BitMari Smart Farm Contract Whitepaper

BitMari Smart Farm Contract platform will bring fairness, transparency and accountability in contract farming projects.

Connecting sponsors with Africa's amazing farmers in a peer to peer relationship; sharing financial, social and professional capital.

BitMari will make use of Blockchain technologies such as smart contracts and distributed ledgers.

NEO smart economy

Draft v (1.0)
July-August 2018
The information in this document is subject to change over time.
info@bitmari.com www.bitmari.com

Abstract

BitMari is a pan African Blockchain company founded in 2015. BitMari has utilised Blockchain technology to facilitate the remittance of money to Africa. This paper outlines how we plan to use Blockchain smart contract technology in existing agriculture production methodologies in-order to create a level playing field in contract farming.

Farmers who engage in contract farming with individuals or organisations are often short-changed by off-takers with unfair contracts and pricing models. Offtakers benefit from the farmer's labour, they leave the farmer with long-term debts, unpredictable and highly variable payments and in extreme cases bankruptcy.

The focus is on using smart contract technology and Blockchain digital tokens to bring fairness, transparency and efficiency into the contract farming. The BitMari Smart Farm Contract will allow farmers to conduct contract farming with sponsors from anywhere in the world in a fair, transparent and non-predatory way. The farmer's produce will still be sold locally within the farmer's marketplace.

Contents

1. Background

1.1 The BitMari Women Farmers Agro-Tech Accelerator 2016/2017

1.2 The BitMari Digital Coupon

1.3 What is Contract Farming?

1.4 What is BitMari Smart Farm Contract?

1.5 Why the Neo-Blockchain?

2. What is the problem?

2.1 Lack of transparency and accountability

3. The Solution

3.0 The BitMari Smart Farm Contract

3.1 BitMari Smart Farm Contract compared to traditional systems

3.2 The BitMari Smart Farm Contract Overview

3.3 The BitMari Digital Coupon

3.4 Token Economy

3.5 The BitMari Smart Farm Contract Testnet

3.6 Smart Contract Features

3.7 Conclusion

1.Background

1.1 The BitMari Women Farmers Agro-Tech Accelerator 2016/2017

BitMari acquired a licence in 2016 to operate a Money Service Business in Zimbabwe. This licence allows people in the diaspora to remit funds via the BitMari Platform.Recipients collect cash at over 47 branches of our local bank partner.

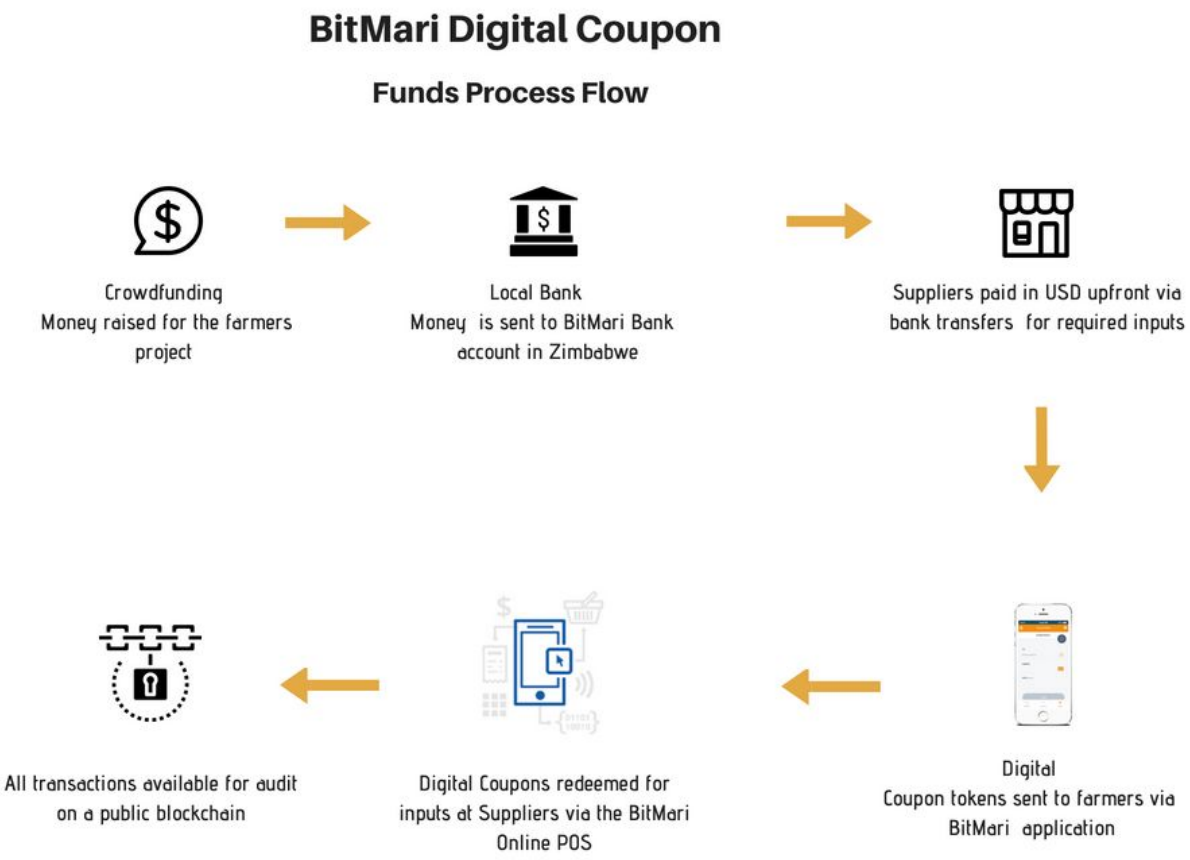
Using the Blockchain technology, BitMari was able to conduct the first ever Zimbabwe Women Farmers Agro-Tech Accelerator program which provided farming inputs to selected women farmers in Zimbabwe. In this program, digital coupons were used to redeem farming inputs at various retailers nationwide.

