



LAND LAYBY
bLoCkchAin iT

LAND LAYBY LISTING (LLL) PLATFORM
HARAMBEE TOKEN
[HRBE]
WHITE PAPER

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Edition 1

LAND LAYBY LISTING (LLL) PLATFORM
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PARTNERS

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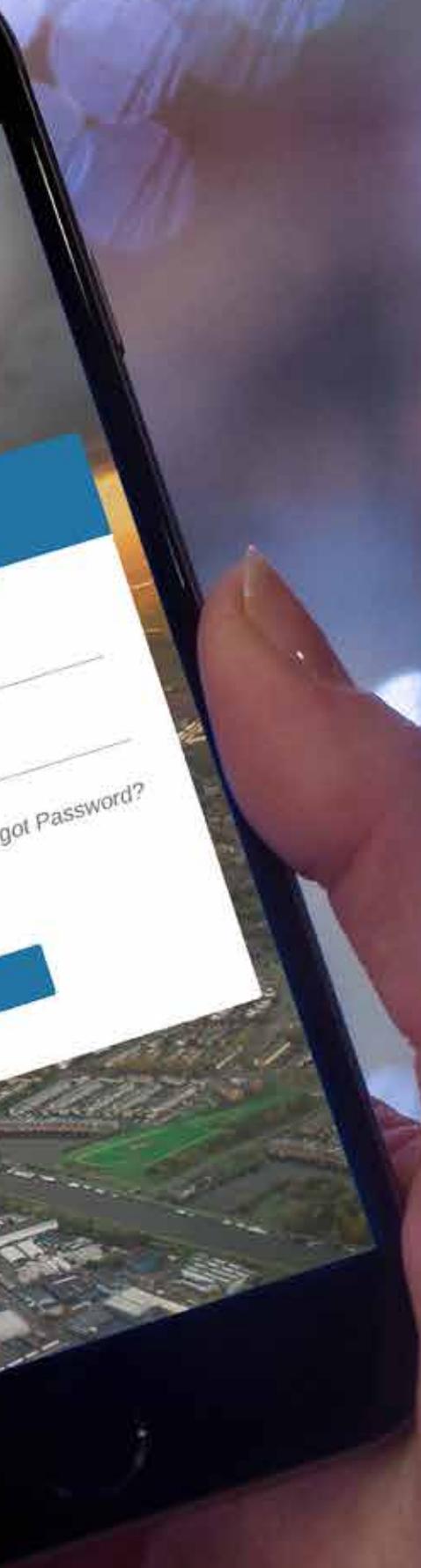




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Executive Summary

Land records in most developing countries are not available to the public. Tacit land information shared through generations is rarely upheld in cases of dispute and is often lost over time. Consequently, the general public is forced to trust the government to keep the land records intact. In an economy where trust is managed by a centralized authority, efforts to uphold trust are diffused by institutionalized asymmetry of information. We propose a solution through our blockchain platform to create a single Land LayBy Listing (LLL) of immutable and incorruptible land ownership details. Land detail entered on the LLL platform is secured through smart contracts. Access to the platform will be granted through the Harambee Token (HRBE). Our application of blockchain technology to decentralize our land option ledger, mirror the government's land registry, and initiate the adoption of a decentralized ledger for the African land registry system, will be a strong gain for the economy. It will resurrect dead capital, facilitate economic development, and encourage sustainable investment. It will enhance land ownership rights and formalize land information that has been held in the minds of a chosen few in many communities throughout the continent. It is bound to affect all industries associated with the purchase, sale, and use of land; including the resources beneath, or on the surface.

PROBLEM



1.1. Land Ownership, Registry, and Conveyance

Land ownership in the world is a major source of competition affecting social, political, and economic prospects. In most African societies, it is the most important of the natural resources, representing the foundation of much of the continent's economic activity. In Kenya, the purchase of a plot of land represents the largest financial and legal transaction of one's lifetime. It is a key component of the Kenyan economy fed by an increasing middle-income population and a rise in remittances. The number of times a piece of land exchanges ownership is increasing as more people can afford to buy land. In the aftermath of the 2007/8 post-election crisis, landowners found it difficult to prove land ownership. More transactions are carried out in the land registries, and corroborated with the independent land registry units rendering the existing manual registration system ineffective and unprepared for a future pegged on an exponential increase of activity in land utilization.

There are two central registries in Kenya where all information related to land can be found: the land registry in Nairobi (also called the Inland Registry) and the Coast Registry^[1]. Historically, most of the lands were owned and governed by community leaders under customary tenure systems. During the post-colonial era, we inherited the land registry system adopted by the British in East Africa. The Kenyan government asserted direct claims over community lands, resulting in a situation of overlapping claims to lands extending across the country. Political and social turmoil responsible for displacing masses from their lands has created fertile grounds for corruption and the highest form of disorganized land registries. To address the underlying land ownership issues, the Ministry of Lands took steps to digitize land records, but at a snail's pace, and with minimal social or economic impact to the bottom of the pyramid.

However, they have only managed to cover a precious few municipalities, whose information can be questioned due to the existence of dubious middlemen along the conveyance chain of information. Unjustified cases of demolitions and displacement due to land ownership disputes have led to uncertainty amongst potential real estate investors, and the lack of a clearly defined institutional hierarchy for land administration has led to multiple land allocations. All these challenges to the Ministry's efforts to build a trustworthy land registry system have done very little to alleviate the existing issues. One can argue the same for most of the land registries in developing nations, stressing the importance of a formal, statutory recognition of land rights. It empowers the critical mass needed to accelerate the development of a country. The ability to establish ownership and to allow trustworthy transfers is essential to the economic competitiveness of Kenya in the global sphere.

1.2. Unreliable Information



Most land investors encounter the challenge of securing reliable information about the land they are interested in without having a local presence. This challenge discourages investors and leads them to consider other options perceived as easier and more reliable. It is an issue when political upheaval prevents investors from gaining valuable information from the current land registry system because the government is

overthrown, or the administrative offices are closed, or worse, destroyed in war. The lack of information and transparency around land and property rights adversely influences the financial mobility and ownership transfer required to realize the full economic potential of land. Lenders are less likely inclined to securitize mortgages against unverified land to provide capital for entrepreneurial ventures.



1.3. Corruption

Corruption has taken root in the land registry system where land investors face situations of bribery and extortion, reliance on basic services that have been undermined by the misappropriation of land, and confront official indifference when seeking redress from authorities on the take^[2]. Understandably, corruption is a human element that extends to the systems we create. In some cases, corruptive practices interwoven in the system have become part and parcel of the social structure that most people have accepted it as a fact of life in day-to-day business. There are numerous examples of people who have had to pay a bit extra to expedite their paperwork or to facilitate a winning bid for a plot of land. According to the *Transparency International's Corruption Index*, lower-ranked countries on their corruption index are plagued by untrustworthy and dysfunctional public institutions. In cases where anti-corruption laws are present, they are often not upheld in practice. It should be noted that corruption is not only a Kenyan problem, it is a global issue. Each nation has a level of corruption.



1.4. Trust Gap

The huge trust gap associated with land purchase in the developing world continually discourages migrants from investing back home. Most migrants have lost money to their friends, relatives, siblings and sometimes their own parents. The lack of credible networks for migrants leads to higher transaction fees. The geographical barrier impedes enforcement of the legal contracts in instances of fraud and breach of contract. Most of the time, there is no proven system to facilitate due diligence, and after transfer of ownership, other issues arise, for example, in the form of squatter menace. Edelman points out that the implications of the global trust crisis are deep and wide-ranging^[3]. Trust proves to be difficult to earn and very easy to lose across institutions of government, business, media and non-governmental organizations (NGOs).

The gap between the trust held by the informed public and that of the mass population has widened. It is a growing problem that can be seen playing out in international relations because people are fed up with empty assurances to rein in on persistent issues.

These revelations run parallel to our objective of empowering individuals through provision of tools that can make their land visible to investors so that they can execute the utilization of assets and resources granted to them through land ownership rights.



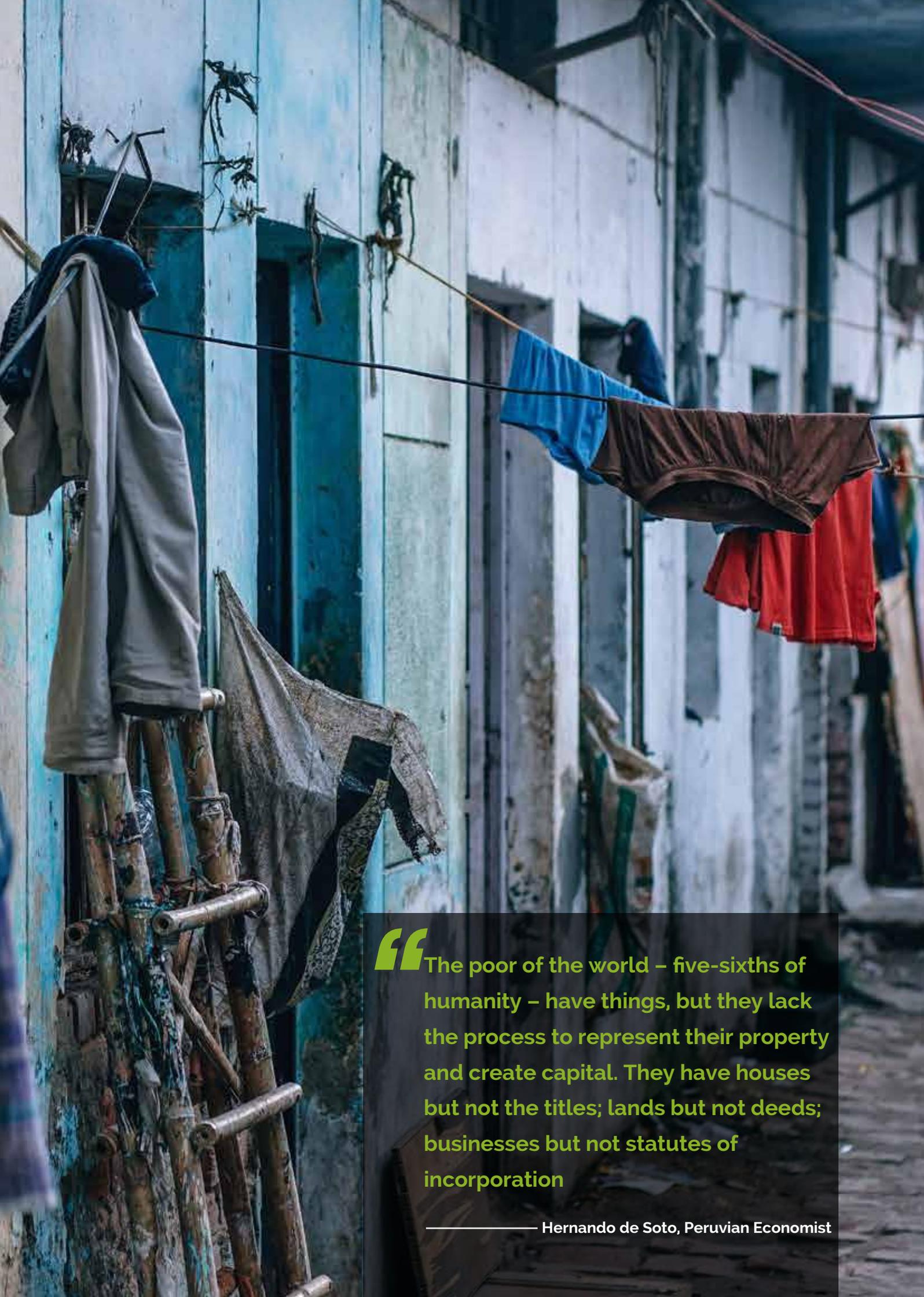
1.5. Dead Capital

The issue of dead capital is ubiquitous in the informal sector of developing nations. Hernando de Soto described dead capital as an asset that cannot easily be bought, sold, valued, or used as an investment^[4]. Land that is not listed in any formalized registry cannot be used formally for economic development and those who own unregistered land are unaware of the potential they are holding on to while they continue to suffer. In some instances, there are people who are afraid that ancestors will curse those who sell land to outsiders, stigmatizing both the registry and sale of land for economic benefit. Dead capital is one of the clearest forms of poverty. People living in *Kibera* and *Mathare* slums possess far more capital than anyone realizes, their assets are not represented in such a way as to make them more marketable.

