NATIONAL BANK OF KAZAKHSTAN

ANALYTICAL REPORT

Decentralised Finance

Opportunities for Application and Approaches to Regulation in Kazakhstan

Key Findings

This report examines the key principles of decentralised finance, international approaches, the main risks, and proposals for pilot projects in Kazakhstan.

Decentralised finance, or DeFi, enables the automated exchange of digital assets, collateralised lending, the distribution of returns, and access to virtually any traditional financial service without an intermediary. These operations are executed by blockchain-based programs known as smart contracts. The technologies underpinning DeFi - Web 3.0, smart contracts and blockchain - change how financial services are delivered, but do not remove the need for client protection, risk controls and clearly identified responsible persons.

A phased approach is proposed for Kazakhstan: smart contracts should be used to execute activities that are already permitted, while new models should first be tested in the regulatory sandbox of the National Bank of the Republic of Kazakhstan. **A separate DeFi law is not required at this stage**. Any need to amend existing rules should be assessed on the basis of the pilot results.

Two areas should take priority: facilitating the exchange of tenge-denominated digital financial assets (DFAs) through a common reserve contributed by participants, and providing tenge loans secured by such assets. Each model must demonstrate practical benefits relative to conventional trading or bank lending.

01

Exchange of tenge-denominated digital financial assets through a common reserve contributed by participants.

02

Tenge loans secured by these assets.

Access to foreign DeFi services through Kazakhstani operators should be considered at a later stage, following an assessment of foreign exchange risks, requirements to prevent illicit activity, and the results of domestic pilots. All limits set out below are proposals for discussion and are to be refined before the projects are launched.

01

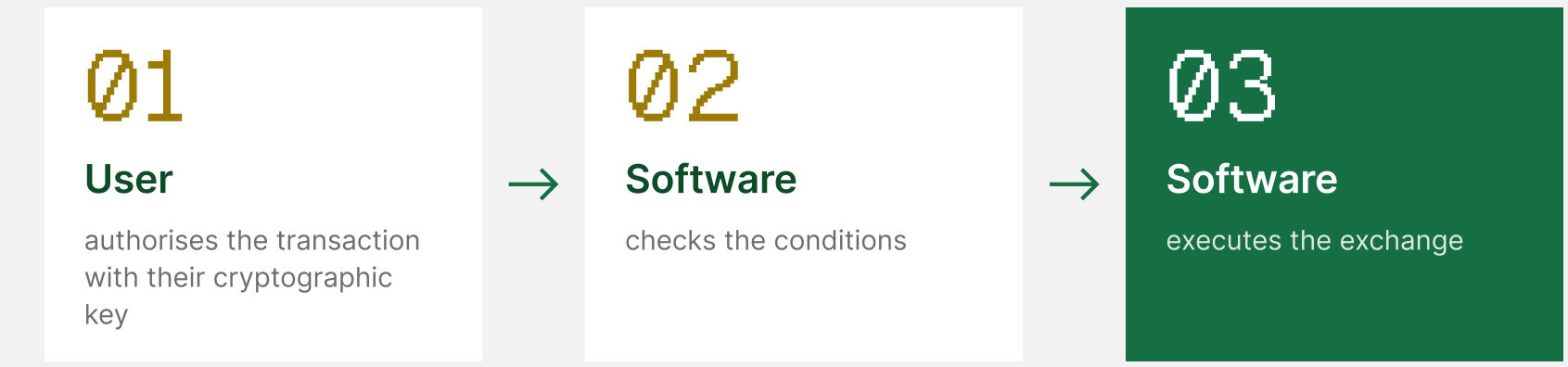
What DeFi Is and How It Works



1.1
Automated Execution of Financial Transactions

In the traditional model, a bank, exchange or other financial institution receives a client's instruction and arranges its execution. In DeFi, some of these actions are specified in advance in software: when the prescribed conditions are met, it transfers assets, calculates interest or checks whether collateral is sufficient.

For example, to exchange one digital asset for another, a user authorises the transaction with their cryptographic key. The software checks the conditions and executes the exchange. The set of programs and rules that enables such a service to operate is known as a protocol.



Automation does not mean that all operations take place without human involvement. Someone creates the service, sets the rules, manages access and, in some cases, can update the software. An assessment of DeFi must therefore establish who actually controls the service and what they are responsible for.

Table 1

Process	Traditional financial platform	DeFi service
Transaction execution	Through the operator's systems and procedures	According to rules programmed in advance
Price formation	Participant orders or an intermediary's quotes	Orders or a predefined exchange algorithm
Governance	The financial institution operating the platform	Persons able to change the rules, software or access
Client protection	The operator's reliability and protection of the client's rights	Software security, secure custody of keys and clear accountability

