



**Lenfi Lightpaper**

July 2023

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## I. Introduction

The following Lightpaper outlines the general concept and fundamentals behind the Lenfi liquidity protocol. The platform embraces the principles of decentralization as defined first by Alexis Tocqueville as an indispensable prerequisite in the ever-evolving DeFi industry. Moreover, it presents a unique solution to the eUTxO<sup>1</sup> model, as presented by Charles Hoskinson in his Whiteboard Session. The protocol tackles persistent issues for the Cardano blockchain, like concurrency, transaction size, and efficiency limitations, by introducing Aiken as a smart contract language. Ultimately, Lenfi represents a conceptual upgrade from the peer-to-peer version of the old Lenfi (*Aada Finance*) protocol.

## II. What is Lenfi?

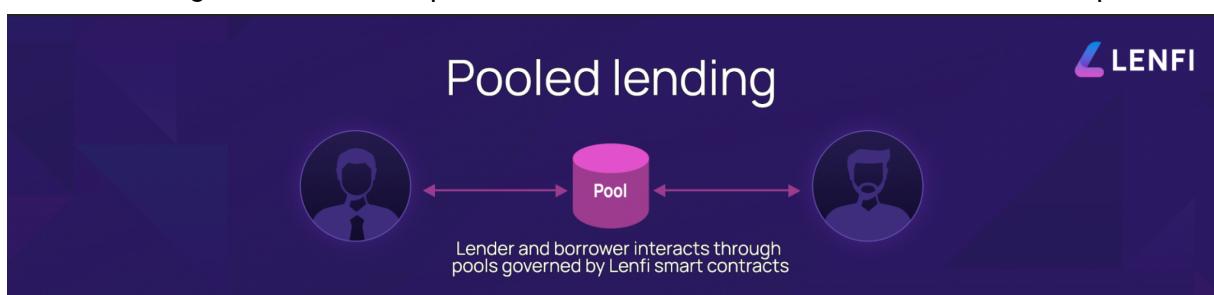
Lenfi is a decentralized liquidity protocol built on the Cardano blockchain. The platform delivers peer-to-pool mechanics by introducing a new paradigm in DeFi lending by leveraging the Cardano eUTxO model.

While users can deposit and borrow assets from readily available pools, they can become pool creators and managers. Moreover, suppliers and borrowers can trade or transfer their positions by listing their NFT bonds in the dedicated marketplace.

That way, Lenfi utilizes the best practices from established liquidity protocols while bringing a unique solution to decentralized financial primitives. The result is an efficient tool for DeFi banking, which enables debt trading as a commodity in a permissionless and trustless manner.

## III. How does Lenfi work?

Lenfi applies the principles of decentralization by enabling direct interaction with the protocol *smart contracts*<sup>2</sup>. The dApp's dedicated UI presents a more user-friendly alternative while retaining the trustless, permissionless, and immutable nature of the protocol.

