GREEN PAPER

**Growing With Green Energy
And Renewable Coin For A Better World**

terraGreen

TABLE
OF CONTENTS

Purpose & Motivation

TerraGreen Purpose

The general thought behind TerraGreen is to use the blockchain technology and cryptocurrency to make the earth (Terra) a greener place by revolutionizing the concept of how green energy is produced and supplied to the customer.

In contrast with current methods of energy production via fossil fuels like oil, coal and natural gas, TerraGreen focuses on renewable energy that is generated from waste and renewable elements. In the end, TerraGreens purpose is to create a truly sustainable and clean community while allowing consumers to directly participate in the renewable energy industry in a positive manner. It is all in our own interest to stop the pollution by coal and oil and move to an age of renewable energies.

We have only one earth and we need to take good care of it. TerraGreen intends to break down the walls between energy producers, investors, utilities and consumers so that people get involved and influence how their energy is produced personally.

TerraGreen Motivations

Environmental stress to earth has induced an urgent quest for innovation in the energy structure on a global scale. As evidenced by the 148 nations which ratified the Paris Climate Accord, there is profound interest in fostering a cleaner future as these nations agreed to fulfill its responsibility by capping GHG emissions as soon as possible. However, the measures taken by companies and governments addressing global warming due to climate change are often tainted with controversial, insincerity, inconsistent policies and conflicting interest. It has been far too long since people have placed both their hope and trust in big companies and the governments to bring about change and lead the way for generation of green energy to mitigate the catastrophic effect of climate change.

In hindsight the enormity of global warming is mainly due to the disconnection between energy users and energy producers. The users have no way to control or influence the generation of energy and have to completely rely on the companies or governments' profundity in managing the energy supply.It is well known that climate change poses the risk of having significant negative impact on future generations and the use of traditional counter-measures have proven to be insufficient over the long term. TerraGreen is all about bringing reform in

the existing energy supply structure and transition to a new energy system through the use of the blockchain technology that can fundamentally reduce GHG emissions and mitigate waste pollution.

TerraGreen is an ecosystem, where renewable energies are tokenized and can be used by the community in exchange for fiat currency or payment for consumed energy. But we are not stopping there, we want to use the blockchain technology in a way that users can monitor how the energy is produced and what it is used for.

Renewable Energy Technology Collaborations

Collaborating Companies

TerraGreen has been in collaborations with companies inside and outside of the energy sector to produce renewable energy technologies in more efficient, reliable and sustainable ways. Increasingly, these collaborations have led to the development of new technologies namely the Biomass Gasification and the Hydrogreen Amplifier. The collaborations partners are:

Technology Descriptions

Fluidised Bed Biomass Gasification Technology

The developed gasifier system consists of two different reactors, which each operate a fluidized bed. The thermo-chemical conversion starts when solid fuel particles enter the gasification chamber, where drying, devolatilization and partially char gasification takes place at a temperature of about 850 °C. Within the gasification reactor steam is used for the fluidization and as gasification agent. The necessary heat for the gasification is provided by circulating bed material. The bed material is circulating between the gasifier and a second fluidized bed reactor, which is used as a combustion chamber. Within the combustion chamber remaining biochar from gasification is combusted and the bed material is heated up to around 930 °C. The hot bed material leaves the combustor at the top as it is operated as a circulating fluidized bed. Afterwards the hot bed material is separated from the hot exhaust gas stream with a cyclone and returned to the gasification reactor. This closed loop enables the heat exchange between the two reactors at adequate operation temperatures and a regeneration of the bed material.

Figure 01: Fluidised Bed Biomass Gasification
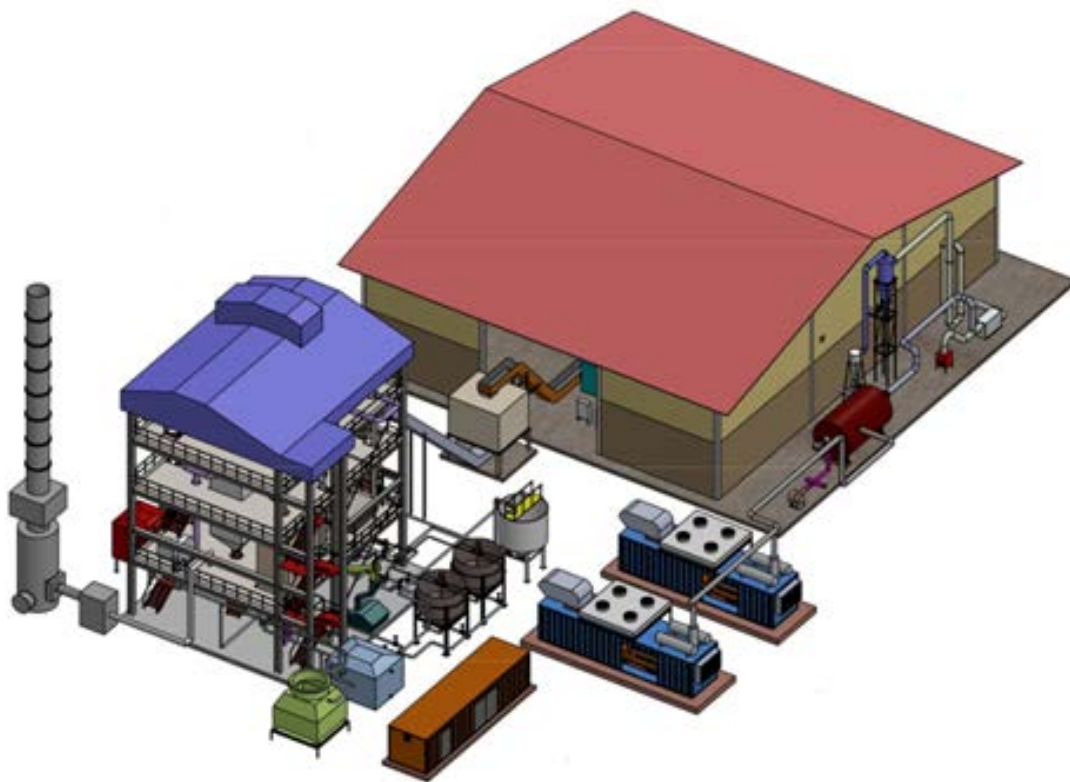
Figure 02: Complete Fluidised Bed Biomass Gasification Power Plant

Hydrogreen Amplifier

The Hydrogreen Amplifier is designed to cut fuel costs in petrol and diesel engines. It has been tested and proven by various independent laboratories to cut greenhouse gases and harmful engine exhaust besides reducing the consumption of fossil fuel intake. Essentially, the Hydrogreen Amplifier, a renewable energy product, produces hydrogen and oxygen gasses via the electrolysis process. On the basis of fossil fuel demand, the green gasses supplement the fuel and increase combustion force in the engine chamber.

Figure 03: Hydrogreen Amplifier Built-in Parts

Figure 04: Hydrogreen Amplifier Built-in Parts

Figure 05: Various Capacity of the Hydrogreen Amplifier for transportation and industrial sectors applications

Table 01: Specifications of the Hydrogreen Amplifier

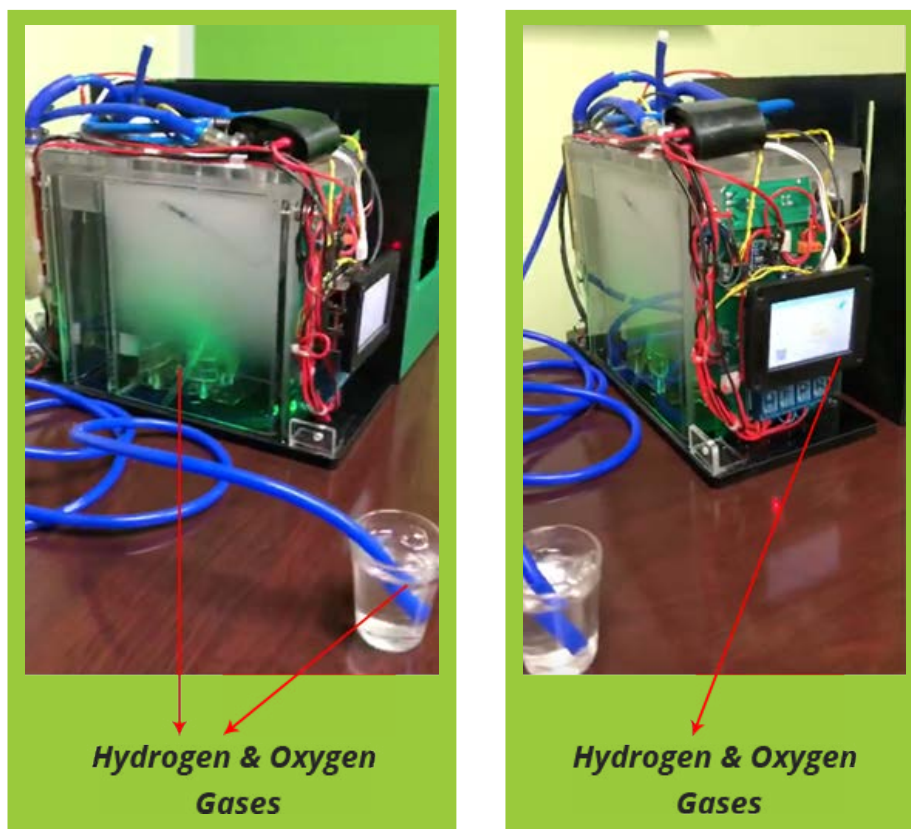| Specifications	Amplifier H1	Amplifier H2	Amplifier H3
Input Voltage	12V/24V	12V/24V	12V/24V
Input Current	0.5-1.0A	1.0-1.5A	1.5-2.0A
Maximum Power Consumption	50W	55W	60W
Operating System	Ignition Control	Ignition Control	Ignition Control
Electrolysis Method	H.O.D System	H.O.D System	H.O.D System
Output Flowrate	0.5 slpm	1.0 slpm	1.5 slpm

By introducing the Hydrogreen Amplifier onto the TerraGreen Platform, we create a direct connection to the customer and a possibility for everyone to reduce fossil fuel consumption and following the idea of TerraGreen with making the earth a greener place. Usage of the Hydrogreen Amplifier can be tracked and transformed into green energy tokens, which are connected to the TerraGreen platform.