To spearhead this program, a total of US$25 500 was raised through crowdfunding which was seen as a form of Direct Investment i.e. a way for individuals all over the world to directly fund farmers. The $25 500 was distributed amongst 80 women farmers drawn from 8 provinces in Zimbabwe from which farmers were selected by the Women Farmers Land and Agricultural Trust (WFLA). The funds covered inputs such as seeds, irrigation equipment, project coordination as well as hiring agronomists.

BitMari approached eleven farm inputs suppliers (hereinafter referred to as the Suppliers) nationwide who agreed to work with us. These suppliers received training on how to use the BitMari Point Of Sale (BSPOS) and were paid upfront for the inputs through our local bank partner. Thereafter the farmers received digital coupons for the farming inputs into their BitMari mobile application which were redeemed at the suppliers using the BitMari Suppliers Point of Sale (BSPOS).

1.2 The BitMari Digital Coupon

The Use of The BitMari BitMari Digital Coupon 2016/2017



The digital coupon was used as a digital token for farmers to redeem inputs.The digital coupon focused on transactional transparency. This solved counterparty risk and the risk of not receiving fair payment that farmers face, in this case farming inputs.

1.3 What is Contract Farming?

Contract farming can be defined as agricultural production carried out according to an agreement between a buyer and farmers, which establishes conditions for the

production and marketing of a farm product or products. Typically, the farmer agrees to provide agreed quantities of a specific agricultural product.

The buyer can be a local or a transnational agribusiness (processor, exporter, retail outlet or shipper), a private plantation, a parastatal with its own production, or local merchants (greengrocers, wholesalers, hawkers, brokers etc.)

Contract farming allows the buyer a measure of control (decision-rights) over production without formally engaging in the farming activities. The allocation of risk depends on the terms of the contracts. As such, contract farming provides a response to market failures with respect to inputs, credit, insurance, information and outputs, by reducing the associated transaction costs, monitoring, transfer of goods and bargaining.

1.4 What Is BitMari Smart Farm Contract?

BitMari has developed an application that allows buyers to purchase farming contracts for agricultural projects in Africa from anywhere in the world in a peer to peer nature. BitMari Smart Farm Contract technology creates fair & transparent farm contracts that give the consumer and farmer the best value.

1.6 Why the Neo-Blockchain?

NEO was launched in 2015 as China's first public Blockchain. Recent improvements to the network have made it a compelling alternative to Ethereum for smart contracts and distributed applications.