In his explanation, de Soto uses the example of a home where the developed world has devised a formalized system of titles, title registries, and an inclusive property law that features real estate used for living or for business purposes. The example illustrates, with blinding light, the reason why some nations are rich while others remain in poverty. He argues that once a system is in place to register titles, shares, property law, trustworthy systems - or at least moderately trustworthy depending on who you ask - people will begin to look beyond the face value of their assets to envisioning them for what they could be: collateral for loan to start a business or to build a house, and other possibilities. The developed world beat us to this task and has basked in the advantageous knowledge and availability of systems that have enabled owners to focus on the title of a house and not just the house itself. Such a system - if implemented in developing nations - could impact fledging economies and catapult the masses on a path of sustainable and diversified growth.

Home and land equity has managed to serve as collateral for most small businesses in the developed world so one can imagine the possibilities if trustworthy systems are put in place. The vast majority of buildings on the planet have no titles and they serve as their owner's largest asset because it is difficult to prove ownership, and thus difficult to create value. In de Soto's words, "The poor of the world – five-sixths of humanity – have things, but they lack the process to represent their property and create capital. They have houses but not the titles; lands but not deeds; businesses but not statutes of incorporation^[5]." It means there are a majority of people who are unable to represent their assets in a manner that makes them widely and credibly transferrable. An issue that renders their assets invisible to the market and cannot be represented as working capital, a value calculated to be over \$10 trillion globally^[6].

To put that into a firm perspective, the entrepreneurial ingenuity of the poor as de Soto put it, "has created wealth on a vast scale, wealth that also constitutes by far the largest source of potential capital for development. These assets not only far exceed the holdings of the government, the local stock exchanges, and foreign direct investment; they are many times greater than all the aid from advanced nations and all the loans extended by the World Bank^[7]." It proves that most of the organizations trying to assist developing nations achieve their full economic potential have been investing in the wrong structures. We seek to tap into this potential because without formal systems in place no matter how many assets one may accumulate, or how hard one works, he or she is inevitably set for failure in a capitalistic society.



“The poor of the world – five-sixths of humanity – have things, but they lack the process to represent their property and create capital. They have houses but not the titles; lands but not deeds; businesses but not statutes of incorporation

————— Hernando de Soto, Peruvian Economist



16. Financial Inclusion

Financial inclusion is a global issue that refers to all initiatives that make formal financial services available, accessible and affordable to all segments of the population. An estimated 2 billion people globally, do not have a basic account (World Bank, 2017). Financial services are not affordable or designed to fit low income users. Many live a considerable distance from financial service providers, or lack proper documentation to open accounts in a system that fails to inspire trust. About 200 million formal and informal micro, small and medium-sized enterprises (MSMEs) in emerging economies lack adequate financing to thrive and grow due to a lack of collateral and credit history, and business informality. Market imperfections determine the extent to which people can borrow to invest in capital (A. Demirgüç-Kunt, 2008). Information asymmetry renders the market inefficient because many cannot access crucial decision-making information. It leads to issues of adverse selection, moral hazard, and information monopoly. The transaction costs tend to be lofty and are captured in the final price of the product. These are costs that can be reduced through financial inclusion.

Dead capital holds untapped potential that could facilitate financial inclusion. Financial inclusion is essential to economic development. Once dead capital is resurrected, the possibility of financial inclusion can be realized. A platform empowering people to access financial services will contribute to the overall economy. Resurrected dead capital can be turned into collateral making it more likely for owners to use other financial services such as credit and insurance, to start and expand businesses, invest in education or health, manage risk, and weather financial shocks, which can improve the overall quality of their lives. Our land option certificates can also be presented as collateral so the added benefit of an incorruptible formal system of land registry and conveyance could allow holders and owners alike to access the financial systems.

Our role in the resource allocation process cannot be denied. It is a deliberate effort that meets at the confluence of the evolution of financial development, growth, and intergenerational income dynamics. We are intervening to ease the market friction that obstructs the markets from operating in favor of marginalized groups. Land LayBy offers innovative solutions to tackle poverty and to promote inclusive development. Our platform appeals to the vast population eager to waltz into the formal financial system to seize the opportunity to access financial services (Kalunda, 2012). The African Development Bank's opinion on the subject reinforces the need to address the issue; "financial inclusion goes beyond improved access to credit to encompass enhanced access to savings and risk mitigation products, a well-functioning financial infrastructure that allows individuals and companies to engage more actively in the economy, while protecting users' rights (AfDB, 2013)."



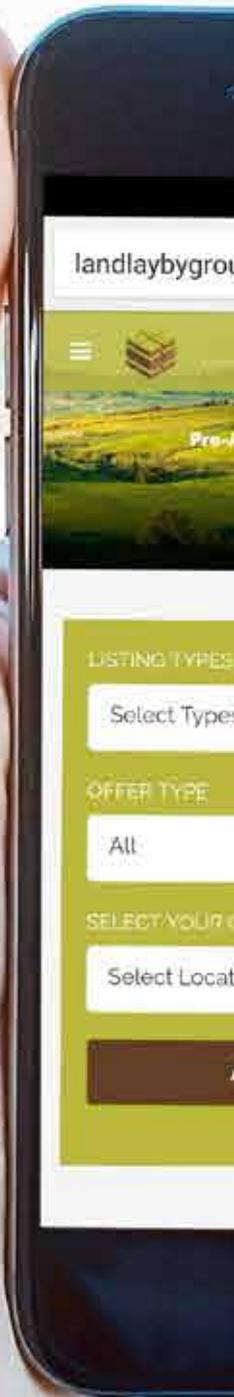
2. Our Solution

2.1. Land LayBy Listing Platform

Land will always be valuable, a value great enough that nations have colonized other nations in the name of it and have waged daring wars to claim ownership. Within the confines of our borders we must reconcile with the massive wealth we have and use it to propel our economy and empower the rightful owners to make the best use of their land. Respect for the challenges stated, and a simple moral obligation not to offend the credulity of anyone prepared to accept as plausible and coherent the difficulties of such an extraordinary exploit demand immediate action. Action that will be greatly aided by the LLL we wish to employ as a solution through our *Harambee* token (HRBE) generation event.

2.2. Mechanics

Land LayBy Listing is a trusted shared distributed ledger for recording land and conveyance data that can never be altered, corrupted, forged or replicated in error. A block consists of all details about a certain piece of land. Once a block space is exhausted with transactions, a new block is created and they are linked together through cryptography. The result is a linear and chronological order referred to as Blockchain. Each time a block gets completed, a new block is generated. There are a countless number of such blocks in the blockchain. The use of cryptography to secure and chain data in the blocks creates an immutable record that is unchangeable by design. Challenges stated have made the simple legal process of buying/selling land in Kenya, a laborious endeavor. Moreover, due to the paperwork involved, the process is prone to errors which are costly to rectify. Land LayBy Listing on blockchain will contain up to date information about a particular land asset. This makes LLL an independent verification listing and where appropriate a mirror of what was and is reflected in the Ministry of Land registry hence speeding up



the process of decision-making in cases where land is the core component of development. The Law Courts admissibility of these records as evidence by design shall provide clarity of ownership in cases of land disputes where the original Land Registry files are missing.

2.3. Fundamental Components

Our blockchain has four fundamental components:

Smart Contracts

This is the business logic or necessary conditions for a transaction. When a buyer purchases a block of land, the completion date will require the buyer and the seller to exchange the settlement amount for completion documents. Several outcomes can be invoked and automatically enforced without the need for a middleman. The buyer can automatically be refunded if the seller fails to deliver the completion documents on time. If both conditions are met, then the next logical step is automatically enforced. Other applications on the LLL platform include management of referrals that become buyers, and automatically executing a logic that awards value to the referring buyers. This self-execution cannot be influenced even by Land LayBy associates. Smart Contracts create automation of process and subsequently enforce the integrity of doing business.

Shared Ledger

A shared ledger is a log of transactions in a business network identical to all participants in the network. A purchase/sale transaction of land can involve all of the following; a buyer/seller, real estate agency, surveyor, notary and government officials. All these entities take an individual role to facilitate the smooth execution of the purchase/sale transaction. Each maintains a separate, secure and central repository of their role in the purchase/sale of the land in interest. Although the central repository is inaccessible to others without their permission, there is the risk of self-manipulation of the records for selfish reasons. Managing and merging these multiple records is time consuming and may introduce fatal errors in the process. LLL facilitates posting of such records to an open and public ledger that can be accessed by all participants simultaneously.

Privacy

Authorization can be applied in the LLL, enabling it to show exclusive data that cannot be shown to other participants in the business network. Our platform facilitates multi-levels of permission, which increases the privacy of the transaction. For example, if there is an entity that is not supposed to see the financial part of the sale, the LLL will facilitate that level of authorization.

Trust

Data in Land LayBy Listing is immutable. The platform offers security on data and transaction by design

2.4. Identifying Added-value

It will increase the speed of transactions

Real estate transactions engage multidisciplinary teams whose red tape prolongs the completion of transactions. LLL will bring all actors under one roof to contribute and mine information from a shared database, significantly reducing the time to complete a transaction and transference of ownership from one entity to another.

It will reduce fraud

Real estate is one of the best ways to make money. Unfortunately, fraudsters are well aware of this fact too. Fraud through fake deeds and corruption in government agencies has made land investment in Kenya less attractive compared to other investments. This fraudulent practice is common in developing countries where the land registry is poorly managed or is otherwise informal. It is a significant bottleneck. By recording all details of a piece of land and digitizing ownership details on the platform, our listing will reduce cases of fraud.