TerraGreen Stages

TerraGreen will be developed in four stages. Starting with use cases in stage one and two. TerraGreen is looking to revolutionize the energy generation and distribution system in the long run. But we are beginning with use cases of real projects to create trust and start the development of the platform.

Stage One

The first stage is made to create the first energy tokens and develop the TerraGreen platform. Energy is produced by power plants and delivered to the transmission company in exchange for money. This is regulated by the power purchase agreement. Energy distributors buy the energy and deliver it to their customers – the consumers. In the first stage and use case of TerraGreen we are looking at the energy creation. The scope of the stage is to set up renewable energy power plants and give investors a way to support green energy easily. Investors can put money into new green energy projects through the TerraGreen Platform. Dedicated tokens are created for every project, depending on the energy output and size of the project. With buying those tokens the investors can actively participate in the renewable energy production and get a return of investment.
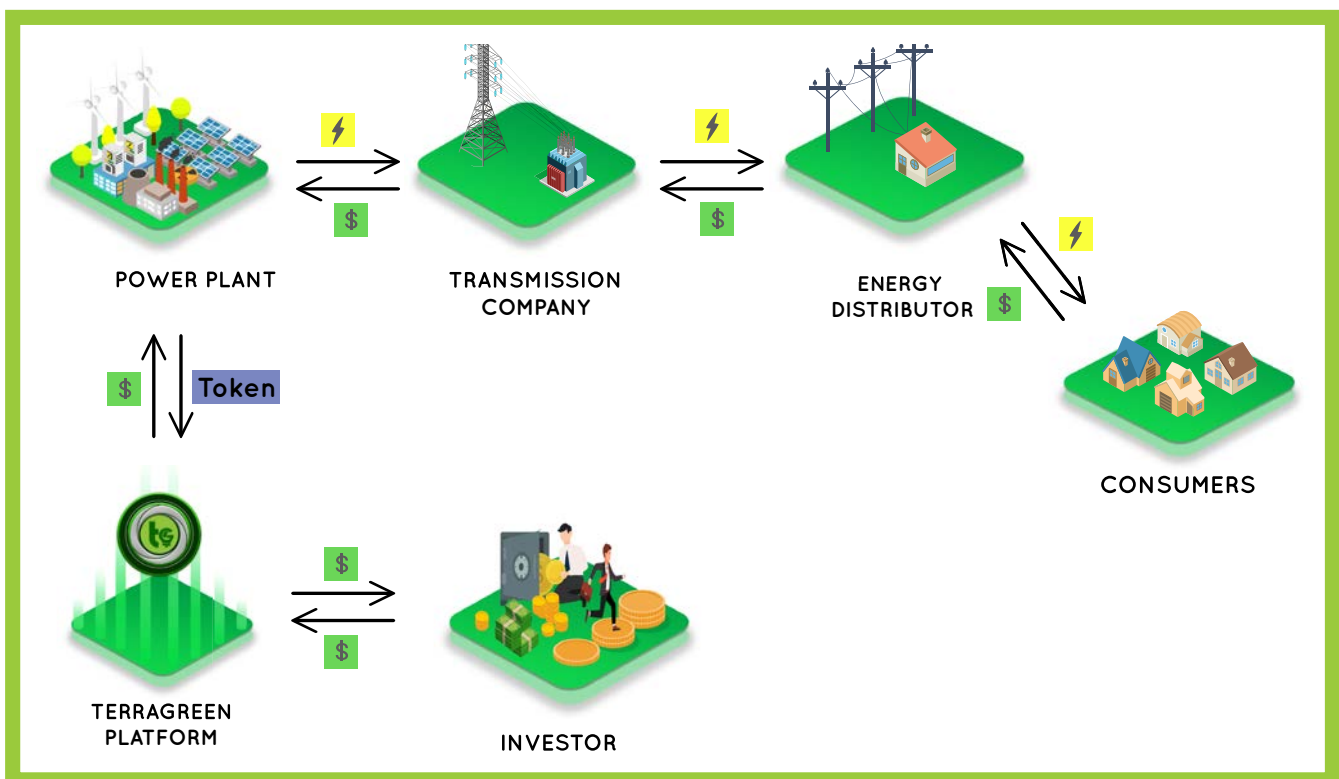
Figure 06: Stage One of Energy Token DApps Development in TerraGreen Platform

The first renewable energy project is described in a later section. In cooperation with different renewable energy companies there are in fact a lot more projects in the line, which will be integrated later. We are not only looking at the generation of electrical power, but also for biofuel and hydrogen production for supporting and sustaining a hydrogen-based economy. In that stage the TerraGreen platform will act as a connection bridge between investors and renewable energy projects.

Token Creation by Renewable Energy Projects
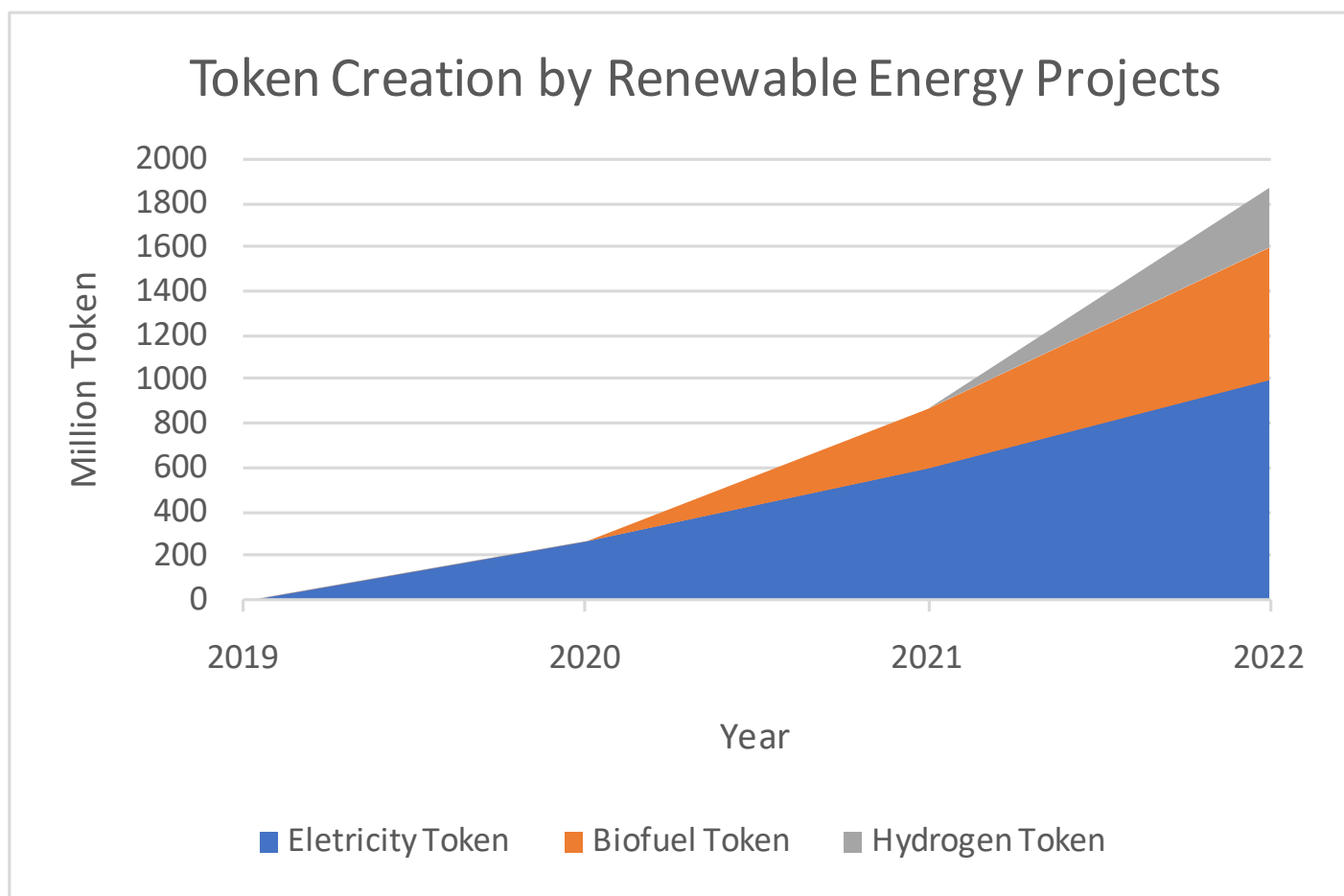
Figure 07: Stage One Projected Token Creations

With more projects, the number of created power project coins will rise.