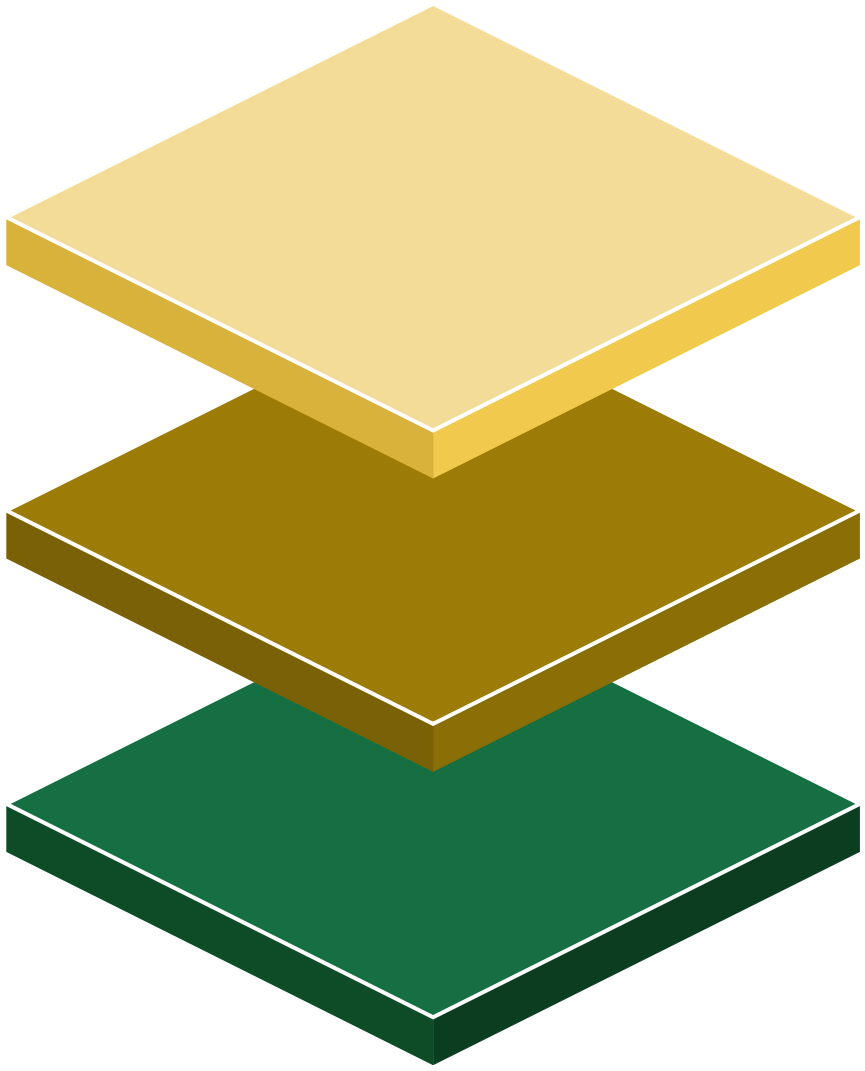
1.2
How DeFi Differs from Tokenisation and Stablecoins

Tokenisation is the digital representation of rights to an asset. For example, rights to a bond may be recorded on a blockchain. A stablecoin is a digital asset whose value is pegged to money or another asset; in the models considered here, it may be used for settlement. DeFi refers to services in which digital assets are exchanged, deployed or used as collateral.

DeFi
enables financial transactions involving these assets

Stablecoins
may serve a settlement function

Tokenisation
determines how rights to an asset are recorded



Thus, tokenisation determines how an asset is recorded, a stablecoin may serve a settlement function, and DeFi enables financial transactions involving these assets.

! Issuing a token does not, in itself, create a DeFi service.

1.3
Main Types of Services

Table 2

Service	How it works	Risk
Exchange through a liquidity pool	Participants deposit different types of digital assets into a pool in advance. Other users exchange assets against this reserve.	The smaller the reserve and the larger the transaction, the greater the potential price impact.
Collateralised lending	The borrower provides an asset as collateral and receives funds. The software monitors the collateral's value.	A fall in collateral value may require additional collateral or the sale of the pledged assets.
Deploying assets to earn a return	Funds are used to support network operations or are deployed in other services.	Returns depend on the source of payments and are subject to market and technical risks.

Liquidity Pools

A liquidity pool is a reserve of two assets held in a smart contract, from which users receive one asset in exchange for the other.



An operator establishes a liquidity pool for a specified pair of digital assets. Participants contribute to a common reserve of different digital assets available for exchange. Those who supply assets receive a share of the fees. Clients exchange assets through a smart contract. An algorithm determines the price based on the ratio of assets in the pool, the transaction size and the fees. Fee income is allocated between liquidity providers and the operator according to predefined rules. Unlike an exchange model in which trades are executed by matching orders, an automated market maker (AMM) executes exchanges against assets deposited in the pool in advance.

How a Liquidity Pool Works

A liquidity pool operates as follows.

01

Step 1. Participants Fund the Pool

Suppose participants deposit two digital assets:

10 ETH
(1)

20,000 USDT
(2)

The initial asset ratio corresponds to a price of 2,000 USDT per ETH. For simplicity, assume that 1 USDT equals 1 US dollar.

02

Step 2. A User Decides to Buy ETH

The user sends 2,000 USDT to the pool. The smart contract calculates how much ETH the user will receive.

The price changes as the exchange takes place: the pool holds more USDT and less ETH. The user therefore receives approximately 0.909 ETH rather than 1 ETH; this calculation excludes fees. A simple AMM follows the constant-product rule: the product of the quantities of the two assets remains unchanged.

