are not yet widely used, perhaps due to trust and verification issues. A blockchain platform could bolster this system by providing a more robust audit trail for such

assets, but it would likely require regulatory approval to integrate with the NWRS. Legislators may need to amend the Warehouse Receipts Proclamation (and related regulations) to explicitly allow digital tokens to serve as electronic warehouse receipts. This includes defining how the transfer of a token equates to transfer of ownership of the underlying commodity, and ensuring that token-holders (who might be foreign investors or diaspora) have clear enforceable rights to the asset or its proceeds. Contracts will have to clarify what happens in cases of default or dispute – for example, which party has claim to the goods if a farmer fails to deliver quality produce, or how arbitration is handled if data on-chain is contested.

Another area is the treatment of these tokens under securities and banking law. Depending on how the tokenized financing is structured, the tokens could be viewed as debt securities, investment contracts, or simply trade instruments. Ethiopian regulators – notably the National Bank of Ethiopia (NBE) and the fledgling Ethiopian Capital Market Authority (ECMA) – will need to provide guidance on this. If farmers or co-ops are effectively raising financing from the public (including diaspora abroad) via token sales, this starts to resemble a securities offering, which would invoke prospectus requirements, investor protection rules, etc., unless done in a sandbox or under exemptions. The new Capital Markets Proclamation (2021) and ECMA's directives will have to catch up to such innovations. There might be a need for a regulatory sandbox specifically for digital trade finance, where rules around forex, banking, and capital markets can be temporarily relaxed or simulated to test these solutions safely. Encouragingly, Ethiopian officials have signaled that a broader crypto-assets regulatory framework is in development and slated for approval by 2025. Up to now, Ethiopia's stance on cryptocurrency has been very strict – effectively banning crypto trading and usage as a means of payment – which means any blockchain applications in the country have had to be permissioned and closely watched. If the forthcoming framework opens the door for certain digital asset activities under license, this could provide an avenue to formally implement tokenized supply chain finance. We might see, for instance, the designation of "Agricultural Trade Tokens" that are exempt from the blanket crypto ban, given their economic utility. Regulators will still prioritize controls on AML/CFT (anti-money laundering and countering financing of terrorism), so the platform would need built-in KYC for all participants and clear audit trails for token transactions (which blockchain inherently provides). In fact, the draft crypto rules emphasize compliance with AML/KYC for any crypto-related services – a requirement that a supply chain finance network can meet by limiting access to vetted farmers, cooperatives, and accredited investors/diaspora members. Data privacy and ownership rights also surface: farmers will want assurances that sensitive data (like farm GPS coordinates or yield figures) submitted to the blockchain for traceability will not be misused. Crafting a data governance policy, possibly under Ethiopia's recently adopted data protection laws, will be important.

Foreign exchange regulations present a unique challenge and opportunity. The platform we envision brings in foreign investors directly to finance local agriculture. Under current rules, foreign lenders to Ethiopian entities typically require NBE approval and must register the debt. However, small-scale lending via tokens by potentially thousands of diaspora individuals doesn't fit neatly in existing categories. Policymakers would need to define how diaspora funding through tokens is treated – is it a form of export pre-payment (which is generally

allowed), or external debt, or something else? There may be a case for treating it as advance payment for exports, which would be simpler: essentially, diaspora investors/buyers are pre-paying for a commodity and thus no foreign loan per se is incurred. Such pre-payments are already encouraged in export policy to improve FX inflows. If classified that way, one must ensure the structure isn't abused for pure financial speculation. Alternatively, Ethiopia could create a new class of diaspora investment instruments under the investment law or diaspora proclamations, carving out a space for these digital investments with limits to protect against capital flight. The recent increase of the forex retention threshold to 50% shows regulators are trying to balance liquidity with exporter flexibility (Serrari Group, 2024). A successful token system that brings more dollars might actually ease pressure on the birr and align with the central bank's goals – but this requires a collaborative regulatory approach, not an adversarial one.

Finally, practical legal issues around enforcement and infrastructure must be addressed. Smart contracts can automate agreements, but their outcomes (like transferring asset ownership or enforcing collateral seizure) need to be recognized offline. For instance, if a farmer defaults and the token representing their goods was sold to an investor, Ethiopian law and courts should recognize that the token holder has the right to claim the physical goods (or insurance payouts, etc.). This might entail updating commercial code definitions of negotiable instruments or property titles to include digital tokens. The judicial system will also need capacity building to understand blockchain records as evidence. Moreover, standardization will be key: collaborating with regional or international bodies on standards for electronic warehouse receipts and bills of lading will make it easier for foreign buyers and banks to accept these digital documents.

In summary, while the technology is ready, the legal framework in Ethiopia will need modernization to fully support blockchain-based trade finance. Key actions include legally defining tokenized commodities, ensuring compliance with securities and forex rules, enabling electronic documentation, and protecting participants through smart regulation. The good news is that Ethiopia is already moving toward digital finance reforms – from the ECMA's establishment to the upcoming crypto guidelines – and has shown interest in using blockchain for supply chains. Early pilots can be conducted under close regulatory oversight (for example, as part of the NBE's fintech sandbox or a special arrangement with the Ministry of Trade). These pilots will help identify any regulatory gaps. The overarching principle should be to protect against fraud and systemic risk without stifling innovation. Robust identity verification, audit rights for regulators (perhaps a node on the blockchain run by NBE or ECX), and transaction caps in the initial phase could allay concerns. As one study noted, blockchain's effectiveness still hinges on the accuracy of input data and the trustworthiness of participants (Demere, M. et al., 2024) – no law can change that, so implementation must involve training farmers and cooperatives to input correct information and follow the new processes. With supportive legal reforms and capacity building, Ethiopia can create a conducive environment for digital asset adoption in agriculture, transforming a traditional sector into a more transparent, efficient, and investable domain.

6.4.7 Summary and Outlook

Ethiopia's agricultural export sector stands to be one of the biggest winners from strategic digital asset adoption. The current supply chains for coffee, oilseeds, flowers, livestock and more are riddled with friction – fragmented actors, slow paper-based workflows, limited traceability, scarce financing, and foreign exchange hurdles all undermine the country's potential. Blockchain-based supply chain finance directly targets these pain points by fusing *traceability with tradable finance*. It creates a system where every bag of coffee or kilo of sesame can be tracked and turned into a digital token, allowing farmers to get paid immediately and lenders to fund agriculture with confidence in the collateral. The result is a more liquid, transparent value chain: smallholders and cooperatives would no longer wait months for payments, exporters could more easily obtain working capital, and all participants would share a single source of truth on product origin and status. Such a system would help Ethiopia meet stringent international standards (by proving compliance with ESG and safety requirements), thereby safeguarding access to key markets. It would also attract new investment – tapping diaspora capital and impact investors to complement traditional banks – injecting much-needed foreign exchange into the rural economy. In essence, digital tokens can turn Ethiopia's agricultural outputs and receivables into inclusive financial assets, bridging the gap between a farmer's storage shed and a global financier's portfolio.

Realizing this vision will require proactive effort on multiple fronts. Technically, significant upgrades in rural connectivity and digital literacy are needed so that farmers and cooperatives can use blockchain apps and IoT devices reliably. Institutionally, stakeholders such as the Ethiopian Coffee and Tea Authority, cooperative unions, and commodity exchanges would need to champion these tools and ensure quality data entry and adherence to new processes. The feasibility is bolstered by early signs of government support – for example, pilot projects in coffee traceability and a general openness to fintech innovations aligned with national strategies. Policy-wise, Ethiopia must adapt its regulatory framework to accommodate tokenized assets, allowing innovations to flourish under appropriate safeguards. The upcoming regulatory moves (like the crypto asset framework and capital market developments) are timely opportunities to carve out space for blockchain in trade finance. Collaboration with development partners can also help de-risk and fund initial pilots, as seen with similar projects in other emerging markets.

In the bigger picture, empowering the agricultural supply chain with blockchain and digital finance can be transformative for Ethiopia's economy. Agriculture is the backbone of livelihoods and the top foreign currency earner; making it more efficient and fair has multiplier effects on poverty reduction, forex stability, and export growth. Farmers would gain higher incomes and resilience (no longer forced to sell at distress prices), while exporters could scale up knowing they have streamlined operations and financing. The country could better retain value from its exports by proving their quality and origin (improving its brand in international markets). Over time, one could envision a virtuous cycle where successful implementation in

one value chain (say coffee) is replicated in others (like livestock or horticulture), and where Ethiopia even becomes a regional leader in agri-tech innovation, exporting its model to neighbors.

There will be challenges to overcome – from ensuring data integrity to training a vast number of participants and synchronizing agencies like customs, banks, and port authorities. Risks such as cyber-security and potential resistance by entrenched intermediaries must be managed. But the feasibility analysis suggests the rewards far outweigh the risks. By leveraging blockchain-based supply chain finance, Ethiopia can modernize an age-old sector in a way that *directly addresses its local constraints* (finance gaps, FX shortages, traceability issues) while aligning with global trends towards digital trade and sustainable sourcing. In conclusion, the agricultural supply chain use-case for digital assets is not a tech fad but a pragmatic solution for Ethiopia: it promises greater transparency, trust, and access to capital in a sector that underpins the nation's future. With prudent regulatory enablement and phased implementation, tokenized supply chain finance could become a cornerstone of Ethiopia's drive to a more inclusive and prosperous digital economy.

6.5 Tokenized SME Fundraising – ICO & STO in Ethiopia

Ethiopian startups and small businesses face chronic funding shortages. Traditional financing channels serve only a fraction of SMEs – fewer than 1% of Ethiopian SMEs obtain bank loans, while roughly 70% rely on personal savings or family funds to start or grow their business. Commercial banks often demand high collateral (often 200–300% of loan value) and view SMEs as too risky, creating a "missing middle" of firms that are too large for microfinance but not served by banks. Venture capital and angel investor networks in Ethiopia remain nascent and under-capitalized, so most entrepreneurs have few options beyond self-funding. This financing gap severely limits SME growth and innovation, impeding job creation and economic diversification. Even foreign investors have been deterred by restrictive rules (until recently a $150,000 minimum investment was required), stifling external equity funding for startups (Clynch, H., 2024). In summary, Ethiopian SMEs struggle to raise capital under the status quo – a problem that tokenized fundraising aims to address.

6.5.1 ICOs and STOs – Concepts and Global Developments

Initial Coin Offerings (ICOs) and Security Token Offerings (STOs) have emerged globally as innovative fundraising models enabled by blockchain. In an ICO, a project sells digital tokens (often utility tokens) to the public to raise capital – akin to crowdfunding on the blockchain. ICOs boomed around 2017–2018 as a fast way for startups to raise money, but many were

unregulated and speculative. In contrast, an STO involves issuing tokenized securities (debt, equity, or revenue-sharing tokens) under regulatory frameworks, granting investors legal rights similar to stocks or bonds. STOs thus blend blockchain's efficiency with the disclosures and investor protections of traditional securities markets.

Global trends show both approaches evolving. Nigeria's regulators, for example, have begun to accommodate tokenized fundraising: in late 2023 the Nigerian SEC approved a blockchain platform to tokenize real estate assets, as part of a regulatory incubation program. This pilot targets Nigeria's $2.2 trillion property market and explicitly aims to attract diaspora investors through digital tokens. Estonia, a pioneer in e-government, explored a state-backed ICO – the proposed "estcoin" – to leverage its e-Residency program for global fundraising (Korjus, K., 2017). While the European Central Bank curbed Estonia's plan to issue a national crypto-token, the country positioned itself as a haven for ICOs by allowing e-residents to launch token sales under clear guidelines (Wong, J. I., & Wong, J., 2017). Kenya's experience highlights the importance of regulation: Kenya's Capital Markets Authority warned in 2018 that no ICO had been approved and that ongoing coin offerings were unregulated, high-risk ventures prone to fraud and information asymmetry (Capital Markets Authority Kenya, 2018). At the same time, Kenyan regulators acknowledged the potential of fintech and indicated willingness to engage with innovators via a regulatory sandbox program (Capital Markets Authority Kenya, 2018). These global developments illustrate both the opportunities and the cautionary lessons of tokenized fundraising – informing how Ethiopia might chart its own path.

6.5.2 Benefits for Ethiopian SMEs and Diaspora Engagement

Tokenized fundraising – whether via ICO or STO – could significantly broaden financing options for Ethiopian SMEs, while also engaging the diaspora as investors. By issuing digital tokens representing equity or debt, SMEs can reach a global pool of investors online, rather than depending solely on local banks or a few wealthy individuals. This enables fractional ownership and micro-investments: a business could raise funds by selling many small token stakes, allowing even modest investors (including diaspora members) to participate. For Ethiopia's large diaspora community, token offerings provide an accessible way to invest back home without cumbersome bank transfers or middlemen. Diaspora investors could directly purchase tokens in Ethiopian ventures from abroad, injecting foreign capital into SME sectors. Notably, tokenization can turn the diaspora's remittance outflows into equity investments – a more sustainable contribution to development. Past schemes like Ethiopia's diaspora bonds met limited success due to trust and liquidity issues, but blockchain tokens offer greater transparency and the possibility of secondary trading, which may bolster diaspora confidence.

Several specific benefits stand out:

- Lower Cost and Complexity: Conducting an STO on a blockchain can be cheaper than a traditional public offering. SMEs avoid many intermediaries (underwriters, registrars,

etc.), as the blockchain handles ownership registration and transfer of tokens automatically. This makes raising, say, $500k–$5M via tokens more feasible for a small firm, whereas such a sum might be too costly to raise on a stock exchange or via bonds in Ethiopia's nascent capital market.

- International Investor Access: Token offerings are inherently borderless – investors worldwide can participate (subject to KYC/AML checks coded into the token smart contract). This means Ethiopian startups could tap into pools of capital in tech hubs or attract impact investors abroad. The Ethiopian diaspora, in particular, can be mobilized. Many diaspora Ethiopians are eager to support businesses at home; token platforms would give them a formal, transparent channel to do so. Unlike traditional shares, tokens can be issued in small denominations, so diaspora members could invest even $100 or $1000 in a venture and trade those tokens for liquidity if needed.

- Liquidity and Secondary Markets: Investors in SME tokens could potentially trade them peer-to-peer or on digital asset exchanges. This liquidity is a major advantage over conventional private equity – currently, anyone investing in an Ethiopian SME (say through a private share purchase) would have virtually no way to sell that stake. With tokens, a 24/7 marketplace can exist, making investors more willing to commit funds knowing they aren't completely locked in. Liquidity also means tokens could carry a market-driven price, providing continuous feedback on the company's valuation.

- Transparency and Trust: Blockchain's immutable ledger increases transparency. All token transactions and ownership stakes are recorded on-chain for stakeholders and regulators to see. Smart contracts can be programmed to enforce investor rights – for example, automatically distributing dividends, or preventing unauthorized token transfers. This automation builds trust: investors have cryptographic proof of their ownership and entitlements. For SMEs with community investors, it means clear, tamper-proof records of who owns what. Such transparency could help overcome the trust deficits that have hampered past investment schemes in Ethiopia. Indeed, the World Bank notes that distributed ledger platforms can enable SMEs to raise funds in a more direct, peer-to-peer manner while lowering barriers to investment and ensuring compliance through code.

In sum, tokenized SME fundraising could democratize access to capital. By enabling fractional, cross-border investment with built-in protections, it offers a novel way to connect Ethiopia's entrepreneurs with the diaspora and global investors – unlocking new funding streams for growth.

6.5.3 Risks, Legal Considerations, and Regulatory Evolution

Despite its promise, tokenized fundraising carries significant risks that Ethiopia must carefully manage. A major concern is the potential for fraud and investor losses if ICOs are launched in

an unregulated environment. The 2017 global ICO frenzy showed that without oversight, many token sales devolved into scams or highly speculative ventures, harming investors and reputations. Ethiopia's regulators will want to avoid a scenario where uninformed citizens or diaspora are sold "hype" tokens with no recourse. The Kenyan CMA's caution exemplifies this: it flagged the risks of unregulated ICOs (fraud, lack of disclosure, price manipulation) and emphasized that token offerings involve information asymmetries that could exploit retail investors (Capital Markets Authority Kenya, 2018). Investor protection is thus paramount – any legal framework must require adequate disclosure, fit-and-proper issuers, and perhaps investor qualification for higher-risk offerings.

Macroeconomic and financial stability considerations are also at play. Ethiopian authorities have historically been wary of cryptocurrency because of concerns about capital flight and monetary sovereignty. If large amounts of funds were raised via token sales (especially if done in foreign stablecoins or crypto), it could enable untracked capital outflows or dollarization of investment flows. The National Bank of Ethiopia (NBE) explicitly banned cryptocurrency payments in 2022 out of fear that "unofficial digital dollars" could undermine the birr and complicate monetary policy. Officials worry that rampant crypto trading or fundraising might bypass exchange controls and draw liquidity out of the formal financial system. These concerns are valid – a recent Center for Global Development brief warned that widespread stablecoin use could erode African countries' public finances by reducing use of local currency. Tokenized fundraising must therefore be introduced in a measured way that doesn't jeopardize Ethiopia's financial stability. For example, limits on raising funds in foreign crypto vs. local currency, or requirements to convert raised funds into birr, might be considered initially.

At present, ICOs and STOs have no official recognition under Ethiopian law – they would fall into a gray area. All cryptocurrency-related transactions are effectively illegal for payments, and no dedicated framework for digital securities exists yet (Chakrawarty, S., 2025). The Ethiopian Capital Market Authority (ECMA), established in 2022, is tasked with regulating securities and capital markets. Notably, recent directives indicate ECMA will oversee crypto-assets that qualify as securities, i.e. security tokens (Chakrawarty, S., 2025). Ethiopia is in the process of developing its crypto and digital asset regulations: a draft proclamation (No. 1359/2024) and related framework were being finalized as of mid-2025 (National Bank of Ethiopia & ECMA, 2025). Early signals show a cautious opening – *crypto trading remains banned*, but authorities plan to license certain activities (like mining and exchanges) under strict conditions (National Bank of Ethiopia & ECMA, 2025). ICOs/STOs are not yet permitted, and would likely be considered high-risk investment offerings under current policy (Chakrawarty, S., 2025). However, the fact that ECMA is identified as a supervisor for tokenized securities suggests the door is open to allowing STOs once investor protection rules are in place.

In crafting regulations for tokenized fundraising, Ethiopia can draw on international best practices. Key legal considerations include: mandating KYC/AML compliance for token issuers

and investors (to prevent illicit flows), requiring prospectus or whitepaper disclosures akin to a stock offering (so investors understand the project and risks), limiting who can invest in certain offerings (e.g. only accredited investors or diaspora for higher-risk tokens), and establishing clear tax and forex rules (e.g. how funds raised in crypto are converted and reported). Ethiopia's new Capital Markets Proclamation and the launch of the Ethiopian Securities Exchange (ESX) in 2025 provide a foundation – these institutions can be extended to cover digital securities. Notably, the ECMA could approve tokenized offerings under its existing mandate if they are structured as securities. In time, tokens might even be listed on the ESX or an alternative digital exchange, once regulations catch up.

Given the novelty, regulators might initially opt for pilot programs or sandboxes. Many countries have used regulatory sandboxes to allow fintech experiments in a controlled environment. While Ethiopia does not yet have a formal sandbox, officials have shown willingness to grant special permission for innovative trials under close supervision. A time-limited test of an SME STO platform (with capped investment amounts and strict reporting) could help regulators learn and adjust rules before wider rollout. Overall, legal reform will need to balance innovation with safeguards. The goal should be to protect investors and the financial system without stifling the transformative potential that tokenized fundraising holds for Ethiopia's "missing middle" finance gap.

6.5.4 Practical Application Models for Ethiopia

Implementing ICO/STO-based fundraising in Ethiopia will require a phased and context-aware approach. Below are realistic models for how the concept could be piloted and scaled:

Diaspora-Focused STO Platform (Sandbox Pilot):
A prudent first step is to launch a tokenized crowdfunding platform targeting Ethiopian diaspora investors, under a regulatory sandbox or pilot exemption. For example, a platform could be set up in partnership with a diaspora organization where vetted Ethiopian SMEs can issue security tokens to diaspora members. This platform would operate in a controlled environment (perhaps initially offshore or ring-fenced) with the approval of NBE and ECMA. By limiting participation to diaspora (who bring in foreign exchange) and enforcing investor caps, this model can mitigate domestic macroeconomic risks while testing the waters. Diaspora are a logical first market – they are often more familiar with digital assets and highly motivated to invest back home. A sandbox STO platform could allow, say, 10–20 SMEs to raise seed funding from diaspora token buyers, with regulators closely monitoring compliance and outcomes. The lessons from this pilot would inform the eventual wider rollout. This mirrors approaches elsewhere in Africa: Nigeria's regulatory incubator, for instance, is engaging diaspora through approved tokenization projects.

Private Tokenized SME Funds:

Another model is to create privately-placed investment funds that issue tokens representing a share in a portfolio of Ethiopian SME loans or equities. Rather than a public ICO, this would be a closed STO limited to qualified investors (e.g. domestic banks, DFIs, or foreign impact investors). For example, a local financial institution could launch a "SME Token Fund" where it tokenizes a pool of SME loans – investors who buy these security tokens effectively finance the loan portfolio and receive interest backed by the loan repayments. Such tokens would be considered securities and fall under ECMA oversight, but by keeping the offering private (perhaps under existing private placement rules) it could proceed before full public token regulations are in place. This model leverages blockchain's efficiency for administration (smart contracts to automatically distribute payments to token holders) while working within current legal constraints. It could also demonstrate to regulators that tokenized debt/equity instruments can perform transparently and fairly. If successful, these private token vehicles might later be opened to retail investors or scaled up via public markets.

Integration with the New Capital Market Infrastructure:
Ethiopia's nascent capital market institutions present an opportunity to "leapfrog" by incorporating digital securities from the outset. The Ethiopian Capital Market Authority should start developing guidelines to recognize and list security tokens as legitimate financial instruments. In practical terms, this could mean the Ethiopian Securities Exchange (ESX) eventually hosts a special segment for tokenized securities or partners with a technology provider to create a digital asset exchange under its regulatory umbrella. As Ethiopia finalizes its crypto asset proclamation, it can designate ECMA as the licensing authority for token issuance platforms. Integration could also involve using blockchain for efficiency in the traditional market – for instance, a company issuing an IPO on the ESX might concurrently issue a tokenized version of the shares for global investors. Over time, one can envision SME-focused segments on the stock exchange or parallel exchanges where smaller firms list tokenized equity and diaspora investors worldwide can trade them under Ethiopian oversight. Aligning token fundraising with ECMA and the ESX will lend credibility and investor protection, bridging the gap between traditional capital markets and Web3 finance. Notably, if security tokens are treated on par with stocks/bonds in law, they can benefit from the same legal protections (e.g. remedies for fraud, disclosure standards) which will be crucial for trust.

