BRIKY LAND

The future of the worldwide real-estate market

Whitepaper
V2.0

July 2024

Abstract

This document describes the definitions and business behind Briky Land and different aspects of the implementation.

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1. INTRODUCTION

Real estate has always been one of the most valuable asset classes globally. By 2024, the real estate market is expected to hit a staggering value of 634.9 trillion USD worldwide and is anticipated to grow at an annual rate of 2.77% (CAGR 2024-2029), resulting in a market volume of 727.8 trillion USD by 2029. However, so far, this market has never reached its peak potential due to several restraints including:

- The high-value nature of this kind of asset prevents investments from people with limited capital.
- Regulations of some governments and countries complexify cross-border real estate trading.
- Traditional real estate trading process takes lots of time for administrative procedures and usually involves significant intermediary costs, ranging between 5% to 10% of the asset value.

Acknowledging these constraints, Briky Land, an on-chain real estate ecosystem, is born to be a direct breakthrough solution to the aforementioned problems. Utilizing the advanced technology of Blockchain to securitize and tokenize your real estate as NFTs (Non-Fungible Tokens) that can be easily traded worldwide, Briky Land is expected to become the future standard of the real estate market.

The key values of trading real estate on the Briky Land platform are decentralization, globalization, simplification with minimum investment value, low intermediary cost, and low latency. The path of technology that Briky Land is building up can lead to many innovative fintech leaps in real market making and borrowing/blending with real estate mortgages.

2. TECHNOLOGIES

2.1. Overview

The solution that Briky Land provides is based on the breakthrough of NFT on blockchain, specifically the ERC-1155 standard. Real estate joining the Briky Land ecosystem will be tokenized and fractionalized into a set of unique on-chain tokens inside an NFT collection called Native Land, with an initial price that is no greater than 100 USD. Each token can be traded freely in a decentralized manner through any NFT marketplace, which also means investors can approach the estate partially with a smaller price than the whole asset value. Thanks to the advantage of blockchain and smart contracts, token holders can buy and sell their possessions freely, globally, transparently and anonymously through various crypto-currencies.

Following the simplification of the trading procedure compared to traditional methods, Briky Land is willing to reduce the broker fee down to 20% of the ordinary cost on the traditional market.

Asset fractionalization yields the fact that the ownership of real estate is shared between multiple token holders. Therefore, Briky Land also provides a voting mechanism for all holders can cooperate in managing and exploiting the value of their shared real estate. Managing here includes extracting the asset from the Briky Land ecosystem.

In order to fundraise for the project and establish the intrinsic value within the ecosystem which can grow together with its expansion, Briky Land will launch an ERC-20 currency named BRIK, with well-defined tokenomics and liquidation mechanism, together with a derivative token named BRIKI, evolving from staked BRIK. Briky Land incentivizes trading real estate with these two tokens by reducing the intermediary cost even more.