03

Step 3. The Pool Composition and Price Change

Metric	Before the exchange	After the exchange
ETH balance	10	~ 9.091
USDT balance	20,000	22,000
ETH price implied by the reserve ratio	2,000 USDT	~ 2,420 USDT

The user's average purchase price is approximately 2,200 USDT per ETH. It differs from the initial price because the transaction itself changes the ratio of assets in the pool. The larger the transaction relative to the pool, the greater its price impact.

04

Step 4. Liquidity Providers Earn Fees

0.3%

fee rate

6 USDT

fee on a 2,000 USDT exchange

0.6 USDT

participant with a 10% share

For example, a fee of 0.3% on an exchange of 2,000 USDT amounts to 6 USDT. If the entire fee is distributed among liquidity providers, a participant with a 10% share is economically entitled to 0.6 USDT. In an actual exchange, the fee is also taken into account when calculating the amount of ETH delivered.

05

Step 5. A Participant Withdraws Their Share

A liquidity provider receives their share of the pool's current reserves and accrued fees. The quantity of each asset may differ from the amount originally deposited. If market prices change, the value of this share may be lower than the value of simply holding the original assets.

Economic Rationale

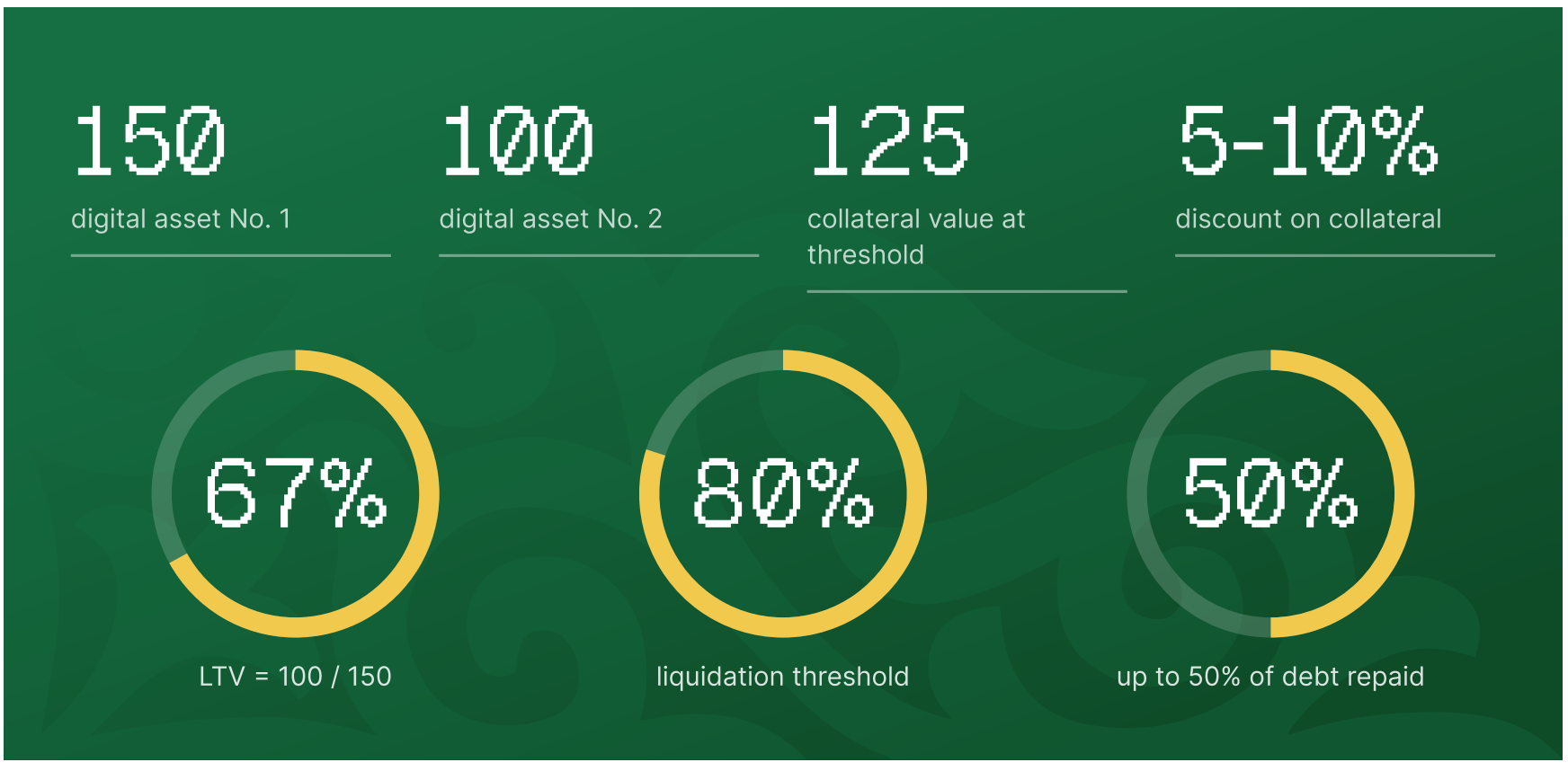
The economic rationale of a liquidity pool: a liquidity pool enables users to exchange assets and liquidity providers to earn fees while assuming the risks associated with the pool.