Phased Rollout with Education and Safeguards:
All models above should be accompanied by robust investor education and technical safeguards. Ethiopian regulators could require that any token offering prominently inform investors of risks (volatility, no guaranteed returns, etc.), much like a stock prospectus. Additionally, cybersecurity and fraud controls must be in place – smart contracts should be audited, and issuers vetted for credibility. A phased rollout might start with relatively simple instruments (e.g. tokenized debt with fixed returns) before more complex token structures. This phased approach allows the market and regulators to build capacity. Collaboration with development partners (World Bank, African fintech hubs, etc.) could provide technical assistance for designing these systems. The endgame is a sustainable model where tokenized

fundraising complements Ethiopia's conventional financial sector – SMEs gain a new lifeline of capital, while investors (domestic and overseas) gain new opportunities within a regulated framework.

6.5.5 Conclusion

Tokenized SME fundraising, through ICOs and STOs, represents a transformative opportunity to tackle Ethiopia's SME financing bottleneck. By leveraging blockchain technology, Ethiopian entrepreneurs could access capital from a much broader investor base, including the diaspora whose financial resources and goodwill remain underutilized. The ability to fractionalize investments, automate trust through smart contracts, and enable global trading of SME tokens could inject dynamism into Ethiopia's private sector – fueling startups and growth of small businesses that drive innovation and job creation. Importantly, these benefits come with significant responsibilities. To realize the potential, Ethiopian authorities must proceed deliberately: crafting regulations that protect investors and stability, starting with pilot programs, and building the necessary legal and technical infrastructure. If implemented with the appropriate safeguards, ICOs/STOs can be a catalyst for financial inclusion and economic development – turning Ethiopia's vibrant entrepreneurial energy and diaspora support into tangible investments via digital assets. In essence, tokenized fundraising could bridge the long-standing funding gap for SMEs, provided it is developed under prudent oversight. Done right, it offers a compelling complement to Ethiopia's ongoing financial sector reforms – marrying the innovation of Web3 with the confidence of sound regulation to unlock inclusive growth.

6.6 Key Takeaways

In summary, the five use cases demonstrate tangible ways that blockchain technology and digital assets can address Ethiopia's financing challenges. The table below provides a comparative overview of each use case, highlighting key benefits and the primary stakeholders involved. From lowering remittance costs to unlocking new investments for businesses and farmers, these applications show practical potential to make financial services more inclusive and efficient.

Use Case	Benefits	Stakeholders
Cross-Border Payments	Lowers remittance costs and speeds up transfers. Increases formal forex inflows into the economy.	Diaspora (senders), remittance-receiving households

DeFi Lending	Improves access to affordable credit for small businesses. Mobilizes diaspora capital for local lending.	SMEs (borrowers), diaspora investors, microfinance institutions
Tokenized Real Estate & Infrastructure	Unlocks capital from property and infrastructure projects. Enables fractional investment by diaspora and other investors.	Property owners/developers, diaspora investors, government (for infrastructure projects)
Agricultural Supply Chain Finance	Provides farmers with earlier payments and working capital Reduces financing risk through transparent transactions.	Farmers, agribusiness buyers, financiers (banks or investors)
Tokenized SME Fundraising	Enables SMEs to raise capital directly from investors via digital tokens. Broadens their investor base beyond traditional lenders.	SMEs, investors (including diaspora)

All five use cases involve different participants from diaspora and households to SMEs, farmers, financial institutions, and government agencies but they converge on common goals. Each aims to reduce inefficiencies, increase transparency, and expand access to finance in its respective area. If implemented with the right policies and safeguards, these blockchain-based solutions could help Ethiopia leapfrog traditional barriers, fostering greater economic inclusion and channeling new funding into productive sectors.

7 Ecosystem Mapping & Market Readiness

Ethiopia's digital finance sector is nascent but rapidly evolving. Notable fintech startups include Ethiopia's own blockchain-enabled solutions like WAGA, which is developing an Ethereum-based platform to trace coffee supply chains and tokenize coffee batches (WAGA Protocol, 2025). Regional fintech players also impact Ethiopia: for example, pan-African crypto exchanges like Yellow Card (Nigeria) and AZA Finance/BitPesa (Kenya) offer on-ramp services across Africa. Although no homegrown crypto exchange is licensed, global platforms (Binance, KuCoin, etc.) have African footprints and serve Ethiopian traders via peer-to-peer (P2P) channels.

Several tech hubs and incubators support fintech and blockchain innovation. Ethiopia's first incubator, iceaddis (est. 2011), and newer hubs like BlueMoon Ethiopia nurture local tech companies. By 2019 there were 15+ such hubs in Addis Ababa. Community groups are also active: for example, the Ethiopian Blockchain Network (a developer community) recently ran a

free Web3 training and Hedera hackathon program to educate 10,000+ Africans (including events in Addis) (Shega, 2024).These initiatives (plus general co-working spaces and university tech clubs) are building a foundation for blockchain skills.

7.1 Financial Institutions and Blockchain Initiatives

Major banks and regulators in Ethiopia have begun experimenting with distributed-ledger technologies, even as crypto remains heavily restricted. Most commercial banks (e.g. Commercial Bank of Ethiopia, Awash Bank, Dashen, Bank of Abyssinia) focus on core banking modernization and digital services, but have not launched consumer crypto products. A notable exception is Cooperative Bank of Oromia (Coopbank), which in October 2024 announced Ethiopia's first blockchain-based remittance service. In partnership with global fintech InFTF, Coopbank's new platform enables Ethiopian diaspora to send money home in under 3 seconds, using blockchain to cut fees and speed settlement (StockMarket.et, 2024). Coopbank's leadership expressly designed this service to boost inclusion in remote areas through secure, rapid transfers (StockMarket.et, 2024).

The central bank, the National Bank of Ethiopia (NBE), still forbids crypto transactions: in June 2022 it declared cryptocurrency trading illegal, mandating the birr as the sole legal tender. However, Ethiopia's leadership is "pivoting" from a hard ban toward cautious regulation. Since late 2022, the government's Information Network Security Agency (INSA) has begun drafting crypto guidelines and requiring service providers to register (Ishida, S. & Yoshida, Y., 2024). In mid-2024 the Council of Ministers approved banking reforms that explicitly prioritize launching a Central Bank Digital Currency (CBDC) pilot (Pessarlay, W., 2024). Under these reforms, the NBE plans to build legal and technological frameworks for a birr-backed digital currency (Pessarlay, W., 2024). Meanwhile, ties with international partners are growing: for example, IOHK/Cardano partnered with the Ethiopian government (with World Bank backing) to issue blockchain-based student IDs for 3,000+ schools (Ishida, S. & Yoshida, Y., 2024). (This World Bank–sponsored initiative – $350 million for national digital identity – reinforces government commitment to DLT solutions (Ishida, S. & Yoshida, Y., 2024).

7.2 Mobile Money and Telebirr

Mobile money is the main driver of digital finance in Ethiopia. Ethio Telecom's Telebirr – launched in 2021 – has exploded in usage. By mid-2025 Telebirr had 54.8 million registered users and processed ~4.9 trillion birr in transactions (FanaBC, 2025). This means well over 40% of Ethiopia's ~134M population actively uses Telebirr, making it a near-ubiquitous mobile wallet. The government and Ethio Telecom are linking Telebirr to mainstream finance: for example, in 2023 Ethio Telecom enabled a virtual Visa card on Telebirr, and in 2025 signed MOUs with Mastercard to integrate Telebirr with Mastercard's network (Nigussie, M., 2025).

At present Telebirr handles only birr-denominated transfers; crypto integration is not available, due to the NBE ban. However, Telebirr's massive reach makes it a potential future on-ramp for tokenized assets or stablecoins once regulations evolve. In contrast, Safaricom's M-Pesa (Kenya) entered Ethiopia in August 2023 and has ~3.1 million active customers (≈33% of the population) (Ishida, S. & Yoshida, Y., 2024). Uniquely, M-Pesa already supports buying/selling cryptocurrency: its Ethiopian platform lets merchants trade crypto and stablecoins on exchanges like Binance and Paxful (Ishida, S. & Yoshida, Y., 2024). This means M-Pesa users can gain crypto exposure via their mobile wallets, a function Telebirr currently lacks. The success of M-Pesa (3.1M active users by Dec 2023 (Ishida, S. & Yoshida, Y., 2024)) alongside Telebirr's dominance underscores Ethiopia's vast mobile finance market.

7.3 Connectivity: Internet and Mobile Penetration

Ethiopia has rapidly expanded telecom coverage but internet use remains limited. By early 2025 there were ~85.4 million active mobile SIM connections – about 63.8% of the population (DataReportal, 2025). Nearly all Ethiopian towns now have 3G/4G coverage (98% coverage reported) and Ethio Telecom has launched 4G service in 512 towns and 5G trials in major cities (FanaBC, 2025). Ethio Telecom reports 99.4% population coverage for its network and added 5.9 million new broadband users in 2024/25 (FanaBC, 2025). In other words, mobile phone access is high (score ~4/5).

By contrast, internet penetration remains low. Datareportal (Jan 2025) shows only ~28.6 million Ethiopian internet users (21.3% of the population) (DataReportal, 2025). Social media use is even smaller (just 6.2% of the population) (DataReportal, 2025). This digital divide – especially between cities (23.9% urban) and rural areas (76.1%) (DataReportal, 2025) – limits the pool of tech-savvy users and constrains fintech growth. In sum, Ethiopia has built basic mobile infrastructure (fiber and towers) and cheap hydroelectric power (5000+ MW capacity (Ishida, S. & Yoshida, Y., 2024)) that could support data centers, but its network and internet infrastructure are still developing.

7.4 Crypto Exchanges: Availability and Legal Status

Domestic crypto platforms: None are legally available. Because the NBE's policy forbids crypto trading, no Ethiopian exchange is licensed. All mentions of a "first blockchain remittance" or similar refer to underlying tech, not public crypto trading. In practice, Ethiopian crypto enthusiasts rely on foreign platforms and peer-to-peer (P2P) channels. For example, services like KuCoin P2P allow users to trade crypto directly using local payment methods, and platforms like LocalCoinSwap advertise support for Ethiopian mobile money, bank transfers and other local payment methods (Akindele, T.F., 2025). These international exchanges often require workarounds (e.g. crypto debit cards) since Ethiopian banks do not process crypto transactions.

International exchanges: Global giants (Binance, KuCoin, BitMEX, etc.) are technically accessible via VPNs or P2P, but they caution users that local laws are evolving. Binance's own educational content notes that Ethiopia "has officially prohibited" crypto trading, even as regulators draft rules. In 2024, reports estimated over 1.8 million Ethiopian crypto users (via cross-border apps) (Ishida, S. & Yoshida, Y., 2024), indicating underground demand. Despite the ban, anecdotal reports (e.g. on social media) suggest active use of Telebirr/M-Pesa for P2P trades, though this remains unregulated. In summary, exchange availability is low (score ~1–2/5) due to the ban; only offshore P2P and gray-market solutions are used.

7.5 International Partnerships and Actors

Several global organizations are influencing Ethiopia's digital finance landscape:

- **Mastercard & Visa:** Ethio Telecom has partnered with Mastercard to link Telebirr to Mastercard's network (Nigussie, M., 2025), and has rolled out a virtual Visa card for Telebirr customers. These tie-ups aim to broaden remittance and payment access.
- **World Bank / IOHK (Cardano):** The World Bank approved a $350 million project (Dec 2023) to create blockchain-backed student and teacher IDs on Cardano (Ishida, S. & Yoshida, Y., 2024). This is the largest blockchain initiative in Ethiopia, targeting 90 million people and highlighting government/NGO commitment to DLT.
- **Binance and Crypto Platforms:** Binance (global exchange) and affiliates have publicly chronicled Ethiopia's crypto transition (Ishida, S. & Yoshida, Y., 2024). They note that while trading is officially banned, there is growing mining activity and a community interested in crypto. Binance also partnered with Safaricom M-Pesa in other African countries, enabling M-Pesa crypto trading; the same model has extended to Ethiopia via M-Pesa's launch here (Ishida, S. & Yoshida, Y., 2024).
- **UNDP and Donors:** While no large UNDP-specific crypto pilot in Ethiopia is widely reported, the government's digital agenda aligns with UN/IMF programs. For example, Ethiopia's IMF-backed reforms and World Bank digital ID project imply that multilateral actors (IMF, AfDB, UNDP) indirectly support blockchain use-cases (identity, transparency). The national tech event ETEX 2025 (Gov't-led) has also signaled openness to innovation, inviting global tech leaders.
- **Regional Movers:** The arrival of Kenya's Safaricom/M-Pesa (Sep 2023 license) is a major foreign fintech presence. M-Pesa's Ethiopia arm collaborates with Binance/Paxful to enable crypto trades (Ishida, S. & Yoshida, Y., 2024). Chinese companies (West Data Group, Bitcluster, Hashlabs) have inked deals for large bitcoin mining, betting on Ethiopia's cheap hydro power. These international crypto miners (21 projects approved) showcase Ethiopia as a power-rich mining destination.

7.6 Market Readiness Score

Category	Score	Commentary
Infrastructure	3/5	Abundant renewable power and expanding 4G/5G networks. However, last-mile internet and fintech infrastructure (data centers, fiber, last-mile connectivity) remain underdeveloped, limiting sophisticated digital finance.
Regulation & Policy	2/5	The NBE maintains a strict crypto ban, though it is drafting crypto regulations and a CBDC framework. Policy signals are mixed: interest in blockchain (education IDs, mining) but no clear timeline for liberalizing crypto markets. Overall the regulatory environment is cautious to restrictive.
Institutional Capacity	3/5	Government and banks are building digital platforms (e.g. digital payments strategy) and engaging international partners (WB, IOHK). However, banking sector reforms (foreign entry, digital banking systems) are very recent and most institutions lack crypto expertise. Public institutions are experimenting but still building capacity.
Fintech Ecosystem Maturity	3/5	Ethiopia's fintech is young: Telebirr scaled massively in 2 years, and new entrants (M-Pesa, ArifPay, Chapa, BelCash, etc.) have emerged. Nevertheless, fintech funding is limited and few startups focus on blockchain. Compared regionally, Ethiopia's fintech is nascent but growing in payments and lending (all 2021–25 launches).
Mobile/Internet Access	4/5	Mobile phone penetration (~64% of population) and Telebirr use are very high. 4G now covers most towns. The main limitation is internet adoption (21% users). Overall mobile connectivity is strong (facilitating cashless services), scoring higher due to Telebirr's ubiquity.
Crypto Exchange Availability	0/5	No domestic exchanges - trading is illegal. Foreign exchange access exists only via creative workarounds (P2P, offshore platforms). As things stand, conventional crypto trading infrastructure is essentially unavailable.

Each score reflects Ethiopia's situation circa 2024–2025: robust in mobile money infrastructure and basic fintech, but constrained by low internet uptake and strict regulation. The ecosystem shows promise (e.g. large-scale Telebirr adoption and initial blockchain pilots), but true crypto and DeFi readiness remain low until policies liberalize and institutional capacity grows.

8 Regulatory and Legal Framework

8.1 Current Regulatory Landscape

Ethiopia currently has no dedicated law legalizing private cryptocurrencies, and the birr remains the sole legal tender. In June 2022 the National Bank of Ethiopia (NBE) reaffirmed that only the Ethiopian birr may be used for transactions and warned that crypto payments would be illegal (Nigussie Redae & Associates, 2025). In 2024 this stance was codified in law: Proclamation No. 1359/2024 explicitly bans cryptocurrency as a means of payment (Nigussie Redae & Associates, 2025). At the same time, the government has signaled a cautious openness to blockchain technology for other uses (e.g. in agriculture and land registry), even as crypto trading remains prohibited.

The NBE is the primary regulator for financial activities, so it leads on any crypto policies. The Ethiopian Capital Markets Authority (ECMA) is responsible for regulating securities markets, which in future would include any tokenized securities or ICOs. For example, ECMA issued a draft directive in 2024 on dematerialization of securities, paving the way for electronic trading (ECMA, 2024). The Ministry of Innovation and Technology (now part of the Ministry of Innovation, Science & Technology) is driving Ethiopia's broader digital agenda. It developed the National Digital Transformation Strategy (2023–2025) emphasizing a digital payments ecosystem (NBE, 2023), and has promoted blockchain pilots through public–private initiatives. In summary, authorities maintain a *cautious stance*: crypto-assets are not legal for payment, but regulators (NBE, ECMA and relevant ministries) are preparing tailored frameworks.

8.2 Recent Developments

Key policy milestones since 2022 include:

- 2022: The NBE issued public warnings and advisories, declaring that only the birr is legal tender (Nigussie Redae & Associates, 2025). Cryptocurrency transactions were explicitly discouraged, though the bank did not outlaw blockchain R&D.
- 2024: A surge in crypto-mining activity led the government to formally grant investment licenses to foreign and domestic mining firms. By mid-2024 over 20 operations had received permits, with investors drawn by Ethiopia's cheap renewable power (International Trade Administration, U.S. Department of Commerce, 2024). In August 2024 the ECMA launched a regulatory sandbox for fintech and blockchain innovators (UNDP, 2024), allowing startups to test digital financial products under supervision. Later in 2024, Parliament passed NBE Proclamation No.1359/2024, which explicitly banned all crypto payments (Nigussie Redae & Associates, 2025) and reaffirmed that only the birr can be used in trade.

- 2025: The NBE is finalizing a formal digital-asset framework. New *AML/CFT guidelines* are being developed to cover crypto-service providers (requiring KYC checks and suspicious-activity reporting for any licensed operators). At the same time, Ethiopia has started laying groundwork for a central bank digital currency. In 2024–25 the NBE prepared legal provisions for a "Digital Birr" and commissioned a CBDC feasibility study (**Andersen, D.**,2024). (These reforms are part of the Homegrown Economic Reform Agenda.)

Each of these steps – banning private crypto payments, regulating mining, enabling fintech testing and studying a CBDC – illustrates Ethiopia's progressive but guarded approach.

8.3 Regulatory Gaps and Issues

Despite recent moves, major areas remain unaddressed. Existing laws do not specifically cover DeFi platforms, NFTs, stablecoins or simple peer-to-peer crypto trading, since the focus has been on payments and mining. Similarly, no clear rules exist for ICOs or tokenized assets outside of the general securities law. Analysts note that Ethiopia's current AML/CFT laws have "strategic deficiencies" regarding cryptocurrencies (Gobena, M. A., 2021). Enforcement is also challenging: the pseudonymous nature of blockchain makes it hard for authorities to track illicit transactions, and regulators currently lack the technical capacity and legal tools to police decentralized networks.

By contrast, international bodies like the Financial Action Task Force (FATF) stress that countries *must* fill these gaps. The FATF warns that without effective virtual-asset regulation "significant loopholes" remain for criminals (FATF, 2024). Its standards now require licensing or registration of Virtual Asset Service Providers (VASPs) and strict KYC/CDD procedures (FATF, 2024). Ethiopia's policies, while building, are still behind these global benchmarks. For example, FATF calls on regulators to apply the same AML rules to crypto as to banks; Ethiopia's law has not yet explicitly applied Proclamation 780/2013 (anti-money laundering law) to crypto assets.

In summary, Ethiopia's approach remains nascent. Key innovations like DeFi, stablecoins and cross-border crypto payments lack any tailored framework. As one expert concludes, current norms simply do not comprehensively regulate the crypto-payment ecosystem (Gobena, M. A., 2021). This regulatory gap means the government must now balance innovation with oversight, learning from global best practice to avoid criminal exploitation while enabling useful blockchain solutions.

8.4 Future Outlook and Recommendations

Looking ahead, Ethiopia will need a phased, pragmatic rollout of regulations. Key suggestions include:

- Phased licensing regime: Gradually authorize crypto-related businesses. For example, Ethiopia could emulate Nigeria's pilot program (the SEC's Accelerated Regulatory Incubation Program) which temporarily registers crypto service providers for testing (SEC Nigeria, n.d.). A step-by-step licensing framework (starting with exchanges, custodians, and then DLT developers) would help regulators monitor risks and enforce AML rules without stifling innovation.
- Token offering frameworks: Introduce clear rules for initial coin offerings or security token offerings under existing capital market laws. ECMA could classify tokenized securities and set disclosure and investor-protection standards. This would provide entrepreneurs with a predictable process to raise funds via blockchain while protecting buyers.
- Diaspora engagement: Leverage blockchain to mobilize diaspora finance. The government could issue regulated "digital birr" bonds or facilitate blockchain remittance services for Ethiopians abroad. (For instance, Cooperative Bank's new blockchain remittance service for the diaspora shows promise.) However, international experience indicates success depends on strong legal safeguards and trust. Ethiopia should thus craft dedicated rules for diaspora investments or tokens, ensuring transparency and aligning with diaspora-bond guidelines.
- Alignment with global standards: Ensure new rules match FATF and other international norms. FATF explicitly calls for customer due diligence and the "travel rule" even for crypto transfers (FATF, 2024). Ethiopia's regulators should adopt these AML/CFT measures for virtual assets from the outset. At the same time, rules should be calibrated for Ethiopia's context: for example, imposing lower capital requirements on small fintech startups or tailoring disclosure rules to local investor sophistication. By blending global best practices with local adaptation, Ethiopia can foster innovation while maintaining financial stability.

In sum, Ethiopia's crypto regulations should evolve incrementally. Starting with clear licensing and AML mandates, and progressively enabling tokenized finance and diaspora use cases, will allow the government to mitigate risks. Throughout, coordination with NBE, ECMA and the ministry will be essential. Aligning with international frameworks (FATF, IOSCO, etc.) will also help Ethiopia integrate its digital asset policies into the global system, while accommodating its own monetary and financial priorities.