2.2. NATIVE LAND

2.2.1. Token standards

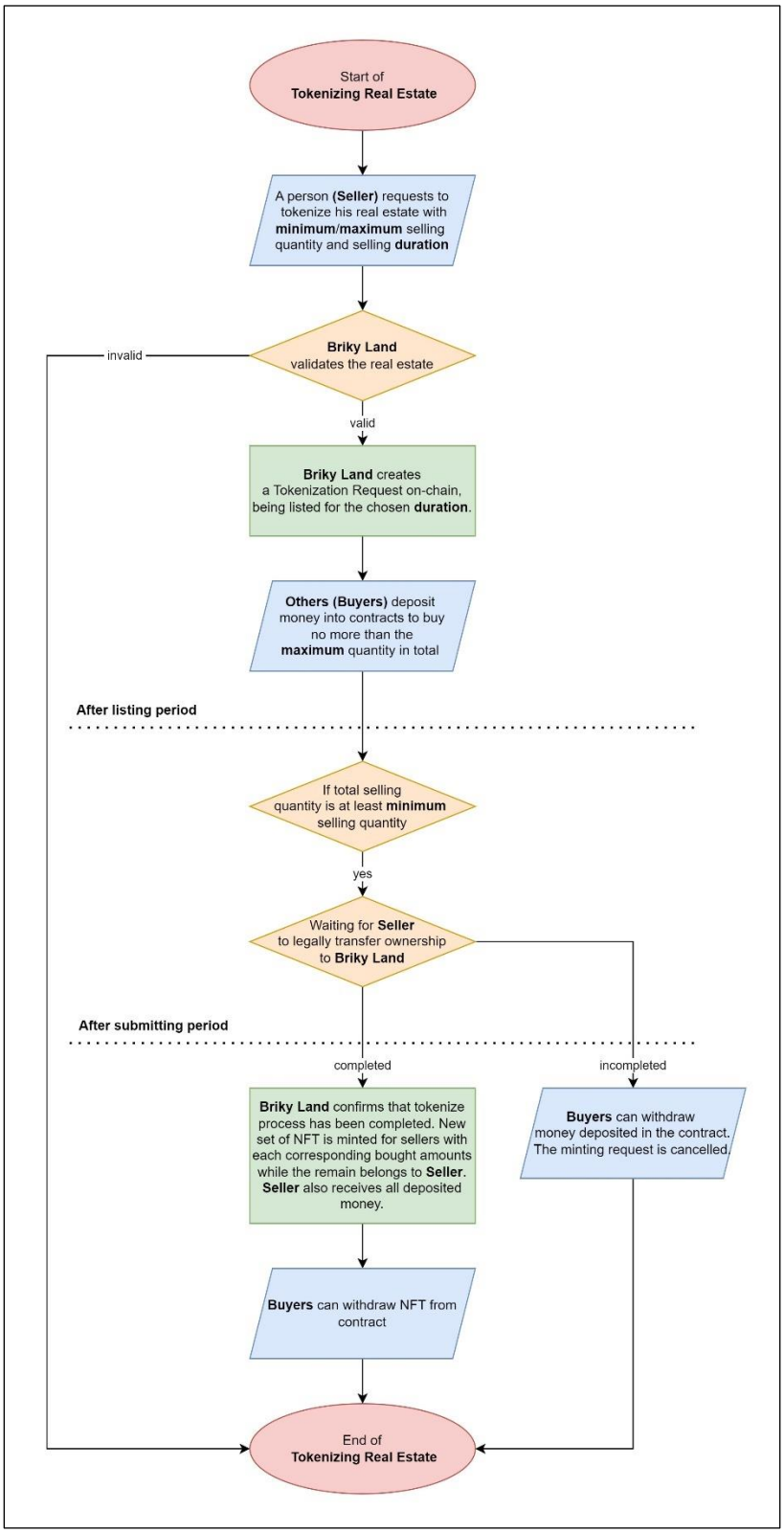
The real estate mechanism is implemented based on **ERC-1155** standards, which is the combination of the two most novel token standards **ERC-20** (Fungible Token) and **ERC-721** (Non-Fungible Token).

- **ERC-20** standardizes the smart contract of a fungible cryptocurrency whose all tokens are identical so its fundamental storage focuses on the total supply and the balance of each account. Its interface includes functions to transfer a certain amount of tokens and approve other accounts on permission to spend theirs.
- **ERC-721** standardizes the smart contract of a collection of non-fungible tokens. Each token is considered unique and identified by a distinctive identifier. They are usually implemented so that each is associated with certain metadata. Its interface also includes functions to transfer and approve but for a singular unit.
- **ERC-1155** combines both ERC-20 and ERC-721. The smart contracts will store multiple token sets with different balance mappings, distinguished by a single identifier for each set. This means tokens from the same set are considered equivalent while tokens from two distinct sets are considered non-fungible. The standard is highly advanced and extremely suitable for securitizing assets, and in our particular case, real estate.

In the particular use case of Briky Land, a real estate joining the ecosystem will be tokenized into a set of tokens with specific metadata identifying the asset, with the supply chosen by the original owner. While the tokenization process, which may contain several local administrative procedures, will require manual operations from Briky Land's staff, any trading or transferring actions afterward are directly decided by each token holders according to functional standards.

The Native Land also implements the **ERC-2981** standard, which proposes a royalty payment on each trading transactions (formally applied by all notable NFT marketplaces) as a fee for the Briky Land platform. The royalty fee is implemented to be proportional to the trading value but the rate is promised by Briky Land to be set less than the average of the traditional market.

2.2.2. Real estate tokenization



Tokenizing Real Estate flow

The lifecycle of any real estate in Briky Land's ecosystem starts with tokenization.

When landowners choose to let their real estate participate in Briky Land's ecosystem, a request form of tokenization must be filled out on the Briky Land website. Noticing the demand, Briky Land will send our agents to qualify the assets to collect information and make sure any necessary administrative procedures are positively available. If no issue appears, Briky Land's managers will create tokenization requests on the smart contract. These tokenization requests are virtually public selling offers of the real estate.