Collateralised Lending

Collateralised lending. A borrower locks collateral in a smart contract to obtain another digital asset. If the collateral falls below the required threshold, liquidators - other participants in the platform - repay part of the borrower's debt and receive part of the collateral at a discount.

For example, a client deposits digital asset No. 1 worth 150 as collateral and borrows 100 of digital asset No. 2. The loan-to-value ratio (LTV) is 100 / 150 = 67%. The liquidation threshold is set at an LTV of 80%: if the collateral value falls to 125, third-party liquidators repay up to 50% of the debt and receive the corresponding portion of the collateral at a discount of 5-10%. The remaining collateral stays with the borrower.



If prices fall faster than liquidations can be completed, lenders may be left with bad debt.

Some DeFi models also use more complex instruments, such as flash loans, which are issued and repaid within a single blockchain transaction. If repayment does not occur, the entire transaction is reverted. These instruments are not included in the proposed Kazakhstani pilots, but are considered when assessing potential methods of market manipulation.

Staking and Yield Aggregators

Staking and yield aggregation involve committing crypto-assets to support the operation and security of a blockchain using a proof-of-stake mechanism. Transactions are verified by validators: participants running specialised software. They receive rewards for performing their duties correctly.

For example, an Ethereum staking service works as follows.

01

Step 1. The User Deposits Assets

The user sends 1 ETH to a pooled staking service. The service combines funds from several participants to operate validators.

02

Step 2. Validators Participate in the Network

Validators verify transaction blocks, attest to their validity and, when selected by the network, propose new blocks. The deposited ETH provides an economic incentive for honest performance.

03

Step 3. The Network Awards Rewards

Validators receive rewards for fulfilling their duties under the blockchain's rules. In pooled staking, rewards are distributed among participants in accordance with the service's terms and fees.

04

Step 4. The User Earns a Return

Assume an annual return of 4% after the service fee. This is an illustrative assumption, not a guaranteed rate. Over one year, a deposit of 1 ETH would earn 0.04 ETH, bringing the total to 1.04 ETH.

1 ETH	0.04 ETH	1.04 ETH
deposited	reward	total

Rewards accrue in ETH. An increase in the amount of ETH therefore does not guarantee an increase in the investment's value in tenge or US dollars: the market price of ETH may fall.

05

Step 5. The User Exits Staking

Withdrawals are governed by the network's and the service's rules and may involve a waiting period. A validator's failure to perform its duties can result in penalties; certain violations can lead to the deduction of part of the staked assets, known as slashing.

1.4
Accountability

The label 'decentralised' does not establish the absence of control.

It is necessary to establish who can change the rules, update the software, control access keys, restrict transactions and influence the movement of client assets. These powers may be held by a company, a group of individuals or participants in collective governance.

The person exercising effective control should be identified by considering their powers and actions together. Receipt of fee income or other economic benefits is also relevant to the assessment. Developing software or taking part in a vote does not, by itself, mean that a person controls a financial service.

A developer may be regarded as a technical contractor if they have no independent access to assets or governance keys, implement the client's decisions, receive agreed remuneration and can be replaced. If these conditions are not met, their role requires further assessment. A conclusion on control should not be based solely on a job title or the name of a contract.

DAO

Collective voting by participants, including through a decentralised autonomous organisation (DAO), does not rule out concentrated influence. The distribution of voting power and the actual ability of individual persons to determine decisions must be assessed.

02

How the DeFi Market Is Evolving



2.1
From Open Services to Financial Institution Participation

The development of DeFi is linked to the emergence of blockchains capable of executing smart contracts. Following Ethereum's launch in 2015, automated exchange and lending services began to proliferate. Rapid growth in 2020-2021 was followed by a downturn in 2022 amid falling prices and major incidents.

Web 3.0 has played a key role in the technological development of DeFi. It is a concept for a new generation of the internet based on decentralisation, blockchain technology and cryptography. These technologies have enabled the automation of financial transactions and allowed users to interact with protocols through digital asset wallets.

The next stage involves the use of tokenised bonds, funds and other financial instruments. Banks and asset managers are testing automated settlement and asset exchange within a restricted group of identified participants. For Kazakhstan, this experience is relevant as an example of how the technology can be applied within regulated financial infrastructure.

2.2
Measuring the Size of the DeFi Market

One of the main DeFi metrics is the value of assets deposited in protocols, known internationally as total value locked (TVL). It measures the value of those assets at a particular point in time.

METRIC · VALUE AND DATE

78.6

Assets in DeFi protocols

USD 78.6 billion as at 10 November 2026; USD 46.9 billion three years earlier

302

Stablecoins in circulation

Approximately USD 302 billion as at 10 November 2026

03

International Approaches to Regulation

3.1
General Principles

International recommendations encourage regulators to focus on the substance of financial activities and the persons who are responsible in practice. The use of software should not exempt a service provider from requirements that would apply to a comparable transaction in the conventional financial system.

The Financial Action Task Force (FATF) distinguishes between software and persons using that software to provide digital asset services. Where owners or operators retain control or sufficient influence over a service, their activities are assessed to determine whether the relevant obligations apply.