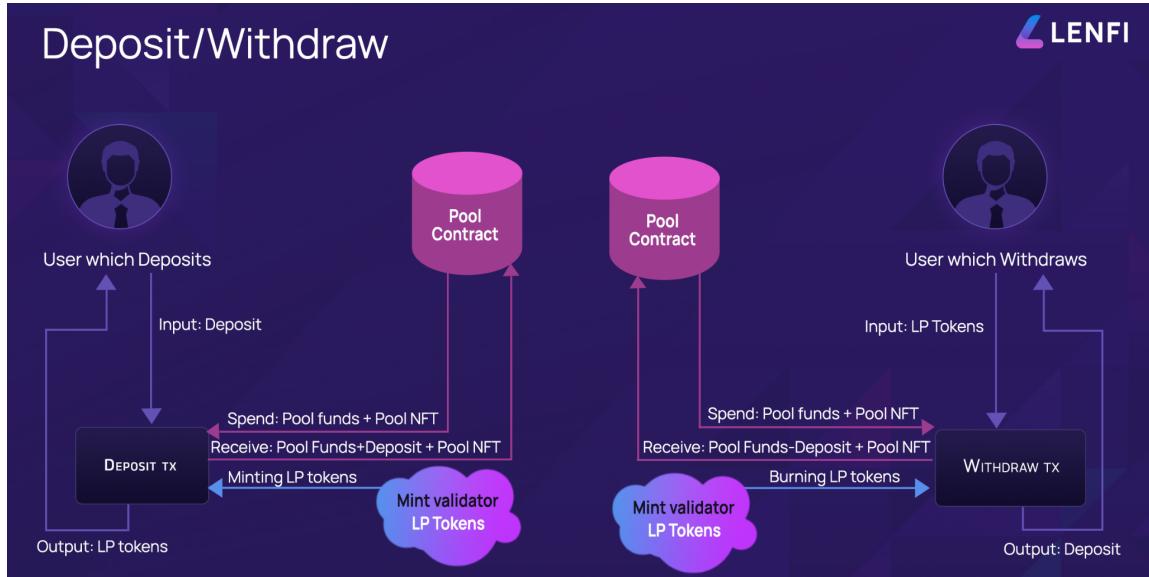


<sup>1</sup> “Cardano implements an innovative Extended Unspent Transaction Output (EUTXO) model, which is introduced by the Alonzo upgrade to support multi-assets and smart contracts.” - [Cardano Docs](#)

<sup>2</sup> Lenfi utilizes Aiken as a smart contract language for its peer-to-peer and peer-to-pool le

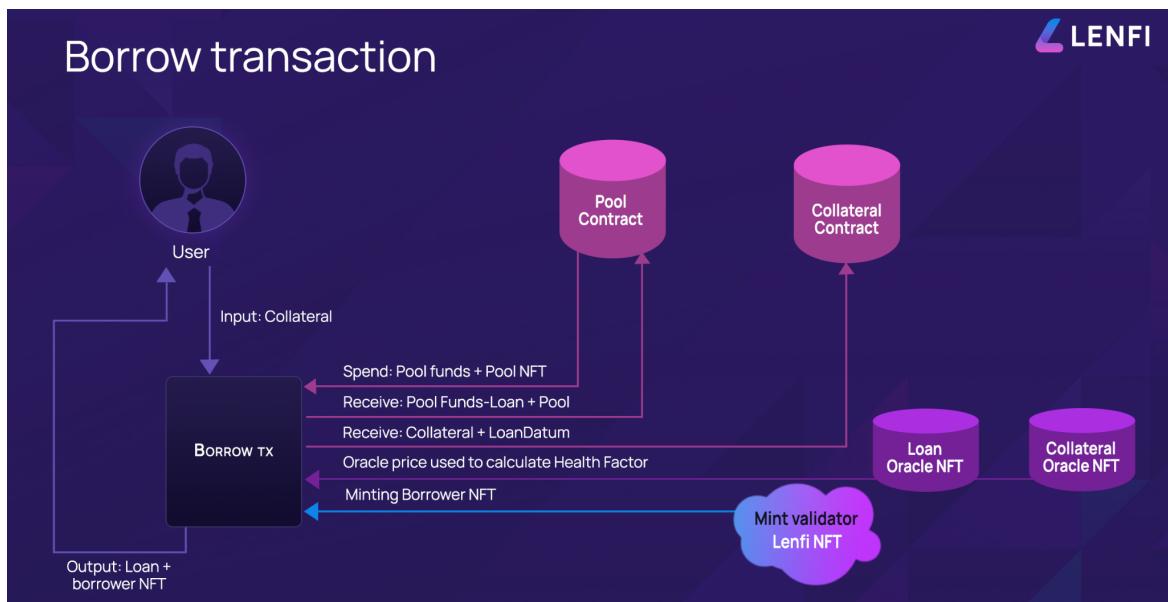
## 1. Supplying Assets

Lending funds is done by depositing native tokens into a smart contract. The latter then supplies borrowers with the available amounts. In turn, depositors earn interest on the funds they deposit. The interest rates are determined algorithmically based on the platform's utilization rate (supply and demand). However, they remain fixed for each loan.



## 2. Borrowing Assets

Borrowing is essentially taking out a loan from a pool of funds suppliers provide. The loan is issued through a smart contract, and the funds are transferred to the borrower's wallet address. However, it's important to note that borrowers must repay the loan amount plus interest before the *Health Factor*<sup>3</sup> drops below 1. Failure to do so can result in the liquidation of the collateral.