A tokenization request will contains these informations:

- *requester:* Address of the real estate seller
- *uri:* Uniform resource identifier of the real estate, which in our particular case, shall be a IPFS link to the corresponding metadata file
- *totalSupply:* The total number of NFTs will be minted to represent the real estate
- *maxSellingAmount:* The total amount that the seller expects to sell, which buyers cannot buy accumulatively more than
- *minSellingAmount:* The required sold amount must be surpassed so that the tokenization process can be completed
- *unitPrice:* The initial price of a single token to be minted, limited at 100 USD, relatively for each specific cryptocurrency
- *currency:* The address of the cryptocurrency that the seller expects to trade with
- *expireAt:* Some real estate ownership has an expiry that shall be stored directly in the contract once tokenization is completed
- *duration:* The amount of time that the seller expects the public sale to last, counted from the moment the request is listed by admin after validation

During the public sale, anyone can join to deposit, quantized by the number of tokens they wish to buy and multiplied with unitPrice to determine the corresponding cost in the predefined *currency*. The deposit will be locked inside the contract, and not transferred to any personal address until the verdict of the next phase. The system prohibits people from depositing more than *maxSellingAmount* overall.

After the public sale when no one can ever deposit anymore, if the deposited tokens reach *minSellingAmount* then the real estate is qualified to be tokenized. Within the 30 following days, the seller and agents from Briky Land must complete the

administrative process to transfer the real estate ownership to Briky Land as the proxy entity because the ownership from that forward will be shared among multiple inside the system of Briky Land.

Once the ownership transfer is successful, Briky Land will confirm the tokenization. A new NFT set with *totalSupply* token will be newly minted, binding with *uri* and *expireAt*. The correct deposit amount of NFTs will be transferred to the contract so depositors can individually withdraw their corresponding amount of tokens. The deposit money in predefined *currency* inside the contract together with the remaining tokens that are not sold, will be sent to *requester* (the seller's address).

If the happy case can't be achieved at any step of the aforementioned process, including the deposited token number being less than *minSellingAmount* or the administrative process not being done in 30 days, the tokenization will be canceled. The depositors can then withdraw their previous deposit.

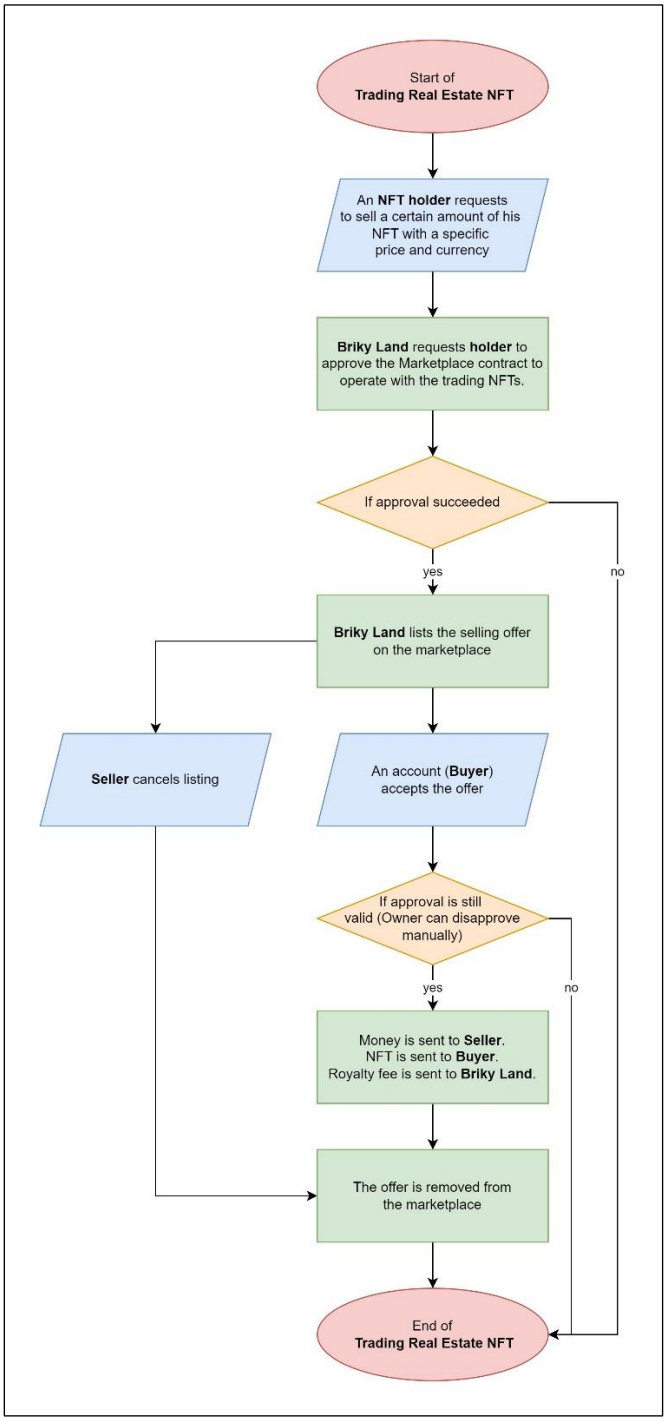
The maximum/minimum selling amount mechanism is a significant feature that helps sellers meet their expectations of liquifying real estate. In best sales, the seller always keeps at least *totalSupply* - *maxSellingAmount* tokens. In worst sales that are qualified enough to tokenize, the seller always gets at least *minimumSellingAmount* × *unitPrice* in the predefined *currency*. If the tokenization is canceled, everyone can retain their possessions.