Stage Two Till Four

Moving further along the stages, TerraGreen is able to take up more parts of the energy market. In the second stage, TerraGreen can set up partnerships with energy distribution companies, to accept specific energy tokens as a payment from the consumers. Those energy tokens can be bought at the TerraGreen platform and represent produced energy by renewable energy plants. Even though the energy creation and energy consumption from the consumer can not yet be connected at this stage, the consumer can be sure that the energy he buys with the tokens, is green energy. This is because the tokens available on the TerraGreen platform are dependent on the renewable energy power plants, which have been set up and are therefore also limited. The price of the tokens is not yet connected between power production and power usage at this stage. The token price is dependent on the current energy market price.
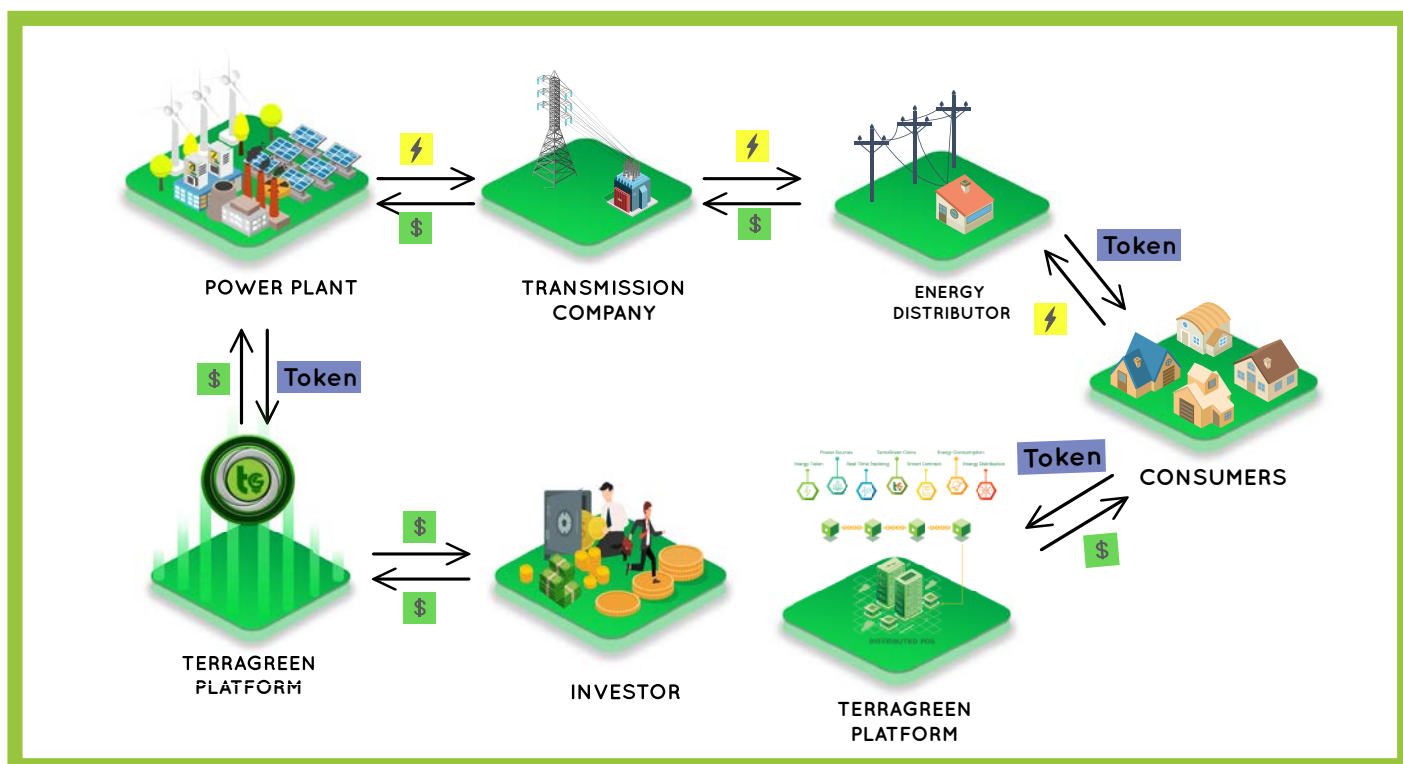

Figure 08: Stage Two of Energy Token DApps Development in TerraGreen Platform

Stage 3 will combine stage 1 and 2 to connect the energy token price that the consumer is buying with the token creation from the renewable energy power plants. This introduces the TerraGreen Exchange on the platform. Consumers can independently buy energy and investors can sell the energy to a price they set. These energy tokens are not speculative but have a fixed price. This is possible with the model of "stable coins". With the creation of energy, the power is sold to the transmission company. The returned money is then stored and backs the tokens, which are given to the investors. Those backed tokens don´t lose their value and can easily be sold at the Exchange.
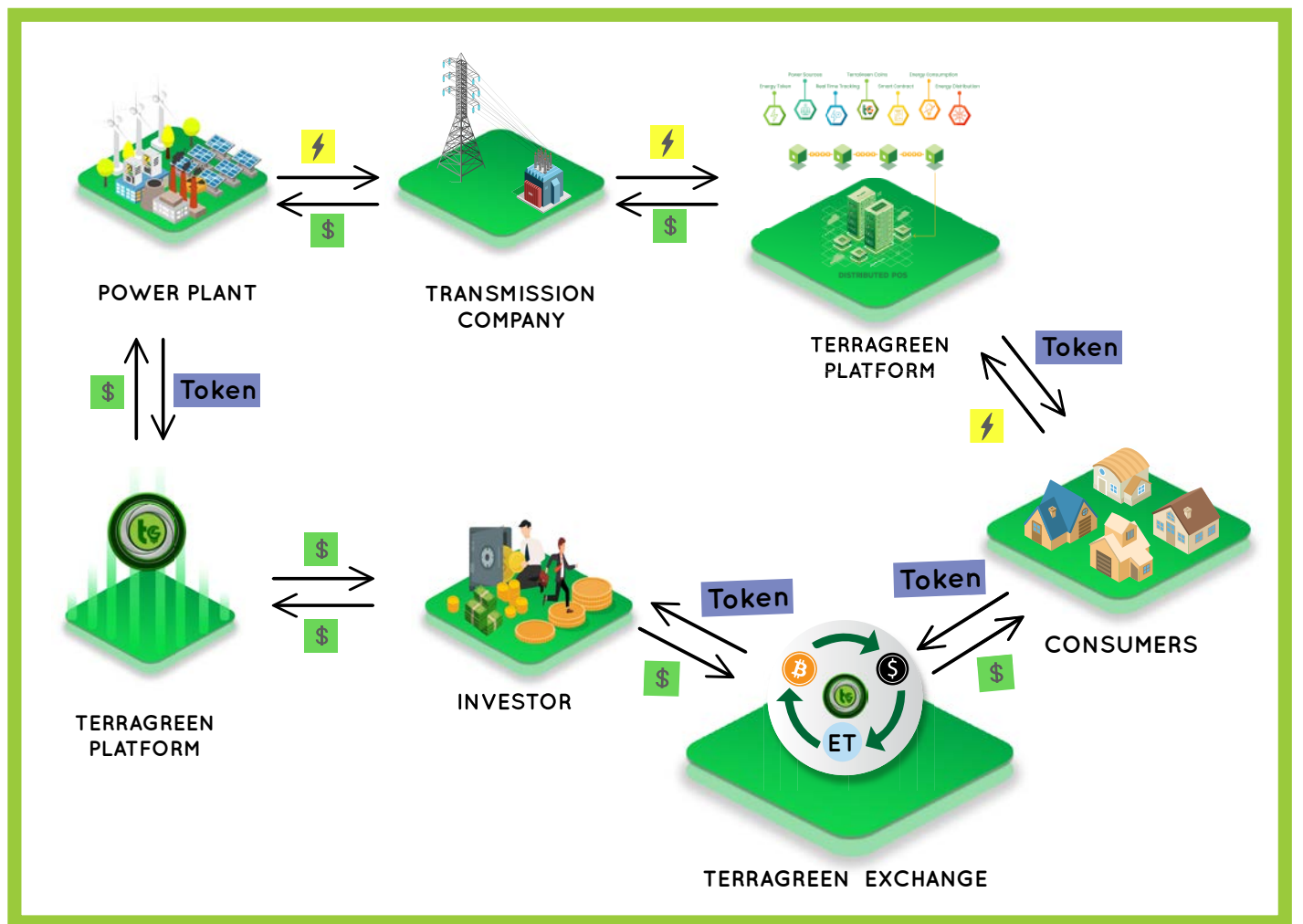
Figure 09: Stage Three of Energy Token DApps Development in TerraGreen Platform