<sup>3</sup> The Health Factor is the numeric representation of the safety of the deposited assets against the borrowed assets and their underlying value. Read more about it in the Lenfi Gitbook.

### 3. Liquidations

Liquidation can occur when the *Health Factor* falls below 1. The collateral is locked in a smart contract, and the liquidator takes the loan value + interest. An additional 1.6% is reimbursed as a commission fee. The remaining collateral is left to claim by the borrower. The liquidation penalty helps maintain stability and security in the system by ensuring loans are adequately collateralized.

#### Health Factor

The Health Factor is the numeric representation of the safety of your deposited assets against the borrowed assets and their underlying value. The higher the value, the safer your funds' state is against a liquidation scenario. If the Health Factor reaches the liquidation threshold, the dApp will allow the lender to trigger a liquidation procedure.

- The Health Factor is the Collateral (value in ADA) divided by the sum of the Loan (value in ADA) and Interest (value in ADA), all divided by the Liquidation Threshold.
- The Collateral value of ADA is determined by estimating how much it would fetch if sold on a DEX.
- The Loan value of ADA is calculated by estimating how much collateral can be purchased with ADA on a DEX.
- The Interest value of ADA is determined by estimating how much of collateral can be bought with ADA on a DEX.

#### Liquidation Threshold

The Liquidation Threshold is an indicator that determines whether a position is undercollateralized. If the Health Factor reaches 1 or below, the loan is considered undercollateralized, and the lender can trigger the Liquidation Oracle.

Collateral asset	Liquidation threshold	Recommended Health Factor
ADA	1.3	1.5
AADA	2	1.5
MIN	1.7	1.5
WMT	2	1.5
LQ	2	1.5
WRT	2	1.5
COPI	2	1.5
DJED	2	1.5
SHEN	2	1.5

## 4. Platform fees

Lenfi implements a fee structure to sustain the platform's operations, known as the Platform fee. This fee is charged by the platform to cover its maintenance costs and ensure its long-term sustainability. The size of the Platform fee is determined as a percentage of the interest paid by users and varies based on the utilization rate of the platform.

**Utilization Rate-Based Fee Size:** The size of the Platform fee varies based on the utilization rate of the Lenfi platform:

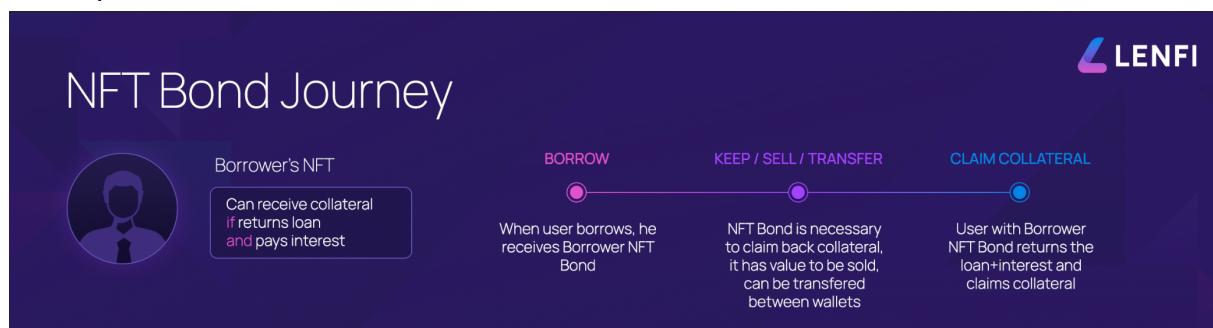
- Utilization rate falls below 10%, the fee size is set at 10% of the interest paid by users.
- Utilization rates between 10% and 45%, the fee size increases to 20% of the interest.
- Utilization rate exceeds 45%, the fee size reaches 40% of the interest.

Lenfi's fee structure is not set in stone. It can be changed and improved through the Lenfi DAO Governance process. This means that the community has the power to propose and implement modifications to the fee size, allowing for a flexible and adaptable system that caters to the evolving needs and preferences of platform participants.