2.2.3. Marketplace

Due to being implemented with the ERC-1155 standard, which is widely recognized by the community, Native Lands can be traded freely in many famous marketplaces such as OpenSea, Rarible, Mintable, etc.

The Briky Land team also constructed our own marketplace for trading Native Land NFTs only to provide the best user experience. Currently, we use a basic smart contract mechanism, similar to other marketplaces. There, NFT holders list their selling offers each with a specific amount, price, and currency, as well as approve the marketplace contract to operate over their tokens, and wait for others to accept their offers. The marketplace contract triggered by the buyers will pull the required money from the buyers, split the NFTs cost to the seller and the royalty to the platform, and also transfer the NFTs ownership to the buyers.

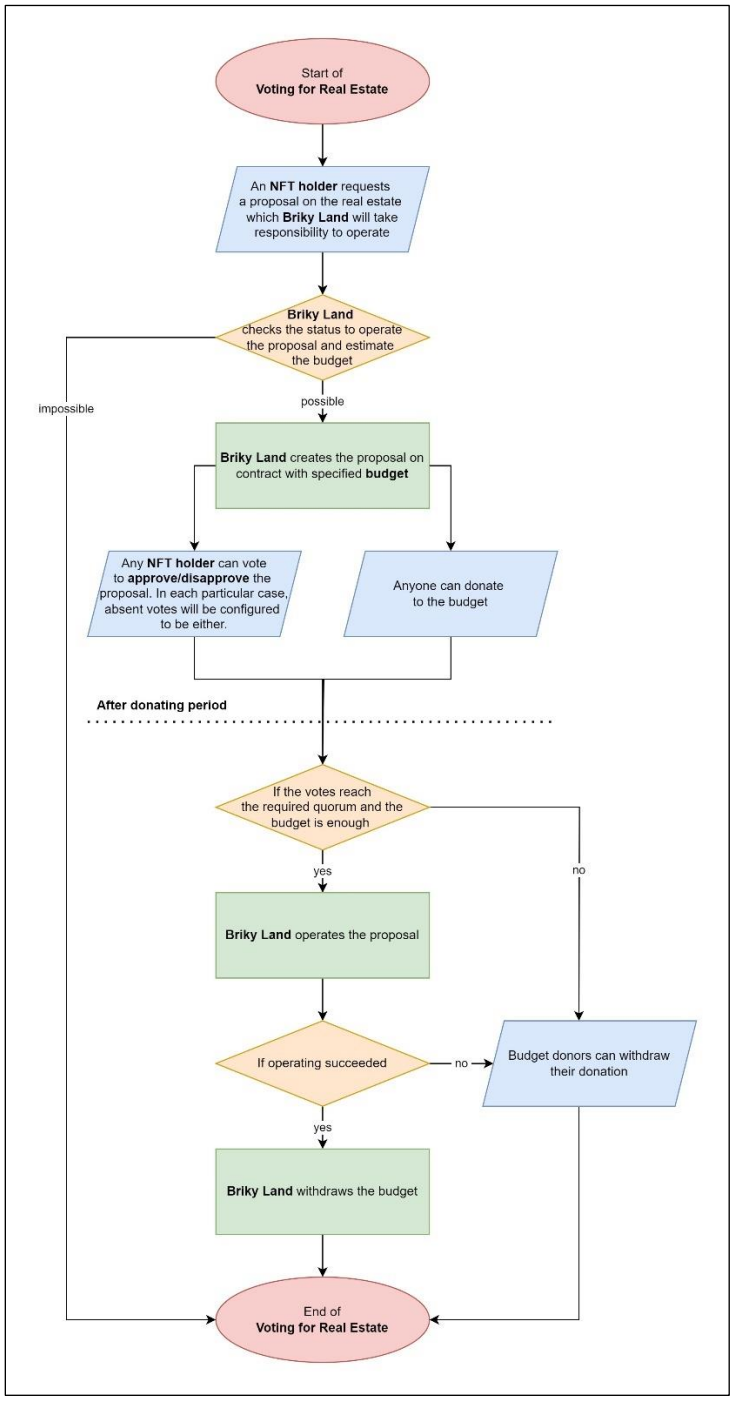
However, only in Briky Land's marketplace could you meet an exclusive royalty rate that is smaller than the ordinary rate, which is already smaller than the average of the traditional market, when you trade with our exclusive token – **BRIK** (described in the next section of the document).