Literature: Ethiopia's regulatory documents (e.g. NBE proclamations, ECMA directives) and recent analyses inform the above. For example, Gobena (2021) argues that Ethiopia's crypto regulations are currently fragmented, and global bodies like FATF emphasize the need to supervise crypto providers (Gobena, M. A., 2021). These insights have shaped the recommendations above.

9 Technical Feasibility

9.1 Technology Infrastructure

Ethiopia has rapidly expanded its digital backbone in recent years, but significant gaps remain. Ethio Telecom now owns a national fiber-optic network of roughly 23,000 km (TS2, 2025). However, fixed broadband penetration is extremely low (only ~669,000 subscribers, ≈0.6% of the 120 million population) (TS2, 2025). Mobile networks cover nearly the entire population with 3G/4G and emerging 5G (piloted in Addis Ababa in 2022, expanding to other cities by 2023) (TS2, 2025). Mobile usage is high: about 85 million subscriptions (~64% of the populace) are active (almost all on 3G or better) (TS2, 2025). Despite this, speeds remain modest (median fixed-broadband ~9 Mbps) and rural connectivity is weak. Electricity access has improved (55% of people electrified by 2022, up from 20% in 2015 (TS2, 2025)), but reliability is uneven: even some urban grids experience frequent outages (e.g. >800 hours/year in the city of Debre Markos) (Agajie, T. F., et al., 2024).

Fiber & Mobile: Ethiopia's inland fiber spans thousands of kilometers, and 98–99% of mobile subscriptions use 3G/4G/5G networks (TS2, 2025). By late 2024 there were ~85 million mobile lines (≈64% of people) (TS2, 2025). 5G service began in 2022 (Addis pilot, national rollout in 2023). These assets make basic mobile and internet connectivity broadly available, but last-mile coverage and speed are limited outside cities.

- Power & Data Centers: New Tier-III data centers are coming online to support cloud and enterprise services (Wingu Africa, 2023). For example, Raxio (a private operator) opened Addis's first Tier-III facility in 2022, and Wingu (at the ICT Park) also launched a large carrier-neutral colocation center (designed with full backup power/cooling) in 2023 (Wingu Africa, 2023). These improve cloud access. At the same time, Ethiopia's power grid remains fragile. Only about half the population had reliable electricity by 2022 (94% urban vs. far fewer rural) (World Bank, 2025), and outages are common (Agajie, T. F., et al., 2024). In practice, blockchain nodes and data centers will likely be deployed in Addis and a few regional hubs where power is most stable.

Given these constraints, private or permissioned blockchain networks will generally be more practical than public ones. Permissioned ledgers (e.g. Hyperledger, Corda) can run on local servers or regional clouds, requiring less constant synchronization over limited internet. In contrast, public chains (full Ethereum or Cardano nodes) must continuously download and validate the full ledger, which strains bandwidth and storage. For instance, in benchmark tests Hyperledger Fabric (permissioned) handled far higher throughput and much lower latency than a private Ethereum network (Khan, M. M.,et al., 2025). In that study Fabric achieved ~5× the transaction rate and ~26× lower latency than Ethereum (albeit up to ~1,000 tx before

saturating) (Khan, M. M.,et al., 2025). In short, with Ethiopia's patchy connectivity and power, consortium blockchains (hosted on vetted nodes) are likely more reliable and cost-effective.

9.2 Blockchain Platforms and Standards

Several blockchain platforms could be suitable for Ethiopian use cases. Ethereum (public, Proof-of-Stake) is the most established smart-contract platform, supporting DeFi and tokenization standards (ERC-20, ERC-721, etc.). Its security and large ecosystem are strengths, but public Ethereum carries high transaction fees and heavy node requirements. In practice, Ethiopian projects might use Layer-2 solutions or private Ethereum networks to cut costs; one study noted private Ethereum could process up to 10,000 tx (with gas-fee delays) versus 1,000 for Hyperledger Fabric (Khan, M. M.,et al., 2025). Hyperledger Fabric (permissioned) offers modular consensus and no crypto-tokens. It excels in throughput for enterprise use (Khan, M. M.,et al., 2025) and can be tuned for low-bandwidth settings (since nodes are known and can operate over local networks). Fabric's reliance on periodic consensus rounds means it can be lighter on network traffic than a public chain. However, Fabric deployments require trusted intermediaries and governance, which may suit regulated sectors (banks, utilities).

Cardano is a public Proof-of-Stake chain (Ouroboros) with an academic approach to scalability. Cardano uses energy-efficient consensus (no mining) and supports native tokens. Crucially, Cardano/IOHK has active engagement in Ethiopia: in 2021 the Ethiopian government and IOHK agreed to use Cardano's Atala PRISM identity platform for the education system (Hochstein, M. & Baydakova, A., 2021). Under that pilot, some 5 million student and 750,000 teacher records would be managed on Cardano (Hochstein, M. & Baydakova, A., 2021). Cardano is also part of an Ethiopia coffee-traceability initiative: the Ethiopian Coffee and Tea Authority partnered with IOHK to develop a blockchain certification system for coffee (Acheampomaa, N. A. & Bellini, F., 2025), intended to verify quality and improve farmer compensation. These pilots illustrate Cardano's suitability for identity and supply-chain cases in Ethiopia.

In summary, platform trade-offs are clear: public chains (Ethereum, Cardano) give maximal openness but require robust infrastructure and face volatility in fees. Permissioned platforms (Hyperledger, Corda) can be leaner and cheaper (no per-transaction crypto fees) (Khan, M. M.,et al., 2025), which may favor applications like tokenized real estate or SME fundraising handled by consortiums of banks or regulators. In practice, a hybrid approach could be used: for example, private Ethereum or Hyperledger Fabric for on-chain financing (insider clearance, private data) with periodic anchoring to a public chain for auditability. Standards-wise, Ethereum's established token and DeFi protocols are an advantage for cross-border payments or lending, but alternatives like Stellar or local CBDCs (Digital Birr) could also emerge. Ethiopia is exploring token standards: for instance, plans for a "digital birr" (wholesale CBDC) have been reported in 2024–25.

9.3 Security and Data Considerations

Security is a major concern for any blockchain deployment. Ethiopia faces rising cyberthreats and fraud. A 2025 INTERPOL report found Ethiopia was "the world's most targeted country for cyberattacks" in 2024 (highest global rate of malware detections) (INTERPOL, 2025) . Similarly, Kaspersky's data (H1 2024) show 4,623 attempted cyberattacks on Ethiopian government and businesses (a 115% increase over 2023) (Positive Technologies, 2024). Common attack vectors include malware, phishing, and social-engineering scams. In the financial sphere, mobile-money fraud is growing across East Africa: scammers use SIM-swap and telecom impersonation to hijack users' wallets and solicit emergency payments (INTERPOL, 2025). Such threats would extend to blockchain platforms (e.g. swiping private keys or wallets). Robust security measures (encryption, regular audits, intrusion detection) will be essential.

On data protection, Ethiopia has only recently enacted a comprehensive law. In July 2024 the government issued the Personal Data Protection Proclamation (PDPP 1321/2024) (Tsebee, D. & Adaramola, V., 2024), establishing an authority to regulate personal data. Notably, the PDPP mandates that personal data be stored on local servers (data localization) (Tsebee, D. & Adaramola, V., 2024). This means any blockchain handling sensitive data (KYC/identities, health or land records) must ensure its nodes are in-country or that personal data on-chain is minimized. Projects will need to align with this law (e.g. by storing only hashes on-chain). The Digital Ethiopia 2025 strategy also includes a cybersecurity component (Positive Technologies, 2024), but implementation is nascent.

A key facilitator will be Ethiopia's emerging digital ID/KYC infrastructure. The new "Fayda" biometric ID (launched 2023 with TECH5/Visa) aims to register ~90 million adults by 2027 (Macdonald, A., 2025). By mid-2025 over 12.2 million Ethiopians had enrolled (Macdonald, A., 2025). Crucially, Fayda supports remote biometric verification: for instance, the Cooperative Bank of Oromia integrated Fayda for instant eKYC during account opening. Experts note that Fayda provides a tamper-proof identity foundation for digital services: "the [Fayda] ID is considered a vital tool for digital KYC in banking and fraud prevention" (Macdonald, A., 2025). For blockchain finance (DeFi lending, cross-border transfers), this means users can be uniquely identified while preserving privacy. Moreover, Ethiopian banks and telcos already use Fayda for mobile money and telecom onboarding, which will help meet anti-money-laundering (AML) rules. Ethiopia does not yet allow crypto payments, but regulators are preparing. As of 2025 a draft crypto regulation (aimed at end-2025) would ban consumer crypto payments but license mining and require full AML/KYC compliance (AINvest, 2025). In sum, blockchain solutions must integrate with these developing identity and compliance frameworks to be secure and legal.

9.4 Pilot Projects and Innovation

Blockchain pilots in Ethiopia have so far been limited but illustrative. The highest-profile use case is education and credentials: as noted, the Ministry of Education is testing a Cardano-based student ID and records system. This pilot (covering ~5 million students) aims to create immutable verifiable diplomas on-chain. Its lessons include technical scaling (e.g. handling mass enrollment) and the need to integrate with school IT systems.

In coffee (Ethiopia's flagship export), several traceability trials have been launched. In 2021 the Ethiopian Coffee & Tea Authority partnered with IOHK/Cardano to design a digital certification system for specialty coffee. Separately, the government is working with global blockchain firms to track beans from farm to market. A recent NGO-led pilot in Sidama (2019–2024) illustrates practical challenges: farmers and collectors initially resisted extra record-keeping (Walter Matter SA, 2024), and project staff had to deal with frequent power/internet outages in the field (Walter Matter SA, 2024). The solution was to use offline-capable tools (e.g. KoboToolbox on smartphones) and intensive training (Walter Matter SA, 2024). Despite hurdles, participants reported satisfaction and local officials have considered scaling the system. These pilots show that integrating blockchain requires attention to human factors: smallholders may fear added complexity, so systems must be easy to use and run under poor connectivity (Walter Matter SA, 2024).

Land registry is another often-mentioned use case. Ethiopia itself has not (yet) implemented a blockchain land title system; current reforms (land law and digital cadastral mapping) use conventional databases. However, regional precedents are instructive. For example, Ghana's Lands Commission (with the World Bank) piloted blockchain land titling in 2021, improving transparency in Kumasi. The lesson for Ethiopia is that land systems are complex and require legal recognition of blockchain records. Any future pilot would need to ensure alignment with Ethiopian land laws and enable easy e-delivery of title certificates.

In summary, Ethiopia's blockchain pilots have demonstrated proof-of-concept for traceability and identity, but also revealed integration challenges. Key lessons include the necessity of offline-capable design and stakeholder buy-in (Walter Matter SA, 2024). Projects must adapt to local realities (limited devices, intermittent networks) and accompany technical deployment with training. These experiences underline that blockchain is a tool – pilot programs must focus on value (e.g. premium pricing for traceable coffee or fraud-proof diplomas) and not impose undue burden on users.

9.5 Skills and Capacity

Ethiopia has a growing IT workforce and startup scene, but dedicated blockchain expertise is still nascent. The tech ecosystem now counts hundreds of startups (over 300 nationwide, many in Addis Ababa) and dozens of accelerator/incubator programs. Fintech is a leading

vertical (mobile payments, microfinance apps, remittance platforms), suggesting potential demand for blockchain talent. Several Addis-based firms (e.g. Belcash, Robe Technologies, ArifPay) indicate a vibrant digital payments sector, though few publicly advertise blockchain development teams.

On the education side, local universities and training centers are beginning to cover blockchain. For example, Addis Ababa University has hosted workshops on distributed ledger courses (often in collaboration with industry) and proposals exist to integrate Cardano-focused curricula. International programs are also reaching Ethiopia: in 2024–2025 the Ethiopian Blockchain Network partnered with Dar Blockchain to offer *free online courses* in Hedera Hashgraph (a DLT platform) and opened a $1M pan-African blockchain hackathon (with Addis Ababa as a host city) (Shega, 2024). This initiative provides certificates and on-chain badges to thousands of Ethiopian developers (Shega, 2024), with the aim of funneling 10,000+ participants into blockchain projects. Such programs (supported by 100+ African universities and hubs (Shega, 2024)) are rapidly upskilling local coders.

Government and international agencies are also active. The UN International Trade Centre's Ethiopia program (NTF V) recently launched an "Unchained Ethiopia" track focused on blockchain, Web3 and AI (Shega, 2024). This is expanding policy-maker and private-sector awareness of emerging tech. Moreover, Ethiopia's larger ICT strategy (e.g. the ICT Parks initiative, Digital Ethiopia 2025) has begun to prioritize software skills development.

Despite these efforts, gaps remain. Ethiopia still lacks a critical mass of blockchain-savvy developers, and there are few industry-offered certification programs. The anecdotal evidence suggests ample general engineering talent (one data-center CEO reported 80 applicants for a single electrical-engineer role) (Shega, 2024), but most candidates must learn blockchain on the job. To bridge this gap, capacity-building is needed: partnerships with global blockchain consortia (Hyperledger, Ethereum Foundation, Cardano's EDU) could help design academic courses and bootcamps. Public–private innovation hubs could fund hackathons (beyond the current one) and prize challenges in areas like DeFi lending or tokenized real estate. Vocational training (for example, combining telecom/mobile development skills with basic crypto concepts) should be expanded.

In conclusion, Ethiopia's technical feasibility for blockchain adoption is promising but conditioned on continued development. Infrastructure is improving (broadband rollout, data centers, 5G trials) but still lags in many rural areas. Public blockchains may need to be augmented with off-chain or permissioned solutions to cope with bandwidth/power limits. Security and governance structures (new data law, digital ID) are emerging to support trustworthy platforms. Early pilots in education and agriculture provide proof-of-concept but underscore the need for local adaptation and capacity building (Walter Matter SA, 2024). With sustained investment in connectivity, developer training, and clear regulation (including blockchain-friendly statutes and AML/KYC rules), Ethiopia could realistically support the intended use cases (cross-border payments, DeFi, tokenization, supply-chain finance, SME

fundraising). Otherwise, failure points will likely arise where infrastructure or skills prove insufficient.

10 Risk and Compliance Matrix

This chapter evaluates key risks and mitigation strategies for implementing blockchain and digital asset solutions in Ethiopia, based on use cases such as decentralized finance (DeFi), tokenized real estate, cross-border payments, SME fundraising, and supply chain finance. The focus is on regulatory uncertainties, compliance/AML challenges, market adoption hurdles, and technical/operational risks – each crucial to feasibility. A summary risk matrix is provided at the end.

10.1 Regulatory Risk

Ethiopia's regulatory environment for digital assets is in flux, posing uncertainty for innovators. Unclear or shifting regulations are a major risk. In June 2022, the National Bank of Ethiopia (NBE) declared cryptocurrency transactions illegal, citing threats to financial stability and AML/CFT compliance (Ishida & Yoshida, 2022). The NBE warned that only the Ethiopian birr is legal tender and promised legal action against crypto use. However, by August 2022 the stance began to soften – the Information Network Security Agency (INSA) ordered all crypto service providers (including miners and transfer services) to register, signaling a shift from an outright ban to a regulated approach (Ishida & Yoshida, 2022). As of 2024–2025, Ethiopia is developing a regulatory framework for digital assets, but full clarity is pending. Milestones include the 2022 prohibition of crypto as a payment method (while still exploring blockchain applications), a 2024 move to license crypto mining firms, and expected 2025 guidelines clarifying AML/KYC requirements for crypto businesses (Coin World, 2025). The regulatory structure involves multiple agencies: NBE oversees financial stability (and currently bans crypto payments), the Ethiopian Capital Markets Authority (ECMA) would regulate tokenized assets as securities, and the Ministry of Innovation and Technology guides blockchain initiatives (Coin World, 2025). Legal milestones so far – such as the draft directives to license exchanges and miners – indicate progress, but the lack of enacted laws explicitly permitting digital asset use means a grey area persists (Ishida & Yoshida, 2022). Internationally, Ethiopia's cautious approach mirrors many African regulators' worries that cryptocurrency could disrupt monetary control. The global standards underscore these concerns: the IMF notes that only ~25% of sub-Saharan countries formally regulate crypto, while about two-thirds impose restrictions, and six countries (including Ethiopia) had outright bans as of 2022 (IMF, 2022). This patchwork leads to *regulatory swings* that deter investment and innovation, as entrepreneurs fear sudden policy shifts (Mossberg, 2025). Moreover, Ethiopia will need to align with international norms such as the Financial Action Task Force (FATF) recommendations. FATF's Recommendation 15 requires countries to identify and mitigate risks from virtual assets, yet only 7 out of 41 African

countries have been rated fully compliant as of 2023 (Mossberg, 2025). Ethiopia's evolving stance – from banning to exploring a "Digital Birr" central bank digital currency pilot – shows policy can change quickly (Coin World, 2025). This uncertainty in the legal/regulatory landscape poses risks for all use cases (e.g. tokenized real estate or SME token offerings may lack legal recognition, and DeFi or crypto payments face potential prohibition).

Implications: Regulatory risk can result in non-compliance costs, project shutdowns, or legal penalties if laws tighten unexpectedly. For instance, an SME crowdfunding via token issuance could be deemed illegal if tokens are later classified as unlicensed securities. Unclear rules also discourage institutional adoption and foreign investment due to compliance fears (Mossberg, 2025). In the context of cross-border payments, a strict ban on crypto transactions forces remittance use-cases underground or into grey areas, increasing operational risk. Overall, shifting regulation creates a "stop-go" effect where innovation stalls in uncertainty.

10.1.1 Mitigation Strategies

To address regulatory risk, stakeholders should adopt a proactive and flexible approach:

- Regulatory Engagement: Fintech firms and pilot projects should engage early with regulators (NBE, ECMA, etc.), seeking sandbox arrangements or no-objection letters. Open dialogue can help shape balanced policies and ensure authorities understand the benefits (e.g. demonstrating how blockchain can improve transparency in supply chain finance or facilitate SME fundraising) before regulations are finalized. Continuous engagement will also help projects anticipate and adapt to new directives (Mossberg, 2025).
- Policy Monitoring & Flexibility: Given the possibility of shifting rules, projects must be designed with legal flexibility in mind. This includes monitoring international guidelines (IMF, FATF) and incorporating the ability to modify products (or halt certain features) to remain compliant with new laws. For example, a tokenized real estate platform could be configured to easily implement investor caps or KYC features if required by the ECMA. Staying informed on global standards (e.g. FATF's evolving guidance on virtual assets) ensures readiness to meet best practices.
- Align with International Standards: Proactively implement measures even if not yet locally mandated. For instance, adhering to FATF's Travel Rule (which mandates sharing sender/receiver information for crypto transfers) and robust AML controls (discussed below) will position projects as low-risk and trustworthy to regulators (FATF, 2023). Demonstrating alignment with IMF and World Bank recommendations – such as prioritizing financial stability and consumer protection – can build regulators' confidence in the project.
- Legal Compliance Strategy: Employ legal counsel to navigate Ethiopia's existing laws (e.g. banking, payment systems, capital markets proclamations) and structure digital asset offerings in compliant ways. This might involve structuring certain applications as

permissioned, private networks in early stages (which regulators may view more favorably than public cryptocurrencies) or using offshore licensing for services until domestic laws are in place. Maintaining a degree of central oversight (e.g. regulator nodes in a blockchain network) could also assure authorities while regulations are nascent.

By staying agile and cooperative, digital asset innovators can mitigate regulatory risk – ensuring that projects (from DeFi platforms to tokenized land registries) remain viable under Ethiopia's developing policy regime.

10.2 Compliance & AML Risk

The anti-money laundering (AML) and combating the financing of terrorism (CFT) dimension of digital assets presents a critical risk, especially in decentralized or peer-to-peer contexts. Traditional KYC/AML regimes rely on intermediaries (banks, exchanges) to verify customers and report suspicious activity, but many blockchain use cases reduce or eliminate intermediaries. In Ethiopia, where crypto activity has largely been unregulated historically, there is a high risk that illicit finance could flow through new digital asset channels undetected. The National Bank cited money laundering concerns as a key reason for initially banning crypto (NBE, 2022), and these concerns remain valid. Decentralized finance applications and peer-to-peer crypto trading create KYC enforcement challenges – users can transact directly through wallets without revealing identities, making it difficult for authorities to trace who is behind transfers. FATF has warned that such peer-to-peer and DeFi transactions, while still a smaller share of total crypto activity, are "at risk of misuse, including by sanctioned actors"(FATF, 2023). In Ethiopia's context, this could mean individuals circumventing currency controls or moving funds abroad via crypto, as well as the potential for bad actors (e.g. organized crime or terrorist groups in the region) to exploit nascent digital asset systems. Indeed, across Africa, inconsistent regulations have created opportunities for criminals and terrorists to use the fastest and least-monitored transfer methods – including cryptocurrency – to move money undetected (Mossberg, 2025). Ethiopia must avoid becoming a weak link; if its AML/CFT framework for digital assets is not robust, it risks FATF greylisting or other international repercussions, which carry severe economic costs (Mossberg, 2025).

Specific compliance pain points include: verifying user identities in a largely unbanked population (over 60% of Ethiopians lack bank accounts, indicating any crypto system must bring KYC to people outside formal finance), monitoring peer-to-peer transactions that occur off-exchange, and preventing illicit uses such as terrorism financing. Ethiopia's current AML laws, while existing, have gaps regarding virtual assets (Ozili, 2025). FATF data shows most African countries (34 of 41 assessed) are only partially compliant with crypto AML standards (Mossberg, 2025), underscoring the regional challenge. Additionally, enforcement capacity is

an issue – Ethiopia's financial intelligence and cybercrime units will need new tools and training to oversee blockchain transactions. Decentralized finance (DeFi) use cases (like lending or yield farming protocols) amplify the risk because they intentionally remove centralized gatekeepers; without careful design, they could enable anonymous pooling of funds or unregulated fundraising (e.g. an SME issuing tokens on a DeFi platform could inadvertently facilitate investors hiding their identity).

Implications: If AML/CFT controls are weak, Ethiopia could face reputational and legal risks. These range from facilitating money laundering (undermining the integrity of the financial system) to sanctions violations if sanctioned entities use local digital asset platforms. In practical terms, a high profile breach – such as a terrorist group found financing activities via an Ethiopian crypto exchange – would prompt regulatory crackdowns, hurting the entire digital asset ecosystem. Lack of compliance could also deter partnerships with international banks or technology providers, isolating Ethiopia's fintech sector. For the use cases in question: a cross-border payments solution not meeting AML standards could be shut out by correspondent banks; a tokenized real estate platform without proper KYC might enable illicit purchase of assets, leading authorities to suspend the platform. The risk of regulatory sanctions, platform shutdowns, or heavy fines looms if compliance isn't managed. Furthermore, any association of digital asset projects with crime will erode public trust and adoption.