In its 2023 recommendations, the International Organization of Securities Commissions (IOSCO) emphasises the identification of responsible persons, the management of risks and conflicts of interest, disclosure and investor protection. The Financial Stability Board (FSB) also examines the links between DeFi and the traditional financial system.

A lack of information about the person in control cannot be treated as evidence of full decentralisation. If a financial institution cannot establish the nature of a service, assess its risks and comply with mandatory requirements, it should not be permitted to engage with that service.

3.2
Practices in Selected Jurisdictions

European Union

The Markets in Crypto-Assets Regulation (MiCA) covers crypto-asset services provided or controlled by identifiable persons. Fully decentralised services without an intermediary are treated separately. The European Securities and Markets Authority's (ESMA) proposals of September 2026 focus on clarifying the definition of DeFi, the criteria for decentralisation and the rules for providing access to such services. The relevant principle for Kazakhstan is that status should be determined by actual control, rather than by a project's description of itself.

United States of America	The Securities and Exchange Commission (SEC) decision of 17 September 2026 discussed in this report provides for a limited experiment in trading tokenised shares through automated exchange mechanisms. Its conditions include the admission of verified participants, restrictions on eligible instruments and transaction volumes, verifiable code, and the coordination of trading halts with the primary trading venue. This approach involves setting conditions for a specific activity.
Singapore	Under Project Guardian, the Monetary Authority of Singapore (MAS) has been testing transactions in tokenised financial instruments since 2022. Smart contracts are used for trading and settlement between financial institutions. The defining feature is automation within a known group of participants, with responsibilities clearly allocated.
Dubai	Under the regime administered by the Virtual Assets Regulatory Authority (VARA), a service provider must have a legal entity and a transparent governance structure. Collective decision-making mechanisms do not remove the requirements to disclose controlling persons and comply with mandatory rules.
Switzerland	Project Mariana (BIS) is an experiment conducted by the Innovation Centre of the Bank for International Settlements (BIS), the Bank of France, the Monetary Authority of Singapore, and the Swiss National Bank. As part of the project, the technical feasibility of cross-border exchange and settlement between financial institutions was tested on a public blockchain. An automated market maker (AMM) facilitated the exchange via a common liquidity pool. During the exchange, the bank deposited one currency into the pool and received another from it at the rate calculated by the algorithm for the specific transaction. Both parts of the transaction were executed simultaneously using the “payment against payment” (PvP) principle, which eliminated the risk of transferring one currency without receiving the other.

The common direction for Kazakhstan is to test specific services on a limited scale, identify an accountable operator and expand their use only once safety and economic benefits have been demonstrated.

04

Opportunities and Key Risks

4.1
The Benefits of Automation

Smart contracts can combine the transfer of an asset and the corresponding payment into a single coordinated transaction. If implemented correctly, this reduces the risk that one party fulfils its obligation while the other does not. However, risks arising from software errors, invalid rights to an asset and failures of external infrastructure remain.

Automation can reduce manual reconciliation, accelerate income accrual and collateral monitoring, and enable certain operations to run around the clock. Actual service availability nevertheless also depends on banks, settlement infrastructure and price data sources.

Blockchain makes it possible to track asset movements and balances. This information is insufficient for supervision: a wallet address alone does not reveal the owner's identity, residency or the purpose of a payment. Blockchain data must therefore be matched with information on identified clients and operators' reports.

4.2
Risks

Table 4

Risk	How it arises	Main safeguards
Software error or exploit	Assets are drained or transactions are executed incorrectly. Example: Euler Finance in 2023.	Independent code review, continuous monitoring and an emergency pause mechanism.
Loss of control over keys	An attacker obtains the authority to transfer assets. Example: Ronin in 2022.	Secure key custody and approval of critical actions by several independent persons.
Unreliable prices	Price manipulation enables excessive borrowing or an unfavourable exchange. Example: Mango Markets in 2022.	Independent valuation sources, limits on price deviations and transaction sizes.