It will increase transparency and accountability

Each transaction will be recorded on the blockchain. All platform users with privilege rights can check and cross-check the documents, transactions and history of ownership. The indisputability of the information on our platform, the verification of land information, and the platform users will serve doubly as reliable witness and evidence of ownership, and with it, its rights.

It will enhance investment value

Since our platform is powered by smart contracts, most of the fees charged by intermediaries will be eliminated, and the extra cost will not be passed down to the investor. This will allow fair pricing with better and promising returns. Additionally, the resurrection of dead capital will allow invisible assets to become visible and available for transfer. The result would be increased economic activity and innovation extending to other industries including urban planning, civil engineering, banking, construction, natural resource mining, and other industries linked to real estate.

It will help create the first blockchain land listing

Our land listing will mirror the records at the Ministry of Lands registry, transforming and transcending the way land data is recorded. Our platform's centripetal design ensures future adoption by other real estate entities including the Ministry itself.

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2.5 Technology Architecture and Stack

Land Layby and its associates are pioneers of *buy now, pay tomorrow* land system. With its industry experience and technology focus vision, LLB aims to bring credibility and transparency to land registries with a public blockchain. Because blockchains are designed to allow a set of mutually distrusting parties to come to consensus on who has what, it will provide transparency of land registry to the members of the

LLL ecosystem. Furthermore, it will address trust gap issues by divulging the land and land options publicly. Thanks to the inherent distributed ledger system, it will improve efficiency of record keeping for land details, user details, transaction details and a log of the previous edits. Additionally, the data stored on the blockchain is always replicated to all the nodes which are under the blockchain network, to maintain data consistency. Figure one illustrates the positioning of the LLB in the Ecosystem:

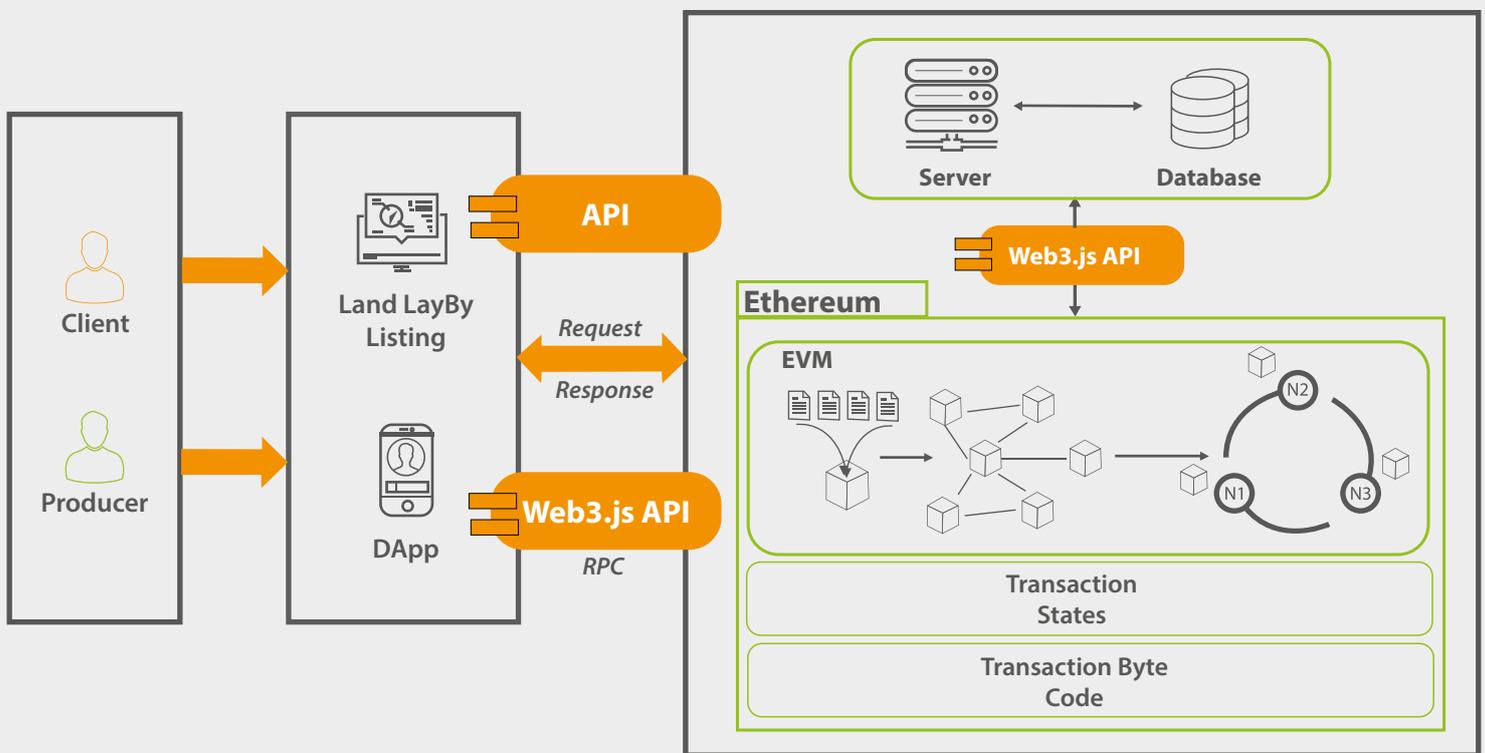


Figure 1. System Architecture

The architecture is structured into logical layers for:

- ✓ User roles
- ✓ Application interface (Land LayBy Listing, Producer DApp)
- ✓ Centralized server and Ethereum blockchain



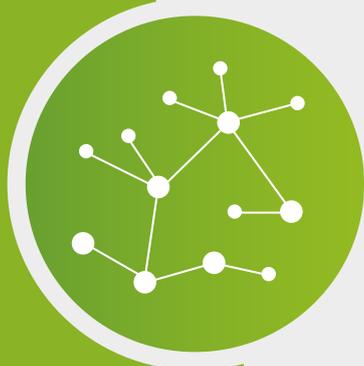
Within the User Role layer resides the Clients (Buyers and Sellers of Land) who are registered on the LLB platform. To safeguard the privacy of the clients, personal details are stored on a local server. However, a unique ID will be generated for every user, serving as their crypto address. Producers are the delegates responsible for creating value on the platform. Some of these producers i.e. advocates who might have professional indemnity or must practice under a license issued by a professional body that regulates their activities will have access to validate the Land Listings and Land Deals created on the platform. At some stage of the platform development, the role of validating listings will include other trusted professionals functioning under a regulatory umbrella. Such producers will include Land Valuers, Surveyors and Finance Agents. The producers will also be registered on the Land LayBy Listing, but will have exclusive access to a Decentralized Application (DApp). The producers shall also have a unique hash ID as their crypto address.



DApp will primarily be used by Producers to verify land details. This is also where the producer will be rewarded for verifying information correctly, and penalized for erroneous entry. Since these entries will be stored on the blockchain database, the data will be immutable. This will ensure that the record shall be tamper proof yet be available to all. The DApp front ends uses HTML, CSS and JavaScript to render a page and grab details from database with the help of smart contracts connecting to blockchain.

2.7. Application Interface

Clients and producers will be registered on the LLL platform. Clients selling land will share land details on the platform, which will be visible to everyone in the ecosystem. In creating the land listing, clients will place all the land related information with their ID and price on the platform. Anyone can post his/her land products to the platform. Prior to the completion of inquiries and final transfer of ownership, clients must complete the transactions with fiat currency. The current system allows for the traditional offchain settlements with fiat currency through the traditional conveyance pathway. In future, however, and subject to prevailing regulatory framework approval at the time, the clients will have an option to facilitate completion of the transaction with either fiat currency or HRBE Tokens. Clients can access other features like, priority listings and platform advertisement. Blocks of land listed on the platform will be verified by the advocates registered to access the platform. A system logic will identify the initial lawyer to set a genesis blockchain block for the land listing. With the help of Web3.js API, land details will be stored on ethereum.⁹



2.8. Centralized Server & Ethereum

The centralized server will be responsible for storing all land-related data. The blockchain ecosystem will be developed and deployed on the Ethereum Blockchain, an open blockchain platform/ programmable blockchain. It has a distributed computing architecture. Ethereum's consensus mechanism ensures that the shared ledgers are exact copies, and lowers the risk of fraudulent transactions. Cryptographic hashes and digital signatures ensure the

integrity of transactions. Ethereum Virtual Machine (EVM) focuses on providing security and executing untrusted code by computers all over the world. In the ethereum network, every node executes and records same transaction. These transactions are grouped into one block. Only one block can be added at a time. It contains mathematical proof for every node to ensure that the block follows in sequence from previous block, all the blocks are connected. Once the blocks are verified, then such blocks will be broadcasted to the nodes. The connection from DApp to Ethereum, all the components involved in the system are illustrated below.

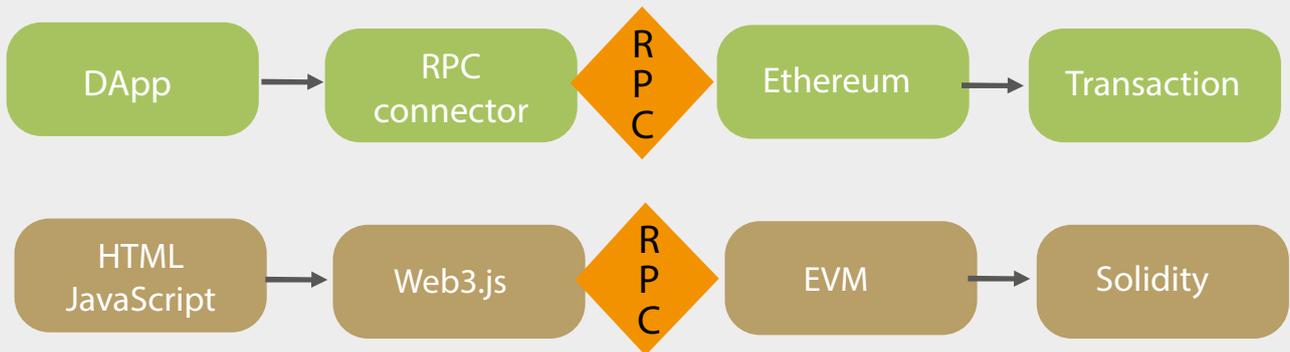


Figure 2 Tech Stack

In our implementation, the high-level components are DApp, RPC connector, Ethereum and transactions. All the details of producers are stored /retrieved through DApp. This DApp is written in HTML/CSS and JavaScript. Web3.js API will be used to develop connection from DApp to ethereum. Transactions are stored on EVM and are written in Solidity Programming Language. Solidity is compiled to bytecode that is executable on the EVM. With Solidity, developers can write applications that implement self-enforcing business logic embodied in transactions, leaving authoritative record of transactions.