10.2.1 Mitigation Strategies

Implementing strong AML/CFT measures from the outset is essential to manage compliance risk:

- Robust KYC Procedures: All user-facing applications (exchanges, wallets, token issuance platforms) should enforce strict Know-Your-Customer checks. This means verifying user identities with government ID, using biometric digital ID systems when available, and screening against sanctions/PEP (Politically Exposed Persons) lists. Even in decentralized setups, creative solutions can be employed – for example, integrating a KYC smart contract or oracle that vouches for a wallet address once the owner's identity is verified off-chain. By ensuring each participant in, say, an SME fundraising token sale is verified, the platform reduces the risk of anonymous illicit actors.
- Transaction Monitoring & Analytics: Deploy blockchain analytics tools to track transactions for suspicious patterns (large transfers, structuring, known illicit addresses). Compliance software can flag high-risk addresses (e.g. those linked to darknet markets or hacks) and freeze or report funds if they interact with the system. Although blockchain provides pseudonymity, every transaction is recorded on a public ledger, enabling advanced analytics to trace flows. Ethiopian institutions could partner with international firms (Chainalysis, Elliptic, etc.) to build capacity in monitoring crypto flows for AML purposes.

- Adherence to FATF's Travel Rule: When the ecosystem matures to include exchanges or custodial wallets (VASPs – Virtual Asset Service Providers), they should implement the "Travel Rule" which requires sharing sender and receiver information for transfers above certain thresholds (FATF, 2023). Proactively building this data-sharing between any Ethiopian exchange and global counterparts will close off a major gap that criminals exploit. Many jurisdictions are lagging on this (over half of surveyed countries had not implemented the Travel Rule by 2023, a serious loophole (FATF, 2023), so Ethiopia's early compliance would be viewed favorably.
- Permissioned Blockchain Solutions: For use cases like supply chain finance or land registries, consider permissioned blockchain networks where only approved entities (banks, logistics companies, government agencies, vetted SMEs) can participate. By limiting network access to known, pre-approved nodes, the system inherently reduces anonymity. Permissioned ledgers can enforce rules at the protocol level – e.g. every transaction requires a consensus of validator nodes that follow AML policies. This approach may sacrifice some decentralization, but it is prudent for high-risk domains and can be a stepping stone until broader regulatory comfort with open networks is achieved.
- Regulatory Compliance Programs: Firms engaging in digital assets should establish internal compliance departments akin to banks. This includes training compliance officers on crypto-specific red flags, setting up reporting mechanisms to Ethiopia's Financial Intelligence Unit (for example, filing suspicious transaction reports for crypto when needed), and keeping auditable records. Engaging with Ethiopia's financial regulators and FIUs through capacity-building programs (perhaps with support from the IMF or World Bank technical assistance) will ensure that as policies develop, the industry is ready to implement them.
- Legal Enforcement and International Cooperation: Mitigation also involves government action: increasing funding and training for enforcement agencies (police, cyber units, financial regulators) to handle crypto crimes. Ethiopia can join or strengthen cooperation with regional bodies (like the Eastern and Southern Africa Anti-Money Laundering Group) to share intelligence. Demonstrating the ability to prosecute illicit crypto use will deter bad actors. For example, if peer-to-peer traders are required to register (as per the 2022 INSA directive) and authorities actively enforce this, it channels activity into compliant avenues.

By embedding strong compliance controls, Ethiopia can enable legitimate uses (like diaspora remittances via crypto or blockchain-based trade finance) while minimizing illicit finance risks. This balance is crucial to satisfy global standards and protect Ethiopia's nascent digital asset sector from abuse.

10.3 Market and Adoption Risk

Even with clear laws and good compliance, digital asset initiatives in Ethiopia face market and adoption risks. These include the volatility of crypto assets, low public trust, and limited awareness or financial literacy regarding digital assets. Token volatility is a well-recognized risk in decentralized finance and crypto markets: the prices of cryptocurrencies (e.g. Bitcoin, Ether) and tokens can swing wildly, which is problematic for use cases like payments or savings. Ethiopian users and businesses may be reluctant to adopt a tokenized system if the value of tokens isn't stable. For instance, if an SME raises funds via a token sale, investors face the risk that the token's price could crash, undermining the very capital raised. Likewise, using volatile crypto for cross-border payments could mean a remittance loses value before the recipient cashes out. Such instability makes crypto unsuitable as a store of value or medium of exchange for everyday users (IMF, 2022).

Closely tied to volatility is the issue of low user trust and awareness. In Ethiopia, general awareness of blockchain and crypto remains nascent – many potential users have only heard of crypto in the context of speculative trading or scams, which can breed distrust. Public confidence in digital finance is also influenced by broader digital literacy. Internet usage in Ethiopia, while growing, was only ~35% of the population in 2023 (Getahun, 2024), and a significant portion of the population lacks the digital skills to navigate online services (Getahun, 2024). This digital divide means a large user segment may be ill-prepared to use innovative blockchain applications. Misconceptions are common – for example, equating cryptocurrency with fraud or believing that one must be very tech-savvy to use it. Additionally, past experiences such as Ponzis or crypto scams in Africa have made some of the public skeptical. In Ethiopia's case, the initial official stance labeling crypto as illegal might have also signaled to the public that it's unsafe.

Another adoption challenge is the awareness gap about specific use cases: tokenized real estate or supply chain finance are niche concepts that require education for users to understand benefits. SMEs might not trust "digital tokens" as a fundraising tool without seeing success stories. Moreover, limited infrastructure (discussed more in Technical Risk) can hamper adoption – e.g. if using a crypto app requires a smartphone and reliable internet, many rural or low-income users could be excluded at first, slowing network effects. Finally, there is market readiness to consider: introducing complex DeFi products too quickly could overwhelm uninitiated users, leading to mistakes or losses that hurt confidence.

Implications: Market and adoption risks, if not addressed, can result in slow uptake or even failure of digital asset initiatives. Even a well-designed platform could sit underutilized if users don't trust it or understand it. For example, a stablecoin-based cross-border payment app would not achieve cost-saving impacts if migrant workers stick to informal channels due to mistrust. Low adoption also means less liquidity and utility – a DeFi lending pool won't function well with too few participants. In extreme cases, sudden loss of trust (perhaps after a hack or a sharp price crash) can trigger a run where users abandon the platform en masse, undermining its viability. For tokenized real estate, if investors doubt the legal validity or stability of property

tokens, the market for those tokens will be illiquid and fail to attract capital to the sector. More broadly, public skepticism and negative sentiment can spill into political resistance, prompting regulators to further tighten rules (a self-reinforcing cycle that stifles innovation). Market risk also encompasses macroeconomic factors: if the broader crypto market crashes, Ethiopian holders of crypto assets could lose savings, denting overall trust in digital assets as a solution.

10.3.1 Mitigation strategies:

To mitigate volatility and build public trust, a combination of education, sensible product design, and gradual rollout is recommended:

- Public Education & Awareness Campaigns: Education is arguably the most important mitigation for adoption risk. Stakeholders (government, industry associations, international partners) should invest in widespread literacy campaigns about digital assets. This includes workshops, media content in local languages, and integration of basic blockchain concepts into financial literacy programs. Emphasize real-world benefits – for instance, demonstrate a pilot where a farmer's cooperative gets better financing terms via a blockchain platform, or how a diaspora remittance in crypto arrived faster/cheaper than traditional means. Education should also address misconceptions: clarify that blockchain can be transparent and regulated, and distinguish reputable projects from scams. The impact of education is well-noted: surveys indicate that 56% of potential users feel more confident about crypto if they have more resources and training (Mwangi, 2025). By improving understanding, users will be less fearful and more likely to cautiously try these innovations.
- Stable Value Instruments: To directly tackle volatility risk, stablecoins and potentially a Central Bank Digital Currency (CBDC) should play a key role. A stablecoin pegged to a stable asset (e.g. USD or Ethiopian birr) can be used as the medium for transactions, so that value does not fluctuate drastically day-to-day. In Africa, stablecoins have already seen rapid adoption for exactly this reason – they provide a "crypto" that holds stable value. Ethiopia in fact was the fastest-growing African market for retail stablecoin transfers in a recent period, with a 180% year-over-year increase in volume (Mwangi, 2025). This suggests that users are gravitating to stablecoins as a hedge against currency volatility and inflation, and as a reliable payment medium. Incorporating reputable stablecoins into Ethiopian digital asset platforms (or even a future Digital BirrCBDC issued by NBE) can greatly mitigate volatility concerns. For example, a cross-border payment app could convert user funds into a USD-backed stablecoin for transfer, and recipients can convert out with minimal value change. Similarly, DeFi lending could use stablecoins as the principal currency. Authorities should also ensure any stablecoin used is fully backed and compliant to maintain trust.
- Gradual Rollout & Pilot Programs: A phased approach to implementation will build trust over time. Rather than launching a nationwide, open-access crypto system overnight, pilot projects can be run in controlled environments. For instance, start with a limited

rollout of a supply chain finance blockchain with a select group of known businesses, or a remittance corridor between one or two countries and Ethiopia using crypto that a small community tests. Gradual expansion allows success stories to emerge and kinks to be ironed out. Early positive outcomes – such as farmers receiving faster payments for exports via a blockchain platform – can be publicized to win over skeptics. Phasing also means if there are any failures or user issues, they affect fewer people and can be addressed before scaling up. Essentially, this mitigates the *trust deficit* by proving the concept in steps.

- User Protection Mechanisms: Designing applications with user protection in mind will also boost confidence. For example, integrate features like limit orders or volatility alerts in trading apps to help users manage price swings, or provide an insured custody solution (so users know their funds have some protection against loss or hacks). For token offerings (SME fundraising, real estate tokens), transparency is key: clear disclosure of risks, lock-up periods to prevent speculative flipping, and maybe a mechanism for buyback or guaranteed minimum value (if feasible) can reassure investors. Government or development institutions might provide partial guarantees or co-investment in early tokenized projects to signal confidence. Additionally, integrating with existing trusted financial services can help – e.g. allowing users to access crypto services via their bank or mobile money account, so they feel the familiarity of known brands.
- Community Engagement and Support: Building a community around these projects can create network effects that drive adoption. This includes engaging local tech communities and influencers to champion blockchain solutions. If respected figures (technology leaders, popular entrepreneurs) vouch for a platform, the wider public is more likely to give it a chance. Customer support lines and local language resources for any digital asset service will further ease the onboarding of users who might not be tech-savvy. Essentially, the approach should be *"start simple and local"*: introduce easy-to-use products (perhaps abstracting away the complex crypto jargon) and solve a clear pain point for the average Ethiopian user. Over time, as comfort grows, more advanced DeFi or token markets can develop.

By creating a stable, user-friendly environment and patiently cultivating trust, Ethiopia can overcome market reluctance. Successful mitigation in this area will be evident when volatility is less of a daily concern – thanks to stable value instruments – and when digital assets gain a reputation as useful tools (for finance and commerce) rather than speculative gambles among the Ethiopian public.

10.4 Technical & Operational Risk

Implementing digital asset solutions requires robust technology and operations. Ethiopia faces significant technical and operational risks, ranging from cybersecurity threats and infrastructure limitations to talent gaps. Cybersecurity is a paramount concern: blockchain

systems and crypto platforms around the world have been targets of hacking, malware, and fraud. Smart contracts (the self-executing programs in DeFi platforms) can contain vulnerabilities that attackers exploit – globally, over $1.7 billion was stolen in cryptocurrency hacks in 2023 alone, and $3.8 billion in 2022 (George, 2024). Ethiopia's nascent digital asset infrastructure could become an attractive target if not secured to international standards. This includes the risk of exchange hacks, wallet breaches, and smart contract exploits. A successful cyberattack could result in theft of funds (e.g. draining a DeFi liquidity pool or users' wallets), loss of sensitive data, and disruption of services – all of which would severely damage confidence in the ecosystem's safety. Beyond malicious attacks, there is also the risk of technical failures or bugs. For example, a flaw in a tokenized property registry could corrupt ownership records, or a glitch in a payments smart contract could lock up users' funds. Operational resilience is another aspect: Ethiopia's internet and power infrastructure is not uniformly reliable. Power outages and network downtime are common in certain areas, which can interrupt access to online platforms (Mwangi, 2025). Many users, especially in rural regions, have limited connectivity and older devices, posing compatibility and access challenges. As noted, only about one-third of the population had internet access in recent data, and rural areas often suffer from both electricity and connectivity shortages (Getahun, 2024). These conditions mean a blockchain network might not always be reachable, or transaction confirmations could be delayed, undermining the user experience and reliability of any digital asset service.

Furthermore, Ethiopia currently has a limited pool of skilled professionals in blockchain technology and cybersecurity. There is a broader digital skills gap. A significant portion of the population lacks advanced ICT skills (Getahun, 2024) and while there are talented software engineers in Ethiopia, blockchain is a specialized domain. Without sufficient local expertise, projects may depend on foreign developers or off-the-shelf solutions that might not be tailored for local needs. Lack of in-house expertise also makes ongoing maintenance and security monitoring difficult. This talent gap extends to institutions: regulators and law enforcement need technical know-how to oversee and support these systems. Operational risk also includes the ability of organizations to manage new processes, e.g. a bank dealing with crypto custody will need entirely new operational protocols (key management, 24/7 monitoring of blockchain transactions, etc.). If these are not set up correctly, errors or internal fraud could occur.

Finally, consider the specific use cases: a supply chain finance platform must integrate with real-world logistics – if the tech fails, goods could sit idle waiting for a blockchain update. A decentralized exchange for cross-border forex could suffer downtime due to infrastructure issues, causing users financial losses if they cannot transact timely. Thus, ensuring high availability, security, and performance is critical.

Implications: The implications of technical and operational risks are multifaceted. A major cyber incident could lead to financial loss for users and stakeholders, legal liabilities for providers, and

loss of public and government trust (undoing the gains from adoption efforts). It might also invite regulatory backlash ("security risks" would become another reason to delay crypto integration). Operational failures or unreliable service will frustrate users and push them back to traditional alternatives – for example, if a blockchain payment network is often offline, people will revert to cash or existing mobile money. For supply chain or SME finance, if the platform is down, it could delay critical financing or transactions, harming businesses. In extreme cases, technical failures in tokenized systems (say a bug that misallocates ownership) could result in contractual disputes and loss of legal credibility for digital records. Additionally, over-reliance on foreign technical support due to local talent shortage can be problematic; if external developers pull out or if geopolitical issues arise, Ethiopia might be left with systems it cannot independently maintain. Scaling issues are also an implication: a solution might work in a pilot but falter when user numbers grow, if infrastructure and technical design don't scale – leading to crashes or slow performance at peak usage. In summary, without mitigation, technical risk can derail the feasibility of digital asset solutions no matter how sound the concept, simply because the systems won't be trusted to stay secure and operational.

10.4.1 Mitigation strategies:

A rigorous approach to technology design, infrastructure investment, and capacity building is needed to manage technical and operational risks:

- Phased and Secure Implementation: Adopt a *"security-first"* development mindset. During the pilot and development stages, conduct thorough audits of smart contracts and platforms by independent cybersecurity experts. Before scaling any DeFi or token system, subject it to penetration testing and fix vulnerabilities. Implement multi-layer security for exchanges and wallets (multi-signature authorization, hardware security modules for private keys, encryption of sensitive data, etc.). It's also wise to limit functionality initially – for example, launch with basic features and add complexity only after the base has proven stable. This phased deployment means fewer components to secure at each step. Drawing on global best practices (e.g. guidelines from OWASP for blockchain security, ISO standards, etc.) will ensure the technical architecture is robust.
- Cybersecurity Protocols and Response Planning: Given the high stakes, establish strong cybersecurity protocols and an incident response plan. This includes real-time monitoring of systems for suspicious activity, routine updates and patch management, and 24/7 operations centers if possible for critical services. Contracts or insurance against cyber-theft (crypto insurance policies) can be considered to mitigate financial damage from any breaches. Importantly, if a breach occurs, having a clear response – such as the ability to pause the system or blacklist stolen assets – can prevent escalation. Training a specialized cyber unit (possibly within INSA or new fintech regulatory units) to handle blockchain-specific incidents will improve resilience. Ethiopia could also partner with countries or organizations experienced in blockchain security for knowledge transfer.

- Infrastructure Investment and Backup Systems: To address infrastructure unreliability, strategies include using cloud services and redundancy. Hosting blockchain nodes on cloud providers with uptime guarantees, and having nodes in multiple locations (domestically and perhaps abroad) can ensure the network remains accessible even if one data center goes down. Incorporating offline-capable features can help – for example, designing wallet apps that can queue transactions and send them later when connectivity returns, or using SMS/USSD gateways for basic operations in low-bandwidth scenarios. For power outages, critical nodes and data centers should have backup power (generators, UPS systems) so that at least the core network stays online. The government, as part of its Digital Transformation Strategy, should continue expanding internet access (especially broadband and mobile data coverage) and power supply to support these digital initiatives (Getahun, 2024). In the interim, focusing deployment in regions with more reliable infrastructure (e.g. major cities) for initial phases can mitigate the risk of outages disrupting the whole system.
- Talent Development and Partnerships: Bridging the skills gap is a longer-term mitigation. Ethiopia should promote training programs in blockchain and fintech – this could be through university courses (similar to how the University of Johannesburg introduced a blockchain certification (Mwangi, 2025) to build local skills), hackathons, and partnerships with international blockchain companies or foundations (Cardano's earlier involvement in Ethiopia's DID project is an example of knowledge exchange). In the short term, hiring global experts or contracting established technology providers to build and audit systems can ensure quality, but alongside that, pair these experts with Ethiopian teams to mentor them. Organizations like the Africa Blockchain Institute or UNDP's Blockchain Academy (launched in 2023 to train staff globally) could be leveraged to upskill Ethiopian developers and officials (UNDP, 2023). Ensuring that banks and enterprises have access to cybersecurity training (since new threats will accompany digital assets) is also crucial. Additionally, encourage the formation of a local blockchain community or association – this creates a network to share best practices and collectively solve technical challenges.
- Operational Resilience Measures: Within institutions that will operate digital asset solutions, implement strong internal controls. For example, if a bank custodies crypto, they should use multi-person approval for transfers, strict access controls, and regular audits of digital asset holdings. Establish clear SOPs (Standard Operating Procedures) for how to handle lost credentials, system downtimes, or errors. Drills or simulations can prepare teams for real incidents (e.g. simulating a cyberattack to test response). It is also wise to start with low stakes – limit transaction sizes or total value locked in early stages so that any technical failure has a bounded impact. As confidence in the technology and team capacity grows, these limits can be raised. Finally, maintain flexibility in technology choices: if a particular blockchain protocol is found to be inefficient or insecure, be ready to pivot to alternatives (interoperability standards can help with this). The presence of a Digital Transformation Strategy at the national level (Getahun, 2024) suggests high-level support for building necessary infrastructure and

skills; aligning digital asset projects with this broader effort will help secure the needed investments and policy support to strengthen technical foundations.

Through careful planning, rigorous security, and capacity-building, Ethiopia can significantly reduce technical and operational risks. This will ensure that blockchain applications – whether facilitating an agricultural supply chain or enabling an SME loan via DeFi – run on secure, reliable platforms that users and institutions can depend on.

10.5 Conclusion

The exploration of blockchain and digital asset applications in Ethiopia must be accompanied by a clear-eyed assessment of risks and proactive mitigation. The table below summarizes the key risks identified, their potential implications, and the recommended strategies to mitigate them:

Risk Category	**Implications** (Potential Impact)	**Mitigation Strategy**
Regulatory Uncertainty (unclear, evolving laws for crypto and tokens in Ethiopia)	Legal non-compliance if rules change; projects stalled or shut down; hesitant investors due to unpredictable policy; innovation moves to informal/grey markets.	– Engage regulators early, seek sandbox approvals and adapt to guidance. – Monitor and align with IMF/FATF standards to anticipate regulatory changes. – Design flexible business models that can comply with new laws (e.g. switch from public to permissioned model if required). – Advocate through industry groups for clear, supportive digital asset policies.
Compliance & AML Risk (inadequate KYC/AML in decentralized or P2P systems enabling illicit finance)	Money laundering, terrorist financing or capital flight via crypto; risk of regulatory penalties or international sanctions (greylisting); loss of credibility and forced crackdowns if platform is used for crime.	– Implement strict KYC for all user onboarding and require real identities for transactions. – Employ blockchain analytics to monitor transactions and report suspicious activity in real-time. – Enforce FATF Travel Rule for information-sharing on crypto transfers. – Use permissioned networks or whitelisting to ensure only vetted participants in high-risk use cases. – Build compliance teams and cooperate with authorities (e.g. reporting and oversight).
Market Volatility & Low	Users/investors incur losses due to	– Introduce stable-value assets

Adoption (high crypto price swings, low trust and awareness among users)	token price swings; low adoption/usage of platforms due to fear or ignorance; liquidity issues as few participants join; potential public backlash if early adopters lose money (reputational damage to technology).	(stablecoins or a future CBDC) for transactions to minimize volatility exposure. – Conduct public education campaigns and pilot demonstrations to build understanding and trust (showing successful use cases). – Start with small-scale rollouts to generate positive user experiences and testimonials. – Provide user protections (insured wallets, customer support, clear risk disclosures) to build confidence. – Leverage existing trusted channels (e.g. integrate with familiar mobile money apps) to ease users into blockchain gradually.
Technical & Operational Failures (cyberattacks, outages, or lack of expertise)	Theft or loss of funds through hacks; service disruptions during power/internet outages; critical failures undermining data integrity (e.g. incorrect records on blockchain); inability to scale systems under demand; reliance on foreign support if local talent is lacking, creating sustainability issues.	– Follow "security by design": rigorous code audits, penetration testing, and gradual feature deployment to catch bugs. – Implement strong cybersecurity measures (multi-factor authentication, encryption, secure key management) and incident response plans (with backup systems, ability to freeze transactions if needed). – Use redundant infrastructure (multiple nodes/servers, backup power and offline transaction options) to ensure high availability. – Invest in local capacity: training programs, hire/retain IT talent, and partner with experienced tech firms for knowledge transfer. – Limit exposure in early stages (caps on value and user numbers) until systems are proven stable, then scale up carefully while continuously monitoring performance.