**Fair and Proportional Fee System:** The fee structure in Lenfi is designed to be fair and proportional. By charging a percentage of the interest paid by users, the fee size corresponds to the level of utilization on the platform. This ensures that the burden of fees is distributed equitably and reflects the value users derive from their engagement with Lenfi's decentralized liquidity protocol.

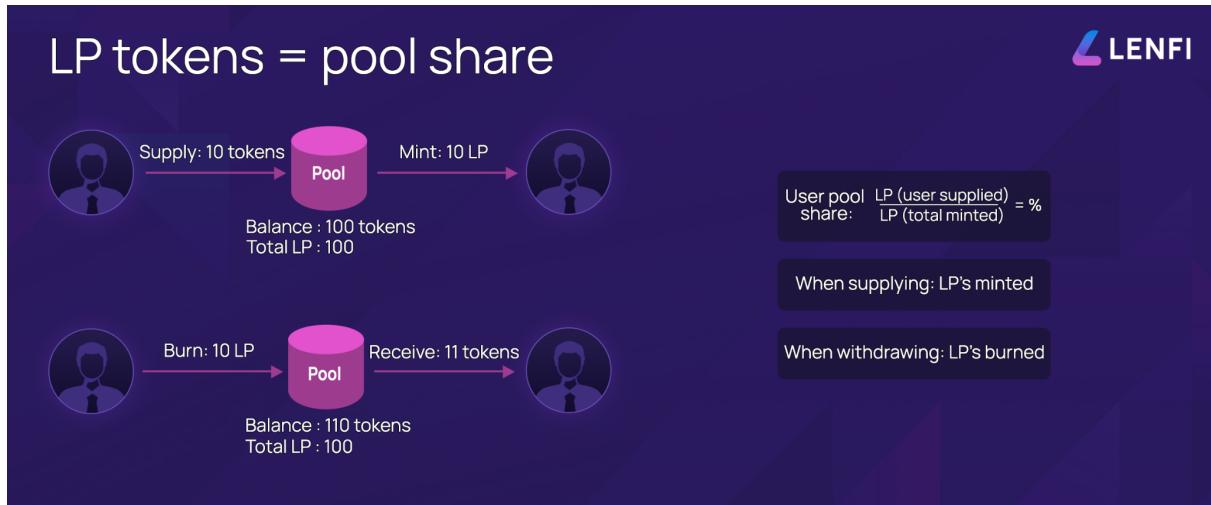
## IV. NFT Bonds

NFT bonds are a unique way of using loan positions as a transferable commodity. It leverages the benefits of the Cardano blockchain by tokenizing each loan. In turn, borrowers can redeem their collateral only after depositing the underlying bond into the smart contract (including the loan + interest). Alternatively, users can list them for sale in the NFT bond marketplace.



## V. LP Tokens

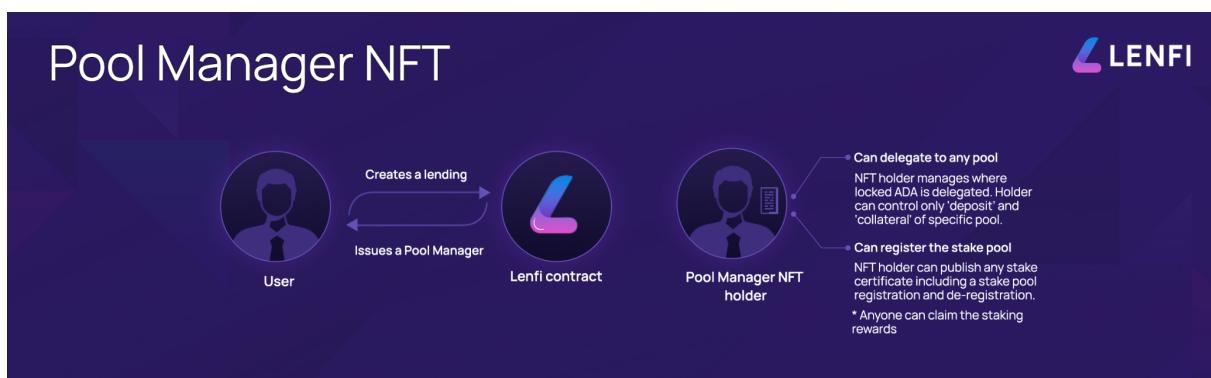
Every depositor receives *Liquidity Pool*<sup>4</sup> tokens representing a share of the underlying pool. Since the pool datum keeps track of the total number of LP tokens, it can validate that the LPs correspond to a certain amount of the pool share.