We are able to create smart contracts on the Neo-Blockchain and one of the programming languages that Neo supports is Python. Python is a popular and versatile language, this enables us to get more developers involved in our work. BitMari Smart Farm Contract code will be open source.

2.What is the problem?

2.1 Lack of fairness, transparency and accountability in contract farming

The industry and the powerful corporations who control the majority of the contract farming market, use these contracts to benefit themselves while unfairly shifting production risks onto farmers. This often leaves the farmers in long-term debt, unpredictable and highly variable payments, small or negative revenues and bankruptcy.

Research has shown that farmers in the current system are being taken advantage of through unfair contracts. The BitMari Smart Farm Contract ecosystem will play a big role in ensuring that farmers are treated fairly including receiving fair compensation for their work.

The BitMari Women Farmers Agro-Tech Accelerator 2016/2017 pilot project allowed us to realise some of the challenges that have long-plagued the grains industry and growers in Zimbabwe such as matching investment to final product (grain / livestock) and supply chain and traceability.

3.The Solution

3.0 The BitMari Smart Farm Contracts

BitMari has developed an application that allows buyers to purchase farming contracts for agricultural projects in Africa from anywhere in the world in a peer to peer nature. BitMari Smart Farm Contract technology creates fair & transparent farm contracts that give the consumer and farmer the best value. Contract farmers will get funding for their projects while everything is being monitored transparently using the Blockchain.

BitMari will leverage on the Blockchain technology to manage the contractual obligations between the buyer and the contract farmer as well as utility tokens for the distribution of farming inputs. The smart contract will also be used to record participants' performance ratings for future contracts.

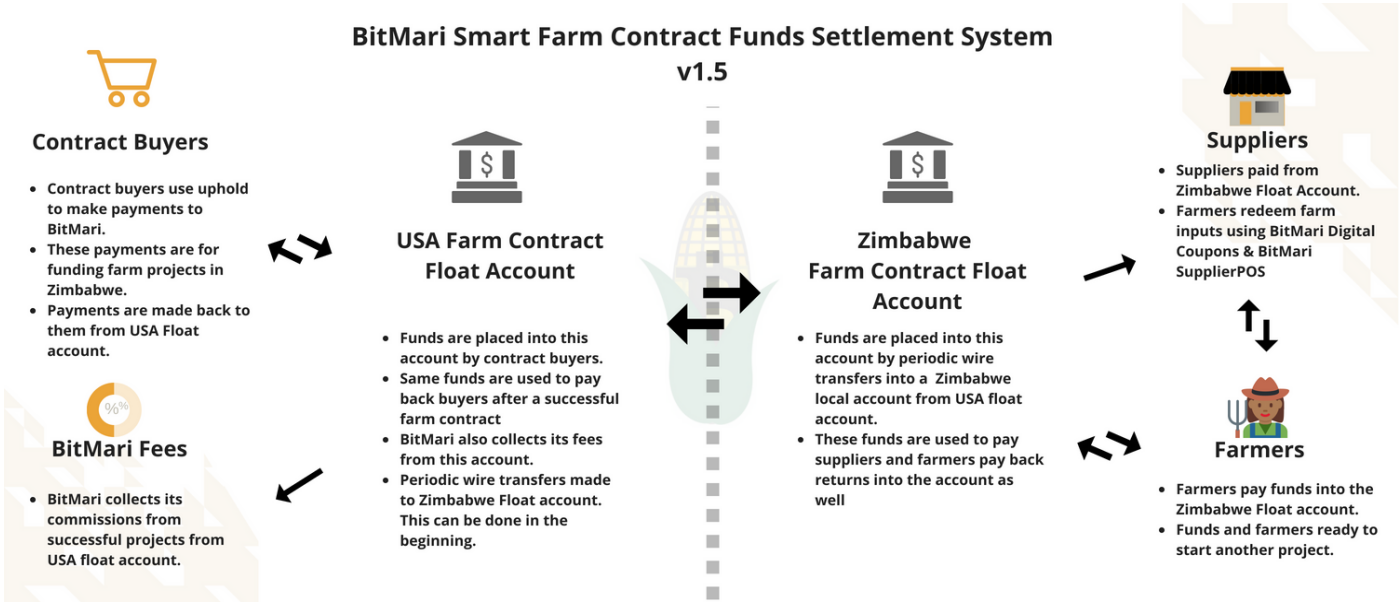
BitMari Smart Farm Contract transactions are traceable

In the architecture design the buyer funds the farmer who then uses the utility token to redeem farming inputs from the Suppliers. This information is added into the Blockchain smart contract , creating a transparent environment where all participants can trace the contract transactions.