In the last stage of TerraGreen, we are expanding the energy network to the transmission company. Getting into contract with various transmission line companies in various countries can only be done, when the TerraGreen platform has evolved to at least stage 3. By getting the last puzzle involved, we can slim down the payment processes a lot and directly deliver green energy to the consumer. Energy payments will just be done with the various tokens. Creation, transmission and usage of energy can then be tracked on the blockchain in real time, allowing an unprecedented optimization and revolution of the energy system as we know it.
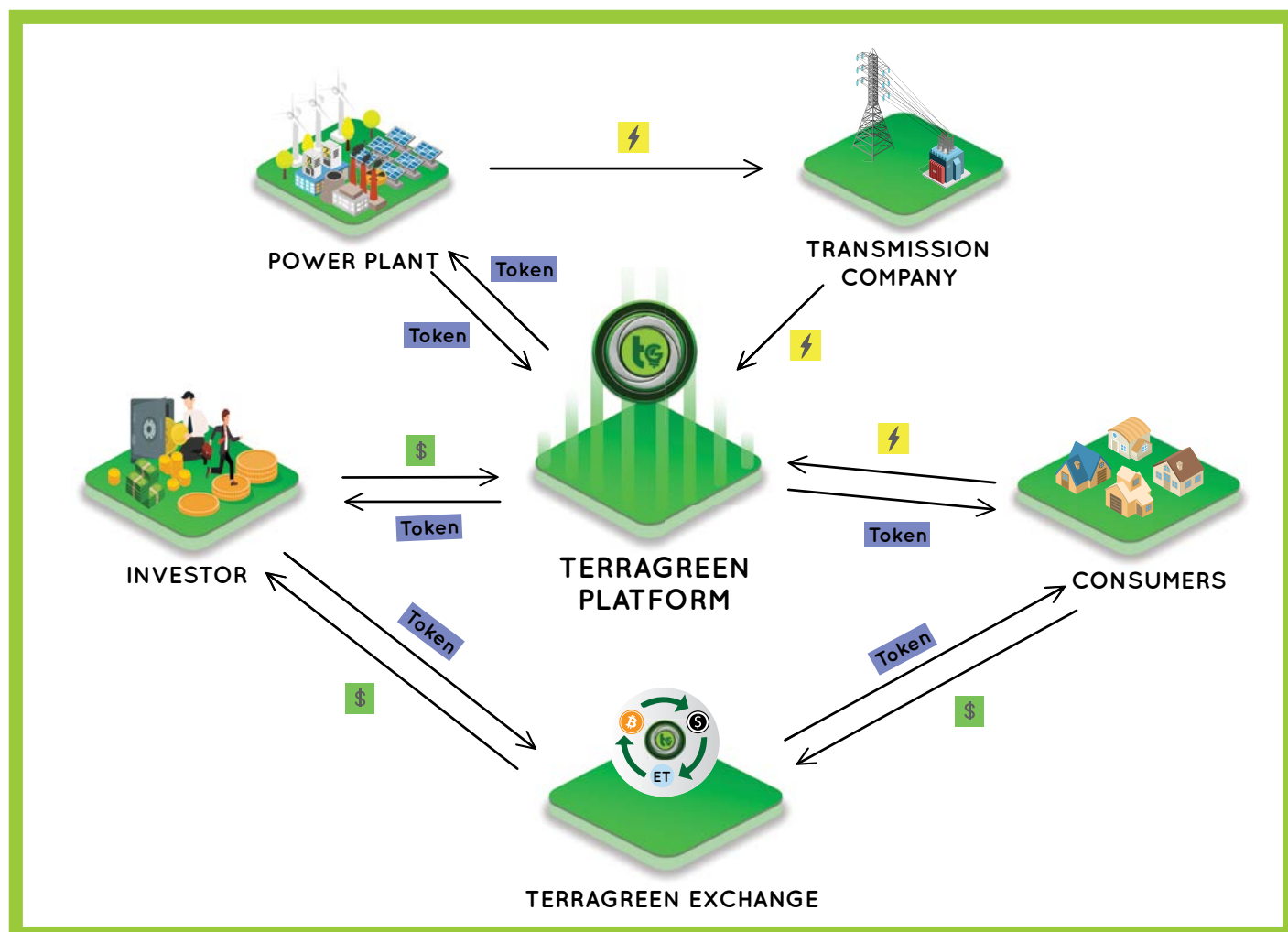

Figure 10: Stage Four of Energy Token DApps Development in TerraGreen Platform
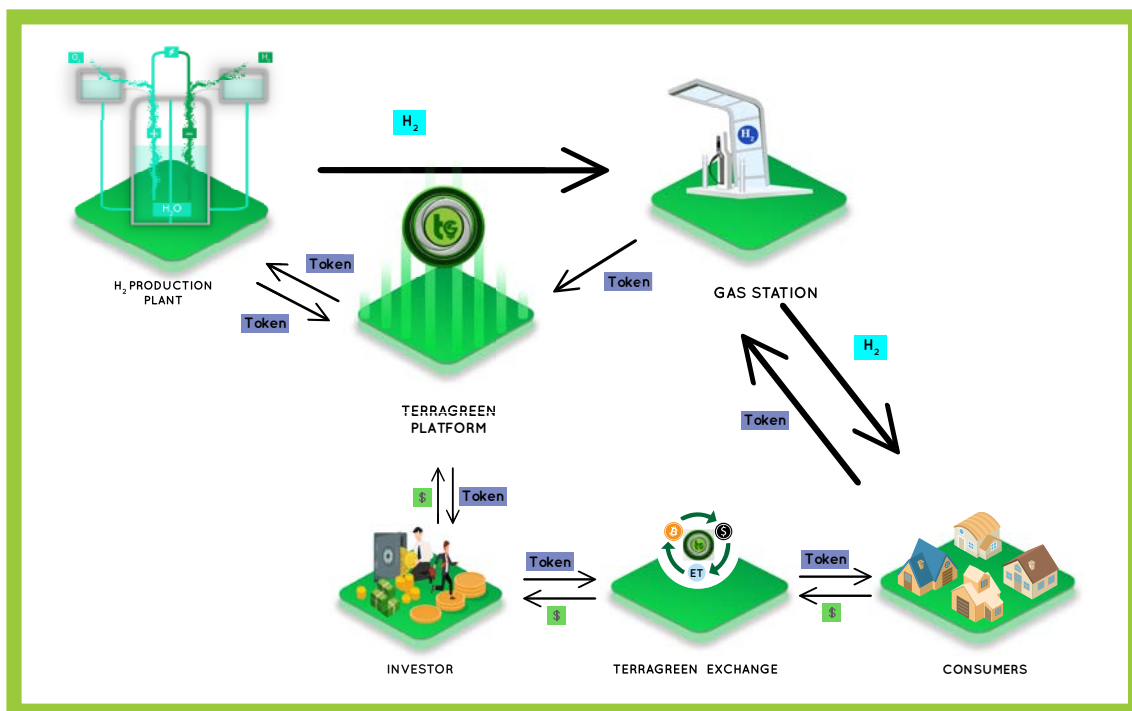
Figure 11: Hydrogen Energy Token DApps Development in TerraGreen Platform
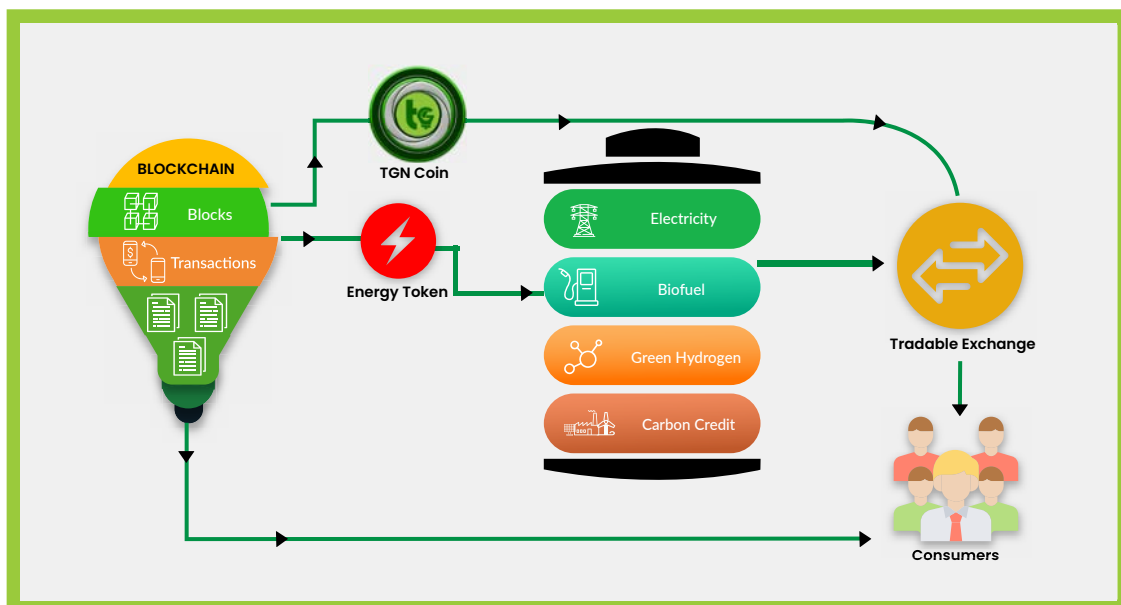
Figure 12: Different Renewable Energy DApps Creation in TerraGreen Platform