2.9. Transactions

Meaningful action performed by a client will be recorded in transaction form. Each transaction will consist of following information:



User ID:

Individual registers to our platform, unique key / hash key will be generated. The client ID and producer ID are termed as user ID.



Land information:

Whenever client post their land listing on our platform, land related information like land title, address, city, country, suburb, post, product option ID and price will be stored on blockchain.



Balance:

For all the transactions performed between buyer and seller or between lawyer and admin, certain amount of token will be added or deducted from their wallet.



Gas Usage

With every valuable action, a minimal token fee will be charged from the user as convenience fees for the blockchain nodes.

For getting the clarity on how much gas cost is required, refer following table.

Operation Name	Gas Cost	Remark
Step	1	default amount per execution cycle
Stop	0	Free
Suicide	0	Free
Sha3	20	
Sload	20	get from permanent storage
sstore	100	put into permanent storage
balance	20	
create	100	contract creation
call	20	initiating a read-only call
memory	1	every additional word when expanding memory
txdata	5	every byte of data or code for a transaction
transaction	500	base free transaction
contract reaction	53,000	changed in homestead from 21000



Fiat currency HRBE tokens will be charged for multiple scenarios viz.,



Producers are awarded for successful verification in fiat currency and HRBE tokens. Since the wallets can only hold HRBE tokens, only the token equivalent of the fiat currency reward is credited to the producer's wallet. The fiat currency shall be credited to the producer's account held with us and processed by the accounting department as payment for conveyance/legal services offered in accordance to the terms of payment. Initial participants shall enjoy payment of either fiat currency or HRBE tokens until such a time the ecosystem is fully stable. The estimated downtime before validation of an advocate's entry by the consensus mechanisms is proposed to be 5 days and is subject to review dependent on practicality of the implementation during deployment.



Any producer, who fails to verify the land details, will be fined by imposing a fiat currency fine. This fine shall be deducted from their wallets. Since the wallets are in HRBE tokens, the token equivalent of the fiat currency will be deducted.



In order to access certain advertisement privileges like priority listing, the land seller has to ensure they purchased the correct membership. Land sellers can upgrade their memberships by sending required HRBE tokens to LLL wallet.



Certain memberships allow the client to edit their listing after successful posting. Clients who wish to access these features should upgrade their memberships by sending equivalent number of HRBE tokens to LLL's wallet.

Once the land sale deal is initiated, the parties involved will transact off-chain through the traditional channels of conveyance and the conveyance shall be mediated by advocates of their choice. The default settlement currency shall be fiat currency of their choice unless both parties elect to complete the transaction on the chain via barter trade, ultimately using HRBE tokens. For token management we are integrating ERC 20 compatible wallet.

2.10. Securing land data on our platform

Land LayBy Listing platform utilizes the ingenuity of mathematics functions and cryptography to uniquely fingerprint each land transaction recorded. This function is known as a HASH. This function accepts data of any length and size as input, and output a unique fixed length code for the corresponding input. Our blockchain platform is based on Ethereum blockchain, which utilizes a cryptographic function known as Keccak-256 to perform hashing.

2.11. Hashing

	INPUT	HASH (Keccak-256)
1	Title Deed: Title Number: 001, Approximate Area: 0.0041 Ha	dbe0dfb3a6a4150188edd47b619b21c4b262332c7d6cd62a4d05dcfb3fed6a
2	Title Deed: Title Number: 001, Approximate Area: 0.041 Ha	2d5fe509cd722d78af489ddcbaff0a60c9aecc8d22dd72327ae948e1f34457dc
3	Title Deed: Title Number: 001, Approximate Area: 0.041 Ha	au5fe509cd722d78af489ddcbaff0a60c9ghjt8d22dd72327ae948e1f34634ft
4	Title Deed: Title Number: 001, Approximate Area: 0.041 Ha	ytu4hjb3a6a4150188edd47b619b21c4b262332c7d6cd62a4d05dcfb3we5ht

Input 1 is lengthier than 2, 3 and 4, but it still generates the same size of hash code. This is very important when you are dealing with a large set of data that performs multiple transactions, synonymous to our land transactions details. Instead of keeping track of the input data which could be very large, LLL stores and tracks the hash code, which is always a fixed size. This facilitates faster processing of the information while using fewer resources, thus reducing the cost of operations.

Input 2 and 3 are the same and they produce the same hash code. This enforces an important property of any cryptographic functions known as Deterministic. Deterministic property ensures that no matter how many times you input a particular data through a hash function you will always get the same result. This facilitates keeping track of the inputs through the generated hash code. For example; if the hash code of your title deed is similar to the hash code of a deed record in the system, then it validates the deed in paper as the one on the Land LayBy Listing.

Input 3 and 4 are of the same length, but have a very different hash code, this is because there is an alteration on the hectares. Input 3 have 0.041 Ha but input 4 have 0.040 Ha. A slight alteration in this case 0.001 Ha gives out a very different hash code. This

helps in validating the records in the blockchain and those on paper. If the hashes do not match, then the record on paper is different.

The above example shows how the Land LayBy Listing will keep track of massive records at minimal storage space and with lightning processing speed. The tremendous effort by the Ministry of Land to digitize land records has managed to reduce the time it takes to obtain land search results to a minimum of seven days. If the land records being sought are on our blockchain platform, it will take seconds to obtain the results.

The noticeable difference in hash code that arises from an edited document compared to its original enables our platform to detect illegal tampering of the land records instantly. Once a record has been entered into our blockchain platform, it cannot be deleted or edited. Timestamping on each record entered on our blockchain platform creates a trail of digital breadcrumb that can be used as history of a certain piece of land.

All these functions of our platform will be accessible through the Harambee token.



3. Token Distribution Event

A Token Distribution Event (TDE) creates opportunities for platform participants to acquire tokens that give access to the DApp and Land LayBy Listing. HRBE tokens are a means to access the platform conferring certain privileges to its holders. There is no passive expectation of income solely from holding the HRBE Tokens and no promise that HRBE Tokens will hold a particular value. Although HRBE Tokens have made provision for compliance with KYC/AML policies and existing legislation, the buyers undertakes to comply to the extent required by applicable laws.



3.1. The Harambee Token (HRBE)

Harambee (HRBE) token is a utility token that promotes financial inclusion as well as advocates for social impact applications of blockchain technology in the developing countries. HRBE enables users, platform actors and registered practising advocates all over the world especially in the developing countries to access, build and maintain a blockchain land listing through a platform that facilitates property transfers as well as innovative property sales. The innovative sales are mediated through leverage instruments like land call options as well as a combination of land put/call options. The prototype business is ISO 9001:2015 compliant and commenced operations in Kenya in September 2014, and has successfully witnessed the transfer of land options through a secondary market as well as the exercise of land options and consequent settlement of title transfers in Kenya.

3.2. Token Issue Price

The tokens' issue price has been calculated using the Black Scholes Model, where we use the price of the put option as calculated in the table below. We use the derivative on ethereum because that is an only reliable source of data. Harambee token's price is derived from ethereum historical data because it is also ether. We have calculated the volatility using price data of the first two years because those first two years show the most reliable predictive path HRBE could take. **There is no suggestion or promise that HRBE Tokens will hold a particular value after the initial offer.** The offering price should be USD 0.70 per token for the one billion tokens issued.

Black-Scholes Option Value	
Input Data	
Date	20th June 2018
Stock Price now (P)	538.51
Exercise Price of Option (EX)	201.36
Number of periods to Exercise in years (t)	10
Compounded Risk-Free Interest Rate (rf)	10.008%
Standard Deviation (annualized s)	28%
Output Data	
Present Value of Exercise Price (PV(EX))	74.0156
$s \cdot t^{.5}$	0.8839
d1	2.6872
d2	1.8033
Delta N(d1) Normal Cumulative Density Function	0.9964
N(d2)*PV(EX)	71.3756
Value of Call	465.19
Value of Put	0.70

3.3. Regulation



Existing/inbuilt Blockchain
Nash Equilibrium



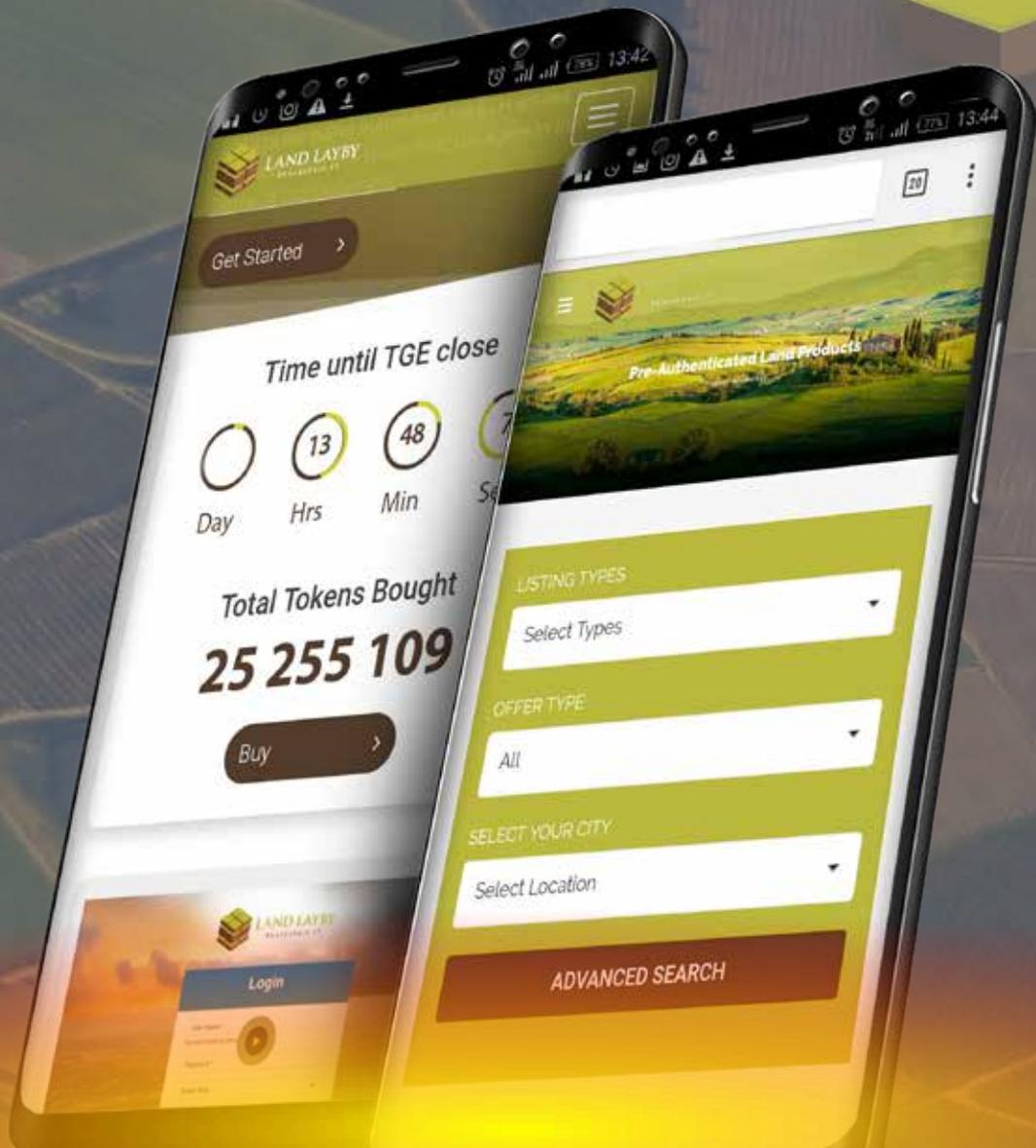
Punishment / Rewards in the
Ecosystem



Proof of Stake (inbuilt Blockchain programming)
to counter bribing attacks. Involves punitive
measures subjected to the Token offender