## VI. Pool Manager

The Pool Manager role is a novel concept that serves as a genuine continuation of the NFT bonds. It tokenizes pool ownership, making it a transferable and tradeable commodity indispensable in every liquidity pool in Lenfi. The general idea is to enable users to create their own pools in a trustless and permissionless manner by receiving a tokenized key in return.

Upon pool creation, every pool creator receives a Pool Manager NFT. The latter represents the pool ownership and enables the owner to delegate the pool to a Stake Pool<sup>5</sup> if one of the underlying tokens in the pool pair is ADA. Consequently, suppliers can earn staking rewards on top of their interest fees, while pool managers are incentivized to delegate their pool funds to Stake Pools with more attractive rewards.

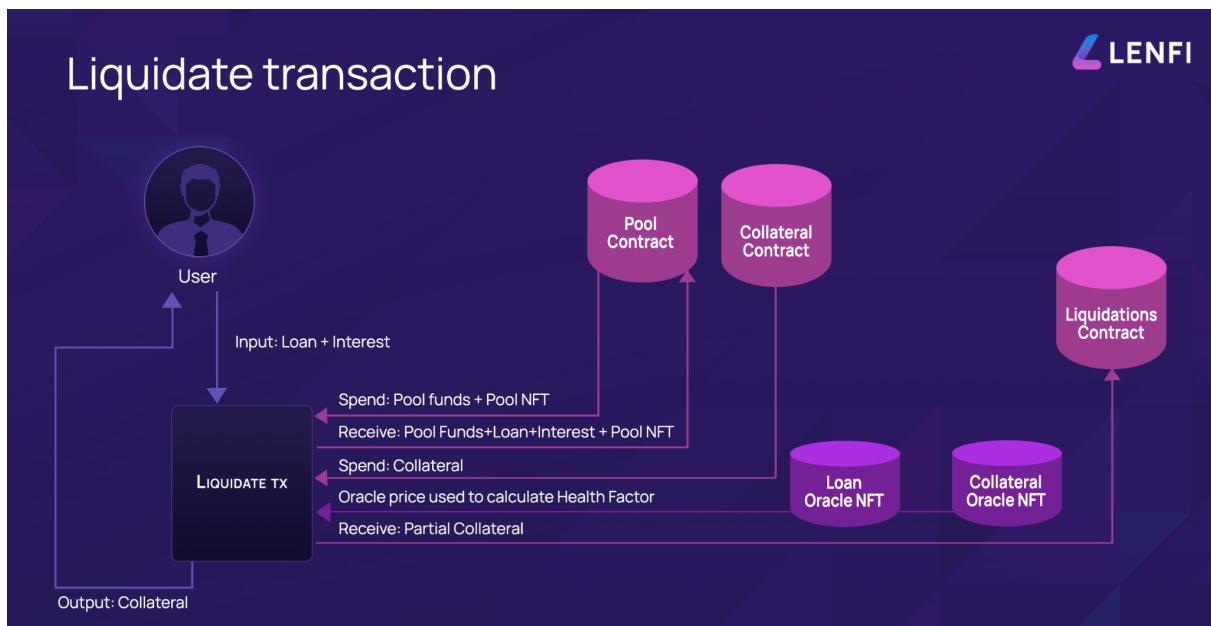


<sup>4</sup> A liquidity pool is a pool with a pair of pre-approved native assets that have been deposited by suppliers for borrowers to take.

<sup>5</sup> Stake Pools (SPs) are the core of Ouroboros, Cardano's proof-of-stake protocol.