By addressing each of these risk areas with targeted mitigation strategies, Ethiopia can significantly improve the feasibility and success of digital asset initiatives. The aim is to create an environment where innovative use cases (like DeFi lending for SMEs or tokenized agriculture

supply chains) can flourish responsibly – under clear regulations, with strong compliance guardrails, growing user trust, and resilient technology. Such an environment would unlock the transformative benefits of blockchain (efficiency, transparency, financial inclusion) while safeguarding against the pitfalls. The next chapters of this feasibility study will delve into implementation roadmaps and pilot design, building on the risk mitigations outlined here to ensure Ethiopia's digital asset journey is both ambitious and prudent.

11 Stakeholder Mapping

11.1 Government & Regulators

Key public-sector institutions will shape Ethiopia's digital asset ecosystem. The National Bank of Ethiopia (NBE) – as central bank and financial sector regulator – oversees payments and fintech. NBE has spearheaded the national digital payments strategy (with the Ministry of Innovation and Technology) (Better Than Cash Alliance, 2021) and licensed new mobile-money services (e.g. Safaricom's M-Pesa) under recent reforms (Digital Frontiers Institute, 2023). At the same time NBE has explicitly banned cryptocurrency payments and warned that only the Ethiopian Birr is legal tender (Emurgo Africa, 2022). Its mandate includes prudential regulation, foreign-exchange oversight, AML/CFT rules, and (soon) frameworks for blockchain and digital securities (AInvest, 2025).

The Ethiopian Capital Markets Authority (ECMA) regulates securities markets and will govern any tokenized investments. ECMA helped establish the new Ethiopian Securities Exchange (ESX) and is drafting rules for digital securities. Its director-general notes that the ESX "will serve as a key part of a functioning Ethiopian capital market ecosystem," with ECMA working closely on launch and oversightuneca.org. ECMA's mandate under the Capital Markets Proclamation includes regulating any blockchain-based instruments classified as securities (AInvest, 2025).

The Ministry of Innovation and Technology (MoIT) leads national digital transformation (the "Digital Ethiopia 2025" strategy). MoIT coordinates technology policy, ICT infrastructure and e-services, and has championed projects like blockchain-verified student IDs (via partnerships with firms like IOHK/Cardano) (Better Than Cash Alliance, 2021). In the payments space, MoIT helped develop the National Digital Payments Strategy jointly with NBE (Better Than Cash Alliance, 2021). MoIT's role is to enable innovation (e.g. licensing tech pilots, promoting ICT skills) and to align blockchain initiatives with Ethiopia's broader tech agenda.

The Information Network Security Agency (INSA) is Ethiopia's national cybersecurity and IT security agency. INSA has been tasked with regulating cryptographic products and digital

assets under the 2013 INSA Reestablishment Proclamation. In August 2022 it issued a directive requiring all cryptocurrency service providers (exchanges, miners, payment platforms) to register with the agency (Emurgo Africa, 2022). INSA thus oversees network security for blockchain and crypto activities (including import/export of mining equipment) and enforces the ban on illicit digital currencies. Its buy-in is crucial for any crypto-related policy or registry.

The Ethiopian Investment Commission (EIC) licenses and facilitates foreign and domestic investment. Under recent rules it treats crypto-mining firms as "data center" or "cloud services" businesses, issuing permits subject to foreign-investment regulations (Afriwise, 2024). EIC also coordinates land and tax incentives for large-scale mining operations. While EIC has not yet licensed any home-grown crypto startups, it could in future fast-track blockchain R&D centers or fintech joint ventures. Its partnerships with state agencies (e.g. Ethiopian Electric Power) make it a key interface for energy-intensive blockchain activities (Afriwise, 2024).

11.2 Financial Sector

The finance industry is rapidly opening and diversifying. Commercial banks (e.g. Commercial Bank of Ethiopia, Awash, Dashen) remain dominant but are now under overhaul. In 2024 the banking system was liberalized (allowing foreign banks), the birr was floated, and NBE modernized regulations for capital, consumer protection and FinTech. This reform context encourages banks to adopt innovations: for example, some banks are exploring blockchain for trade finance or securities custody, and more are integrating with instant-payment platforms (EthSwitch). Banks are also likely partners in any digital-asset sandbox or digital-currency pilot, ensuring compatibility with core banking.

Microfinance institutions (MFIs) and cooperatives play a major role in rural finance. Ethiopia has over 1,000 MFIs and SACCOs that serve millions of low-income borrowers (Digital Frontiers Institute, 2023). For example, by mid-2024 Ethiopian MFIs served over 829,000 borrowers and 5.6 million savers, mostly in agriculture and rural trade (Digital Frontiers Institute, 2023). MFIs already use digital channels (agency banking, mobile wallets) to reach clients. They could partner on blockchain-based SME lending platforms or tokenized community savings schemes. Several MFIs are piloting digital-loan apps and biometrics; integrating these with blockchain identity layers could further streamline credit. (Sharia-compliant micro-banks have also begun sponsoring MFIs into the national payments ecosystem(Digital Frontiers Institute, 2023)).

Mobile money operators are now central to financial inclusion. Ethio Telecom's Telebirr (launched 2021) is a national mobile wallet; by January 2025 it had an astounding 51.54 million registered users (Digital Frontiers Institute, 2023). Vodafone-led HelloCash (launched 2015) is the second-largest, with millions of users nationwide (Digital Frontiers Institute, 2023). In 2023 Ethiopia issued the first foreign mobile-money license to Safaricom's M-Pesa (to operate in partnership with a local bank) (Digital Frontiers Institute, 2023). There are also private wallets (e.g. M-Birr, Chirp). These platforms already handle government payments and transfers, and

could serve as rails for blockchain remittances or e-KYC identity. Fintechs can work with Telebirr/HelloCash to pilot tokenized vouchers or programmable payments for SMEs.

Fintech startups and tech firms are emerging rapidly. Notable local fintechs include *Kifiya Financial Technologies* and *BelCash* (leading payment-service providers). Both have recently partnered with Visa for digital payments solutions (Fintech News Network, 2021). *ArifPay* introduced Ethiopia's first mobile point-of-sale (mPOS) devices and raised $3.5 M in funding (awaiting NBE licensing) (Fintech News Network, 2021). Other start-ups like YenePay (online payments) and Chapa (mobile payments) are growing. These firms are building infrastructure (payment aggregators, wallets) that can layer on blockchain apps. For instance, a fintech could enable SMEs to convert earned tokens into fiat or integrate blockchain loyalty points into their offerings.

Currently no crypto exchanges are licensed in Ethiopia. The NBE has clarified that only Birr is legal tender and warned that all crypto trading is illegal (Emurgo Africa, 2022). As a result, Ethiopians who trade cryptocurrencies must use offshore or peer-to-peer channels. In future, regulated exchanges could emerge – especially after anticipated legal reforms (for example, 2024 proclamations explicitly barred crypto payments but envisaged permitting mining and exchanges under license (AInvest, 2025)). Such exchanges would need NBE/INSA approval, KYC/AML systems, and possibly ECMA oversight if they deal in tokenized securities.

11.3 SMEs and Business Community

Micro-, small- and medium-sized enterprises (MSMEs) are the intended primary beneficiaries of digital asset financing. SMEs (which make up the vast majority of Ethiopian firms) struggle to obtain formal credit and payment services. Many SMEs are family-owned and often undercapitalized, so they could gain from blockchain-based financing (e.g. tokenized bonds, crowdfunding) that bypasses traditional intermediaries. Special attention is given to women-led businesses, who face a fintech gap: for example, women in Ethiopia are 27% less likely than men to own a mobile phone UNCDF Policy Accelerator (2024). Since mobile money growth disproportionately benefits women (mobile wallet ownership rose faster for women than men (Digital Frontiers Institute, 2023)), inclusive design is crucial.

Key intermediaries in the business community are the Chamber of Commerce and sector associations. The Ethiopian Chamber of Commerce and Sectoral Association (ECCSA) and regional business councils advocate for SMEs, provide training and market information, and represent private-sector interests to the government. They can help articulate SME needs (e.g. access to finance, payment security) to regulators. Similarly, women's business networks and microenterprise associations can ensure that digital finance products are user-friendly and reach female entrepreneurs. These groups could partner on pilot programs – for instance, organizing blockchain finance workshops or aggregating SME demand for a tokenized lending pool.

11.4 Development Partners and Academia

A range of international and local partners support Ethiopia's digital finance agenda. The World Bank has been heavily involved in digital infrastructure, identification, and financial sector reform. World Bank projects have funded Ethiopia's Digital ID program and its Digital Foundations project, boosting mobile connectivity and payments for millionsworldbank.org. Its 2025 report notes that mobile-money users in Ethiopia jumped to 60 million by end-2024 (from zero in 2020), "driving financial inclusion, particularly for women"worldbank.org. The Bank is also financing a US$700 million financial sector strengthening program, modernizing NBE supervision and state banks.

Donors such as USAID, GIZ, and others are active in financial inclusion and fintech capacity-building (often with private partners). For example, Visa and USAID have collaborated to digitize government payments and boost e-payments systems. FSD Africa (a UK-funded development agency) is providing technical support for Ethiopia's capital market development (helping launch the ESX)uneca.org, and other regional multilateral partners (Afreximbank, the Growth Centre) are advising on digital finance. The Bill & Melinda Gates Foundation funded a workshop on Ethiopia's new securities exchangeuneca.org, reflecting interest in deepening markets via technology.

Gender-focused initiatives are also present. The UNCDF-backed *Women's Digital Financial Inclusion (WDFI) Advocacy Hub* convenes Ethiopian stakeholders – including government (e.g. Ministry of Finance), NGOs and fintech leaders like Kifiya – to promote women's access to digital finance (UNCDF Policy Accelerator, 2024). This coalition provides grants, research and training to ensure blockchain solutions do not overlook female entrepreneurs.

Local academic and research institutions (e.g. Addis Ababa University and engineering schools) are beginning to explore blockchain applications. Some universities are piloting blockchain education and liaising with private firms (for example, implementing blockchain-based student credentialing). Although formal "blockchain labs" are not yet widespread, Addis Ababa University and others have hosted conferences and advised government agencies on fintech risks and opportunities. These institutions can supply technical expertise, train IT professionals and evaluate pilot programs, and could collaborate with international tech partners (e.g. workshops with IOHK/Cardano, which has deployed blockchain IDs in Ethiopia).

Stakeholder	Role / Mandate	Potential Contribution
National Bank of Ethiopia (NBE)	Central bank; issues currency, regulates banks/fintech. Banned crypto payments. Led digital	Licensing of fintech (e.g. Telebirr, M-Pesa); venue for blockchain sandbox; ensures AML/CFT compliance.

	payments strategy.	
Ethiopian Capital Markets Authority (ECMA)	Capital markets regulator; oversees securities and exchanges. Launching Ethiopia Securities Exchange (ESX).	Regulates tokenized assets; partners on blockchain for capital markets (e.g. tokenized bonds, SME listings on ESX).
Ministry of Innovation & Technology (MoIT)	National ICT/digital strategy; leads "Digital Ethiopia 2025" (including NDPS). Oversees tech policy and capacity.	Enables tech pilots (e.g. digital ID projects); incubates startups; coordinates with donors for tech reforms.
Information Network Security Agency (INSA)	Cybersecurity agency; regulates cryptographic products and digital transactions. Enforces crypto-registration and bans.	Monitors blockchain security; could host crypto-registry; works with NBE on compliance and network security.
Ethiopian Investment Commission (EIC)	Investment *licensing and promotion*. Licenses foreign crypto-mining as "data center" investments. Manages investor facilitation.	Attracts blockchain/crypto FDI; fast-tracks infrastructure (land, incentives) for mining and fintech projects; liaises with MoI on investment policy.
Commercial Banks	Deposit-taking, lending, payment clearing. Undergoing liberalization (foreign entry allowed).	Could offer crypto custody, blockchain trade finance, tokenized loans; integrate with national switch (EthSwitch); partnership on digital finance outreach.
Microfinance Institutions (MFIs)	Provide small loans/savings to rural/MSME sector (829k borrowers).	Distribute blockchain-based credit or savings products; use agent networks for token distribution; pilot micro-remittance or "buy now, pay later" via smart contracts.
Mobile Money Operators (Telebirr, HelloCash, M-Pesa, etc.)	Mobile-wallet providers serving consumers and SMEs. Ethio Telecom's Telebirr: 51.5M users (Jan 2025); HelloCash (Vodafone) and M-Birr have millions; M-Pesa just licensed.	Channels for blockchain payments and ID; could enable tokenized merchant payments; partner on blockchain-based subsidies or remittances; integrate with digital-ID systems.

Fintech Startups & Tech Firms	Private payment/tech innovators (e.g. Kifiya, BelCash; ArifPay; YenePay, Chapa, etc.).	Develop blockchain applications (e.g. digital ledgers, crypto wallets); partner with banks/NBE on pilots; bring external expertise and agility; bridge gaps (e.g. P2P lending platforms).
Licensed Crypto Exchanges	*None to date.* Crypto payments are illegal (no recognized exchange).	*In future, could provide on/off-ramps, AML-compliance, custodian services if regulations permit. Early-stage partnerships would require NBE/INSA approval.*
SMEs (incl. women-led businesses)	End-user and beneficiary group (~90% of firms). Often credit- and tech-constrained. Women face lower mobile access.	Demand-side for tokenized finance (crowdfunding, asset-backed tokens); pilot users of blockchain platforms; feedback on usability; multiplier effect on rural employment.
Business Associations (Chambers, sector groups)	**Organize and represent business interests (e.g. Ethiopian Chamber of Commerce). Provide SME training and advocacy.**	Voice industry needs policymakers; help design usable products; implement outreach/training on blockchain finance; coordinate cluster projects (e.g. agriculture tokens).
World Bank	Finances and advises on digital finance and inclusion. Funded Digital ID, payments, digital literacy.	Provides grants/loans for blockchain pilots (e.g. digital bonds); technical assistance on regulation and infrastructure; promotes best practices (financial inclusion, gender).
Development Partners (USAID, GIZ, etc.)	Bilateral donors supporting ICT and finance. Example: USAID (digital strategy, public-private partnerships); GIZ (tech innovation programs).	Capacity-building for regulators and banks; co-funding of fintech incubators; piloting solutions (e.g. GIZ could fund blockchain traceability in agriculture).

FSD Africa / Gates Foundation	Fintech development agency (FSD Africa) and philanthropic funder. Helped establish ESX.	Technical support for financial infrastructure; funding market studies and regulatory sandboxes; championing inclusive tech. Gates Foundation funding signals global interest.
UNCDF / WDFI Hub	Catalyst for women's digital finance (UNCDF initiative). Hosts a multi-stakeholder coalition advocating gender-inclusive policy.	Elevates women's needs; funds pilots for women entrepreneurs; liaises with NBE and MoF to integrate gender in financial policy; connects local voices to global forums.
Academic/Research Institutions	Universities and think tanks (e.g. Addis Ababa University). Conduct fintech/blockchain R&D and training.	Generate local expertise; evaluate pilots; advise government; partner on projects (e.g. blockchain-based credential programs). Can help build a talent pipeline for digital finance.

12 Benchmarking

This chapter provides comparative insights from other African countries to inform Ethiopia's approach to digital asset infrastructure. It analyzes how Nigeria, Kenya, and South Africa – three leading African markets – have approached digital asset and blockchain adoption, regulation, and ecosystem development. Brief examples from additional countries(Ghana, Rwanda, Mauritius, etc.) are included to contextualize regional dynamics. The analysis covers public and private sector strategies, extracting best practices and lessons learned that are relevant to Ethiopia's regulatory and technical roadmap. Throughout, emphasis is placed on recent developments (2023–2025) and evidence (qualitative and quantitative) to ensure relevance to Ethiopia's current context. The chapter is organized by country, with clear subheadings, and all information is referenced in-text. A literature list in Harvard style is provided at the end.

12.1 Nigeria: A Regional Leader in Adoption and Evolving Regulation

12.1.1 Adoption and Use Cases

Nigeria stands out as a regional leader in digital asset adoption. It has one of the highest rates of cryptocurrency use in the world – by 2024 Nigeria ranked 2nd globally on Chainalysis's Crypto Adoption Index (Chainalysis, 2024). An estimated 10%+ of Nigerians (over 20 million people) own cryptocurrency (Triple A, 2022), driven largely by real-world use cases. Nigerian users leverage crypto for practical purposes such as everyday payments, remittances, and as a hedge against inflation in an environment of currency volatility (Chainalysis, 2023). Notably, Nigeria's youthful, tech-savvy population has embraced crypto as an alternative where traditional finance has gaps. For example, faced with a weakening naira and high inflation, many Nigerians have turned to stablecoins (USD-pegged digital currencies) to store value and facilitate trade. In 2023–24 Nigeria received around $59 billion in cryptocurrency value – largely in smaller retail transactions – indicating widespread grassroots usage (Chainalysis, 2024). This phenomenal uptake has been described as Nigerians using crypto for "practical needs … as a hedge against economic challenges" rather than just speculation (Chainalysis, 2024). High adoption has also been fueled by the need for cheaper and faster remittances and payments. Nigeria consistently ranks among the top African countries for peer-to-peer (P2P) crypto trading volumes, reflecting how users circumvent formal banking restrictions to transact directly (Emurgo Africa, 2024).

12.1.2 Regulatory Evolution

Nigeria's regulatory approach has evolved from initial restriction to gradual acceptance and oversight. In February 2021, the Central Bank of Nigeria (CBN) took a very restrictive stance by directing banks to stop servicing cryptocurrency transactions, effectively cutting off exchanges from the banking system (Dzirutwe, 2023). While this was often termed a "ban," it was not a ban on crypto ownership per se, but it prohibited banks from facilitating crypto-related payments. The immediate effect was that Nigerian crypto activity went underground into P2P channels. Despite the clampdown, crypto use continued to grow – indeed between mid-2022 and mid-2023, Nigerian crypto transaction volumes still rose about 9% to reach $56–57 billion (Dzirutwe, M., 2023). This underscored strong latent demand and the difficulty of an outright ban in practice. Recognizing global trends and local reality, Nigerian authorities started shifting toward a more balanced approach by 2022. The Securities and Exchange Commission (SEC) of Nigeria took the lead in drafting rules to regulate digital assets. In May 2022 the SEC issued digital asset regulations that defined categories of crypto service providers and sought to register and license them (International Bar Association, 2024). However, implementation was initially slowed by the CBN's banking ban. By late 2023, a pivotal change occurred: the CBN lifted the restriction on banks serving crypto firms, on the condition

that such firms are licensed by the SEC (Dzirutwe, 2023). In a December 2023 circular, the CBN allowed banks to open accounts for Virtual Asset Service Providers (VASPs) under new guidelines, formally reversing the 2021 prohibition (CBN, 2023). This move acknowledged that completely prohibiting crypto was untenable and that regulation was needed instead of suppression.

Parallel to the central bank's actions, the Nigerian SEC rolled out an Accelerated Regulatory Incubation Program (ARIP) to bring crypto businesses into compliance. Under ARIP, all crypto service providers must register with the SEC and undergo an assessment/sandbox process before getting full licenses (Adeyemo, 2025). By mid-2024, this program had yielded tangible results: at least two Nigerian crypto exchanges (e.g. Busha and Quidax) were granted provisional licenses to operate under SEC oversight (Adeyemo, 2025). This demonstrates a proactive move toward regulatory clarity – effectively balancing innovation with oversight. Rather than a blanket ban, Nigeria is migrating to a framework where crypto exchanges and fintech startups can operate legally, but within guardrails (e.g. registration, reporting requirements, consumer protections). In another landmark development, Nigeria's government passed a new Investments and Securities Act 2025, signed into law in April 2025, which formally recognizes digital assets as securities under SEC regulation (Adeyemo, 2025). This law expands the definition of securities to include digital assets and investment tokens, giving the SEC clear authority to regulate crypto markets. It also introduces stricter penalties for fraud (e.g. Ponzi schemes involving crypto) – an effort to protect consumers in the crypto space (Adeyemo, 2025). Overall, Nigeria's regulatory journey – from a de facto ban to a licensing regime within a few years – provides a valuable case study. It shows the importance of adapting regulations in response to market demand and risks. The Nigerian approach now aims to legitimize the industry (bringing it into the regulatory fold for monitoring and taxation) while mitigating financial crime and systemic risks. This measured strategy of "regulated openness" offers lessons for Ethiopia: overly restrictive policies can drive crypto activity into the shadows, whereas a supervised framework (e.g. requiring exchange licenses, enforcing AML/CFT rules) can allow innovation to flourish under watchful eyes.

12.1.3 Public Sector Innovation (CBDC) and Challenges

Nigeria has also been a pioneer in public sector digital currency. In October 2021, the CBN launched the eNaira, Africa's first central bank digital currency (CBDC), aiming to improve financial inclusion and digital payment efficiency. The eNaira initiative reflects Nigeria's willingness to experiment with blockchain technology at a national scale. However, uptake of the eNaira has been very limited so far. By early 2024 – almost three years after launch – the eNaira accounted for less than 0.5% of currency in circulation in Nigeria (Tekedia, 2024). According to CBN statistics, only about ₦14 billion worth of eNaira was in circulation by Q1 2024, which was under 1% of the total money supply (Tekedia, 2024). Moreover, studies found that roughly 98% of eNaira wallets were inactive by 2023 (Milken Institute, 2023), indicating that most people who downloaded the app did not end up using it regularly. Many Nigerian

users have simply preferred established private crypto-assets – especially USD stablecoins – over the nascent official CBDC (Milken Institute, 2023). The tepid performance of the eNaira offers a cautionary lesson. It suggests that simply deploying a CBDC, without strong user incentives and trust, may not achieve wide adoption. In Nigeria's case, factors such as limited merchant acceptance, low public awareness, and competition from dollar-denominated stablecoins have hampered the eNaira's appeal. For Ethiopia, the Nigerian CBDC experience underscores that public sector digital innovations must be demand-driven and user-friendly to succeed. It also shows that a CBDC should complement, not replace, a well-regulated cryptocurrency ecosystem. While a CBDC can enhance digital payments, its success will likely depend on integrating with existing financial habits and solving pain points (e.g. easing remittances or government payment distribution).