LAND LAYBY LISTING

DISRUPTING
THE LAND MARKET



3.4. Initial Offering

The number of tokens to be offered in the TDE takes into account two assumptions: that subsequently offered tokens are half of the preceding number. The other assumption is that all the tokens to be offered in total should be one billion tokens, and the total value offered should never reach the billionth token. This assumption translates into a supply function that is asymptotic, with $n \rightarrow \infty$. We have:

$$1,000,000,000 = \lim_{n \rightarrow \infty} x + x \left(\frac{1}{2}\right) + x \left(\frac{1}{2}\right)^2 + x \left(\frac{1}{2}\right)^3 + \dots + x \left(\frac{1}{2}\right)^n$$

Where x is the number of initial number of tokens offered

$$1,000,000,000 = \lim_{n \rightarrow \infty} x + xt + xt^2 + xt^3 + \dots + xt^n \text{ where } t = \frac{1}{2} \text{ and } n \rightarrow \infty$$

$$1,000,000,000 = \lim_{n \rightarrow \infty} x \left(\frac{1-t^{n+1}}{1-t}\right) = \lim_{n \rightarrow \infty} x \left(\frac{1-\left(\frac{1}{2}\right)^{n+1}}{1-\frac{1}{2}}\right) = \lim_{n \rightarrow \infty} 2x \left(1 - \left(\frac{1}{2}\right)^{n+1}\right)$$

$$\lim_{n \rightarrow \infty} 500,000,000 = \lim_{n \rightarrow \infty} x \left(\frac{1-t^{n+1}}{1-t}\right) \text{ meaning that: } x = 500,000,000$$

This means that we have to offer 500,000,000 at the beginning of the TDE and the rest will be reserved for producers in order to meet obligations of the ecosystem.

3.5. Determination of Reserves

From Economics, we find that

$$RR = RR + RE + Cp$$

Where RR is the required reserves, RE the excess reserves ('loanable' tokens) and Cp is the reserves provided by the company through open market operations. Kenya's reserve ratio is 5.25%. This will represent the RR part of the formula above. This means:

$$RR = * 1,000,000,000 = 52,500,000$$

We will allow 1% for contingent regulation policy rate, meaning that: above the 52,500,000, we will have an additional 10,000,000 kept aside to contribute towards RR, which are 'idle tokens'.

$$\text{Therefore, } RR = 52,500,000 + 10,000,000 = 62,500,000$$

$$R = RU + RB \text{ and } RU + RB = RR + RE + Cp$$

$$RU = RR + RE - RB + Cp \text{ where } RF = RE - RB$$

$$RU = RR + RF + Cp \text{ where } RF \text{ is the net free reserves}$$

According to prudential guidelines in economics, the following should be effected:

✓ 10% should be for loanable tokens, meaning that 100,000,000 should be set aside to incentivise the producers to increase the ecosystem's stability.

✓ 3% should be on net reserve (RF = RE - RB), meaning that:

$$3\% = RE - 10\%$$

$$RE = 13\%$$

✓ 7% should be set aside for ecosystem liabilities; this means 75,000,000 should be set aside for behavioural management of the producers (as a risk management strategy) Cp

Using the following formula, we have:

$$\text{Reserve} = RR + RE + Cp$$

$$\text{Reserve} = (6.25 + 13 + 7) \%$$

$$RR = 26.25\%$$

$$\text{Reserve token} = 262,500,000$$

Therefore, adding the tokens offered during the TDE plus the reserve, we have:

$$\text{TDE Offering} + \text{Reserve} = 500,000,000 + 262,500,000 = 762,500,000$$

The remaining tokens will be offered to the blockchain validators who are mostly advocates. They can also be used to incentivise LLB employees. This means that after the TDE and keeping aside reserves, we have a net of:

$$1,000,000,000 - 762,500,000 = 237,500,000 \text{ tokens for operations purposes}$$

The total tokens to be issued are 1,000,000,000 (one billion tokens). Of this, 500,000,000 (half a billion) should be offered at the Token Distribution Event, and 262,500,000 tokens should be held in reserves. The remaining 237,500,000 should be used to the blockchain validators and operations-related activities. The TDE's offering price should be USD 0.70 per token. There is no suggestion or promise that HRBE tokens will hold a particular value.

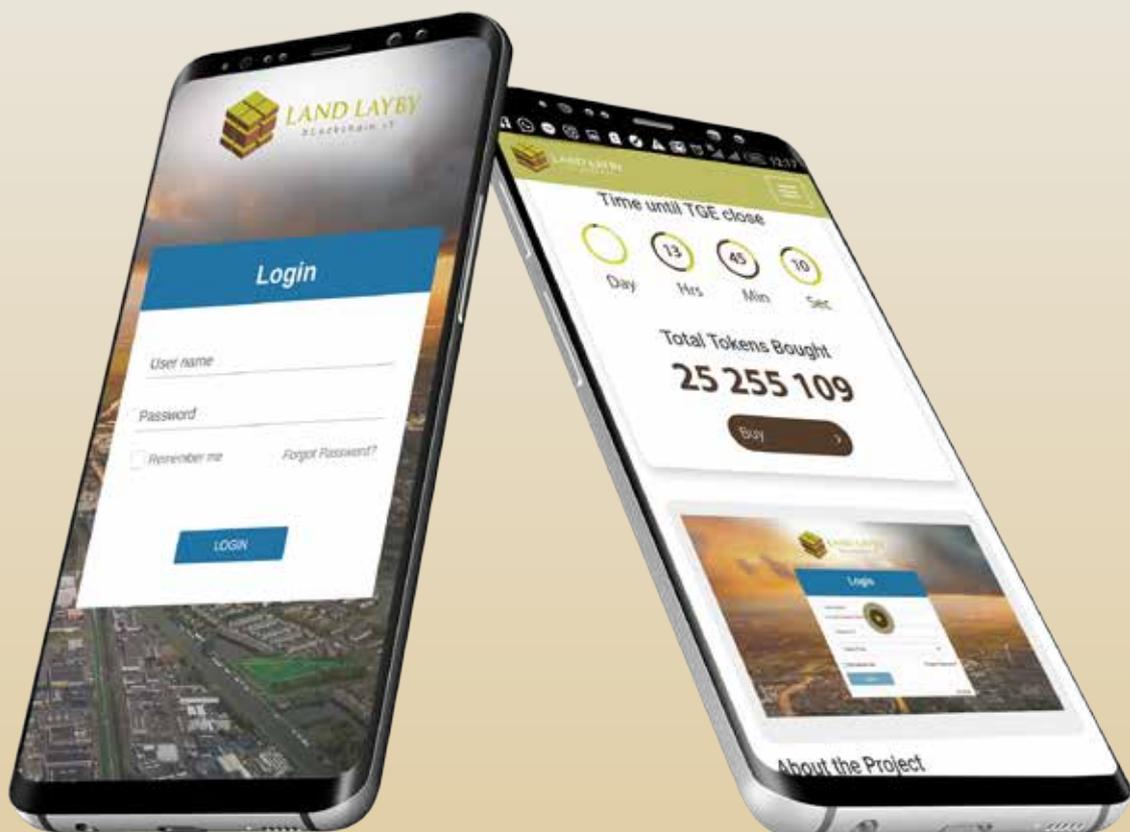
3.6. Additional HRBE Optional Features

Platform users and producers will enjoy additional optional features and account functions within the

business platform. These could include; Premium Plus Memberships, improved search, advertising promotions and some promotional opportunities available from time to time. The table below describes some membership benefits conferred by acquiring a certain number of HRBE Tokens. In order to access the LLL platform a basic membership is required. Any balance of tokens short of the 20 HRBE tokens should be updated in order to continue to access the token. The table below details the other types of memberships and their corresponding benefits.

GET HRBE TOKENS TO ACCESS THE LLL PLATFORM

www.hrbe.io



The table below details the other types of memberships and their corresponding benefits.

Number of HRBE Tokens	Type of membership and their main benefits	Consensus Mechanisms/ Optional benefits
1600	<p>Premium Plus Memberships (PPM)</p> <ul style="list-style-type: none"> - Stamp Duty Management to the member who purchases land products - Squatter Proof Guarantee to the member who purchases land products - Resale Assistance to the member who purchases land products - Money Back Guarantee to the member who purchases land products - Buy Back Guarantee to the member who purchases land products - Safe & Secure Land Title to the member who purchases land products - Land Title Storage/Delivery to the member who purchases land products - Free Real Estate Professional advice - Referral benefits - Get 100 properties authenticated for free 	<p>Permissionless protocols layer interaction:- Premium Plus Members who meet certain criteria i.e. long term customers, verified by their relevant professional regulatory body i.e. accountants, legal practitioners, medical practitioners can participate in Proof of Stake consensus mechanisms. This means that PPM who are trusted and approved by administration can validate data and ultimately post it to the blockchain</p> <p>Can access the data validators' incentives.</p>
350	<p>Premium Memberships (PM)</p> <ul style="list-style-type: none"> - Unlimited and free property tours - Access our affiliate program - Referral benefits - Access to discounted products - Access to New Land Releases -Purchase land products through monthly instalments structured within a 2 year window - Get 40 properties authenticated for free 	<p>Cannot participate in either permissioned or permissionless protocol layers.</p> <p>Cannot access the data validators' incentives.</p>
200	<p>Standard Memberships (SM)</p> <ul style="list-style-type: none"> - List your property through our platform for free - Leverage on our market research and diaspora networks to sell land products -Access market innovation products like Chanuka/ Hazina and sell your land products using these innovative land contracts - Access new trends in land banking sector. - Participate in maintaining land transaction decentralised data base provided you meet the specifications for data validation - Get 20 properties authenticated for free 	<p>Permissioned protocols layer interaction:-Standard Members who meet certain criteria i.e. practising advocates, surveyors who have been verified by their professional regulatory body can participate in Proof of Stake, Proof of Authority and Zero Proof consensus mechanisms. This means that SM who are trusted and approved by administration can validate data and ultimately post it to the blockchain.</p> <p>Can access the data validators' incentives.</p>
20	<p>Basic Memberships (SM)</p> <ul style="list-style-type: none"> - Learn how to use land options - Access platform and purchase land products - Get 1 property authenticated for free. 	<p>Cannot participate in either permissioned or permissionless protocol layers.</p> <p>Cannot access the data validators' incentives.</p>



Transfer of Value

HRBE tokens are not legal tender neither are they any form of currency. Land LayBy does not rule out future plans to negotiate this position and submit applications to relevant regulatory authorities towards the acquisition of the regulator's approval and/or financial licenses that will facilitate the acceptance of HRBE token as a transfer of value, such as paying for services beyond its basic utility function.