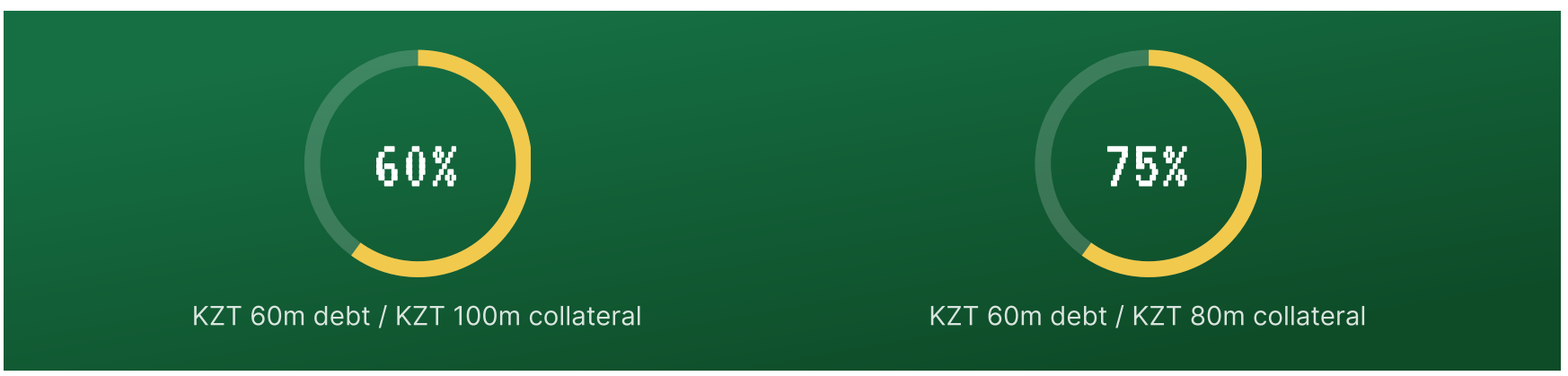
Table 4 continued

Risk	How it arises	Main safeguards
Stablecoin depegging	The asset's value no longer corresponds to its stated peg. Example: Terra in 2022.	Assessment of backing, redemption terms and issuer risks; exclusion of algorithmic stablecoins from the pilots.
Insufficient liquidity	A large transaction or a participant's withdrawal causes a sharp price change and makes selling difficult.	Transaction limits, concentration monitoring and testing of withdrawal scenarios.
Unequal execution conditions	A participant uses information about a pending trade to move the price in their favour.	Transparent transaction sequencing, limits on changes in execution prices and access controls.
Illicit activity	The service is used to move criminal proceeds or circumvent restrictions.	Client identification, analysis of the origin of assets and transfer monitoring.

An independent audit reduces the likelihood of errors but does not guarantee security. Safeguards must remain effective throughout the service's operation, including software upgrades and incident response. Similar requirements also matter for centralised platforms: automation alone does not determine the level of security.

A liquidity provider earns fee income, but changes in prices alter the composition of their assets in the pool. As a result, the value of their share may fall below the value of holding the same assets separately. This is commonly known as impermanent loss. The risk must be explained before funds are deposited; fees do not guarantee that it will be offset.

For a borrower, the main risk is a decline in collateral value. For example, debt of KZT 60 million against collateral worth KZT 100 million gives an LTV of 60%. If the collateral value falls to KZT 80 million, the ratio rises to 75%, even though the debt remains unchanged. The rules must therefore specify in advance when the client is notified, when additional collateral is required and under what conditions the collateral may be sold.



05

Proposed Approach for Kazakhstan

5.1
Distinguishing Technology from a New Service

In light of the digital asset regime introduced on 1 May 2026, DeFi mechanisms should be developed within the existing regulatory framework.

A smart contract should be regarded as a means of executing a transaction. If an organisation is already authorised to issue, record, transfer or redeem a digital financial asset (DFA), using software should not, in itself, require a separate category of authorisation. Requirements governing the transaction, client rights, security and settlement continue to apply.

A different assessment is needed where an operator pools assets from several clients, arranges lending or deploys funds in a third-party service. This changes the substance of the service and creates additional obligations. Such models should first be tested in the regulatory sandbox.

Table 5

Situation	Proposed approach
An already permitted activity is automated	Apply existing requirements; set out execution procedures and client safeguards in the platform's rules.
Participants' funds are pooled to exchange assets	Test the liquidity pool model in the sandbox.
A bank lends against DFAs	Test the automation of collateral management and settlement in a separate pilot.
An operator deploys assets in an external DeFi service	Defer pending a separate assessment of foreign exchange, legal and other risks.
Responsible persons have not been identified and mandatory checks are impossible	Do not permit a supervised institution to engage with such a service.

5.2 Matters to Be Addressed Before Launch

Safeguarding Assets	The ownership of each asset, the procedures for recording participants' shares and segregating client assets, key management powers and the process for returning funds must be defined. Using client assets for other purposes requires a legal basis and the client's informed consent.
Security and Software Changes	Testing and independent assessment of critical components are required before launch. Material updates must be reassessed. Critical actions should require approval by several independent authorised persons, and emergency pause procedures must be tested in practice.
Client Disclosure	Before a transaction, clients must be informed of the source of returns, fees, potential losses, exit conditions and procedures in the event of a failure. Projected returns must not be presented as guaranteed. The contract must clearly allocate responsibilities among the operator, the bank and the participant.
Preventing Illicit Activity	Requirements to combat money laundering, terrorist financing and the financing of the proliferation of weapons of mass destruction continue to apply to automated execution. Client identification, analysis of transfers and the origin of assets, detection of suspicious activity and compliance with applicable restrictions are required.
Conflicts of Interest and Reporting	The operator must disclose its own participation and that of related parties, as well as the rules for transaction sequencing and fee allocation. The National Bank requires information on asset volumes, liabilities, participant concentration, collateral sales, losses and technical incidents.

5.3
Absence of a Controlling Person

The first priority should be to continue identifying the persons who effectively control the service, using blockchain analytics and international cooperation. If there is genuinely no controlling person, requirements may be applied to the regulated institutions through which clients obtain access or transfer funds, including banks, exchange services and other providers.

Restrictions on engagement, public warnings and other measures must be applied within statutory powers and in light of the specific risks. The absence of a management company does not exempt a regulated intermediary from its own obligations.