Use-Case: Hydrogreen Amplifier in India

The state of Gujarat, in India is one of the fastest growing metropolitan areas in the world. The number of registered motor vehicles in Gujarat was about 19 million for 2015. This immense demand for mobility comes along with big environmental challenges. TerraGreen counters rising fuel demand and emission with the latest technology. For this reason, we are going to roll out the implementation of the Hydrogreen Amplifier first where it is needed most.
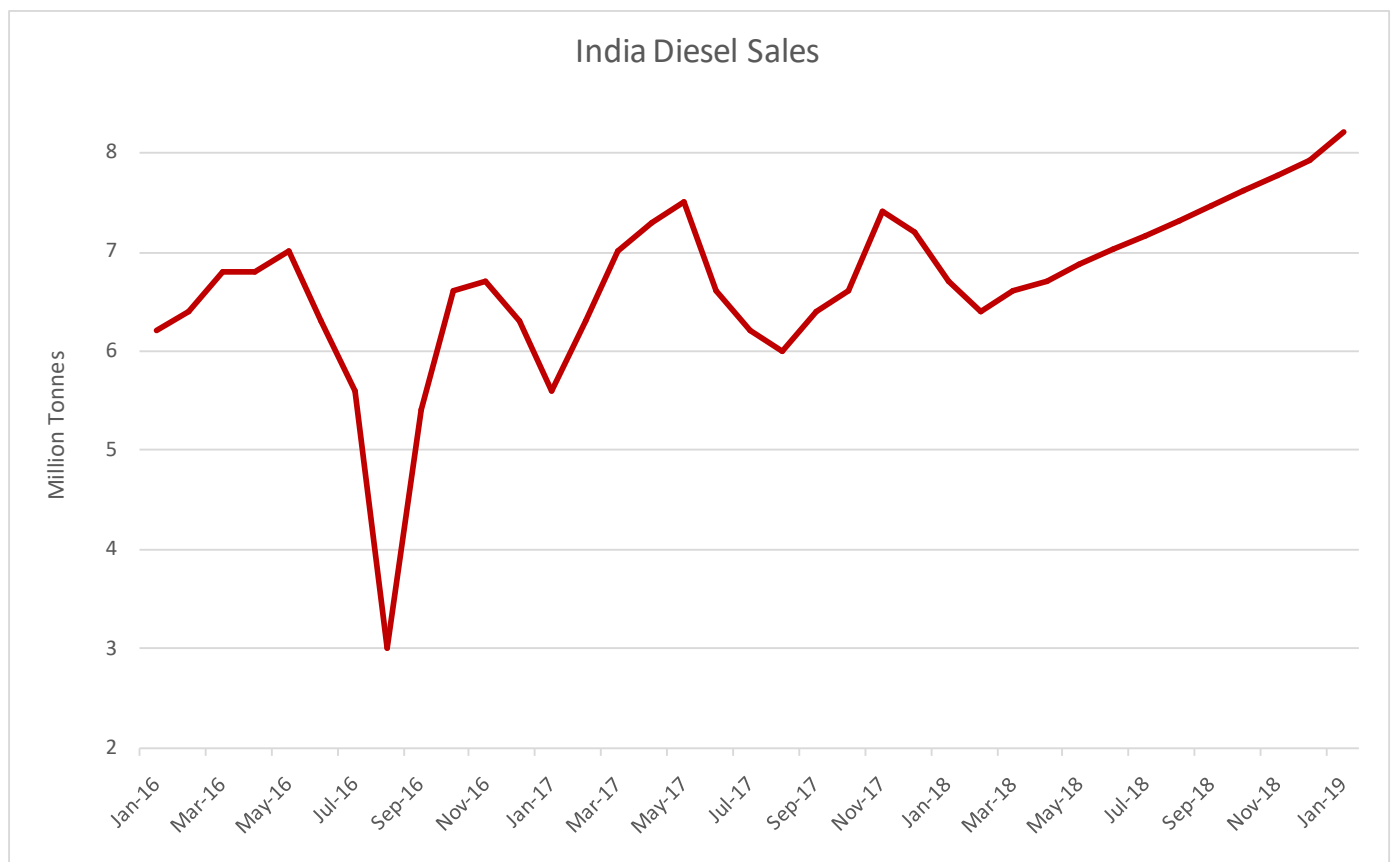
Figure 13: India diesel sales up to Jan 2019

With the integration of the Hydrogreen Amplifier in cars, there is a proven fuel saving of up to 20%. Additionally, the emissions of the burned fuel will be reduced by up to 15%.

Figure 14: Integration of the Hydrogreen Amplifier

With the emission of the transport sector at 200 Mt CO_2 per year and a market capitalization of 1%, we can expect a reduction of 400 000t CO_2 per annum. This saving will be converted to energy tokens on the Terra-Green platform.

Malaysia Renewable Energy Act 2011

In accordance with Renewable Energy Act 2011, the Malaysia government has introduced a Feed-in Tariff (FiT) mechanism to promote the growth of the renewable energy sector, which implementation is administered, managed, monitored and reviewed by the Sustainable Energy Development Authority (SEDA) Malaysia. With the support of the FiT mechanism, the utilities are obliged to purchase the electricity from a producer at a mandated price and thus guaranteeing access to the national grid at a favourable price per unit of electricity to take advantage of the enacted mechanism.

2.4MWe Biomass Gasification Power Plant

The technology, to be employed in the power plant, is a well-proven fluidised bed gasification system. The use-case plant will be using feedstocks in the form of forest and agricultural wastes. The gasification plant will be comprised of three units of gas engines, in balance supporting auxiliaries and ancillary plants. The biomass plant will be equipped with all the systems that would be required to make the plant in full compliance with the requirements of the Renewable Energy Power Purchase Agreement (REPPA) for prudent utility practices and with all statutory, regulatory, governmental and legal requirements. The power plant is designed to achieve an availability factor minimum of 85% throughout the entire 16 years of operation.

The plant converts treated biomass wastes into a medium calorific product gas. The produced gas is combusted in a gas engine for the production of electricity. The plant is capable for the production of 2.4 MW of electricity.

Figure 15: Layout of 2.4MWe Fluidised Bed Gasification Power Plant in Terengganu, Malaysia

Biomass Fuel Production Facility

The biomass fuel production facility is designed to produce briquettes from forest and agriculture waste materials. The facility is located within the compound of the Biomass Gasification power plant. The briquettes are used in the Biomass Gasification plant for the production of electricity.
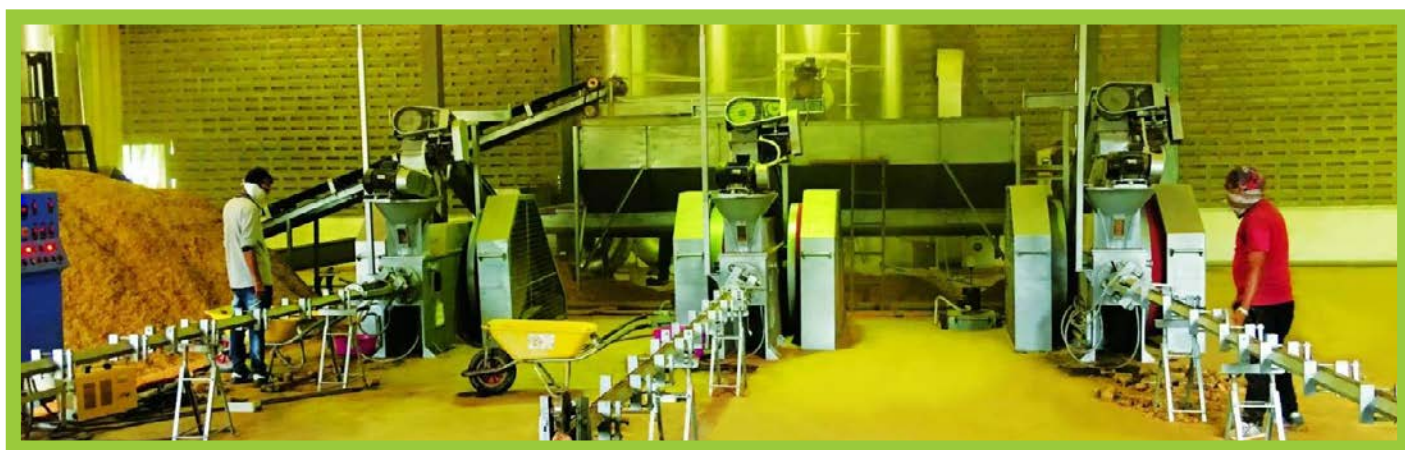

Figure 16: Fuel treatment and briquetting facility

Use-Case Stage Two: Electricity Transaction Validation Services

TerraGreen, in partnerships with electricity distribution companies in Cambodia, Malaysia and Central Africa Republic (CAR), plans to implement electricity retail DApps for the following purposes:

- Validation of electricity consumption
- Validation of payments
- Improve efficiencies in the electricity value chain

An overwhelming challenge to electricity distribution companies in these countries are malpractices in the form of revenue diversion. The TerraGreen energy tokens are introduced as a new form of distributed private utility tokens that will aid in electricity consumption and payment authentication. Through our blockchain technology, we can track and store information about energy creation and usage. This will ensure a reduction of potential fraud in energy consumptions and payments on account of the very resilience of the distributed ledger. The transactions are recorded and verified near-instantaneously before electricity units are issued to the consumer.