12.1.4 Lessons for Ethiopia

Nigeria's experience yields several pertinent lessons for Ethiopia's digital asset roadmap. First, the high crypto adoption in Nigeria demonstrates latent demand in emerging markets for alternative financial tools – often to fill gaps left by traditional finance (e.g. inflation hedging, remittances, access to investment). Ethiopia, which has a similarly young population and currency stability issues, could see a comparable grassroots interest in crypto; this suggests Ethiopian regulators should be prepared rather than dismissive. Second, Nigeria's policy trajectory highlights the risks of a prohibition approach. A banking ban did not stop crypto use; instead, it pushed it into less transparent channels. Ethiopia can learn that engagement and regulation may be more effective than exclusion. Crafting a clear legal status for digital assets (as Nigeria did in 2025) and allowing controlled experimentation (e.g. sandboxes akin to Nigeria's ARIP) can help harness the benefits while managing risks. Third, Nigeria's coordination between central bank and securities regulator – eventually aligning to allow licensed crypto firms – shows the importance of regulatory cooperation. Ethiopia might similarly need coordination between the National Bank of Ethiopia (for payments and FX concerns) and other bodies like the Financial Intelligence Service or a future capital markets authority, to ensure a consistent stance on crypto-assets. Finally, Nigeria's mixed outcomes with the eNaira indicate that technology alone isn't a silver bullet; user adoption must be earned. Ethiopia should thus focus on use-case relevance and public trustfor any digital currency initiatives (whether facilitating crypto-based services or potentially exploring an Ethiopian CBDC in the future). In sum, Nigeria offers a playbook of early missteps and subsequent corrections that Ethiopia can study to proactively chart a balanced path – encouraging innovation, protecting consumers, and aligning with international best practices (e.g. licensing and AML norms).

12.2 Kenya: Fintech Foundation and Emerging Crypto Innovation

12.2.1 Digital Finance Ecosystem

Kenya is often cited as Africa's fintech trailblazer, thanks to its pioneering of mobile money and digital financial services. This fintech-friendly environment has laid a strong foundation for cryptocurrency and blockchain innovation. Over 15 years ago, Kenya launched M-Pesa, the mobile money platform that now reaches the vast majority of Kenyan adults. The success of M-Pesa (which enables easy mobile phone payments and transfers) familiarized Kenyans with digital wallets and non-cash currency, effectively priming the population for crypto adoption (Mwangi, 2020). By 2023, an estimated 6+ million Kenyans owned cryptocurrency – roughly 10–11% of the population – one of the highest rates in Africa (Triple A, 2022; Emurgo Africa, 2024). In 2021, Kenya even briefly led the world in peer-to-peer cryptocurrency trading volume, according to Chainalysis data (Mutemi, 2021). This reflects a high grassroots uptake, driven by a tech-savvy youth demographic and an entrepreneurial fintech culture.

12.2.2 Use Cases and Private Sector Innovation

Kenyan startups have been at the forefront of leveraging blockchain to solve financial inefficiencies. A notable example is BitPesa (now AZA Finance), founded in Nairobi in 2013, which uses crypto (Bitcoin and later stablecoins) as a bridge currency to facilitate cross-border payments and forex exchange in Africa. By using blockchain rails, BitPesa has managed to drastically lower the cost of remittances and international transfers. Traditional remittances to Kenya (e.g. via banks or money transfer operators) often cost 7–10% (or more) in fees, and even higher (up to ~15%) for small transfers to rural areas (World Bank, 2023). In contrast, crypto-powered remittance services like BitPesa charge fees as low as 1–3%, and in some corridors even under 1% of the transaction value (Alo, 2020; Forkast News, 2020). One Kenyan fintech wallet recently enabled remittances for a 0.1% fee – essentially near-zero cost – as a demonstration of the efficiency gains possible with digital currency rails (FSD Africa, 2017). While 0.1% is an extreme case, it underscores that blockchain transactions can bypass many intermediaries, saving on costs. Kenya's remittance market, which is significant (nearly $5 billion in inflows annually), has thus seen new competitive pressure from crypto startups that promise faster and cheaper transfers. This has broader implications for financial inclusion: lower remittance fees mean more money in the hands of Kenyan families relying on diaspora income, and crypto platforms can reach users in remote areas not well-served by banks.

Beyond remittances, Kenyan companies are using blockchain in various sectors. For instance, Pesabase offers blockchain-based micro banking and remittance services in East Africa (Emurgo Africa, 2024). Pezesha leverages blockchain for SME financing platforms, and UTU is a Kenyan project building decentralized digital identity and trust infrastructure. These homegrown innovations show how Kenya's private sector is actively exploring blockchain to extend credit, improve transparency, and connect to global markets. Notably, many Kenyan crypto ventures integrate with or build on the existing mobile money infrastructure (e.g., allowing easy conversion of M-Pesa to crypto and vice versa). This synergy between mobile

money and crypto is a key strength: it provides an on-ramp for users and a distribution network for blockchain services. Essentially, Kenya's strategy (albeit led by industry rather than government) has been to "build on what works" – using the widespread adoption of mobile wallets as a springboard for new digital asset services.

12.2.3 Government Stance and Initiatives

The Kenyan government's formal regulatory stance on crypto has been cautious but not outright hostile. As of 2024, Kenya does not yet have comprehensive crypto-specific regulations or laws in force; however, significant groundwork is being laid. Early on, Kenya demonstrated high-level interest in emerging technologies: in 2018 the government formed a Blockchain and AI Taskforce (headed by former ICT minister Bitange Ndemo) to explore use cases for blockchain in public services (GoK, 2019). This taskforce's report (2019) recommended several pilot projects, such as applying blockchain to land registry to tackle title fraud, and using blockchain for education certificates to prevent forgery. It also floated the idea of a "digital Kenyan shilling"(CBDC) and encouraged a regulatory sandbox for crypto innovations. While implementation of these recommendations has been slow, they signaled an openness at the policy level. In the ensuing years, Kenyan authorities primarily issued warnings to the public that cryptocurrencies were unregulated and risky, but did not ban their use. The Central Bank of Kenya (CBK) has repeatedly stated (in 2018 and 2020 notices) that crypto is not legal tender and that users have no legal protection – a typical stance of caution (CBK, 2020). Despite this, the CBK also began studying digital currencies: by 2022 it had issued a discussion paper on a Kenyan CBDC, seeking public input on potential benefits (CBK, 2022).

A notable regulatory development came through taxation policy. In 2023, Kenya's parliament passed a Finance Act that introduced a Digital Asset Tax, essentially a 3% tax on income derived from the transfer or exchange of digital assets (GoK, 2023). This tax, which came into effect in 2024, is one of the first explicit legal measures on cryptocurrency in Kenya. Its introduction indicates that the government recognizes the growing crypto trade and aims to derive revenue from it (TechCrunch, 2023). However, industry stakeholders raised concerns that an excessive tax could stifle the nascent sector or drive it underground (Muchira, 2023). The Blockchain Association of Kenya (BAK), an industry body, engaged with lawmakers to advocate for sensible regulation. In late 2023, the Kenyan Parliament's Finance Committee asked BAK to help draft a bill for comprehensive crypto regulation – a sign of public-private dialogue beginning (Emurgo Africa, 2024). As of early 2024, work was underway on a Virtual Assets Service Providers (VASP) draft bill, which aims to define licensing requirements for crypto exchanges and providers in Kenya (Emurgo Africa, 2024). This would bring Kenya in line with FATF standards and provide legal certainty for operators. Kenya also launched a regulatory sandbox under its Capital Markets Authority that has admitted some blockchain firms (CMA, 2022). Meanwhile, the Central Bank has been exploring retail CBDC feasibility but has not yet decided to launch one, taking lessons from Nigeria's eNaira experience.

In summary, Kenya's public sector approach can be characterized as "observe, support innovation, and gradually formalize". The government leveraged task forces and sandboxes to learn about the technology, allowed the private sector to innovate (Kenya did not impose harsh bans like Nigeria did in 2021), and is now moving towards establishing guardrails (through taxation and forthcoming regulations).

12.2.4 Lessons for Ethiopia

Kenya's experience offers a compelling model of how a conducive digital ecosystem can amplify the benefits of blockchain. A key lesson is the importance of leveraging existing digital infrastructure – in Kenya's case, mobile money networks – to drive crypto adoption. Ethiopia, which has its own growing mobile money platforms (e.g. Telebirr) and digital ID initiatives, can similarly integrate digital asset solutions with these platforms to reach scale quickly. For example, a blockchain-based remittance or micro-lending solution in Ethiopia could plug into widely-used mobile wallets for user convenience. Another lesson is that crypto can directly contribute to financial inclusion if aligned with everyday needs. In Kenya, using crypto for remittances addressed a real pain point (high fees), thereby accelerating adoption. Ethiopia should identify comparable use cases that resonate locally – such as facilitating remittances from the Ethiopian diaspora, tokenizing agricultural supply chains for farmers, or providing alternative savings products in a high inflation environment.

Regulatory-wise, Kenya illustrates a measured approach: the authorities did not rush to regulate or ban, but first sought to understand the technology (through studies and industry engagement). This helped avoid stifling innovation during early stages. Ethiopia could benefit from a similar learning period, for instance by establishing a multi-stakeholder task force on blockchain/DLT to explore pilot projects (as Ethiopia's Information Network Security Agency INSA reportedly did with a crypto mining initiative), and by creating a regulatory sandbox for fintech and crypto startups. At the same time, Kenya's case shows the need to eventually provide legal clarity – the ongoing efforts to craft a VASP bill indicate that industry can grow faster once clear rules are set. Ethiopia should likewise work towards a legal framework for digital assets (perhaps updating its financial or IT laws) to define the status of cryptocurrencies and tokenize assets, rather than leaving them in a gray zone.

Finally, Kenya demonstrates the economic opportunity of embracing fintech innovation. Kenyan blockchain startups have attracted investment and created solutions now exported to other markets (e.g. AZA Finance operates in multiple countries). By fostering a supportive environment, Ethiopia could become a regional hub for certain blockchain applications (for example, Addis-based startups targeting francophone Africa markets). The balance for Ethiopia will be to encourage such innovation (through supportive policies, hackathons, public sector pilot projects) while also ensuring consumer protection (learning from Kenya's deliberative approach to regulation and public warnings about risks). In essence, Kenya's story is one of fintech-driven progress – Ethiopia can draw inspiration from how Kenya harnessed digital

finance to leapfrog in inclusion, and now is cautiously extending that ethos into the realm of cryptocurrency and blockchain.

12.3 South Africa: Institutional Adoption and Formal Regulatory Framework

12.3.1 Market Maturity and Adoption

South Africa has one of the most developed financial markets in Africa, and this maturity is reflected in its approach to digital assets. Crypto adoption in South Africa, while not as pervasive at a grassroots level as in Nigeria or Kenya, is still significant – about 10% of South Africans (roughly 5–6 million people) owned cryptocurrency as of 2022 (Business Insider Africa, 2022). South Africans tend to use crypto both as an investment (trading on exchanges) and for specific use cases like online purchases or remittances. Notably, South Africa has a higher presence of institutional players in crypto markets. By 2023, all major South African banks were exploring or offering some form of digital asset service, whether through custody solutions, exchange-traded notes on Bitcoin, or blockchain-based pilots for interbank payments (Standard Bank, 2023; SABRIC, 2023). This mainstream financial sector involvement sets South Africa apart from the more informal, retail-driven adoption in Nigeria and Kenya. For instance, stablecoin usage in South Africa has grown rapidly for corporate treasury and remittance purposes; by late 2023, stablecoins (like USDC) became more popular than Bitcoin on local exchanges, reflecting demand for low-volatility digital assets (Chainalysis, 2024).

12.3.2 Regulatory Clarity and Legal Status

A hallmark of South Africa's approach is the early provision of regulatory clarity. South African regulators moved relatively quickly to define the legal status of crypto-assets within existing financial law. In October 2022, the Financial Sector Conduct Authority (FSCA – South Africa's financial regulator) formally declared crypto assets to be "financial products" under the Financial Advisory and Intermediary Services (FAIS) Act (FSCA, 2022). This classification meant that any entity giving advice or intermediary services regarding crypto must be an authorized financial services provider under the act – effectively bringing crypto exchanges and brokers under regulatory supervision. This was a major step that institutionalized the crypto industry: exchanges had until mid-2023 to apply for licenses, and anti-money-laundering and consumer protection rules became enforceable in the crypto sector (CMS Law, 2023). By recognizing crypto in law (instead of leaving it unregulated), South Africa aimed to protect investors and integrate crypto into the formal financial system. Additionally, South Africa updated its laws to

address crypto's inclusion in the financial system's risk framework – for example, it implemented the "travel rule" (in 2023–24) requiring crypto asset service providers to share sender/receiver information for transactions, aligning with FATF standards on crypto-asset transfers (Notabene, 2025).

12.3.3 Institutional and Private Sector Initiatives

South Africa's established financial institutions have generally engaged with blockchain technology in collaboration with regulators. A prime example is the Project Khokha series – experimental projects led by the South African Reserve Bank (SARB) involving major banks to test DLT for interbank settlements and wholesale payments. Project Khokha (Phase 1 in 2018, Phase 2 in 2021) successfully demonstrated that a blockchain-based system could handle high volumes of interbank payments (essentially a prototype for a wholesale CBDC) (SARB, 2021). These projects, involving consortia of commercial banks, indicate a top-down interest in harnessing blockchain for efficiency in the existing banking system. Commercial banks have also pursued their own initiatives: for instance, Standard Bank (Africa's largest bank) launched a blockchain-powered foreign exchange and payment platform for African currencies, and invested in infrastructure for crypto custody to safely hold digital assets on behalf of clients (Ledger Insights, 2021). Another major bank, First National Bank (FNB), ran an innovation lab that explored stablecoins for cross-border transfers within the Southern African region. Unlike in some countries where banks have shunned crypto, in South Africa the approach has been to cautiously participate, often under regulatory sandbox conditions.

The country also hosts a regulatory sandbox (operated by the Intergovernmental Fintech Working Group, IFWG) that has admitted crypto and blockchain startups to test innovative products under oversight. One notable success story is VALR, a South African crypto exchange that grew to become one of Africa's largest, operating with proactive engagement with regulators. By having clear guidelines (post-2022 classification) and dialogue (the IFWG has published crypto asset regulatory working group papers since 2019), South Africa created an environment where legitimate businesses can thrive while illegal operators are discouraged. Indeed, in 2023 the South African authorities issued cease-and-desist orders against several unlicensed crypto schemes and ponzi operations, signaling that enforcement is stepping up now that a framework is in place (BusinessTech, 2023).

12.3.4 Public Sector and Continental Role

South Africa's balanced approach also extends to participation in continental efforts. As a member of the G20 and Financial Stability Board, South Africa often serves as a reference point for other African regulators formulating their crypto policies. In 2023, South Africa became one of the first African countries to implement comprehensive crypto asset AML rules (FIC, 2023), and it has announced plans to introduce a regulatory framework for cross-border crypto transactions by 2025 to manage risks related to capital flight and illicit flows (Adeyemo,

2025). Additionally, the South African Reserve Bank has been exploring a retail CBDC and is contributing to multi-country digital currency initiatives (such as a pilot with other SADC countries on a regional settlement token). These show that South Africa aims to stay at the forefront of fintech innovation while maintaining financial stability.

12.3.5 Lessons for Ethiopia

South Africa's experience underscores the importance of clear legal definitions and involvement of traditional financial institutions in building a robust digital asset ecosystem. A key lesson is that bringing crypto into the regulatory perimeter early can mitigate a lot of risks. By classifying and licensing crypto service providers, South Africa managed to reduce regulatory uncertainty, which in turn invited more responsible participation from established companies (e.g., banks, institutional investors). For Ethiopia, which is in the process of modernizing its financial sector (e.g. upcoming capital market launch), embedding crypto-assets into its financial regulations from the outset could be wise. This might mean, for example, empowering an Ethiopian regulator (such as the Financial Markets Authority once established under the new Capital Markets Proclamation) to oversee digital asset offerings and exchanges. Ethiopia can draw from South Africa's definitions (treating crypto as a financial product or security depending on its nature) to craft its own legal taxonomy.

South Africa also illustrates how engaging incumbents (banks, payment providers) can help scale infrastructure and lend credibility to digital assets. Ethiopian banks and financial institutions, once properly briefed and guided by regulators, could play a constructive role – perhaps by operating permissioned blockchain networks for interbank processes, or by offering custodial services that make it safer for the public to hold digital assets. Rather than seeing fintechs and banks at odds, the South African case encourages collaboration. This reduces the friction in adoption (customers can move money between bank accounts and crypto wallets more easily when banks are on board) and improves oversight (banks are experienced in compliance and can extend those controls to crypto dealings).

Another lesson is the value of regulatory sandboxing and pilots. South Africa's controlled experiments (like Project Khokha, and sandbox trials of crypto startups) allowed learning and risk assessment in a contained way. Ethiopia, too, could employ pilot projects – for instance, a pilot for blockchain-based bond issuance or a trial of a supply-chain tokenization platform with a limited user group – under close supervision. Such pilots, as part of a feasibility study implementation, would mirror South Africa's method of iterative innovation.

Finally, South Africa's focus on balancing innovation with risk management is instructive. Even as it embraces crypto, it is implementing strict AML/CFT measures and preparing rules for cross-border use to protect its currency. Ethiopia, which maintains capital controls and has a nascent financial system, would similarly need to balance openness with prudence. For example, if Ethiopia permits crypto trading, it might initially do so in a sandbox or with strict

limits (as South Africa did, treating it as a financial service). If it explores a digital Birr (CBDC), it can glean from South Africa's studies how to design it interoperably with other systems. In summary, South Africa's journey suggests that a formalized, institution-friendly **approach**, grounded in robust regulation and proactive innovation, can integrate digital assets into an economy without undermining financial stability. Ethiopia's regulators could use South Africa as a benchmark for crafting policies that encourage mainstream adoption (by building trust through regulation), rather than an unregulated proliferation or a ban that leaves potential benefits untapped.

12.4 Additional African Benchmarks

While Nigeria, Kenya, and South Africa represent leading cases, other African countries provide additional insights relevant to Ethiopia. This section briefly highlights a few such benchmarks to illustrate broader regional dynamics:

12.4.1 Ghana – Steps Toward Regulation

Ghana is an example of a country with rapidly growing crypto usage that is now moving toward a regulatory framework. As of 2023, around 3 million Ghanaians (roughly 17% of adults)owned cryptocurrency, reflecting surging adoption amid economic challenges (Crawley, 2025). Ghana's central bank has until recently warned that crypto is unregulated, but recognizing the trend, it is finalizing new rules. In mid-2025, the Bank of Ghana announced plans to license cryptocurrency exchanges and firms by the end of 2025. A regulatory bill is being submitted to Parliament to provide oversight of digital asset trading, with the twin aims of capturing tax revenue and protecting the local currency (Asiama, 2025). Ghana's approach is essentially to preemptively regulate – learning from Nigeria's turmoil – so that as crypto adoption rises, it happens in a supervised environment. This resonates with Ethiopia's needs: establishing a regulatory framework *before* crypto use becomes widespread can help mitigate risks and integrate the sector with fiscal and monetary policy goals. Ghana is also noteworthy for its exploration of a CBDC (the e-Cedi pilot) and digitization of gold-backed tokens by private innovators, showing a willingness to blend fintech with traditional assets. The lesson for Ethiopia is to monitor peer countries' regulatory milestones closely – Ghana's upcoming licensing of exchanges, for example, might provide a template for licensing requirements, consumer protection norms, and technical standards that Ethiopia could adapt.

12.4.2 Rwanda – Fintech Sandbox and Strategic Vision

Rwanda has positioned itself as a future fintech hub and is proactively embracing regulatory innovation to attract digital finance investment. In 2022, Rwanda's Capital Market Authority and Central Bank launched a Fintech Regulatory Sandbox, which by 2024 had admitted over a dozen firms testing solutions including blockchain-based products (Ashimwe, 2025). The

sandbox allows live experimentation under oversight, enabling regulators to learn and companies to refine their services. Additionally, in 2023–2025 Rwanda implemented a new National Fintech Strategy aiming to boost fintech adoption to 80% of the population and create thousands of jobs (Government of Rwanda, 2023). As part of this plan, emerging technologies like blockchain are championed for their potential in areas like payments, savings groups, and land administration. Rwanda's government has emphasized aligning fintech innovation with national development goals (e.g. promoting financial inclusion which is already above 90% in Rwanda). This deliberate top-down support, combined with agile regulation (sandboxes, tech-neutral laws), is yielding a conducive environment for digital assets – for instance, Rwanda is exploring stablecoins for cross-border payments to reduce costs for merchants (Uwase, 2024). The Rwandan case teaches Ethiopia the value of strategic alignment and capacity-building. By treating fintech and digital assets as strategic sectors, Rwanda is investing in both infrastructure and skills (including hosting Africa's Inclusive Fintech Forum). Ethiopia could similarly incorporate digital assets into its Digital Ethiopia strategy and upcoming financial sector reforms, ensuring that there is institutional support (and not only oversight) for innovation. Establishing a sandbox in Ethiopia – as a controlled space to pilot crypto applications relevant to Ethiopia (e.g. agritech or remittances) – would directly borrow from Rwanda's playbook and help regulators build expertise through hands-on supervision.