Trading Real Estate NFT flow

2.2.4. Governor

To help all NFT holders cooperate in managing and harvesting profit from real estate, Briky Land will establish a government mechanism for each real estate, or with the perspective in the system, each specific set of NFTs.



Voting for Real Estate flow (generic)

For each real estate, any NFT holder can request a proposal with the property from the website. Its target can involve renting, extending expiry, changing real estate zoning, reconstructing the property, etc., and even extracting the real estate from the platform. Briky Land, the proxy entity responsible for operating the proposal, will validate the possibility of it and estimate the required budget. If the proposal is doable, it will be posted onto the smart contract. Any token holders can approve/disapprove the proposal with voting power equal to their balance of the corresponding NFT set at the starting timestamp of the proposal. Any account can donate to the budget. Absent votes might be pre-configured as either approval or disapproval of each proposal.

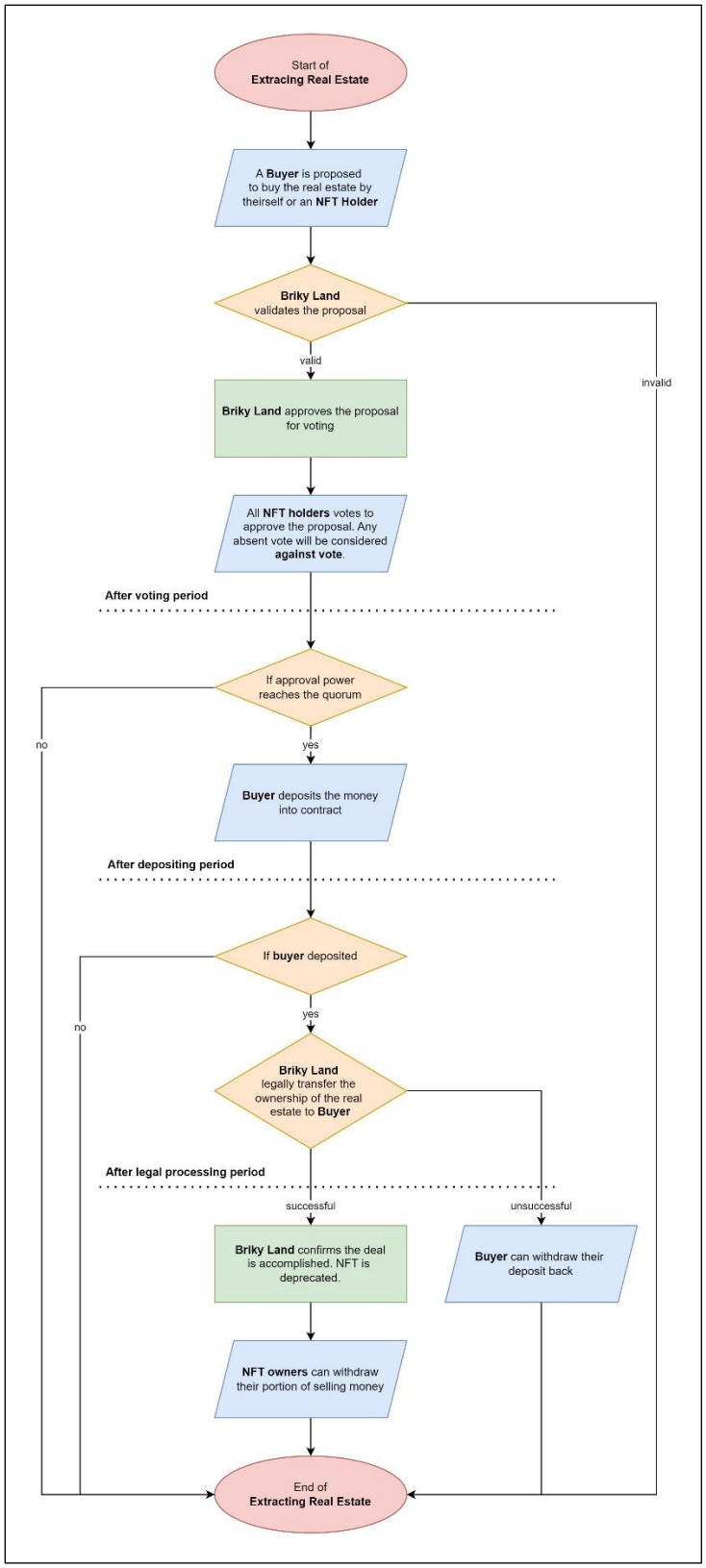
When the vote is close, if the approval voting power reaches the required quorum (reagularly 50% of the total supply) and the budget reaches the required amount, Briky Land will operate the proposal. If it succeeds eventually, the platform will withdraw the budget. If the flow fails at any point, budget donors can withdraw their donations.