The TerraGreen ecosystem is the application host that allows the electricity consumers of distributed companies to gain access to the supply of energy by using the utility token as a means of energy payment validation on the blockchain. The minted utility token will be used to validate payments for electricity via a smart contract application service that will forward the utility token to the energy distributors and to the Proof of Stake Distribution Smart Contract.
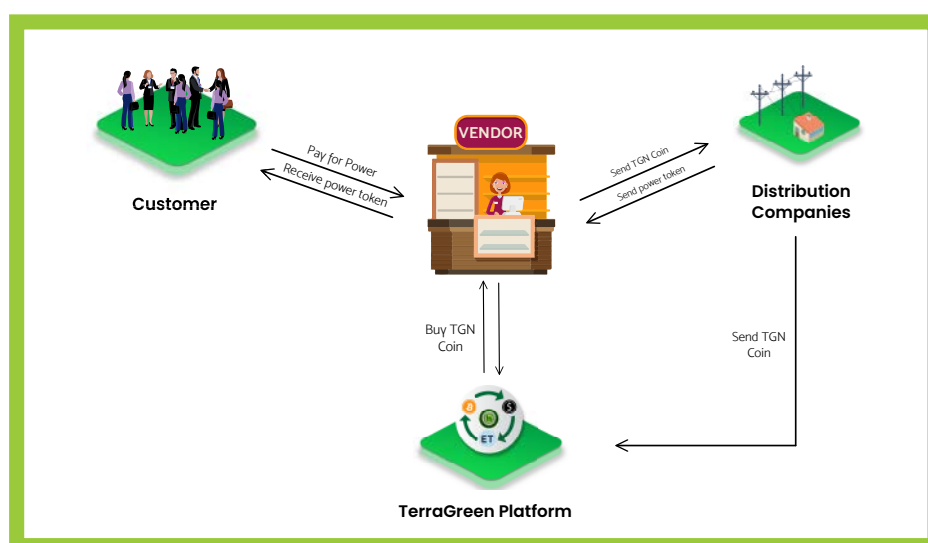

Figure 17 Electric Energy sales and smart contacts

The electricity distribution companies' customers fall under two categories:

1. Prepayment-Meter (PPM) Customers:

Electricity consumers with smart meters, who pay for energy before consumption

2. Postpaid or Credit Customers:

Electricity consumers with smart meters, who pay for energy after consumption.

TerraGreen Platform can be integrated with distribution companies' smart metering platform. The electric energy value chain consists primarily of the following market participants:

a. Energy consumers
b. Energy Sales Channels ("vendors" or "aggregators")
c. Utility Distribution Company
d. TerraGreen platform: Allocates tokens to distribution companies for energy trading and payment verification purposes.
e. Utility Vending System: Fiat-kWh exchange system serving as interface between Utility Distribution Company and Energy Sales Channels: Electricity consumers with smart meters, who pay for energy after consumption.

Primary commodities to be exchanged by participants above:

1. Fiat
2. TGN Token
3. KWh (units of energy)

Blockchain Technology

The native Blockchain of TerraGreen will allow a deployment of different DApps on the system. Since it is a platform for green energy, we do not support the massive energy waste done by proof of work consensus. For this reason, we will implement the latest dedicated proof of stake consensus to make our blockchain safe and efficient.

With the applications being deployed on the blockchain, we can transmit, store and analyse energy data in real time.
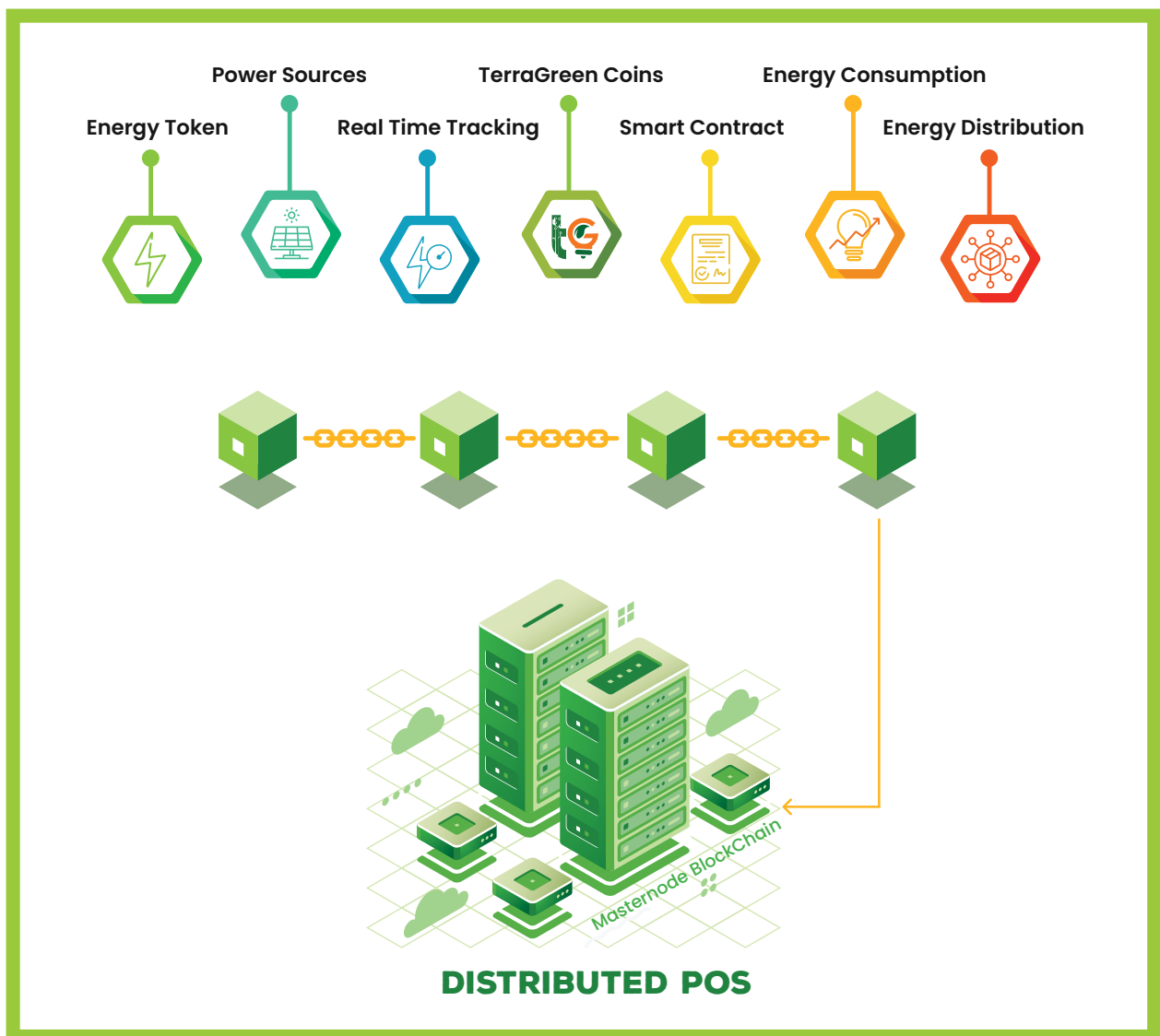
Figure 18: TerraGreen Platform for DApps Creations

Features of TerraGreen Platform

Lightning fast

The TerraGreen blockchain is lightning fast. It just takes 1 Sec of block time to complete any transaction.

Multilayer Protocol

A multilayer protocol will allow the storage and tracking of multiple data on the blockchain.

Easy to use UI/UX

TerraGreen UI and wallet will allow users to follow the latest project developments and makes trading easy and safe.

Unlimited Sidechains

Unlimited sidechains allow the deployment of other projects and coins under the umbrella of the TerraGreen green energy platform.

Tokenomics – Market, Growth, Revenue

The TerraGreen platform coin (TGN) is connected in every token transaction to a small percentage and therefore "running" the system. This connection is done by smart contracts, which are implemented into the blockchain technology. An increased use of tokens and the platform will inevitably lead to an increase in use of the TGN and create a demand. An increased demand will then lead to a rise of the TGN value.

Each stage of TerraGreen has its own market and creates a new demand of the coin. Additionally, each stage will consist of multiple projects and markets where TerraGreen will be introduced.

The platform of TerraGreen will sustain not only through a rise of the TGN value, but also through a sophisticated fee system, which makes transactions on the platform favourable, but at the same time creates a revenue channel for ongoing development and improvement of the technology.

The growth of the TGN value will align with the stage development of TerraGreen and the supported green energy projects. In that way the TGN value is an indicator for how green our planet is:
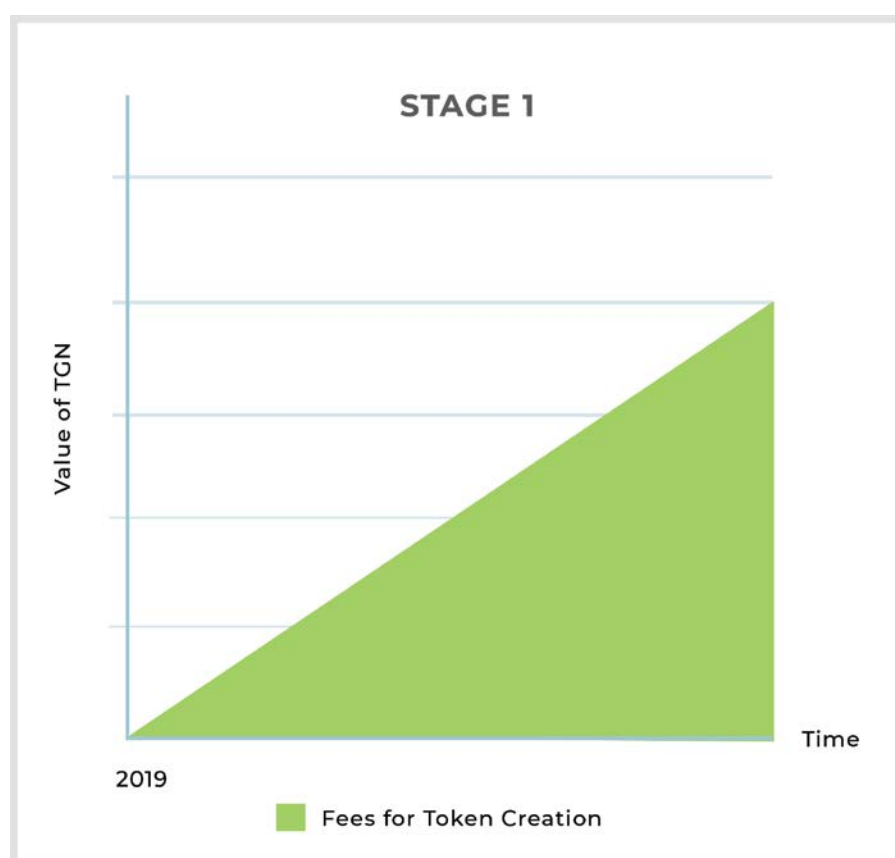