Advertising Privilege

The HRBE Tokens can be used to access certain advertising privileges and/or services for producers on the LLL (Finance agents, land sellers, individual projects, SACCOs¹⁰ and other land selling companies).



Buyer's Agent Service

Although not available as a function in the Minimum Viable Project, users who purchase certain memberships can request to access the Buyer's Agent Service if they transfer the membership corresponding HRBE Tokens to LLL's wallet. This option enables the user to appoint the advocates of their choice to undertake further private transactional due diligence process.



Platform Producers Privileges

A particular threshold of HRBE tokens will confer certain rights and privileges. For instance, the advocate with the highest number of HRBE token gets to enjoy priority privileges to the legal/conveyance jobs available on the platform. The advertiser with highest number of HRBE tokens gets to enjoy certain advertising offers and services. Rights and privileges are monitored by smart contracts and one particular event that affects the platform negatively can either result to restrictions in accessing certain privileges or cancellation of access rights and/or instant notification of a particular professional regulatory body in cases of gross professional misconduct.



3.7. Streamlining Real Estate Agency

Token holders can enroll as agents of LLL and participate by searching for land deals and listing them onto the platform. The listing fees realised after the sale of the listed property will be shared between all the producers in the ecosystem who were initially responsible for listing, authentication, notarizing and validating the product.

3.8. Distribution Status for HRBE Token Holders

Although not a feature of the current LLL, the platform participant who purchases the Franchise Sales Executive (fSE membership) can submit an application to operate data collection centers and up on approval, semi-permanent branded structures will be erected in specific regions. These data centers will be implemented as enrolment/data collection portals, which will offer free Wi-Fi hotspots for purposes of offering easy access to the LLL. The operators will be entitled to rewards in the form of mined HRBE tokens for every business conducted. The table below demonstrates the benefits conferred by the specific amounts of HRBE tokens purchased.

HRBE Tokens	Membership and their main benefits	Optional Benefits
75,188	FSE Diamond <ul style="list-style-type: none"> - Earn 35% Sales Commission on Land Option Fee - Territorial Rights - Trading of Franchisee Rights - Higher Sales Commission rates - Sales Recruitment Support - 100% Per Annum Return on Investment with Sales as low as 8 products per month 	The right to distribute products as fSE Diamond business with branded distribution outlet (a fabricated roadside semi-permanent structure) in an upmarket location
7,519	FSE Gold <ul style="list-style-type: none"> - 25% Sales commission on Option Fees - Business with less overheads - High income - Brand Excellence - Opportunity for high income from high sales commission. - No start up capital required 	Branded Kiosks in upmarket areas.
1,503	FSE Silver <ul style="list-style-type: none"> - Earn 10% Commission on Option Fee - Boss of your own - High return on investment - No experience required - Start a business with very low capital outlay 	Branded Kiosks in certain areas

Total Tokens: 1,000,000,000

Land LayBy Token Reserves: 262,500,000

Land LayBy Team, Token Distribution expenses & Company Operations: 237,500,000

3.9. Presale of HRBE Tokens

There are several bonuses associated with TDE described as follows but the offer is subject to change without prior notice. Early supporters will enjoy token bonuses and discounted prices, detailed out as follows:

I. 10% off discount translating to a bonus of 9:1 HRBE for Pre-TDE Sales for a minimum of USD 100,000 per transaction. (For every 9 HRBE purchased, a total of 10 HRBE are realised).

II. 5% off discount translating to a bonus of 19:1 HRBE for Pre-TDE Sales for a minimum of USD 10,000 but less than USD 100,000 per transaction. (For every 19 HRBE purchased, a total of 20 HRBE are realised).

A total of only 200,000,000 HRBE will be sold during Private & Pre-TDE sale. This figure includes both the 10% & 5% discount.

III. 2.5% off discount translating to a bonus of 39:1 HRBE for Pre-TDE Sales for during the first week of the TDE. (For every 39 HRBE purchased, a total of 40 HRBE are realised).

IV. Last 3 weeks of the TDE, HRBE will be sold at USD 0.70 per HRBE Token

3.10. Advocates Token Distribution Pre-TDE /During TDE & Post-TDE

Advocates signing up during presale or during TDE sale shall be invited to participate in advocates HRBE airdrop. Upon verifications of the advocates' details, 10,000 operational tokens will be allocated to their private wallets on distribution day, provided the operational tokens have been unlocked. These operational tokens will be used to manage the central platform before the TDE and shall be converted to HRBE Tokens. We require that these advocates start using the platform to notarize documents so that operational tokens that represent the yet to be generated HRBE Tokens are unlocked unit for unit. For instance, if an Advocate does conveyance/legal tasks that attract an incentive that equates 10,000

operational tokens, then the advocate unlocks the 10,000 operational tokens and the balance of their LLL wallet will reflect 20,000 HRBE after the distribution of the HRBE Tokens. This is the only process for redeeming the operational tokens issued for free to advocates and other producers. All the unredeemed operational tokens before the distribution day will be returned to the treasury. For instance, if an Advocate does conveyance/legal tasks that attract a perk of incentives equates to 5,000 operational tokens, then the advocates unlocks only 5,000 operational tokens of the initially allocated 10,000 operational tokens and the balance of their LLL wallet is therefore 10,000 operational tokens (5,000+5,000) and not (10,000+10,000) operational tokens. The unredeemed 5,000 operational tokens will be returned to the treasury. During distribution of the HRBE tokens, all operational tokens will be converted to HRBE Tokens acquired during TDE..

3.11. Assumptions

All genesis blockchains and the secondary blocks up to the 7th block have to be created by advocates who have a valid standard membership and who have been approved by the LLL administrator as registered legal practitioners. These Advocates will actually risk losing their standard membership benefits if they erroneously post incorrect transactions to the blockchain. Advocates who are not standard members and those who only hold airdropped operational tokens which have to be unlocked anyway will not have access to post genesis blocks (or write the first 7 transactions on the blockchain). Advocates who are not standard members and only hold the airdropped operational tokens will require pre-approved by a LLL administrator in order to exercise the privilege to post genesis blocks (write the first 7 transactions on the blockchain). In some exceptional circumstances, the administrator can elevate a trusted advocate who hasn't enrolled for standard membership to the first tier advocate role where they can write the genesis blocks. Rewards and penalties will be variable and will be supplied by the centralized LLL platform through API.

3.12. Membership Restrictions

In order to control and manage the ecosystem, all memberships acquired during presale will be subjected to some form of restrictions. Rules for certain memberships purchased at bonus rates will be subject to a special restrictions schedule to support a stable ecosystem. The restriction period commences on the date of distribution not on the date of purchase. Distribution is scheduled for a month after the TDE.. Participants buying memberships at a bonus rate of 9:1 will have access to 15 percent of their total purchase after an initial restrictions period of 120 days following distribution. The next 25 percent will be restricted for an additional 180 days and a further 60 percent will be restricted for an additional 120 days. Participants buying memberships at bonus rate of 19:1 will have access to 25 percent of their total purchase after an initial restriction period of 120 days following distribution. The other 25 percent will be restricted for an additional 180 days and a further 50 percent will be restricted for an additional 120 days. Participants buying memberships at a bonus rate of 39:1 will have access to 35 percent of their total purchase after an initial restriction period of 120 days following distribution. The other 65 percent will be restricted for an additional 150 days. All the tokens reserved for

the employees will be restricted¹¹ as follows: employees and business partners will have access to five percent of their total allocated¹¹ tokens (other than what they have purchased) after an initial vesting period of 120 days following distribution. Another five percent will be restricted for an additional 150 days and the next 10 percent will be restricted for a further 120 days. The remaining 80 percent will be restricted for additional 300 days and only accessible provided the employee or the partner worked for the project for a continuous and uninterrupted period of two years excluding the normal annual leave arrangements.

3.13. Tokenization of third party properties

One of our solutions but not included in the MVP provides fundraising capability to the land seller with massive acreage and who lacks the ability to coordinate or pay for the land title subdivision process. Massive acreages of land can therefore be tokenized and subsequently a PTO (Property Token Offering) conducted. Tokenizing of large acreages of land will allow real estate assets to be uniquely identified via a digital record that contains information regarding the unit tokenized and enable the land owner to liquidate with ease their large properties.