12.4.3 Mauritius – Comprehensive Legal Framework and Fintech Hub Aspirations

Mauritius, though a small economy, has been a pioneer in Africa for digital asset regulation. It recognized early that having clear laws could attract fintech businesses to its jurisdiction. In 2021, Mauritius enacted the Virtual Asset and Initial Token Offering Services (VAITOS) Act, which took effect in 2022 (FSC Mauritius, 2022). This law created a comprehensive licensing regime for Virtual Asset Service Providers and set out rules for token offerings, custodians, exchanges, and other services. Under the VAITOS framework, entities dealing in crypto must obtain one of several classes of licenses from the Financial Services Commission, meet capital and cybersecurity requirements, and comply with AML/CFT regulations. Notably, Mauritius distinguishes digital assets from traditional securities, providing clarity on what falls under securities law versus the new virtual asset law (Appleby, 2023). By formalizing these definitions, Mauritius offers legal certainty to crypto projects – for example, a security token would be treated under the securities act, whereas a utility token might be regulated only under the VAITOS Act. In addition, Mauritius has been running a regulatory sandbox license program since 2016 that has welcomed blockchain startups (including in areas like insurance and payment solutions), thus branding itself as a fintech-friendly domicile. The outcomes are evident: Mauritius now hosts a growing number of fintech firms serving African markets, and its regulatory model (often cited alongside Gibraltar and Malta in crypto-friendly jurisdictions) shows that stringent but clear regulation can attract credible players while deterring illegitimate ones. For Ethiopia, Mauritius exemplifies how legal frameworks can be modernized to accommodate digital assets – something Ethiopia could consider via amendments or new

proclamations. It also illustrates the potential economic benefits: by clarifying crypto legality, Mauritius has seen investment flow into its fintech sector. While Ethiopia's domestic market is much larger (hence the approach will differ), the principle remains that a well-crafted law can both protect consumers and encourage investment. Should Ethiopia aim to become a regional center for digital finance (leveraging Addis Ababa's position as a diplomatic hub, for instance), it might draw on elements of Mauritius's regulatory architecture – such as tailored licensing for exchanges, token offering regulations to facilitate compliant ICOs/STOs, and strict enforcement against non-licensed activities to build market confidence.

12.4.4 Nigeria's eNaira and Other CBDC Efforts

Apart from the private-sector focused benchmarks, it's worth noting African public sector innovations in digital currency. Nigeria's eNaira launch (2021) has already been discussed – it was the continent's first live retail CBDC, aimed at expanding financial inclusion and modernizing payments. Although its adoption remains low (under 1% of Nigerians use it regularly), the project provided valuable lessons on user education, technology infrastructure, and the importance of use-case design. Other countries are watching closely or conducting their own pilots: for example, Ghana's central bank piloted an e-Cedi in 2022, Namibia launched a CBDC pilot in 2023, and Morocco and Tunisia have researched state digital currencies. Even within East Africa, countries like Uganda and Tanzania have formed committees to study CBDCs in the wake of Nigeria's experience. The proliferation of these efforts signals that African regulators see some merit in public digital currencies, whether to reduce cash handling costs, improve monetary policy transmission, or counter the rise of private cryptos. For Ethiopia, which also faces a heavily cash-based economy, a CBDC could in theory be beneficial – but the Nigerian case cautions that success depends on many factors beyond merely launching the technology (e.g. ensuring adequate merchant ecosystem, clear advantages over cash, etc.). Ethiopia can extract lessons from these pioneers: start small (pilot testing), involve users early, and clarify how a digital Birr would coexist with other digital assets (rather than attempt to replace them).

In summary, these additional benchmarks reinforce the main themes found in Nigeria, Kenya, and South Africa: rapid adoption is happening across Africa, prompting governments to respond through either enabling regulation or direct innovation. They highlight various tools – comprehensive laws (Mauritius), sandbox frameworks (Rwanda), targeted regulation like licensing and tax (Ghana) – that Ethiopia can mix and match in forging its own path. The experiences also stress that context matters: each country calibrates its approach based on local objectives (whether attracting investment, boosting inclusion, or protecting the currency). Ethiopia should therefore weigh these comparative insights against its unique national priorities (e.g. controlling capital outflows, promoting exports, digitizing the economy) to develop a tailored yet informed strategy. Ultimately, the African examples collectively suggest that engagement with the digital asset revolution is inevitable; the question for

Ethiopia is how to harness it in a way that aligns with Ethiopia's development goals and safeguards the public interest.

12.5 Relevance to Ethiopia and Concluding Remarks

Across the African benchmarks examined, a clear pattern emerges: digital assets are gaining ground in Africa, and regulatory and ecosystem responses are evolving rapidly between 2023 and 2025. Countries that were initially skeptical (or even prohibitive) have shifted to more nuanced positions, acknowledging both the opportunities and the risks of crypto and blockchain technology. For Ethiopia, which is just beginning to explore the feasibility of digital asset adoption, these case studies provide a valuable fast-track to understanding what works and what pitfalls to avoid.

Some best practices and lessons distilled from the benchmarking analysis include:

Embrace Innovation with Oversight: A common lesson is that a blanket ban on cryptocurrencies is generally ineffective long-term and forfeits potential benefits. Instead, the "regulate rather than ban" approach (seen in Nigeria's U-turn and South Africa's proactive stance) is more promising. Ethiopia should consider creating a legal pathway for digital asset businesses – e.g., through licensing, registration or sandbox programs – so that innovation happens in a supervised manner. This can help mitigate illicit use while encouraging legitimate solutions (such as blockchain for SME finance or remittances) to develop under regulatory eyesight.

Align with National Goals: Each country studied found ways to align digital assets with broader economic or financial inclusion goals. Kenya leveraged crypto to cut remittance costs for its diaspora and citizens; Rwanda sees fintech as a driver for investment and jobs; Nigeria linked its regulatory acceptance to fostering innovation in capital markets (with the SEC explicitly aiming to "reposition Nigeria as a competitive destination for investment" via its new Act (Adeyemo, 2025)). Ethiopia likewise should anchor its digital asset strategy in its national development frameworks (e.g., Digital Ethiopia 2025 and the Ten-Year Perspective Plan). If the goal is SME financing and financial inclusion (as in this feasibility study's context), Ethiopia can prioritize use cases like tokenized lending platforms, crowdfunded digital investments for small businesses, or mobile-based stablecoin wallets for unbanked populations. By clearly articulating how blockchain and digital assets serve Ethiopia's priorities (job creation, capital mobilization, inclusion), regulators and the public will be more inclined to support their adoption.

Build Regulatory Capacity and Public Awareness: A recurring challenge in all countries has been regulatory capacity – understanding a fast-moving technology and crafting appropriate rules. Countries like Rwanda and Mauritius invested early in training regulators (often in partnership with international bodies) and setting up innovation teams. Ethiopia will benefit from doing the same: capacity-building for the National Bank, Ministry of Innovation, and other

stakeholders is essential so that they can effectively supervise new digital asset activities. Public education is equally important. Nigeria's eNaira struggle showed that without public trust and understanding, even state-of-the-art platforms can lie unused. Ethiopian authorities, working with industry, should engage in awareness campaigns about both the opportunities and risks of digital assets. This includes clarifying that upcoming regulations are to protect users (not to endorse any scam), and demonstrating through pilots how real-world problems can be solved (e.g., a pilot tokenized agricultural commodity market improving farmer incomes could showcase value to skeptics).

Leverage Regional Cooperation and Standards: The African benchmarks also highlight that many countries are converging toward international standards (FATF guidelines on VASPs, IOSCO principles for token offerings, etc.). Ethiopia should not reinvent the wheel but rather draw on these standards and the drafts already formulated by peers. For example, Ghana's forthcoming framework or South Africa's FAIS crypto licensing requirements can inform Ethiopian regulations to ensure they meet global best practices. Moreover, regional bodies like the African Union or UNECA could be platforms for Ethiopia to collaborate on knowledge exchange – given Ethiopia's role in African diplomacy, it could even lead in proposing continental guidelines for digital assets to harmonize approaches and facilitate cross-border innovation (as hinted by the African Union's interest in digital transformation).

Balance Risk and Innovation – a Phased Roadmap: Finally, all cases teach that a phased approach works best. Countries first allowed experimentation (often unregulated, then in sandboxes), then created interim guidelines, and now are passing laws – an iterative progression. Ethiopia can formulate a phased roadmap: initially, allow a controlled pilot (for instance, an Ethiopian "crypto sandbox" that lets a few startups operate with disclosure requirements). Next, issue interim directives (for example, the central bank could authorize certain activities like crypto remittances under conditions). Finally, enact comprehensive legislation once the groundwork is in place and stakeholders are familiar. Such gradualism, combined with feedback loops (monitor, evaluate, adjust rules), will help Ethiopia avoid both extremes of doing too little or too much too soon.

In conclusion, benchmarking Nigeria, Kenya, South Africa, and others provides Ethiopia with a rich set of experiences to draw from. These countries illustrate that digital assets, if channeled properly, can contribute to financial inclusion, investment, and efficiency in Africa, aligning with many of Ethiopia's development aims. However, they also show the importance of prudent regulation, stakeholder engagement, and adaptability in policy. As Ethiopia charts its own course, it should internalize these lessons: encourage the useful adoption of blockchain (for instance, to unlock financing for SMEs or streamline remittances), contain the risks (through effective regulation and education), and ensure that the journey toward digital assets is undertaken in a purposeful, Ethiopian-specific way. By doing so, Ethiopia can potentially leapfrog in areas of finance and technology, while safeguarding macroeconomic and consumer stability. The feasibility study's analysis, enriched by these comparative insights, thus supports

Ethiopian stakeholders in making informed decisions on the viability and design of digital asset infrastructure in the country.

13 Monitoring and Evaluation (M&E)

Monitoring and evaluation (M&E) ensures that digital asset projects stay on track, achieve their goals, and deliver intended benefits. In this context, M&E provides accountability (by tracking progress against plans), transparency (through open reporting of data), and continuous learning (by identifying problems early and informing adjustments). A robust M&E system enables stakeholders to verify whether initiatives like tokenized real estate, blockchain supply-chain finance, or SME fundraising are effectively increasing SME access to finance. As one practitioner notes, "projects never go perfectly to plan, but a well-designed M&E helps the project stay on track and perform well" (Soken-Huberty, E., 2022). In Ethiopia's case, M&E data will show whether digital asset pilots truly speed up financing, lower costs, and reach underserved SMEs. For example, digital payment records in Ethiopia's social safety-net programs have generated rich data for reporting and evaluation, improving transparency and program effectiveness (World Bank, 2024). By analogy, systematic data from blockchain transactions and platform logs can similarly inform assessment of digital finance projects.

A structured M&E framework defines what will be measured, how, when, and by whom. Commonly this is organized via a *results framework* or *theory of change*, which links inputs (resources, activities) to outputs (pilot deployments, trained users), to outcomes (increased SME financing, reduced processing time) and ultimately to impact (broad SME growth and inclusion). Using a theory-of-change approach (as advocated by financial-inclusion networks), the framework starts with the initiative's goals (e.g. "50% more SMEs accessing credit via digital channels") and works backward to identify intermediate outcomes (e.g. "SMEs onboarded to a blockchain fundraising platform"). Each stage has indicators to be measured. For example, a tokenized real estate pilot might have inputs (blockchain platform, legal framework), outputs (number/value of tokens issued), and outcomes (amount of capital raised by SMEs through token sales). The M&E framework then explicitly ties these to the high-level objective (improving SME access to finance).

Ethiopia's own Digital Payments Strategy illustrates good practice: it calls for an implementation plan with clear actions and "each action has a set of key performance indicators (KPIs)" to be tracked. The strategy mandates frequent reporting: action teams submit fortnightly status updates capturing progress, planned work, and KPI status. This kind of disciplined planning (with responsible teams, timelines, and defined metrics) is critical. In summary, our M&E framework should include:

- **Goals and objectives** (e.g. "increase SME financing by X% through digital platforms")
- **Inputs and activities** (e.g. deploying blockchain infrastructure, training staff)
- **Outputs** (e.g. number of pilots run, digital assets tokenized, regulations drafted)
- **Outcomes** (e.g. SME loan volume disbursed digitally, average processing time)
- **Impact** (e.g. growth in SME production, jobs created, financial inclusion rates)
- **Verification sources** (systems or agencies that provide the data)
- **Roles and responsibilities** (which institution collects each data, who analyzes it)

This logical-results framework ensures every KPI ties back to strategic aims, and that data collection is purposeful rather than ad hoc. It also highlights the need for clear governance: for example, NBE-led working groups (action teams) could oversee payments pilots, MoI&T units could handle digital ID or mobile money interventions, and ECMA staff could monitor tokenization trials in the capital markets.

13.1 Key Performance Indicators (KPIs)

The M&E framework should specify quantitative indicators at each level. Key KPIs include:

- **Pilot activities:** *Number of pilot projects* implemented per intervention (e.g. tokenized mortgage pilot, supply-chain financing trials, SME crowdfunding campaigns). This tracks effort and scale.
- **Transaction activity:** *Number and volume of transactions* processed on the new platforms (e.g. token sales, blockchain payments, smart-contract settlements). High-level metrics include total value of funds raised or loans disbursed via digital assets. For example, one could measure monthly SME financing volume through the blockchain versus baseline.
- **User adoption:** *Number of SMEs and users engaged* with the system. This should be disaggregated by gender (female-owned vs male-owned SMEs) and possibly by region. It may include *number of digital wallets or blockchain accounts* opened by SMEs, or number of SMEs issuing digital tokens. Tracking women's participation is critical for inclusive finance goals.
- **Process performance:** Efficiency metrics such as *average processing time* or *transaction cost*. For instance, a target might be "reduce SME loan processing time by 30% via blockchain automation". Baseline average times must be established (see next section).

- **Capacity-building:** Number of *training sessions or workshops* held, and number of officials/SMEs trained in digital asset technology. Also *certifications completed* or competency gains if measured. These indicate readiness of institutions and market players.
- **Regulatory milestones:** Progress on the enabling environment – e.g. *regulations issued*, *sandbox licenses granted*, or *policy guidelines published*. These milestones signal legal readiness (for instance, drafting a digital securities law or launching ECMA's sandbox).
- **Infrastructure and technology:** Technical KPIs such as system *uptime*, *transaction success rate*, or *interoperability achievements*. For example, tracking the percentage of transactions that are completed successfully on-chain can reveal technical stability.
- **Beneficiary outcomes:** Even where harder to measure, indicators of SME impact (such as *percentage increase in SME revenues or jobs sustained*) should be tracked through surveys or case studies. While these are longer-term and diffuse, they tie back to the ultimate goal.

These indicators cover inputs, outputs, and outcomes. Each KPI must be clearly defined (e.g. what counts as an "SME engaged" or a "successful transaction"). As a guide, frameworks like IFC's results matrix insist on *specific outcome targets* for each intervention, reported per IFC standards (International Finance Corporation, 2022). Similarly, Ethiopia's sandbox guidelines require innovators to design a testing plan with "clear objectives" and identified KPIs before piloting (Ethiopian Capital Market Authority & UNDP, 2024). For example, an ECMA sandbox project might set a target "pilot 3 blockchain payment solutions with 100 real transactions each" and then monitor that exactly.

Finally, the M&E plan should differentiate *leading* vs *lagging* indicators. Leading indicators (like number of SMEs onboarded) help catch issues early, while lagging indicators (like total finance reached) measure ultimate effect. Both kinds will inform decision-makers. As Ethiopia's NDPS emphasizes, "monitoring KPIs over time demonstrates the impact of the strategy and allows action teams to change their approaches if required" (National Bank of Ethiopia, 2023).

13.2 Baseline Data and Targets

An effective M&E framework begins with *baseline data*: measurements of each KPI before or at project start. For example, record the current total annual SME credit volume, average loan processing times, or number of SMEs with bank access. Many of these baselines are available from the National Bank's financial access surveys or household data (for instance, Ethiopia's account ownership rose from 22% in 2014 to 45% by 2020 (World Bank, 2024)). However, new indicators may require fresh surveys or system audits. Establishing baselines might involve a quick initial survey of SMEs' financing channels and turnaround times, or a review of existing project data from partner banks.

Once baselines are in hand, the framework should set *realistic targets* over defined timeframes. Targets should be ambitious but evidence-based. For example, Ethiopia's Financial Inclusion Strategy targets 70% account ownership by 2025 (World Bank, 2024), a near doubling from the baseline – which was deemed attainable. Similarly, if the baseline average blockchain loan process is 10 days, a 30–50% reduction target could be set. Targets for transaction volume or SME engagement can use regional benchmarks: e.g. if Kenya's asset tokenization pilot reached $5M in SME funding, Ethiopia's pilot might aim for a comparable scale. Gender targets should reflect equity goals (e.g. "40% of funded SMEs will be women-owned").

These targets should be specified in the project results framework so progress can be judged unambiguously. Each KPI's baseline and target must be documented, as IFC's Anticipated Impact Measurement and Monitoring (AIMM) system does: project teams submit *initial baselines and expected outcomes* when launching an initiative (International Finance Corporation, 2022). That way, when data is collected, it can be compared to the target to assess success. In practice, Ethiopia might set targets such as "tokenize real estate assets worth $10M and onboard 50 SMEs in the first year", or "achieve 80% loan repayment via blockchain loans by endline". Even if the exact target evolves, stating it upfront focuses efforts and allows rapid assessment of under- or over-performance.

13.3 Data Collection, Monitoring Frequency, and Responsible Institutions

Data will be gathered from multiple sources. Digital platforms and blockchains will generate logs: e.g. transaction counts, timestamps, user registrations. These can be automatically aggregated (using platform analytics or blockchain explorer tools) on a daily/weekly basis. Financial institutions and regulators (e.g. banks, microfinance institutions, ECMA) should provide administrative data: loan disbursement records, trading volumes, or sandbox license logs. For example, the National Bank of Ethiopia routinely collects payment system and mobile money data which can feed into M&E. Surveys and interviews of SMEs and users will capture qualitative outcomes (satisfaction, barriers, adoption reasons), and should be done at least baseline, midline and endline. Government censuses or industry reports (from Ministry of Innovation and Technology or Ministry of Trade) can supplement official statistics on SME numbers and economic indicators.

The M&E plan must stipulate *who* collects *what* and *how often*. For digital asset pilots, some suggested assignments are:

- **National Bank of Ethiopia (NBE):** Lead quantitative data collection on finance volumes, digital payment transactions, mobile money usage, and overall financial inclusion statistics. NBE can issue periodic reporting templates to participating banks/fintechs. It

may also conduct regular surveys of commercial banks and microfinance institutions to capture SME lending volumes (both traditional and blockchain-enabled).

- **Ministry of Innovation and Technology (MoI&T):** Collate and analyze data on technology adoption (e.g. number of fintech licenses, digital ID usage) and coordinate with development partners for surveys. MoI&T may also manage a central dashboard integrating data from NBE, ECMA, and other agencies, as part of the Digital Transformation Strategy (National Bank of Ethiopia, 2023).
- **Ethiopian Capital Market Authority (ECMA):** Track all regulatory pilot activities under the sandbox. ECMA should log each applicant, approved sandbox project, and its performance against its testing plan (including the KPIs set in that plan (Ethiopian Capital Market Authority & UNDP, 2024)). ECMA's regular reports from sandbox teams (which include real-time data analysis and compliance checks) become key M&E inputs (Ethiopian Capital Market Authority & UNDP, 2024).
- **Ministry of Finance/Ministry of Trade:** Provide macroeconomic and SME registry data – for example, total number of SMEs, overall SME credit statistics – to contextualize the pilots' scale.
- **Project Implementation Units or Donor-funded Programs:** If there are specific projects (e.g. World Bank's digital finance pilots), those teams should maintain an internal M&E log. They would collect project-level data monthly and submit to a central M&E unit for aggregation.

Frequency of monitoring should match the pace of the project. Operational metrics (system uptime, number of transactions) can be tracked continuously or daily. High-level KPIs (SME loans disbursed, regulatory milestones) might be reported monthly or quarterly. Progress updates to the steering committee could be quarterly, while technical teams might meet monthly or biweekly. For example, Ethiopia's Digital Payments Strategy uses fortnightly updates on actions and KPIs (National Bank of Ethiopia, 2023). Similarly, each sandbox project under ECMA performs *ongoing monitoring through regular reports and real-time data analysis* (Ethiopian Capital Market Authority & UNDP, 2024), indicating a fast feedback cycle. Formal evaluations (midterm, final) would happen annually or at project end.

Data collection should emphasize accuracy and disaggregation. For gender, MIS forms and surveys must record the sex of SME owners. Financial data should separate data for pilot participants vs. the control group, if applicable. Where data is sensitive (e.g. individual transaction records), aggregations should be anonymized before public reporting. Existing data standards (such as the Financial Inclusion Data Standards by the World Bank) can guide indicator definitions.

13.4 Feedback and Learning Mechanism

Crucially, M&E is not just bookkeeping – it must feed back into decision-making. The framework should embed regular review and learning. For instance, quarterly M&E reports

should be discussed in stakeholder meetings (involving NBE, MoI&T, ECMA, private sector, and donors). These reviews should compare actual KPIs to targets and diagnose variances. If an indicator is lagging (e.g. slow pilot rollout or low SME uptake), teams must identify root causes and adjust the intervention (a process often called "adaptive management").

Ethiopia's NDPS explicitly recognizes this: by tracking KPIs over time, "action teams [can] change their approaches if required" (National Bank of Ethiopia, 2023). Likewise, IFC emphasizes that M&E data allows testing and refining of the theory of change. In its We-Fi program, IFC uses project data to "test hypotheses in the theory of change, resulting in a better assessment of overall impact" (International Finance Corporation, 2022). In practice, this means that if a blockchain supply-chain pilot shows less financing than expected, the steering committee would investigate (perhaps by surveying SMEs about barriers) and then adjust (e.g. by adding a credit guarantee or refining the smart contract).

Learning should also involve documenting lessons learned. Each major phase (pilot, scale-up) should conclude with an evaluation brief: what worked, what didn't, and why. These findings should be shared broadly (for example, via reports on the MoI&T website or a National Fintech Forum) so that future projects benefit. Success stories (e.g. a rural SME that got financing through tokenization) should be highlighted as case studies. Conversely, failures (e.g. a platform that stalled due to low usage) should be analyzed to avoid repeating mistakes. As one M&E guide emphasizes, "data should drive decisions" – by systematically learning from monitored data, teams can replicate effective solutions and abandon or revise weak ones (Soken-Huberty, E., 2022).

In summary, the M&E framework must close the feedback loop: data collection → analysis → stakeholder review → strategy adjustment. Real-time dashboards (for ongoing pilots), periodic evaluation reports, and stakeholder workshops are practical tools. International best practice (e.g. UNDP and OECD guidance) underscores that "feedback mechanisms must be established to ensure that stakeholders are informed of the findings of the monitoring and evaluation" and can use them to improve programmes. By embedding this adaptive learning cycle, Ethiopian digital asset initiatives can evolve responsively and sustainably toward the goal of empowered, finance-accessible SMEs.