All incomes and payments e.g. rent, from operations of the real estate will be forwarded to the government contract so each NFT holder can withdraw their share proportionally to their NFT balances of the corresponding set.

There is one significant operation that the voting flow that must be different and more specified than the former generic flow. Which is **extracting** the real estate from the Briky Land ecosystem.

Extracting real estate from Briky Land means that all its NFTs will be deprecated and the ownership of the property will belong to someone else. To ensure a concrete return value comes to all NFT holders despite their approval/disapproval of the operation, selling the real estate to a specific person seems to be the perfect method.

The extracting proposal must specify the buyer's address with the selling price and currency, requested by either that buyer self or an NFT holder. Briky Land's staff will validate the process of transferring corresponding real estate ownership to the buyer based on local law and the buyer's legitimate profile before creating a proposal on the government smart contract.



Extracting Real Estate Flow

Holders can vote while the buyer deposits the money into the contract. To prevent a few scamming strategies, the required approval quorum is 100% of the total supply during the first year and reduces to 75% after that. If the quorum has been hit and the buyer has deposited then the next step will be the administrative process, as usual, to officially transfer the real estate ownership to the buyer. As things are confirmed to be completed, the corresponding set of NFTs will be deprecated while holders can withdraw a fair share of the property selling value, proportionally to their balance on the total supply.

Again, if flow failed at any point, the buyer can withdraw his deposit money and the real estate remains inside Briky Land ecosystem.

2.3. BRIK

BRIK is an **ERC-20** token that will be the major cryptocurrency to exchange in Briky Land's ecosystem with multiple exclusive incentivization. Besides the ordinary functions following the standard, its tokenomics includes public offering by **Auction**, liquidity **Treasury**, and a stake token **BRIKI**.

2.3.1. Supply distributions

The total supply of BRIK is capped at the threshold of **20,000,000,000 tokens**.

	Token amount	Percentage	Offering
Backer Round	100,000,000	0.50%	Private Auction
Seed Round	50,000,000	0.25%	Private Auction
Private Sale 1	30,000,000	0.15%	Private Auction
Private Sale 2	50,000,000	0.25%	Private Auction
Public Sale	500,000,000	2.50%	Public Auction
Core Team	1,000,000,000	5.00%	For the Team
External Treasury	1,000,000,000	5,00%	Offering on Demand
Market Maker	2,270,000,000	11.35%	Offering on Demand
Staking Reward	15,000,000,000	75,00%	Daily Mint
	20,000,000,000	100,00%	

Supply distributions table

The above table informs the anticipated token allocation for multiple different purposes. **25%** of the total supply, which is **5 billion** BRIK will be initially minted for:

- **230 million tokens** for 4 private auctions: Backer Round (**100 million**), Seed Round (**50 million**), Private Sale 1 (**30 million**), and Private Sale 2 (**50 million**). These rounds are exclusive for early supporters of the project with an influential extraction for development funding while the rest goes into the Treasury to initiate the liquidity. Only whitelisted account of these people can participate in these auctions.
- **500 million tokens** for Public Sale auction. This round is open for everyone to join, with the highest offering token amount and 100% deposit going straight into the treasury.
- **1 billion tokens** for the Core team.
- **1 billion tokens** for External Treasury, which will provide BRIK as liquidity for external systems, e.g. swapping pools. This amount will be withdrawn on specific demands from the market in order to expand the project. Incomes from these operations will be used to enlarge the Treasury.
- **2.27 billion tokens** for Market Maker. This amount will also be withdrawn on specific demands involving market making movements. Incomes from these operations will be used to enlarge the Treasury.

The remaining **75%** of the total supply, which is **15 billion** BRIK will be minted daily for stake, which seems too much greater than the initial offering. However, the staking reward is distributed proportionally to all stakeholders, or in the best case, all BRIK holders as we encourage everyone to stake their BRIK, to protect the liquidation of the token while the project is growing.