06

Digital Financial Asset Exchange Pilot

6.1
Objective and Operating Model

The proposed pilot would test whether a common asset reserve can improve secondary-market trading in high-quality tenge-denominated DFAs. The operator establishes a pool comprising an eligible DFA and an agreed settlement asset. Participants contribute funds that allow other clients to buy and sell DFAs without waiting for a matching order at the time of the transaction.

Prices are calculated according to predefined rules. This mechanism is generally known as an automated market maker, or AMM. Clients need to understand its practical implication: a large transaction against a small reserve can materially worsen the execution price. The existence of a pool does not guarantee that any quantity can be sold at a stable price.

To assess the pilot's benefits, its results should be compared with those of a conventional market maker: a participant that posts buy and sell quotes. Comparisons should use comparable issues, transaction sizes and periods. The assessment should cover clients' all-in costs, the volume available for exchange, execution speed and the outcomes for liquidity providers.

6.2
Proposed Parameters

Table 6

Parameter	Proposal
Instruments	Tenge-denominated DFA issued by state, quasi-state, large banks, and institutional organizations.
Phase 1	Up to 3 months, the total volume of assets will be determined in the context of specific pilots.
Phase 2	Up to 6 months, the total volume of assets will be determined in the context of specific pilots.
Participants	Initially, the operator, banks and professional market participants. Qualified investors may be admitted to trading in Phase 2 after the results have been assessed.
Pricing	Valuation by the Kazakhstan Stock Exchange (KASE) and a second independent source. Daily recognition of accrued income on the debt instrument.

Table 6 continued

Parameter	Proposal
Transaction suspension	A significant deviation of the price from the fair value, unavailability or significant discrepancy in price sources, a technical incident.
Transaction size	Calculated before the pilot project is launched. A daily limit per client is set.

6.3 Participant Protection

For a debt DFA, pricing based solely on the ratio of assets in the pool is insufficient. The price must account for accrued coupon interest, time to maturity and the issuer's credit quality. A deterioration in the issuer's condition requires revaluation and the suspension of transactions until a reliable price has been established.

Before launch, procedures must be established for receiving and distributing coupons, ceasing transactions when an issue matures, calculating participants' shares and returning funds. Participants' rights to the assets, exit conditions and measures to address simultaneous withdrawals of a substantial share of the reserve must also be specified.

The operator's liability must reflect its role and be set out in the contract in accordance with the law. Where it controls the software and infrastructure, the terms must provide for its liability for related failures. Participants' market risk must be distinguished from losses caused by the operator's improper performance.

07

Pilot for Loans Secured by DFAs

7.1
Objective and Participants

The second pilot would test the automation of tenge lending secured by high-quality DFAs. A bank acts as the lender, while the platform operator provides the technical execution: recording collateral, calculating interest, monitoring collateral value and delivering the notifications required under the contract.

7.2
Tenge Stablecoins as Collateral

If a stablecoin is fully backed by tenge and can be freely redeemed at par, a tenge loan secured by that stablecoin is economically similar to borrowing money against an equivalent of the same money. The borrower locks up an asset, receives a smaller amount because of collateral requirements, and pays additional interest and fees.

In these circumstances, redeeming the stablecoin directly provides access to tenge without borrowing. Such a structure therefore does not test the usefulness of lending against a financial instrument; it adds costs as well as issuer and platform risks. Tenge stablecoins are excluded from eligible collateral in the proposed pilot.

7.3
Proposed Parameters and Borrower Protection

Table 7

Parameter	Proposal
Lender and borrowers	The lender is a bank. Borrowers are legal entities and qualified investors.
Collateral	High-quality DFAs from an agreed list. Tenge stablecoins and foreign-currency-denominated DFAs are not eligible.

Table 7 continued

Parameter	Proposal
Loan amount	Determined in the context of a specific pilot project. Stricter requirements will be set for less liquid assets.
Limits	Limits are set for the overall portfolio and for each borrower in the context of a specific pilot project.
Collateral valuation	Sources aligned with the first pilot: KASE valuation and an independent backup source.
Decline in value	Sequential steps: notification, a period to provide additional collateral or repay part of the debt, then a possible collateral sale when a separate threshold is reached.
Price data failure	No new loans are issued; automated collateral sales are suspended until the price is confirmed.
Loss coverage	A reserve funded from a portion of interest income; any further allocation of losses is governed by the contract and applicable law.
Pilot duration	Up to 12 months; the launch date and duration are agreed separately.

Before launch, separate LTV thresholds must be set for notification, collateral top-ups and forced sales. They must be unambiguous and tested against falling-price scenarios. The gaps between thresholds must give borrowers a realistic opportunity to meet the requirement.

Collateral is sold through an agreed platform at a justifiable price. The client receives information on the transaction, the amount repaid and the remaining assets. The contract also governs fees, early repayment, complaints handling and dispute resolution.

Following the pilot, the National Bank, together with the Agency of the Republic of Kazakhstan for Regulation and Development of the Financial Market (ARDFM), should determine the legal structure of the service and any regulatory amendments, if the pilot confirms that changes are needed.

08

Risks and Access to Foreign Services

8.1
Asset Composition

Exchanging a tenge-denominated asset for a digital asset linked to a foreign currency may create an additional channel for currency conversion and the cross-border transfer of value. The assessment must therefore extend beyond a token's name or denomination and consider the asset's economic substance and the ways in which it can subsequently be exchanged.