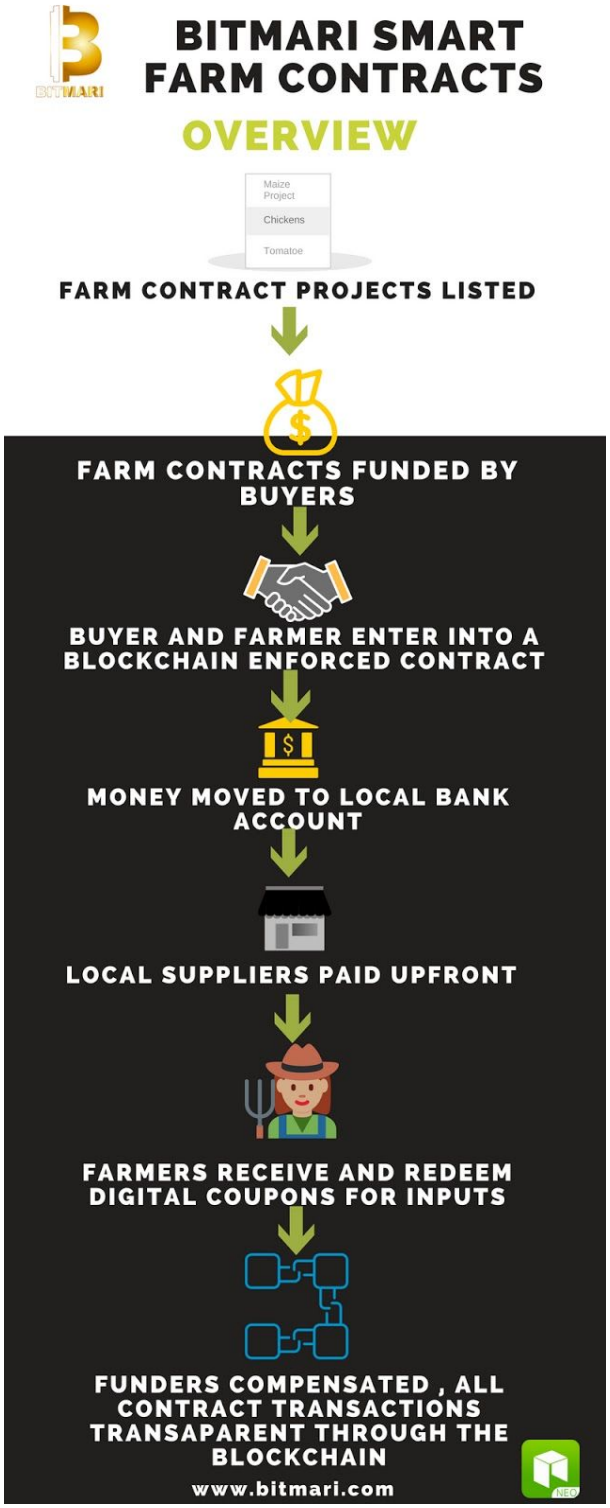
3.1 BitMari Smart Farm Contract compared to traditional systems

	BitMari Smart Farm Contract	**Traditional Systems**
Fairness	Using Blockchain technology, all the prices along the farm contract value chain can be made available publicly, therefore making it possible for all the participants to know exactly what the fair market price is for buying contracts, selling produce, sharing profits etc.	Big companies control the majority of the contract farming market. These companies use these contracts to primarily benefit them and shift production risks onto farmers. In most cases, production risk is solely borne by the farmer. This leaves the farmer in crippling debts.
Transparency	An irrevocable digital ledger of transactions can be created by integrating smart contract technology into the contract farming. The movement of funds, redeeming of farm inputs, selling of produce can all be tracked and audited.	The predatory nature of the farm contract may not be transparent at the disadvantage of the farmer and the final consumer of the produce.
Digital coupons	Introduction of Digital coupons which offer transactional transparency to participants using the blockchain and redistribution of power in the agriculture supply chain.	Traditional systems use fiat currency which is prone to fraud and corruption risk. Further, the traditional systems can be easily manipulated and funds directed for other uses.
Access to finance	Farmers get access to a diverse pool of funds that were never accessible before because of the peer to peer nature of the smart contract. Sponsors world over can also get the opportunity to fund small scale farming projects.	Access to the same pool of financial opportunities with limited diversity.