In fact, if we consider staking reward to be an inevitable expansion of any initial minted token amounts, the allocations can be converted to these relative ratios:

	Token amount	Percentage
Backer Round	100,000,000	2.00%
Seed Round	50,000,000	1.00%
Private Sale 1	30,000,000	0.60%
Private Sale 2	50,000,000	1.00%
Public Sale	500,000,000	10.00%
Core Team	1,000,000,000	20.00%
External Treasury	1,000,000,000	20,00%
Market Maker	2,270,000,000	45.40%
	5,000,000,000	100,00%

Supply distributions table without Staking Reward

The distributions are only expected and can be changed due to liquidating behaviors.

2.3.2. Treasury and Liquidation

In order to give BRIK an intrinsic value, we construct a liquidation mechanism for the token. The stablecoin **USDT**, valued equivalent to real USD, chosen to be the liquidity currency, will be collected from auctions and operations of the project, and kept in a contract called **Treasury**.

All USDT incomes shall be split into 2 different funds:

- **80%** for the liquidation, can only be withdrawn through liquidation process.
- **20%** for the operation funding, can only be withdrawn by the admin for long term operating of the project.

Holders can liquidate their BRIK by triggering a function that burns the tokens and returns the corresponding amount of USDT following the formula:

$$liquidation(value) = \frac{value * liquidity}{totalSupply}$$

There, $value$ is the amount of liquidated BRIK, $totalSupply$ is the total circulated tokens of BRIK in existence, and $liquidity$ is the value locked in the Treasury.

However, the liquidation feature is locked until the end of 2025 to protect the value of the token, as well as the value of the Briky Land project.

2.3.3. Auctions

Token BRIK will initially go into circulation through 5 auctions as mentioned previously, all implemented in smart contracts to automatically and transparently proceed with the money flow.

For each auction, a certain amount of BRIK tokens has already been minted and locked within the contract. Until an auction ends, permitted accounts (whitelisted only for the first 4 rounds) can deposit USDT multiple times into it. Once the time is out, the locked BRIK shall be shared proportionally among all depositors.

Detailedly, let's assume a general depositor i deposits d_i $(d_i > 0)$ value in total during an auction that locks to offer X token BRIK. When the auction concludes, the depositor will receive the amount of BRIK equal to:

$$X \frac{d_i}{\sum d_j}$$

2.3.4. Staking BRIK, receiving BRIKI

In order to protect the liquidity of BRIK in the early stage of the project, we incentivize token holders to deposit their BRIK into our **Staking Pool**, which seals your tokens but helps grow the volume every day until you wish to withdraw them.

Sealing money still sounds like killing its utilities? Don't worry, we replace such utilities by returning to stakeholders the exact same amount of another derivative

token, called **BRIKI**, as the amount of BRIK has been staked. This BRIKI can be used like an ordinary ERC-20 token to transfer the capability to withdraw staked tokens from the Staking Pool. Moreover, the balance of BRIKI will grow daily as the corresponding volume of BRIK will grow inside the pool as well.

Concisely, interactions with the Staking Pool can be described shortly:

- Any user can stake their BRIK into the Staking Pool, implemented as a smart contract. These amounts of BRIK will be locked, while equivalent amounts of BRIKI will be transferred back to the corresponding stakeholders. These BRIKI can be spent with a liquidity rate of **1:1** with BRIK.
- Every single day within **3 years** since the pool starts rewarding (right after all auctions end), **14 million** BRIK will be issued into the Staking Pool, while the same amount of BRIKI shall be issued to all stakeholders' balance, directedly and proportionally to their shares.
- Any stakeholder, or in other words, any BRIKI holder can withdraw their stake in BRIK and burn an equivalent amount of BRIKI.

The Mathematics Behind:

On day k ($k > 0$), the BRIK contract will be triggered to issue a predefined r_k ($r_k > 0$) tokens into the Staking Pool contract. These tokens will be shared among stakeholders correspondingly to their share within the total value V_k ($V_k > 0$) locked inside the pool. The stake inflation of each stakeholder is proportional to every other, and also to the inflation of the whole pool.