3.14. Distribution & Roadmap

Budget Allocation

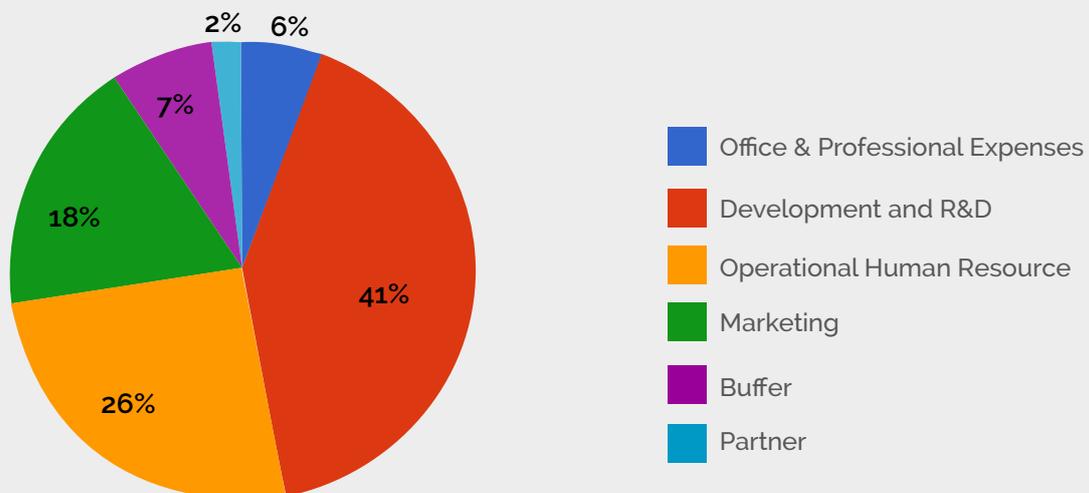
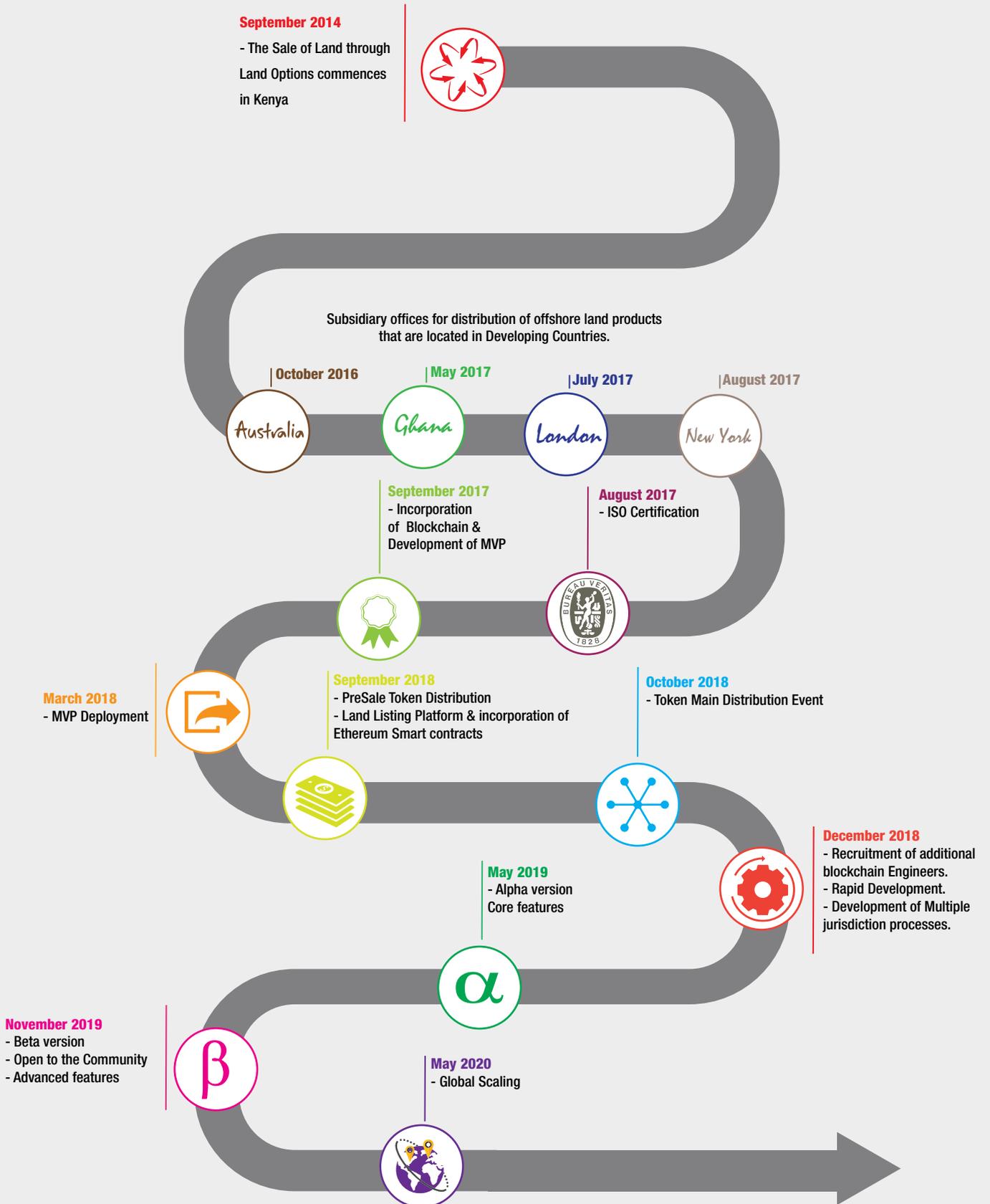


Figure 3: TGE Funding Distribution

Land LayBy Holdings Roadmap





4. Synergies with Land LayBy products

4.1. Business model

Our primary business model conducts the business of selling land through land options (derivatives) in Kenya & Ghana. We plan to replicate this model in most developing countries. These land options could either be call options or call/put options. Since these derivatives have an expiry date, the land buyers are required to exercise their land options before expiry of the land options. Once exercised, the clients proceed to pay the balance (or purchase at the exercise price) within a certain time frame – normally one month. The conveyance process begins once they pay the balance and finally the land titles are delivered to the clients.

Buying Land Option

The cost associated with the acquisition of land option is non-refundable. Payment for land option can be either through ten monthly installments or paid full in a single payment. Once the land option is paid in full the client is issued with a Land Option Certificate (LOC). As the purchaser waits for the land option to mature, they can sell their LOC. Once the sale is complete, the LOC is transferred to the secondary buyer.



4.2. Our products

Land

The is the ultimate product , that results after the clients exercise their options to buy the property. An option to buy a property can be acquired with payment of 10 equal monthly installments. A client will need to pay the balance (in other words exercise the option to buy at a specified exercise price) within the specified time frame in order to own the land. Products related to land include:



Land Call and Call/Put Options

Most of the time, the initial offering is a Land Option, a land derivative which has an expiry date, usually 2 years from the date the product was released to the market. The same project can have different derivatives depending on when those products are released to the market.

Real Estate Services

- Annual Premium plus memberships (USD 880 per annum or USD 89 per month)
- Annual Premium memberships
- Stamp duty management as part of Premium Plus Memberships
- Private listing of third party property (Land) on the online platform
- Buyer's Agent Services - where the Company offers to represent the offshore land buyer and manage their investment decisions and risks.

Business Packages

The introduction of the fSE (Franchise Sales Executive) business enables our business partners and other stakeholders to conduct and manage their own real estate business while making huge commissions. This is specifically engineered to incentivize the land marketplace to quickly adopt selling of Land through Land Options. This distribution strategy ensures that LLB rapidly expands in a very competitive market to large-scale production of Land Options which will then disrupt and revolutionize the land marketplace. Attaining large scale production of Land Options implies that we can be able to offer land options at significantly lower rates hence attracting

more players and ultimately creating our own market. The potential of offering subscription rights to Advocates, Surveyors, Architects, Land Valuers and other professions related to real estate (land sales) presents a great opportunity to seamlessly integrate the business with the Harambee token, consequently creating positive platform networks effects.

White Label Software

We intend to extend our solution as white label software to Private Land Sellers, Real Estate Companies, and Savings and Credit Cooperative Organizations (SACCO) with an aim of capitalizing on the positive network effects. The anticipated platform referral by design will be easily achieved once we can consistently pull participants (producers and consumers) to the platform. These producers will be able to rebrand the software and use as their own. The company intends to License and supervise other real estate agents to use our Trademark registered Land Banking Kenya Option products (Chanuka, Hazina, Jadili, & Akiba) through the use of the Land LayBy Listing, currently being developed for deployment as per our development roadmap.

5. Outlook



The nature of TDEs allows crowd sales to be hosted in any market in the world and the regulatory examples given serve as scenarios that are presently playing out in the markets. Global financial centers tend to set the trend and have a massive pull on financial technology policies. Granted, the technology started with an evil face (We all know too well about the DAO case). It was used by nefarious people to conduct nefarious transactions. Hackers were having their way with the technology and as such, it received a terrible reputation in its infancy.

According to many international observers like the World Bank, IMF, and the United Nations Development Agency, Africa is becoming a key part of investors' global portfolio. The exposure blockchain technology gives to an investor combined with that promise, sets Africa apart in the application and development of blockchain. The late adoption advantage that Africa has enjoyed in the past with innovations like mobile technology has produced incredible results that have transformed how people connect and has facilitated collective intelligence.

However, blockchain technology offers us a different advantage. Developed countries - though ahead in land registries and their use of electronic systems - are faced with employing a technology that could take ownership from people who have enjoyed the centralized

characteristic of land registries. For developing nations, the immediate and obvious disadvantage is that more people (usually the institutions that have basked in the current system) will stand to lose from the application of the technology to their systems. Additionally, the daunting transfer of data from current systems to blockchain systems will be exhausting if not costlier. For developing nations, the advantage is due to the opposite. Little to nothing exists in the form of formal and trustworthy registries. The application of blockchain technology to our ecosystem would be refreshing and impactful. Blockchain offers transparent heterarchy, open and transparent systems where users can view what others have posted and can therefore adapt to the needs of the whole system. Unsurprisingly, it is the reason why one of the less popular suggestions for the technology is its applications in general election, which could be valuable for developing nations dealing with poor electoral systems like in the example of Kenya.

The success of the technology lies heavily upon the success of its practical application, cooperation from stakeholders, regulators, and developers. It will be a mature, tangible concept once more players are involved and regulators remain open to collaborating with the players to create fertile grounds for the markets to employ and disrupt traditional models of operation. It will take time, but the revolution is irrefutable and irreversible.

6. Disclaimer

PRIOR TO MAKING A DECISION TO PARTICIPATE IN THE TOKEN DISTRIBUTION EVENT, PLEASE CONFIRM THAT YOU ARE READING THE LATEST VERSION OF THE WHITE PAPER AVAILABLE ON THE HARAMBEE TOKEN WEBSITE.

This White Paper is being issued by Land LayBy Holdings Inc and its associates for informational purposes only, and in connection with the offer for HRBE Tokens and is not an offer or a solicitation to buy or sell any securities or other financial instruments. The White Paper has been prepared on a good faith basis and no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by Land LayBy Holdings Inc, Land LayBy Technologies or any of the Land LayBy Technologies' subsidiaries or by its OR any of their respective officers, employees or agents in relation to the adequacy, accuracy, completeness or reasonableness of this White Paper, or of any other information (whether written or oral), notice or document supplied or otherwise made available to any interested party or its advisers in connection with the offer to buy HRBE Tokens. All and any such responsibility and liability is expressly disclaimed.

Tokens are not intended for speculation and no representation, warranty, assurance or undertaking is given as to the achievement of any future projections, management estimates, prospects or returns. The Company makes no promises with regard to any kind of future performance or that the HRBE Tokens will have any kind of inherent or other value or with regard to any continuing payments. The HRBE Tokens afford the holder no rights in, or claims to, any of the assets of the Company or any share in any profits that the Company may achieve. No information set out or referred to in this White Paper shall form the basis of any contract. Any prospective purchaser of the HRBE Tokens shall be required to enter into a sale and purchase agreement known as the Token Sale Agreement acknowledging that it has not relied on, or been induced to enter into such an agreement by, any representation, warranty, assurance or undertaking save as expressly set out in that agreement. This White Paper may be changed or amended from time to time and the amended versions of the White Paper will be uploaded onto the Harambee Token Website. It will be important to review new versions of the documents together with the previous drafts to ascertain whether the changes would materially affect your decision to participate or engage with Land LayBy Holdings Inc. However, once agreed to, that decision to participate or engage with Land LayBy Holdings Inc remains in effect and will be governed by the version of the documents agreed to.