How funds will be settled locally and internationally



3.2 BitMari Smart Farm Contracts Overview



BitMari has created an ecosystem of different stakeholders in order to create a complete Agriculture value chain.

Users Registration

This is the process where the smart contract participants get registered on BitMari i.e. the contract farmer and buyer.

Projects listing

A contract farmer will list the projects they intend to do. These projects will not be registered on the Blockchain until such time the farmer and a buyer agree on the applicable terms and conditions and enter into a binding contract.

BitMari Smart Farm Contract

Once the two parties have agreed, the buyer will proceed to purchase the contract. By so doing, the buyer will fund the contract and create an address with a Digital Coupon balance which will be the Blockchain Utility Token, to be used to redeem farming inputs and run the contract until its expiration.

BitMari Digital Coupon (see next section)

At this stage the farmer will use the digital coupon to redeem farm inputs from suppliers which redemptions will be recorded on the Blockchain contract.

Farm Project

The farm project will commence once agreement between buyer / sponsor and farmer is in place. As part of the terms and conditions, the buyer will be kept abreast of all developments until the produce is ready.

Closing of Contract

The contract will run subject to the agreed terms and conditions for example, if the agreed contract duration is 90 days, after 90 days the contract will change its status from In-progress to Complete. Once the contract has lapsed, both the buyer and farmer are rated by the smart farm contract technology based on their performance which rating will determine their readiness and qualification for the next farm contract. In accordance with the agreed terms and conditions of the contract, fees are collected for the Farmer, Buyer and BitMari.

3.3 BitMari Digital Coupons

Transparent distribution of farm inputs.

Project Funding and coupon generation

BitMari digital coupons generated by smart farm contract.

Local supplier payments

BitMari pays supplier upfront from a local bank account.

Digital Coupon Distribution

Blockchain utility token distributed to participating contract farmers through the BitMari Application.

Coupons redeemed for farming inputs

Contract Farmer redeems coupons at supplier for farming inputs like fertiliser using the BitMari Application and Supplier Point of sale.

Instant Settlement

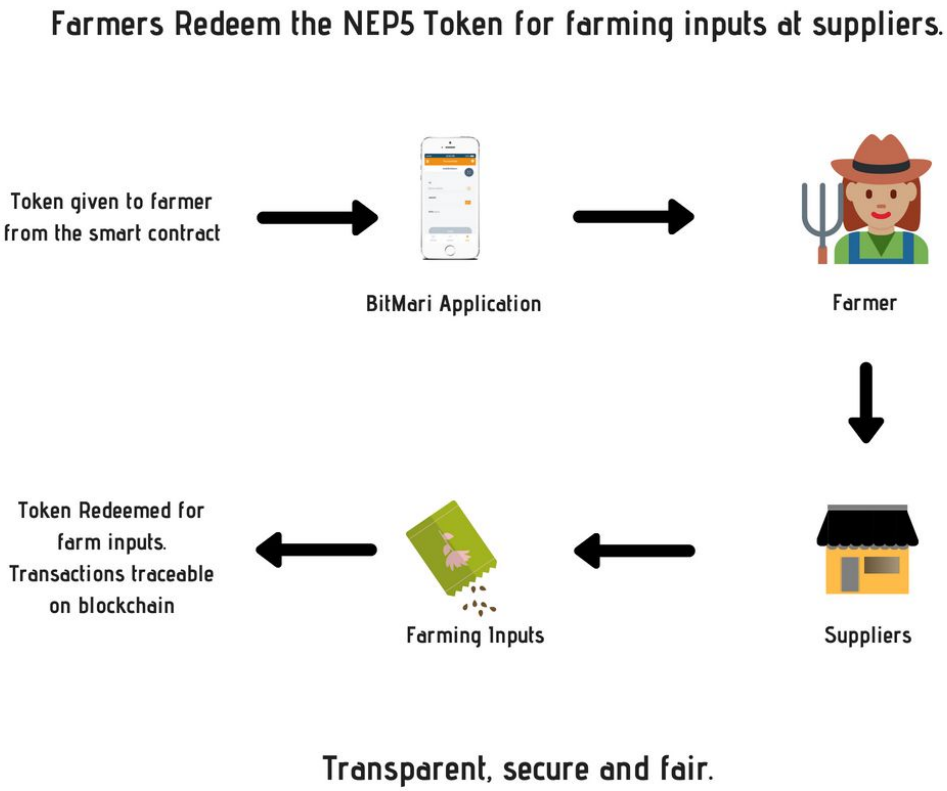
Instantly settling the transaction and updating the Smart Farm Contract. Funder is notified of updates and can verify them on the Blockchain.