- Simple scenario:

Consider an arbitrary BRIK holder who would like to stake exactly once with v tokens on the t-th day since the Staking Pool deployed. Today, the T-th day ($0 \leq t \leq T$), his stake will increase following the traditional Compound Interest formula:

$$reward(v, t, T) = v \prod_{i=t}^{T-1} \left(1 + \frac{r_i}{V_i}\right)$$

A formula like this is impractical to implement on smart contracts, due to its loop of multiplication can grow enormously while the gas being charged on the complexity

of the called function. It requires to proceed a few more transformations. Let P_k to be the accumulated product of all daily interest rates from day 0 to day $k-1$:

$$P_k = \begin{cases} 1, & k = 0 \\ P_{k-1}\left(1 + \frac{r_{k-1}}{V_{k-1}}\right) = \prod_{i=0}^{k-1}\left(1 + \frac{r_i}{V_i}\right), & k > 0 \end{cases}$$

The value of P_k can be calculated easily and only once every day as to being stored globally. With P_k, we can simplify the first formula:

$$reward(v, t, T) = v\prod_{i=t}^{T-1}\left(1 + \frac{r_i}{V_i}\right) = v\frac{\prod_{i=0}^{T-1}\left(1 + \frac{r_i}{V_i}\right)}{\prod_{i=0}^{t-1}\left(1 + \frac{r_i}{V_i}\right)} = v\frac{P_T}{P_t}$$

- General sccenario:

Now, consider staking multiple times. Due to the reward of each occurrence of staking being independent, the whole stake simply is the sum of all singular rewards. Generally, on day T an address that has staked N different times will possess the total stake:

$$\begin{aligned} stake(T) &= \sum_{i=0}^{N-1} reward(v_i, t_i, T) \\ &= \sum_{i=0}^{N-1} v_i \frac{P_T}{P_{t_i}} \\ &= P_T \sum_{i=0}^{N-1} \frac{v_i}{P_{t_i}} \end{aligned}$$

To this point, the formula has become more clean for implementation. The input parameter T has been isolated from the loop while the rest can be easily precomputed and stored. Therefore, it is possible to create functions to update individual stake values by individual stored factors or to update the whole group of stakeholders through some global values, each with a complexity of O(1).

This formula of compound interest has create a dynamic-balance tokens for 2 reasons:

- When reward are sent to the staking pool, balance of all holders will be increased, only by updating accumulated product.
- When reward are sent to the staking pool, the relative ratio between each pair of holders remains the same

To protect the value of the system from early unstaking, we will charge the unstaking holder some fee which is equal to a specific percentage of unstaked amount. The fee rate is implemented to start at **50%** and reduce to **0%** after 3 years. All the fee will be include in staking reward to be shared among the remaining stakeholders.

The Staking Pool will start rewarding after all auctions are finished. To prevent value loss from inflation, token allocated to Core Team, External Treasury and Market Maker will be staked right after the system deployment.

3. FUTURE WORKS

3.1. Innovations from Briky Land's solution

3.1.1. Peer-to-peer Lending

All the advantages that tokenization has brought to real estate trading can also be applied to mortgage loans:

- Real estate NFTs can be locked within the smart contract and used as mortgages, where the borrowing/lending process will be done automatically and transparently, cutting out the financial institution as the middleman.
- Securitizing the real estate into tokens provides smaller valuable assets for mortgage.
- Blockchain nature gives free worldwide access to the market with many cryptocurrencies. Anyone can borrow and lend without restriction of any organization.

P2P Lending is in fact a trend of blockchain productions, combined with Native Land NFTs shall effectively address the demands of the traditional real estate mortgage and promise to enlighten the fortune of the project.

3.1.2. Native Land Orderbook

The ERC-1155 standard contains the properties of the ERC-20 standard. Therefore, each set of Native Land NFTs corresponding to a particular real estate can be considered a distinctive ERC-20 token. That mindset yields the vision to establish the real estate marketplace exactly like a cryptocurrency exchange platform, e.g. Binance. To pursue that, it is essential to build a real estate NFTs order book to enhance the system for high volumes of exchanges.

3.1.3. Artificial Intelligence Utilities

Briky Land platform expects to collect a massive database of real estate around the globe. These data will be a perfect resource for developing AI products exclusive to this market.

Briky Land expects to bring AI into personalizing user experience on the platform and create brilliant chatbots to provide direct and real-time support for each user.

3.2. Roadmap

Q3 – 2024

- Launch the Briky Land platform with contracts deployed to BNB Smart Chain
- Publish Native Land NFT Collection for real estate tokenization
- Process BRIK Initial Coin Offering - First 2 auctions:
  - Backer Round
  - Seed Round

Q4 – 2024

- Process BRIK Initial Coin Offering - Last 3 auctions:
  - Private Sale 1
  - Private Sale 2
  - Public Sale
- Launch P2P Lending Feature
- Launch Governor Feature
- Launch Renting Feature

Q2 – 2025

- Launch Native Land Orderbook

Q4 – 2025

- Unlock BRIK liquidiation
- Utilize Briky Land database for AI development