Figure 19: Trend of TGN coin growths in relation to token creation via projects deployed in Stage One

In the first stage the renewable energy projects are supported through the TerraGreen platform. Every project creates its own token, which is connected to the TerraGreen platform coin. The first revenue and growth channel is therefore in coin creation fees, to develop the platform. As various other projects join the TerraGreen platform, we will see different kinds of tokens and a basic growth. This growth is broken by Stage Two:
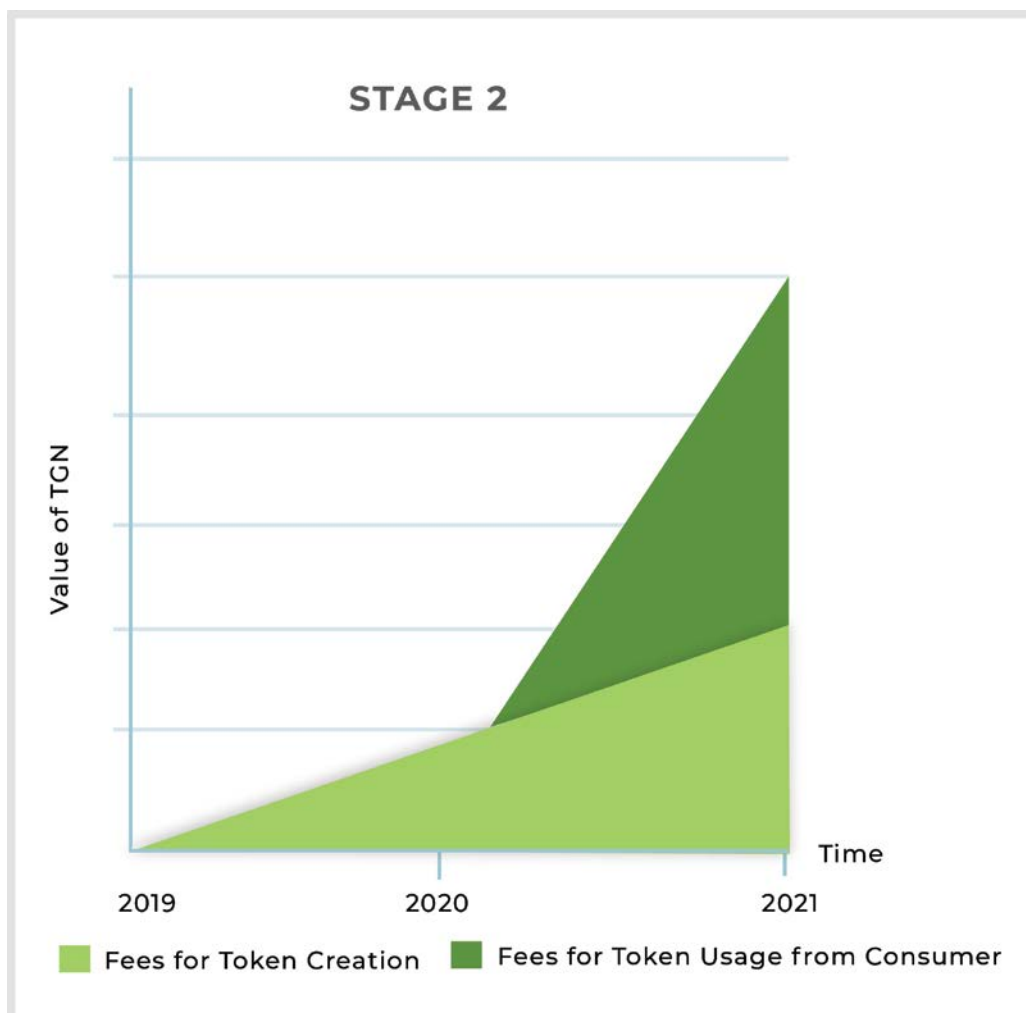
Figure 20: Trend of TGN coin growth in Stage Two

The second stage introduces the consumers with the energy tokens. In that way a new level of demand can be created, which will lead to a second revenue source and growth of TGN.
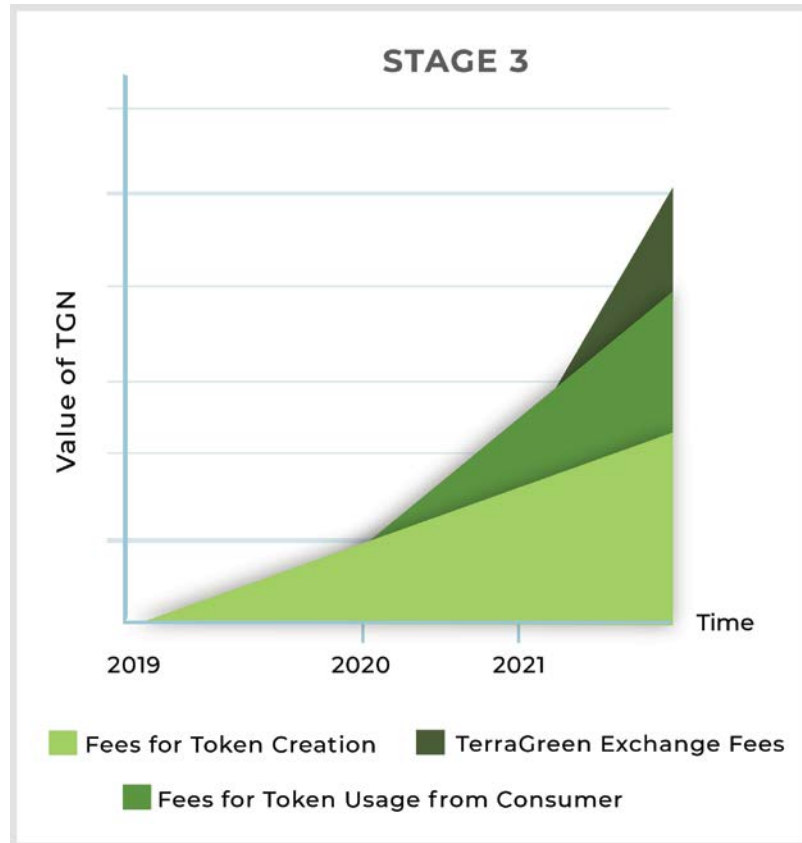
Figure 21:   Trend of TGN coin growth in Stage Three

Later Stage 3 and 4, with a final mass adoption will come into picture, pushing the TGN demand and value even further.
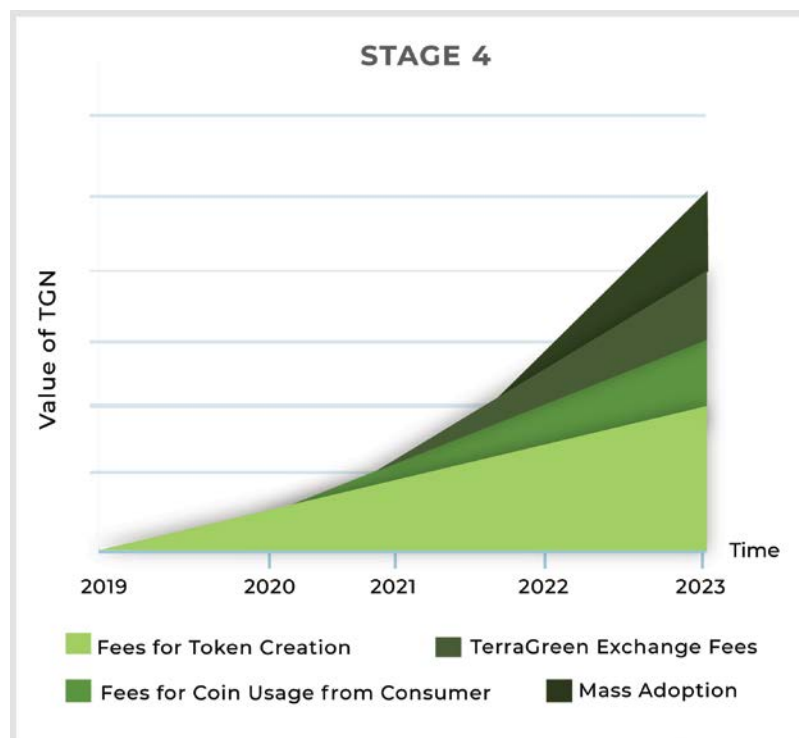
Figure 22:   Trend of TGN coin growth in Stage Four

Token Distribution, Sales, Supply

The total supply of TerraGreen token (TGN) is set at 270 million. We have constrained the initial circulating supply, which will therefore increase growth in demand. Only about 50% of the total cons will be unlocked at first after the ICO. 20% is reserved for rewards for the master nodes and the rest of the TGN is locked in vesting contracts, to be released in line with demand and performance. The tokens and funds have been allocated as pictured:

Figure 23: Asset Allocation

Figure 24: Coin Distribution

Roadmap

2018

Q1
- Formation of TerraGreen

Q2
- Platform feasibility test
- Proof of concept test
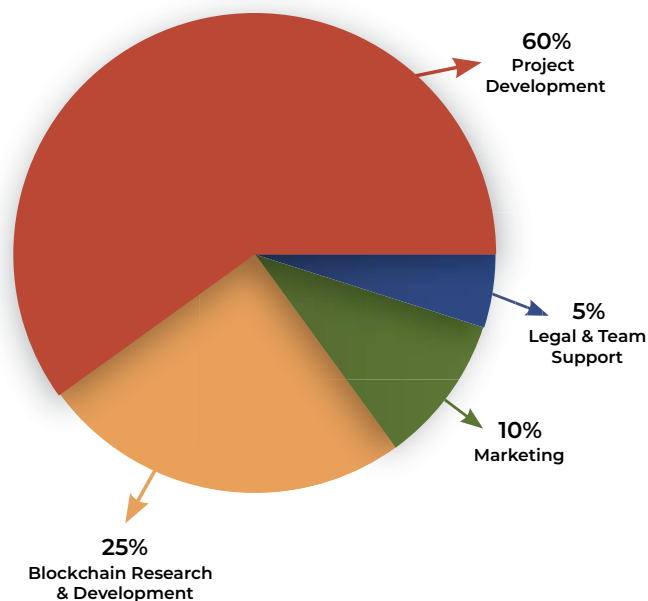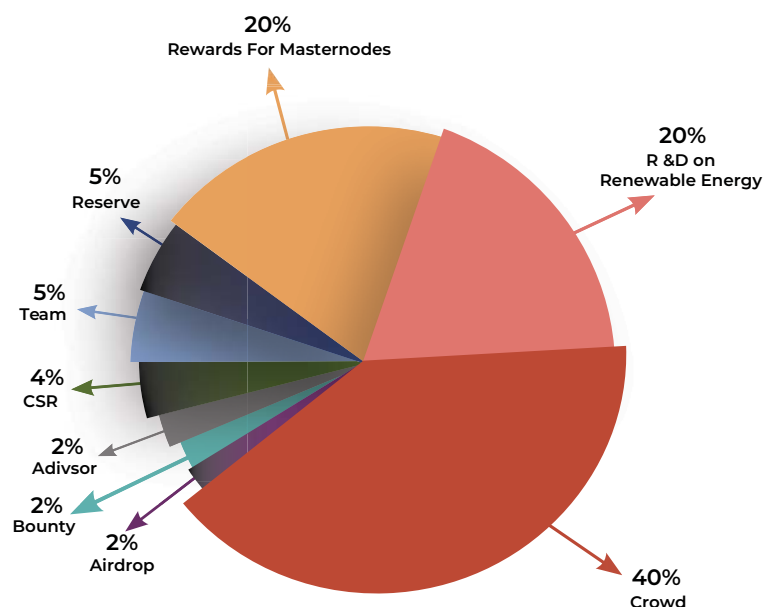- Collaborations with technology companies

Q3
- Starting development of TerraGreen Platform
- Launching of Official Website

Q4
- Partnering with renewable energy companiesAVI Renewables and Augustina Tradelink
- ICO Announcement, ICO Campaign targeting Social Media
- Private Presale

2019

Q1
- ICO launching (January)
- Blockchain Platform test
- Listing TGN Coin on Several Exchanges

Q2
- ICO Closing & KYC verification
- Coin Distribution & Escrow
- Launch of TerraGreen Wallet
- Development of Node software, Consensus Algorithm and Smart Contracts
- Power Purchase Agreement (PPA) for Use-Case 1: 2.4 MW Gasification Project
- Closing contracts of biomass waste supply for 2.4 MW Gasification project

Q3
- Lab and field test of the Hydrogreen Amplifier in India for emission and fossil fuel reduction in transportation and industrial sectors
- Test of Node software, Consensus and Blockchain Building Algorithms
- Development of the Token Creation Module

Q4
- Certification of Blockchain security by external audit
- Smart Contract Creation with AVI Renewables and AJIL Biofuel for Use-Case 1: 2.4 MW Gasification Project
- Financial closing of 2.4 MW Gasification Project
- Tests for Production of briquettes from acquired biomass waste in existing fuel treatment plants for 2.4 MW Gasification Project 2.4MW Gasification Project – commencement of fabrication of gasification technology and gas engine

2020

Q1
- Implementation of AVI Renewables DApp and Token Distribution for Use-Case 1: 2.4 MW Gasification Project
- Smart Contract Creation for the Hydrogreen Amplifier
- Development of Energy data storage and Tracking for TerraGreen Blockchain

Q2
- 2.4MW Gasification Project – commencement of civil & structural activities
- Connecting Emission Reduction and Fuel Savings to the TerraGreen Platform – Creation of a DApp for the Hydrogreen Amplifier
- Large-scale Manufacturing of Hydrogreen Amplifier device

Q3
- Collaboration with energy distribution companies in Cambodia, Malaysia and Central Africa Republic
- Mass supply and integration of Hydrogreen Amplifier device in transportation and industrial sectors in India, Indonesia, Malaysia and Sri Lanka

Q4
- Implementation of Emission Reduction and Fuel Savings Web Platform on Blockchain
- Tests for Production of briquettes from acquired biomass waste in existing fuel treatment plants for 2.4 MW Gasification Project
- Development and Integration of energy distribution functionality on TerraGreen platform

2021

Q1
- Test of Gasification performance of produced briquettes on pilot scale for 2.4 MW Gasification Project
- Initial Operation Date (IOD) of 2.4MWe Gasification project Smart Meter integration for TerraGreen blockchain

Q2
- First Test of a Smart Meter on TerraGreen Platform Commercial Operation Date (COD) of 2.4M We Gasification project

Team

TerraGreen's team is a group of passionate individuals with multi-year experience in energy, finance and digital transformation sectors.
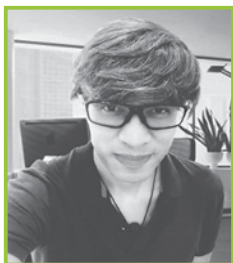
Brad Lee
Founder & CEO

Hannes Klobe
Co-founder & CTO

P. Nahak
COO & Blockchain
Development Specialist

B. Viresh
CIO

Joylin F. Telagen
CMO

Sabina Abdul Aziz
Biomass Wast, Energy
Corp & Smart Contract
Developer

Tejaswi P.
UI/UX Designer

Hiren Gamit
Digital Marketing Expert

Terry T. Robinette
Apps Developer

Advisors

Arturas Svirskis
Advisor

Anthony Abunassar
Advisor

Hamza Khan
Advisor

Krystelle Galano
Advisor

Benedict Okole
Advisor

Meshach Ishaya
Advisor

Marie Victoria
Advisor

Kerwin Cabreza
Advisor

Disclaimer

This whitepaper and the information provided on the TerraGreen website do not represent a financial document that describes TerraGreen financial security of any sort and it also does not represent an offer of securities or solicitation for investment for potential investors in any jurisdiction. TerraGreen coins (TGN) issued are not intended to constitute guarantees against collective investments by the potential investors in any jurisdiction. Please take note that your decision to purchase TerraGreen coin and the contribution towards TerraGreen does not involve the exchange of cryptocurrencies for any form of securities, investment and/or form of ordinary shares in TerraGreen or any other companies.

On the regulatory requirements, we clearly state hereby that no such authority has examined or approved any information provided in the whitepaper. As such, the publication, distribution, and/or distribution of this whitepaper shall not infer the pertinent laws, regulatory necessities or rules have been complied with. Henceforth, the founders, team members and any third party that involved in TerraGreen development shall not be responsible & liable for any direct, indirect, incidental, consequential, or any other losses of any kind including but not limited to loss of revenue, arising out of or in relation to acceptance or reliance of this whitepaper or any part thereof and/or information obtained from TerraGreen webpage.

The material, data and information provided in the whitepaper and webpage, statements made in press releases or in any place available to the public and oral statements that made by TerraGreen, its founders, team members and any third party involved in TerraGreen development and/or acting on behalf of TerraGreen, are only forward-looking statements including but not limited to financial and business strategies, plans and future prospectus of the renewable energy industry, which TerraGreen is in. Therefore, neither TerraGreen, its founders, team members and any third party involved in TerraGreen development warrants, undertakes and/or guarantees that the actual performance or accomplishments of TerraGreen shall be as stated in these forward-looking statements.

Some information provided in the whitepaper include the current global trends and forecast related to the renewable energy industry. This information has been obtained from reports and studies as well as market research, publicly available information and industry publications. This information is obtained from sources believed to be reliable, but TerraGreen, its founders, team members and any third party involved in TerraGreen development and/or acting on behalf of TerraGreen cannot give assurance as to the accuracy or completeness of such included information.

Therefore, it is essential and basic that the information provided in this whitepaper and the TerraGreen webpages should be considered as financial and business advice. Investors and TerraGreen coin holders should be aware that there are many variables at play at any given moment and hence an independent advice should be sought where appropriate. TerraGreen, thereby does not make and hereby disclaims any representation, warranty or undertaking in any form to any entity or person including but not limited to any representation, warranty and/or undertaking in the context of the veracity, validity, and reliability of any of the information provided in this whitepaper.