## VII. Liquidations

Liquidations are the standard method of ensuring debt health in DeFi. But unlike most liquidity protocols, Lenfi allows everyone to become a liquidator and liquidate loans. If a loan *Health Factor* falls below 1, anyone can supply the loan + interest to the pool to receive the loan value in collateral tokens added with 1.6% as a commission fee. The remaining collateral is left to claim by the borrower. The liquidation penalty helps maintain stability and security in the system by ensuring loans are adequately collateralized.



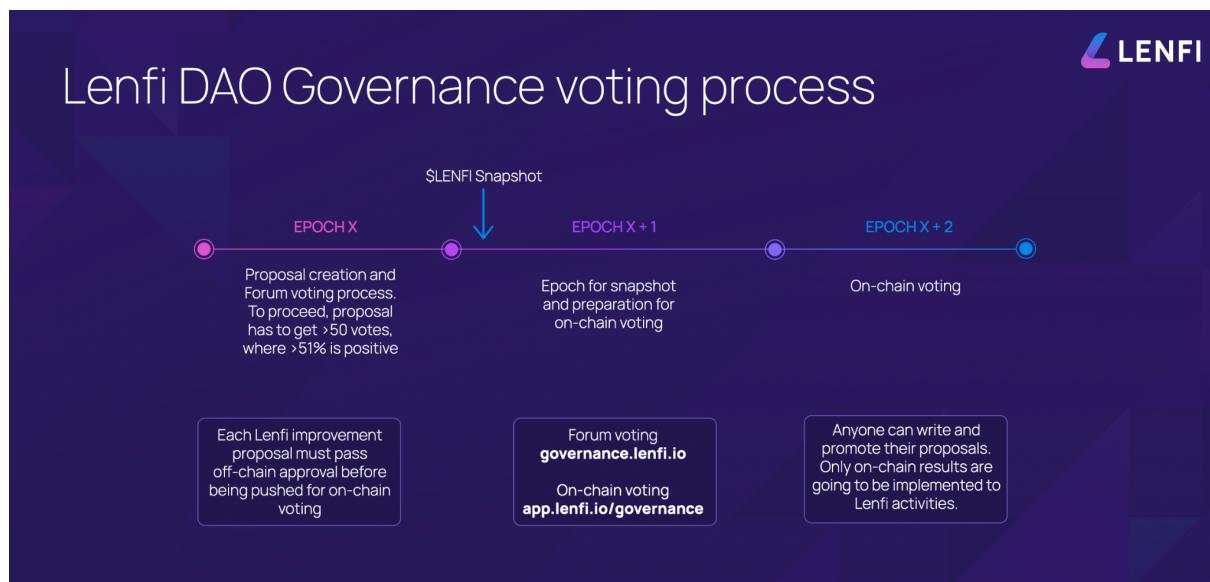
## VIII. Governance

Decentralized governance is an integral part of every successful DeFi protocol. In this regard, Lenfi leaps toward full autonomy by introducing new DAO smart contracts. The current governance process involves two phases:

1. Off-chain proposal and voting - every proposal must garner a quorum of 50 votes.
2. If the forum proposal receives a minimum of 51% positive votes, it passes to the on-chain voting phase. It involves a snapshot one epoch before the actual vote, which determines the voting power for each wallet (including LP and staked tokens). The on-chain voting lasts one epoch.

The voting power represents the number of tokens a wallet holds, stakes, or has in LP farms, e.g., 1 LENFI = 1 vote.

**Disclaimer:** While this governance system is primitive, the Lenfi team is working on implementing a more efficient solution. Ultimately, creating a self-sustainable DAO is one of the primary goals of decentralization.



## IX. Peer-to-peer (P2P) Lending

Lenfi's peer-to-peer (P2P) market retains the initial Aada Finance protocol concept, integrating the V1 smart contracts in Aiken. The primary aim is to give users an alternative method for lending and borrowing with fully customized loan terms. Meanwhile, smart contracts leverage the security and flexibility of the NFT Bonds feature.

### 1. Liquidity Requests (Borrower Requests)

Liquidity requests are a standard way of peer-to-peer interaction in which the borrower submits an overcollateralized loan request. The latter has pre-determined terms like loan and collateral tokens, period, and interest. By submitting a liquidity request, the borrower locks the underlying collateral in a smart contract, where the funds remain until repayment or liquidation.