13 Conclusions and Recommendations

13.1 Feasibility Conclusion

This feasibility study concludes that the adoption of digital asset solutions in Ethiopia is conditionally viable and potentially transformative. On balance, the opportunities appear significant: digital assets could unlock new financing channels for small and medium enterprises (SMEs), broaden financial inclusion, and modernize Ethiopia's nascent capital markets. For instance, Ethiopia has quickly risen to rank second in Africa (26th globally) on the 2024 Global Crypto Adoption Index, with a 180% year-on-year surge in retail stablecoin transactions (Ekanem, 2024). This underscores a substantial *latent demand* for crypto-assets and tokenized value transfer, even though formal usage remains restricted. Such grassroots momentum suggests that well-regulated digital asset platforms (e.g. stablecoin wallets or tokenized crowdfunding portals) could rapidly gain traction in addressing unmet needs for payments, investment and credit. Neighboring African markets provide proof-of-concept: stablecoins have already grown to 43% of all crypto transactions in Sub-Saharan Africa as of 2024, used for cross-border trade, remittances and inflation hedging, with countries like Nigeria and Kenya leading the way (CryptoGuru, 2025). Ethiopia itself saw over 100% year-on-year growth in stablecoin inflows during this period, reflecting public appetite to bypass forex shortages and high transfer costs. These trends indicate that, in Ethiopia's context of foreign exchange constraints and underdeveloped financial services, digital assets could serve real economic purposes – from enabling cheaper remittances to providing new instruments for mobilizing diaspora investment and crowdfunding local businesses.

Crucially, digital asset adoption would align with Ethiopia's broader digital finance evolution in Africa. Many African governments are now cautiously embracing fintech innovations: Nigeria launched a central bank digital currency (eNaira) and is the world's top stablecoin adopter, and Ghana, Kenya, and South Africa are all experimenting with crypto-friendly regulations or sandboxes. Ethiopia's current stance remains nascent and cautious, but it is incrementally shifting. After initially banning cryptocurrency trading in 2022, authorities have moved toward a regulatory approach – for example, the national cyber security agency (INSA) began registering crypto service providers in 2022 (Ishida & Yoshida, 2024). As of mid-2025, Ethiopia is drafting a comprehensive crypto assets framework that would allow regulated usage while affirming the birr as sole legal tender (Chakrawarty, 2025). In short, Ethiopia is at a crossroads: there is

evident market momentum and regional precedent for digital assets, but also clear recognition of the risks. The major risks include regulatory uncertainty (laws are still catching up to technology), limited technical capacity and digital literacy, and potential public hesitancy or mistrust of new financial products. Additionally, policymakers worry about threats to macroeconomic stability – for example, heavy use of US dollar-linked stablecoins could weaken monetary sovereignty if not managed (Gupta, 2025). There are also concerns around fraud/scams and the enforcement of anti-money-laundering controls, given that Ethiopia has not yet explicitly applied its AML laws to crypto transactions. These risks are real but manageable with prudent oversight. The experiences of other countries show that clear rules, consumer education, and strong supervision can mitigate many downsides of digital finance.

Overall, the study finds that the viability of digital assets in Ethiopia is high *if and only if* a careful balance is struck: Ethiopia should proceed in a phased, well-regulated manner that maximizes benefits (greater financial access, innovation, and efficiency) while vigilantly controlling the risks (through legal safeguards, capacity building, and public-awareness measures). In Ethiopia's unique context – a large unbanked population, a constrained capital market, and ongoing financial reforms – digital assets could become a catalyst to leapfrog traditional development hurdles. However, they must be introduced under frameworks that reinforce (rather than undermine) financial stability and consumer protection. The concluding verdict is therefore cautiously optimistic: digital asset solutions can indeed support Ethiopia's financial sector and SME development goals, but the path forward requires strong governance. Ethiopia can learn from the broader African digital finance landscape, harnessing innovations that have worked elsewhere on the continent and avoiding pitfalls observed in less controlled deployments.

13.2 Actionable Recommendations

To realize this vision, we propose a set of actionable recommendations tailored to key stakeholders. These recommendations aim to create an enabling environment for digital assets in Ethiopia while safeguarding the financial system. They are informed by international best practices and the specific gaps identified in Ethiopia's current ecosystem.

13.2.1 Policymakers (Regulators and Government)

- **Establish a regulatory sandbox:** The National Bank of Ethiopia (NBE) and other regulators should set up a fintech sandbox program where startups can pilot digital asset solutions under close supervision. This allows experimentation (e.g. small-scale crypto trading platforms, tokenized lending schemes) in a controlled environment, helping regulators learn and fine-tune rules before wider roll-out. Several African regulators (such as Nigeria's SEC) have used sandbox or "regulatory incubation" programs to safely trial cryptoasset initiatives – for example, Nigeria admitted a

real-estate tokenization startup into a special regulatory incubation cohort in 2023 (Nigerian Tribune, 2024). Ethiopia's regulators should similarly provide a space for innovation, coupled with clear entry and reporting requirements to monitor risks.

- **Develop clear licensing and guidelines:** Ethiopian authorities need to update laws and directives to provide legal clarity on the status of digital assets. In the short term, this means officially recognizing licensed crypto exchanges, digital wallet providers, and token issuers, and spelling out the compliance requirements (capital adequacy, KYC/AML, consumer protection, etc.) for each. For example, a licensing framework for cryptocurrency exchanges could be introduced, allowing vetted companies to operate under NBE/INSA oversight. Tokenized assets (security tokens) should be defined in Ethiopian law as a new class of financial instrument – aligned with the recently established Capital Market Proclamation – so that tokenized equity or debt falls under the mandate of the Ethiopian Capital Market Authority (ECMA). Indeed, Ethiopia's emerging policy draft indicates that ECMA will oversee tokenized securities as part of its mandate (Chakrawarty, 2025). Clear guidelines will reduce uncertainty for investors and innovators while ensuring that digital asset activities remain within the formal, taxable economy.

- **Strengthen inter-agency coordination:** Because digital assets cut across traditional regulatory domains, a multi-agency taskforce should be formalized to coordinate strategy. Key agencies would include NBE, ECMA, the Ministry of Finance, INSA (cyber security), and potentially the Ministry of Innovation and Technology. This body can share information on market developments, harmonize regulatory responses, and ensure that, for instance, a fintech company is not caught between conflicting rules. Regular coordination meetings (and joint working groups on specific topics like AML for crypto or consumer education) will build a unified front. Clear delineation of responsibilities is also critical – *e.g.*, NBE can focus on payment and currency aspects(monitoring stablecoins, prohibiting crypto as legal tender), while ECMA focuses on investment products(overseeing ICOs, security tokens, and crypto-investment funds). A coordinated approach will prevent regulatory arbitrage and send a consistent signal to the market.

- **Enhance legal frameworks in related areas:** Policymakers should also review and update adjacent laws – such as e-transactions, cybercrime, and data protection – to support digital finance. For example, Ethiopia's e-commerce and electronic transactions proclamation could be amended to recognize blockchain records and smart contracts as legally enforceable where appropriate. Anti-money laundering regulations should explicitly cover virtual asset service providers, aligning with Financial Action Task Force (FATF) recommendations. By proactively modernizing the legal ecosystem, Ethiopia can avoid loopholes and enforce high standards (World Bank, 2024). Policymakers may seek technical assistance (from organizations like the IMF, World Bank, or African Development Bank) to draft these laws in line with international norms.

13.2.2 Private Sector (Financial and Technology Firms)

- **Pursue fintech–bank partnerships:** Banks and microfinance institutions in Ethiopia should partner with fintech startups to combine strengths. Partnerships can help bridge the trust and distribution gap often faced by new tech ventures. For instance, a local bank could collaborate with a blockchain startup to launch a tokenized crowdfunding platform for SMEs, where the bank provides escrow and compliance support while the startup provides technology. Such partnerships leverage banks' customer base and regulatory know-how alongside fintechs' agility. The result can be innovative products that are also reliable and user-friendly, helping bring more Ethiopians into digital finance. Early collaboration is already happening in related areas – in March 2024, the Mastercard Foundation convened Ethiopian banks, fintechs, and development actors to explore data-driven digital lending for MSMEs (Mastercard Foundation, 2024). This kind of cross-sector dialogue should translate into concrete pilot projects jointly implemented by incumbents and startups.

- **Invest in capacity building (skills and literacy):** Ethiopian tech firms, universities, and industry associations should work together to develop local blockchain expertise. A lack of skilled developers and system architects was identified as a constraint in this study. Private sector initiatives could include sponsoring blockchain training courses, hackathons, and certification programs – potentially with support from global crypto companies or programs like EMURGO Africa, which has shown interest in Ethiopia (Ishida & Yoshida, 2024). Building a critical mass of local talent will not only help implement solutions domestically but could position Ethiopia as a regional hub for blockchain innovation. In parallel, financial service providers should invest in user educationand simple onboarding processes. Since many Ethiopians are new to digital finance, user-centric design is paramount – mobile apps and platforms for digital assets must be intuitive, multilingual (offering interfaces in Amharic, Oromo, etc.), and backed by customer support to build trust. The private sector could run digital literacy campaigns (in partnership with NGOs or media) to familiarize the public with concepts like mobile wallets, digital tokens, and cybersecurity basics. This will help overcome public hesitancy over time.

- **Focus on high-impact, localized use cases:** Rather than adopting blockchain because it is trendy, Ethiopian entrepreneurs should target practical use cases that solve local problems. Promising areas include: tokenized crowdfunding for SMEs (allowing diaspora investors to fund Ethiopian businesses via digital tokens representing equity or revenue-sharing), supply-chain finance (using blockchain to verify and finance invoices, benefiting producers and cooperatives), and remittances (leveraging stablecoins or crypto rails to reduce the cost of inward remittances from the diaspora). By demonstrating success in one or two such niches, the private sector can build momentum and a track record that will encourage wider adoption. For example, in 2024 a fintech startup Water Financial raised $1.6 million for water access projects through

tokenized assets, tapping retail investors in Kenya and beyond (BitcoinKE, 2024). Pilot projects in Ethiopia could similarly start with crowdfunding community-scale projects (such as solar energy installations or agribusiness expansions) via token issuance. Private firms should document and share the outcomes of these pilots to make the case for scaling up what works.

13.2.3 Development Partners (Donors and International Institutions)

- **Provide regulatory and technical assistance:** Development agencies and international financial institutions can play a pivotal role by supporting Ethiopian regulators in building capacity for digital asset oversight. For example, partners could fund advisory services to NBE and ECMA for drafting crypto regulations or designing a supervisory framework for exchanges. There is also a need for upskilling regulators on blockchain analytics and monitoring techniques (so they can, for instance, trace illicit transactions or assess systemic risks). Development partners with relevant expertise – such as the IMF's technical assistance departments, the World Bank, or FSD Africa – should be mobilized to deliver targeted training and to help establish Ethiopia's regulatory sandbox. The World Bank's recent $700 million Financial Sector Strengthening Project for Ethiopia already includes components to modernize NBE's regulatory capacity (World Bank, 2024); building on this, donors can earmark resources specifically for digital finance innovation within broader financial sector programs.

- **Finance pilots and infrastructure:** Donors are encouraged to fund pilot projects that demonstrate the developmental impact of digital assets. Modest grant funding or challenge prizes could catalyze experiments such as: a blockchain-based agricultural commodity exchange for smallholder farmers, a diaspora bond issued as a security token, or an NGO-led stablecoin remittance corridor for humanitarian cash transfers. By absorbing some of the initial risk, development partners can make it easier for local actors to test these ideas. Successful pilots would provide evidence to regulators and investors about what works. In addition, partners should invest in foundational digital infrastructure that underpins fintech innovation – for example, supporting the rollout of a robust national digital ID system (for easy KYC verification in digital asset platforms), improving internet connectivity in underserved regions, and expanding digital payment rails. These investments have high spillover benefits beyond just crypto adoption, aligning with Ethiopia's overall digital transformation agenda.

- **Support public awareness and literacy campaigns:** Given that public understanding of cryptocurrencies and blockchain is limited in Ethiopia, development partners (who often have experience in consumer financial education) should assist in designing literacy campaigns. This might involve producing easy-to-understand guides in local languages about the opportunities and risks of digital assets, working with community organizations to disseminate information, and funding media content (radio programs,

TV segments, online videos) that demystify concepts like "What is a cryptocurrency?" and "How to protect yourself from digital scams." By improving the general level of awareness, such efforts can reduce public hesitancy and create a more informed user base that can engage with digital financial services confidently. Importantly, education should also cover risk awareness: users must be informed that crypto assets can be volatile and that they should only use regulated providers. Development partners might coordinate with Ethiopian authorities to integrate digital finance modules into broader financial literacy initiatives already underway (for example, those associated with microfinance or rural savings programs).

13.3 Phased Roadmap for Implementation

A phased approach is recommended to implement digital asset adoption in a structured and manageable way. The roadmap below outlines short-term, medium-term, and long-term steps, ensuring that Ethiopia progresses toward integration of digital assets in alignment with its regulatory readiness and market maturity. Each phase builds on the previous one, gradually expanding the scope of digital asset usage while mitigating risks at each stage.

13.3.1 Short-term (next 6–12 months)

Focus on laying the groundwork and testing the waters. Key actions include establishing a multi-stakeholder working group or taskforce on digital assets (if not already in place) to steer the effort. This group – comprising representatives from NBE, ECMA, financial institutions, fintech startups, and development partners – should meet regularly to drive policy and pilot coordination. Awareness-raising should begin immediately: organize workshops and roundtables for policymakers and industry on blockchain fundamentals, regulatory approaches, and use cases relevant to Ethiopia. These can draw on African case studies and involve experts from countries like Nigeria or Kenya. Critically, the short-term should see the launch of at least one small pilot project under regulator oversight. For example, an Ethiopian crowdfunding platform could run a pilot token offering for a single SME or project, within a controlled sandbox and with a limited number of participants. This would serve as a proof-of-concept for tokenized SME financing, allowing regulators to observe mechanics in a low-risk environment. Concurrently, authorities should start drafting priority regulations (e.g. an interim directive on crypto exchange licensing) – even if these remain in consultation form initially. By the end of this phase, Ethiopia should have a clearer legal stance on digital assets (at least in draft or pilot form), an active stakeholder forum, and real-world insights from a pilot to inform next steps.

13.3.2 Medium-term (1–2 years)

In this phase, Ethiopia can progressively scale up and institutionalize the frameworks introduced earlier. Assuming the initial pilots are successful, regulators should formally roll out the supporting regulations. For instance, within 1–2 years, the NBE and ECMA could issue comprehensive guidelines or directives that set the rules of the road for crypto businesses (covering licensing, custody of assets, reporting requirements, taxation of digital asset transactions, etc.). A possible milestone would be creating a new category of financial license for digital asset service providers, under which exchanges, wallet operators, and token issuers can legally operate. Simultaneously, the government should invest in or facilitate the development of enabling infrastructure. This could involve launching a full-fledged regulatory sandbox platform (expanding on the initial pilots) to accept multiple fintech experiments per year under close monitoring. It also may include integrating digital ID and e-KYC systems so that onboarding customers to regulated crypto platforms is secure and compliant. By the end of year 2, Ethiopia could consider allowing a wider range of pilot use cases – for example, enabling a regulated stablecoin for domestic use or a blockchain-based commodities trading system – now that the legal and supervisory framework is in place. Resources must also be allocated to enforcement and supervision teams (ensuring NBE/ECMA have trained examiners for digital assets). In this medium-term period, international partnerships can be deepened: Ethiopia might join pan-African fintech initiatives or information-sharing groups to stay abreast of trends. The goal is that by year 2, the country has moved from isolated tests to a structured market rollout – with licensed operators, active user engagement, and initial integration of digital asset services into the mainstream financial sector (for instance, commercial banks offering custody or stablecoin remittance products in partnership with fintechs).

13.3.3 Long-term (3–5 years)

If the previous phases are executed diligently, Ethiopia can achieve full integration of digital assets into its financial system in the longer term. Within 3–5 years, digital asset solutions should no longer be niche pilots but part of everyday economic activity for businesses and individuals. A number of long-term milestones are envisioned. First, Ethiopia could consider launching a central bank digital currency (CBDC), often dubbed a "Digital Birr," if deemed appropriate after studying other countries' experiences. A Digital Birr, potentially built on a secure blockchain, could be used for domestic retail payments and to improve monetary policy transmission – though this step should only be taken with robust technical and policy preparation. Second, Ethiopia may establish a national digital asset exchange or marketplace, potentially as an extension of the new Ethiopian Securities Exchange (ESX). This platform would list tokenized securities, commodities, or even developmental "impact tokens," providing liquidity and market access to a wide investor base including SMEs and diaspora investors. By 2025, Ethiopia has already launched its first stock exchange after decades of planning (FSD Africa, 2025); by 2030, one can imagine this exchange evolving to support digital listings alongside traditional equities. Third, the long-term vision includes widespread SME access to

digital financing options. An Ethiopian entrepreneur in 2028 might have multiple alternative funding routes: raising a loan via a DeFi lending platform (with appropriate consumer protections), issuing a project token on a local exchange, or receiving remittance-like investments from diaspora backers via stablecoins. The financial system would thus be more inclusive and innovative. Throughout this phase, continuous refinement of regulations will be needed as new innovations (like decentralized finance, NFTs for real assets, etc.) emerge. But if Ethiopia follows the phased roadmap, by the 3–5 year mark digital assets could be a well-regulated, accepted component of the financial landscape – contributing to higher investment, job creation, and a more resilient economy.

13.4 Alignment and Sustainability

It is imperative that the above roadmap aligns with Ethiopia's existing financial sector development plans and that mechanisms are in place to sustain progress beyond this study. Fortunately, the recommended approach is well-aligned with Ethiopia's capital market strategy and SME development goals, ensuring that digital assets complement (rather than distract from) national priorities.

13.4.1 Alignment with Capital Market Modernization

Ethiopia is in the midst of historic financial reforms – most notably the establishment of the Ethiopian Securities Exchange (ESX) and the broader capital markets initiative under the Capital Markets Authority. The introduction of digital assets can be a natural extension of these efforts. By modernizing the financial market infrastructure, Ethiopia has an opportunity to "leapfrog" with technology. For example, the ESX aims to provide equitable access to capital for businesses and improve liquidity in the financial system (FSD Africa, 2025). Tokenized securities and crowdfunding could directly support this objective by channeling investment to SMEs that might not qualify for traditional stock listings. In fact, regulators in countries with new exchanges are already exploring integrated digital marketplaces – Nigeria's SEC, for instance, has begun approving blockchain-based exchanges through special programs (Nigerian Tribune, 2024). Ethiopia can position its capital market for the future by planning for the eventual trading of tokenized assets (such as SME bonds or infrastructure tokens) under ECMA's oversight. This would attract tech-savvy investors (including diaspora Ethiopians) and increase the variety of instruments available, thereby boosting market liquidity. It's also consistent with regional trends: across Africa, capital market authorities are considering frameworks for digital asset trading to complement traditional exchanges (African Business, 2025). By aligning digital asset adoption with the rollout of the ESX, Ethiopia ensures that both initiatives reinforce each other – the exchange provides a regulated venue for digital assets, and digital assets in turn bring in new participants and capital to the exchange.

13.4.2 Alignment with SME Finance and Inclusion Goals

The Ethiopian government and its development partners have a strong focus on SME growth, entrepreneurship, and job creation (GIZ, 2025a). One of the known obstacles to SME expansion is limited access to finance – Ethiopian SMEs face a considerable credit gap, relying heavily on informal funding or scarce bank loans (Kumar et al., 2023). The roadmap we propose directly addresses this pain point by introducing *innovative financing mechanisms* (like peer-to-peer lending, crowdfunding, and invoice tokenization) that can channel new sources of capital to SMEs. For instance, a tokenized crowdfunding pilot allowing diaspora Ethiopians to invest in local businesses would support the government's diaspora engagement strategy and SME development plans simultaneously. Our recommendations also emphasize digital literacy and capacity building, which dovetails with ongoing financial inclusion initiatives in Ethiopia. As digital financial services (mobile money, agent banking, etc.) expand, adding digital asset education to these programs can ensure that more citizens are equipped to benefit from fintech opportunities. In summary, by boosting access to finance and encouraging formal investment flows, digital assets can advance Ethiopia's targets for SME growth and financial inclusion (World Bank, 2024). The key is to deploy these tools in coordination with existing programs – for example, working with the forthcoming national Financial Inclusion Strategy or the SME support programs funded by organizations like the World Bank and IFC.

13.4.3 Institutional Mechanisms for Sustainability

To sustain implementation, this study recommends setting up a dedicated institutional mechanism – such as an innovation unit or a public–private digital finance taskforce – that will continue driving the agenda beyond the life of this report. This could be a formal Digital Finance Innovation Labhoused within the National Bank or the Ministry of Finance, staffed with experts seconded from various agencies and supported by donor funding. Its mandate would be to pilot new technologies, advise on policy updates, and coordinate capacity building. Another model is a public-private council that meets quarterly to review progress on the digital asset roadmap, troubleshoot issues, and propose adjustments. Such a forum should include regulators, industry representatives (banks, fintech associations), academia, and consumer advocates. The presence of diverse stakeholders ensures continuous buy-in and helps pre-empt challenges through dialogue. We have already seen the value of stakeholder engagement in Ethiopia's fintech space – for example, the knowledge-sharing series on digital lending (Mastercard Foundation, 2024) brought together banks, startups, and policymakers to chart a path forward. Institutionalizing this kind of engagement (perhaps by converting the multi-stakeholder taskforce formed in the short term into a permanent advisory council) will keep momentum. Additionally, Ethiopian regulators might consider creating a Fintech Innovation Fund in collaboration with development partners – providing small grants or matching funds to entrepreneurs who build solutions aligned with national priorities (such a fund could be overseen by the innovation unit). This would ensure that innovation is not a one-off effort but a continuous pipeline.

13.4.4 Monitoring & Adoption

Finally, continuous monitoring and adaptation must be part of the sustainability plan. The digital asset space evolves rapidly; thus Ethiopia's framework should be periodically reviewed. We recommend that NBE and ECMA conduct an annual review of digital asset developments – assessing market uptake, compliance issues, and international trends – and publish a brief report with findings and any proposed regulatory tweaks. This transparency will build trust and allow stakeholders to provide feedback, creating a virtuous cycle of learning and improvement. In essence, the alignment of the roadmap with Ethiopia's strategic goals, combined with strong institutional stewardship and stakeholder involvement, will help ensure that the adoption of digital assets remains on track and delivers long-lasting benefits, rather than being a short-lived experiment.

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