This Whitepaper describes the current vision for the Land LayBy Listing (LLL) platform. However, realizing this vision is reliant on numerous factors and subject to a myriad of risks. One of the possible risks is that despite our best efforts to bring the vision to fruition, it is quite possible that the platform may not operate as envisioned. You confirm that you understand, acknowledge and accept this risk. The HRBE Token is intended solely as an access mechanism for using the services offered through LLL. The Company shall have the full, utter and sole discretion to determine how the proceeds received by the Company shall be utilized. Nothing in this Whitepaper is to be taken as constituting an offer, distribution, solicitation, or marketing to any person. Neither is this Whitepaper an offering to the public in any country or territory where such offering is not permitted or would be unlawful.

Nothing in this Whitepaper is to be taken as constituting or for rendering an opinion or advice to sell, or any solicitation of any offer to purchase any HRBE Tokens nor shall it or any part of it nor the fact of its presentation form the basis of, or be relied upon in connection with, any contract or investment decision. Prospective purchasers of the token should carefully consider all risks and uncertainties and regulations associated with

HRBE, Land LayBy Holdings Inc and this offering, as set out in this Whitepaper and in the Token Sale Agreement.

THE RELATIONSHIP BETWEEN LAND LAYBY HOLDINGS INC AND YOU AS A PURCHASER OF HRBE TOKENS IS TO BE GOVERNED ONLY BY A SEPARATE HRBE UTILITY TOKEN SALE AGREEMENT ("PURCHASE AGREEMENT"). IN THE EVENT OF ANY INCONSISTENCIES BETWEEN THE PURCHASE AGREEMENT AND THIS WHITEPAPER, THE FORMER SHALL PREVAIL. THE PURCHASE AGREEMENT IS A PART OF AND INCORPORATED WITHIN, AND IS TO BE READ ALONG WITH THIS WHITEPAPER.

Please know that we endeavor to achieve the vision laid out in this paper. Blockchain, cryptocurrencies and other aspects of our technology and these markets are in their infancy and will be subject to many challenges, competition, regulation and a changing environment. We will try to update our community as things materialize, but undertake no obligation to do so.

There are risks involved in purchasing our token. One should carefully consider all risks including, but not limited to, those listed below and, as described in the Token Sale Agreement. The order of the risks set out below is not intended to have any bearing on the likelihood of such risk arising, or importance of any such risk to any particular person.



5.1. Development and Maintenance

Our platform is currently under development and may undergo significant changes before release and over time, including a change in direction at our discretion. LLB Technologies may have to make changes to the specifications of Harambee token or the platform for any number of legitimate reasons including, but not limited to, a change in the design, implementation plans and execution of the implementation of the platform for global release. Further development and maintenance from the time of purchase could create the risk that it might not immediately meet the participants' needs at the time of purchase.



5.2. Access to Tokens Due to Loss of Private Key, Custodial or Purchaser Error

A private key, or a combination of private keys, is necessary to control and dispose of the Harambee tokens stored in the digital wallet or vault. Accordingly, loss of private key associated with the digital wallet or vault that holds or stores the Harambee tokens will result in loss of such tokens.

Moreover, any third party that gains access to such private key, including by gaining access to login credentials of a digital wallet or vault service you use, may be able to misappropriate your Harambee tokens.

5.3. Ethereum Protocol

Our platform and are based on the Ethereum protocol, any malfunction, breakdown or abandonment of the Ethereum protocol may have a material adverse effect on the platform and token.

5.4. Risk of Attacks

As with other decentralized cryptographic tokens based on the Ethereum protocol, Harambee tokens are susceptible to attacks by miners in the course of validating tokens transactions on the Ethereum blockchain, including, but not limited, to double-spend attacks, majority mining power attacks, race condition attacks and selfish-mining attacks.

5.5. Hacking and Security

Hackers or other malicious groups or organizations may attempt to interfere with the platform or tokens in a variety of ways, including, but not limited to malware attacks, denial of service attacks, consensus-based attacks, Sybil attacks, smurfing and spoofing. Because the platform is based on Open-Source Software, there is a risk that a third party or a member of the team may intentionally or unintentionally introduce weaknesses into the core infrastructure of the platform, which could negatively affect the platform and tokens, including the tokens' utility for using the platform.

5.6. Risks Associated with Markets for Harambee Tokens

Our token is to be used solely on our platform, and LLB Technologies will not support or otherwise facilitate any secondary trading or external valuation of the HRBE token. Even if secondary trading of the HRBE token is facilitated by third party exchanges, such exchanges may be relatively new and subject to little or no regulatory oversight, making them more susceptible to market-related risks..

5.7. Uninsured Losses

Unlike bank accounts or accounts at some other financial institutions, the HRBE token is uninsured unless one specifically obtains private insurance to insure them. Thus, in the event of loss or loss of utility value, there is no public insurer or private insurance arranged by us to offer recourse to the purchaser.



5.8. Transaction Losses

HRBE transactions are irrevocable. If they are stolen or incorrectly transferred, such transfers may be irreversible. As a result, any incorrectly executed HRBE transactions could adversely affect the value of HRBE.



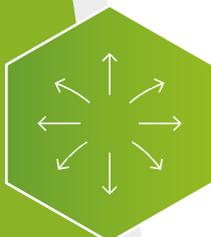
5.9. Uncertain Regulations, Enforcement Actions and Market Environment

The regulatory status of tokens and distributed ledger technology is unclear or unsettled in many jurisdictions. It is difficult to predict how or whether regulatory agencies may apply existing regulation with respect to the technology and its applications. It is equally difficult to predict how or whether legislatures or regulatory agencies may implement changes to law and regulation affecting distributed ledger technology and its applications, including LLL platform and HRBE. Regulatory actions could negatively impact our platform and token in various ways. Land LayBy Holdings Inc and its associates may cease operations in a jurisdiction in the event that regulatory actions, or changes to law or regulation, make it illegal to operate in such jurisdiction, or commercially undesirable to obtain the necessary regulatory approval to operate in such jurisdiction.



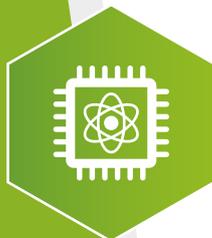
5.10. Risks Arising from Taxation

The tax characterization of tokens is uncertain. One must therefore seek their own tax advice in connection with purchasing HRBE tokens.



5.11. Risk of Alternative Platforms

It is possible that alternative platforms could be established that utilize the same open source code and protocol underlying the LLL platform. The platform may compete with these alternative platforms, which could negatively impact the LLL platform and HRBE token, including HRBEs' utility for obtaining services.



5.12. Exploitable Breakthroughs in the Field of Cryptography

Advances in cryptography, or technical advances such as the development of quantum computers, could present risks to crypto currencies and the Ethereum platform and Harambee Tokens, which could result in the theft or loss of tokens.

5.13. Risk of Insufficient Interest in the LLB Platform

It is possible that our platform will not be used by a large number of individuals, companies and other entities or that there will be limited public interest in the creation and development of distributed platforms. Such a lack of use or interest could negatively impact the development of the platform and the potential utility of HRBE.

5.14. Risk of an Unfavorable Fluctuation of Ether and Other Currency Value

We will use the contributions from selling HRBE tokens to fund the improvement, maintenance and further development of the platform. The contributions from the sale of HRBE tokens will be denominated in Ether or Bitcoin, and may, at our discretion, be converted into other cryptographic and fiat currencies. In addition, some sales of HRBE may also be denominated in fiat currencies. If the value of Ether, Bitcoin or other currencies fluctuates unfavorably during or after the Token Sale Period, LLB may not be able to fund the further development as described on the road map, or may not be able to maintain the LLL platform in the manner that it intended.

5.15. Risk of Dissolution of Land LayBy Holdings Inc & Land LayBy Technologies

It is possible that, due to any number of reasons, including, but not limited to, an unfavorable fluctuation in the value of Ether, Bitcoin (or other cryptographic and fiat currencies), decrease in HRBE's utility, the failure of commercial relationships, or intellectual property ownership challenges, the LLL platform may no longer be viable to operate and might be dissolved.

5.16. Lack of Governance Rights

Because HRBE tokens confer no governance rights of any kind with respect to our platform, LLB Technologies or our affiliates, all decisions will be made by LLB at its sole discretion. These decisions could adversely affect the platform and the utility of HRBE.

5.17. Risks involving Cloud Storage

As Land LayBy Technologies uses a decentralized cloud storage service to host the LLL platform and related applications, the platform is susceptible to a number of risks related to the storage of data in the cloud

5.18. CCryptographic Tokens may experience Risk of Extreme Price Volatility

Land LayBy Holdings Inc cannot and does not guarantee market liquidity for HRBE tokens. Therefore, there may be periods of time in which HRBE will be difficult to buy or sell.



5.19. Intellectual Property Rights Claims

Intellectual property rights claims may adversely affect the operation of the Land LayBy Listing. Third parties may assert intellectual property ownership claims relating to the holding and transfer of cryptographic tokens and their source code.

Endnotes

- ¹ FortuneofAfrica. "Land Registry in Kenya," fortuneofafrica.com, n.p.d. <http://fortuneofafrica.com/kenya/land-kenya/land-registry-in-kenya/>
- ² Transparency International Secretariat. "Corruption Perceptions Index 2016: Vicious Circle of Corruption and Inequality Must be Tackled," transparency.org, last modified on Jan 25, 2017 https://www.transparency.org/news/pressrelease/corruption-perceptions_index_2016_vicious_circle_of_corruption_and_inequali
- ³ Edelman. "2017 Edelman Trust Barometer Reveals Global Implosion of Trust," edelman.com, last modified Jan 15, 2017 <https://www.edelman.com/news/2017-edelman-trust-barometer-reveals-global-implosion/>
- ⁴ The Power of the Poor. "Dead Capital," thepowerofthepoor.com, n.p.d. <http://www.thepowerofthepoor.com/concepts/c6.php>
- ⁵ de Soto, Hernando. *The Mystery of Capital: Why Capitalism Triumphs In the West and Fails Everywhere Else*, New York, NY: Basic Books, 2000. pp6,7.
- ⁶ Ibid pg.36
- ⁷ Ibid pg. 159
- ⁸ Means "to pull together" in Swahili. It is a Kenyan tradition of community self-help events such as fundraising or development activities.
- ⁹ Web3.js is a collection of libraries which allow you to interact with a local or remote ethereum node, using a HTTP or IPC connection (here Remote Procedure Calls will be used)

¹⁰Savings and Credit Cooperative Organizations formed by groups in society as an alternative to traditional financial lenders/institutions

¹¹ Refers to the number of HRBE tokens allocated as an appreciation to their contribution to the success of the project. It does not include the HRBE tokens that the employee or business partner purchased with their own funds.

¹² To be included on our TGE website: www.hrbe.io

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