The risk is not confined to pairs involving a tenge stablecoin and bitcoin or a US dollar stablecoin. Exchanges into tokenised foreign bonds, gold and other assets require a similar assessment. Such transactions can complicate foreign exchange controls and the monitoring of fund flows.

The initial pilots should be limited to high-quality tenge-denominated DFAs. Foreign assets, foreign-currency-denominated assets and gold-backed assets are excluded. Money-backed DFAs are not to be used as investment collateral; the potential use of a tenge stablecoin solely for settlement is to be determined separately in the project terms.

If a tenge stablecoin is issued on a public blockchain, foreign participants may create their own exchange services without a Kazakhstani operator. Restrictions on domestic platforms therefore do not eliminate the risk entirely. Rules governing access, transfers and control over the circulation of the settlement asset must be assessed before launch.

8.2
Network Selection and Participant Access

A public blockchain makes interaction with foreign services easier, but makes it harder to control the participants and the transaction process. A permissioned network allows access to be restricted to verified participants, although interaction with external markets may be less flexible.

For the initial projects, a permissioned network is preferable, or a public network in which pilot transactions are restricted to identified and approved addresses. The chosen solution must ensure compliance with the requirements, rather than merely providing a formal participant check at onboarding.

8.3
Conditions for Considering Foreign Protocols

The model in which a Kazakhstani operator deploys a client's assets in a foreign protocol should be deferred. In this situation, the operator may not control the service's rules, software changes or the ability to recover assets. Additional risks arise in relation to foreign exchange regulation, illicit activity and client protection.

This issue should be revisited after the domestic pilots have been assessed. Preconditions include identified responsible persons, verified participants, a clear governance structure, independent audits of the code in operation and the ability to monitor transactions.

Before access is permitted, the list of approved services, the powers to remove services from that list, limits and procedures in the event of a failure must be determined. Clients must understand the source of returns, fees, key custody arrangements, exit conditions and the allocation of responsibilities. If a separate decision is taken to proceed, initial access should be limited to qualified investors.

09

The Approach to DeFi in Alatau City



The draft Act identifies the operation of a decentralised trading protocol as a separate activity. This includes managing or controlling a decentralised exchange, an automated exchange mechanism or another similar trading service.

The rationale is to distinguish the software from the person operating it. Software may use decentralised infrastructure while governance powers remain with a legal entity. It is the activity of that entity that is assessed for licensing purposes.

This approach is close to the international principle of identifying responsible persons. However, the draft Act establishes a separate category of activity, whereas this report proposes that, under Kazakhstan's general framework, new services should be tested within the existing provider regime. The two approaches must be aligned with due regard to the scope of their respective legal regimes.

10

Assessing Results and Next Steps

10.1
What the Pilots Must Demonstrate

A project's success should be assessed by its economic outcomes and the quality of client protection. The mere fact that software operates or transactions take place does not demonstrate the advantages of a new model.

Table 8

Area	Comparison with conventional practice
Liquidity	All-in purchase and sale costs, available transaction volumes, price stability and execution speed.
Costs	The cost of a completed transaction, including development, integration, independent audits, maintenance, key custody and price data.
Collateral management	Valuation accuracy, notification speed, the ability to provide additional collateral, the sale price and the amount of bad debt.
Participant Protection	Asset security, clarity of terms, timely return of funds and the quality of incident resolution.

Before the projects are expanded, tests must cover withdrawal by the largest liquidity provider, declines in collateral value of 10%, 20% and 30%, and the default of an individual issuer. Incorrect or unavailable price data, network congestion and loss of control over keys must be tested separately. Testing must demonstrate that transaction suspension and recovery mechanisms work in practice.

10.2
Supervisory Indicators

Table 9

Indicator	Proposed trigger for review or action
Assets held in pools	The prescribed limit is exceeded.
Liquidity concentration	The collective ownership by a narrow circle of participants of a significant share in the liquidity pool.

Table 9 continued

Indicator	Proposed trigger for review or action
Price deviation	Reaching the established threshold, divergence, or unavailability of independent sources.
Collateral adequacy	The relevant notification, collateral top-up or sale threshold is reached.
Collateral sales	A sharp increase in the number or volume of sales; review of the justification for each sale price.
Bad debt	Any debt remaining after collateral has been realised.

Triggers require predefined response procedures. Reaching a concentration threshold or a change in asset volumes should not automatically be treated as a technical incident. For each indicator, it is necessary to specify when a review is conducted, new transactions are restricted or operations are suspended.

10.3 Roadmap



Twelve months is an indicative timeline for the overall roadmap from the start of preparation. The duration of each pilot and its phases is set separately, taking account of participants' readiness and the actual launch date. The parameters of the pilot projects will be established taking into account the specific features of each pilot.

Organisational support for participants should be provided and the required infrastructure platform identified. Information on participation procedures and timelines should be communicated to banks, financial institutions and technology companies once the project terms have been agreed.

10.4
Final Proposals

The initial phase should focus on two objectives: improving secondary-market trading in high-quality tenge-denominated DFAs, and automating lending secured by those assets. The projects should remain limited in scale until their economic benefits, asset security and the effectiveness of control mechanisms have been demonstrated.