### 2. Liquidity Deposits (Lender Requests)

Liquidity deposits, or lender requests, are features with the reverse characteristics of liquidity requests. It introduces faster and more seamless P2P interaction by allowing lenders to deposit funds with custom loan terms. The lender locks the loan funds in a smart contract, listing them on the market of readily available loans. A borrower can then agree to the pre-set conditions and take the loan by providing the underlying collateral as a guarantee.

### 3. Possible scenarios using P2P loans

1. If the borrower repays the loan, the lender receives the loan + interest.
2. If the Health Factor drops below 1, the lender can liquidate the loan and receive the loan value in collateral tokens + 1.6% as a commission fee.

3. If the borrower fails to repay the loan before the deadline, the lender receives the entire collateral.
4. The borrower can list the NFT bond on the Bond Marketplace to recoup a portion of the collateral to avoid failing to repay. The liquidator can repay the loan and take the collateral, keeping the difference as profit.

## X. Is Lenfi safe?

Security is of crucial importance in decentralized finance (DeFi). In this regard, Lenfi always strives to stay ahead by taking proper precautions to protect users' funds and ensure the integrity of the protocol. Our determination to maintain paramount protocol safety lays out in the following aspects:

1. **Smart Contract Audits:** Lenfi's smart contracts undergo security audits by reputable third-party firms. These audits help identify vulnerabilities and potential risks, allowing the development team to address them before deploying the contracts on the Cardano blockchain.
2. **Transparent and Immutable:** Lenfi operates on the Cardano blockchain, which ensures transparency and immutability. Lenfi adheres to these principles through open sourcing the smart contract code. Moreover, all transactions and interactions are recorded on the blockchain, making them easily verifiable.
3. **Resilient Infrastructure:** Lenfi is built on the robust and battle-tested infrastructure of the Cardano blockchain. The Cardano network has a strong focus on security and reliability. Moreover, it employs rigorous consensus mechanisms, utilizing a peer-reviewed research-driven approach. The Lenfi protocol is built without a kill switch, meaning that even if the UI stops working, users still will be able to access their funds.
4. **Security Measures for Liquidations:** Liquidations play a vital role in maintaining the stability of the protocol. In this regard, Lenfi implements measures to ensure that liquidations are conducted safely and fairly:
  - 4.1 **Liquidators:** In Lenfi, anyone can become a liquidator and participate in the liquidation process. However, liquidators must provide the loan amount plus interest to the pool to receive the loan value in collateral tokens and a commission fee. This mechanism ensures that only interested parties willing to provide collateral can liquidate loans.
  - 4.2 **Liquidation Penalties:** Lenfi incorporates a liquidation penalty, where a commission fee of 1.6% is charged on the collateralized assets during the liquidation process. This penalty serves as an incentive for borrowers to maintain sufficient collateral and discourages risky borrowing behavior.

**4.3 Adequate Collateralization:** Lenfi sets a Health Factor threshold below which a loan becomes eligible for liquidation. By requiring borrowers to maintain collateral above this threshold, Lenfi aims to ensure that loans are adequately collateralized, reducing the risk of defaults and potential losses for lenders.

**4.4 Transparency and Fairness:** The liquidation process in Lenfi is transparent and accessible to all participants. The rules and conditions for liquidations are predefined and visible to users, ensuring fairness by preventing any arbitrary actions.