Transparency All transactions are available for audit and traceable through the Blockchain smart farm contract.

3.4 Token Economy

The BitMari Farmers Utility Token

The Token Name : BitMari Farmers Token
Token Symbol/Ticker : BFT
Token Decimals : 2
Token Type : NEP5 Utility Token
Token Total Supply : 100 000 000 (100 million)
Token Initial Amount : 100 000 (100 thousand, 0.1% of supply to use on our Neo MVP)
Token Blockchain : NEO Blockchain
Token Usage : BitMari Digital Coupons for adding transparency into contract farming using the Blockchain.
Token Users : Contract Farmers, Farm Input Suppliers.



3.5 The BitMari Smart Farm Contracts Testnet

BitMari Smart Farm Contract Test Net First Release Summary v 0.1

Contract Hash : 0x3ade71dabcd141c41c04de053be8f8d59c8c13ff
Contract Address : AZ4bDeyyq6mCWXoNP8EQS3CYByfS27dfto
Transaction:
https://neoscan-testnet.io/transaction/8c9720ef9a6bbc720c9521141932a236ae142a77c58a9e29497d961f21f7def4
Smart Contract :
https://github.com/BitMari/varimi/blob/master/python/v2/smart-farm-contracts-updated.py

Data will be recorded into a traditional database first for a better user interface and only crucial data will be added into the neo smart contract memory.For example a farmer ID is entered into the contract whereas a farmer name , surname email etc will be on the database.

3.6 Smart Contract Features

Smart farm contract creation

- This feature is to join a farmer and a contract buyer into a smart farm contract.
- The contract has farmer, buyer, project, balance, status and ability to add additional data that may be required.

Smart Farm Contract Balance (Digital Coupon)

- Each contract has a numerical balance of the utility token that will be used by a farmer to redeem farming inputs from suppliers
- This is part of the Digital Coupon.

Smart farm contract progress

- All contracts will have a status depending on the stage at which the farm contract is.
- Participants will be updated of progress made until completion and conclusion of the contract.

Smart farm contract Participant Rating

- All participants in the contract can be rated based on performances. This rating includes performances on previous/past farm contracts undertaken by either of the participants.

- This NEO contract allows the ability for each and every entity to be rated.
- It makes use of the weighted arithmetic average : an average resulting from the multiplication of each component by a factor reflecting its importance.
- This is a powerful feature as buyers , farmers and even the contracts themselves can be rated against a lot of variables and data points

Smart farm contract ownership transfer

- Ownership of the contract is transferable i.e. all rights and title to the contract will be transferred to the new owner.

S**mart farm contract delete**

- Contracts can also be deleted which functionality is a preserve of the administrator only.

3.7 Conclusion

To solve the problems that have plagued the contract farming agribusiness we propose a smart contract which records historical and present transactional data. The results of our pilot project demonstrate that participation in our Smart Farm Contract can increase small commercial farmers' income in circumstances where terms of the contract are clear to the participants. Farmers in BitMari Smart Contract report higher incomes. Access to produce market information has been shown to have positive impacts on the welfare of the participants.

BitMari Smart Farm Contract is the way to GO for empowerment!