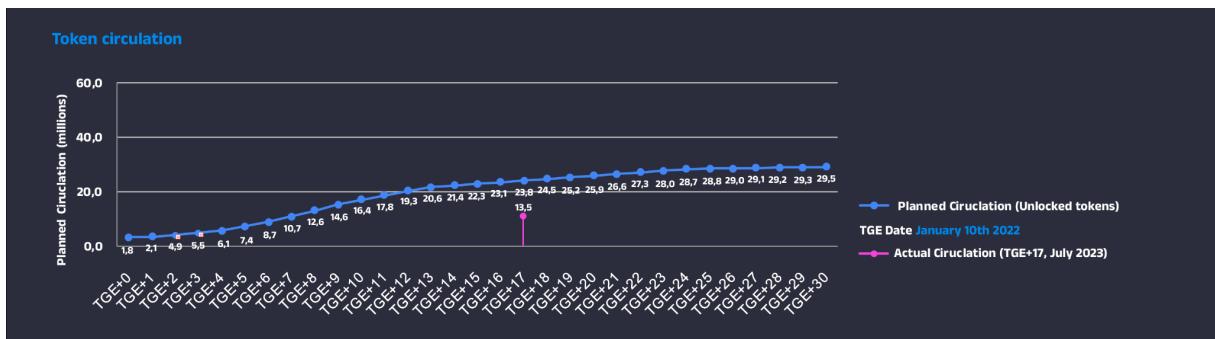
## XI. LENFI token

The LENFI token serves as the core element of the Lenfi ecosystem. Moreover, it provides the following utilities and benefits to its holders.

1. One of the primary utilities of the LENFI token is its use as collateral when borrowing assets on the Lenfi platform. This feature provides users with enhanced flexibility and improved access to liquidity, enabling them to meet their financial needs more effectively.
2. LENFI token holders actively participate in the governance process of the protocol, granting them voting rights and the ability to influence the platform's development. By exercising their voting power, token holders play a crucial role in shaping the future direction of Lenfi, ensuring a decentralized and community-driven decision-making process.
3. In addition to lending and governance, LENFI tokens can be utilized to provide liquidity on Cardano's decentralized exchanges. By contributing LENFI tokens to liquidity pools, users can earn rewards and actively contribute to the overall liquidity and stability of the ecosystem.

LENFI Treasury and its Token circulation. We are working towards full transparency when it comes to the token. Treasury holds all the unlocked and not yet used LENFI tokens + its rewards from various activities. You can view the balance in [addr1qyxgh8xpv4l9zwd70ge3qdk9fx0sctwqnlvxsr5hw0j2gxnwphha8ne6gvrk2t54dv72v4ufefdhsd4w2j2wh32x4k9qxlsuvd](#). This is a hardware wallet address, however shortly we will move to multi-sig address. Not yet unlocked LENFI will remain in a vesting wallet:

[addr1q97r4krjlth2t4n6zj4ts2g2tgf6hy5kec726na7rdwy9nj0mv7emuks64z8l55krwm68n59574j7cdfk7ja2s684fvqpm90ay](#).



With its diverse range of use cases, the LENFI token acts as a valuable asset, empowering users to engage with and contribute to the growth and success of the Lenfi decentralized liquidity protocol.

## Ending Note

Lenfi represents a significant leap forward in the realm of decentralized finance (DeFi) by delivering a powerful liquidity protocol built on the Cardano blockchain. Through its unique features like peer-to-pool mechanics, NFT bonds, P2P lending, and transparent governance, Lenfi provides users with a trustworthy and efficient platform for lending, borrowing, and managing liquidity.

We believe that decentralization is the cornerstone of the future of finance, and Lenfi embraces this principle wholeheartedly. By leveraging the Cardano eUTxO model and Aiken as a smart contract language, Lenfi addresses long-standing challenges within the ecosystem, such as concurrency, transaction size, and efficiency limitations. The protocol opens up new possibilities for decentralized financial primitives and empowers users to actively participate in the lending and borrowing landscape.

While Lenfi incorporates innovative technology and robust security measures, it is vital to acknowledge that DeFi, by nature, involves risks. Users are encouraged to exercise due diligence, conduct their own research, and carefully consider their risk tolerance before engaging with the protocol. Lenfi's team remains committed to continuous improvement, security audits, and the development of a self-sustainable DAO governance system to ensure the long-term success and resilience of the protocol.

We invite you to join us on this exciting journey toward a decentralized financial future. Explore Lenfi, experience the power of the Cardano blockchain, and unlock new opportunities for liquidity provision and utilization in the ever-evolving DeFi landscape.

Let's shine a light on Cardano DeFi together.

**Disclaimer:** This lightpaper serves as a conceptual overview of the Lenfi protocol and its features. It does not constitute financial or investment advice. Users are responsible for making their own informed decisions and should seek professional advice when necessary.