WHITEPAPER

DECENTRALIZED GREEN ENERGY

www.gecoin.biz

Content

Abstract

Decentralized Green Energy is a virtual reality platform powered by the Binance blockchain. Users can create, experience, and monetize content and applications. Land in Decentralized Green Energy is permanently owned by the community, giving them full control over their creations. Users claim ownership of virtual land on a blockchain-based ledger of parcels. Landowners control what content is published on their portion of land, which is identified by a set of cartesian coordinates (x,y). Content can range from static 3D scenes to interactive systems such as games.

The land is a non-fungible, transferrable, scarce digital asset stored in a Binance smart contract. It can be acquired by spending a BEP-20 token. It can also be used to make in-world purchases of digital goods and services.

People are spending increasingly more time in virtual worlds, for both leisure and work. This occurs predominantly in 2D interfaces such as the web and mobile phones. But a traversable 3D world adds an immersive component as well as adjacency to other content, enabling physical clusters of communities.

Unlike other virtual worlds and social networks, Decentraland is not controlled by a centralized organization. There is no single agent with the power to modify the rules of the software, the contents of land, the economics of the currency, or prevent others from accessing the world.

This document lays out the philosophical underpinnings, technical foundations, and economic mechanisms of Decentralized Green Energy.

Introduction

Our imagination is much larger than the world we live in. But the world we live in is limited by our human body, the laws of nature, physics, and time.

Welcome to Green Energy, the realistic VR Metaverse built on the Blockchain. Welcome to a world without limitations.

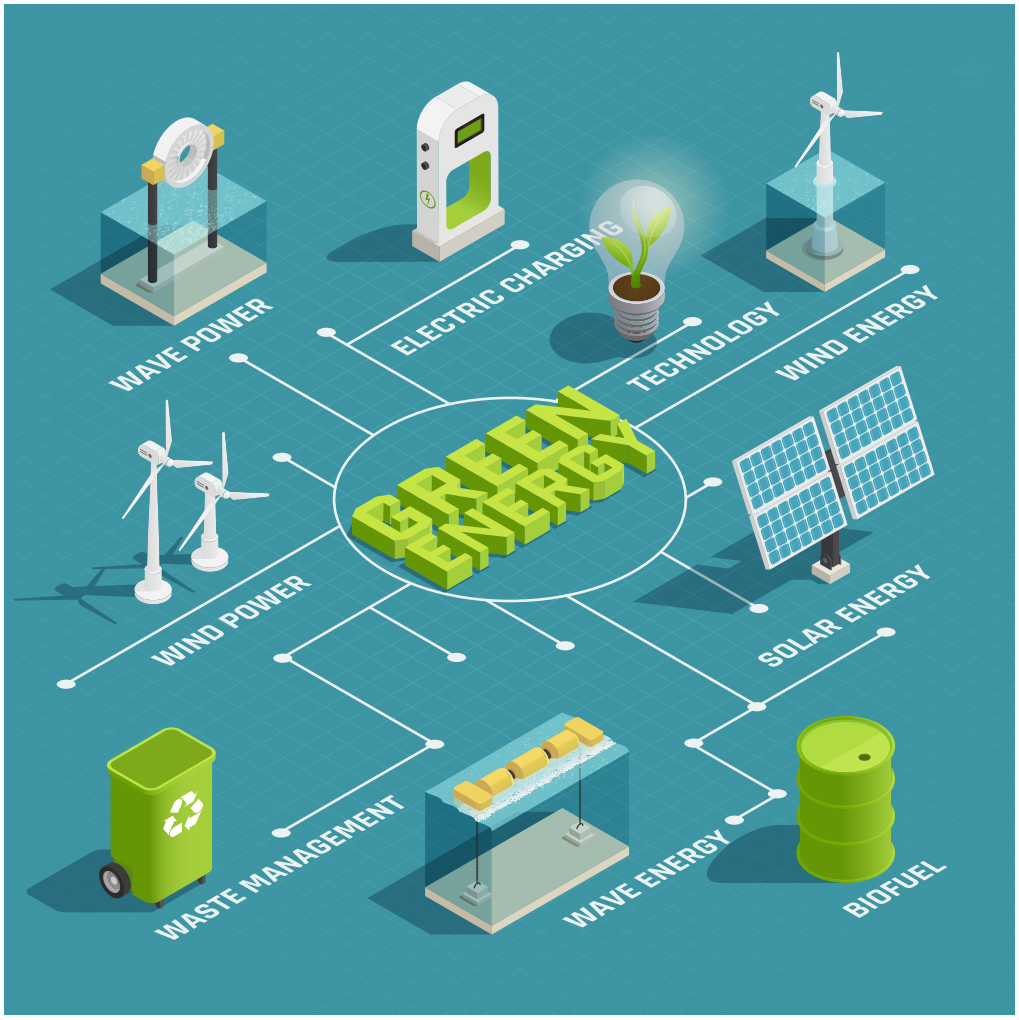
Free for everyone to visit and explore, Green Energy, will replace our current experiences of TV, cinema, business communications, education, entertainment, shopping, commerce services, even search, and much more.

Imagine a world where you can...

- Be anything you want to be.
- Create anything you can imagine.
- Explore a world full of adventures.
- Spend the afternoon visiting the Moon without a space shuttle or relaxing on the beach.
- Jump ten meters or fly free as a bird.
- Commute to work or school by simply putting on your VR headset.
- Have face-to-face in-person meetings on the other side of the world without leaving your living room.
- Hang out with your friends, go shopping, play games, or just explore.
- Attend seminars and conferences.
- Watch live sporting events and concerts.

Renewable energy sources are indigenous. and can therefore contribute to reducing dependency on energy imports and increasing security of supply. Development of renewable energy sources can actively contribute to job creation , predominantly among the small and medium sized enterprises which are so central to the Community economic fabric, and indeed themselves form the majority in the various renewable energy sectors. Deployment of renewables can be a key feature in regional development with the aim of achieving greater social and economic cohesion within the Community.

The expected growth in energy consumption in many third countries, in Asia, Latin America and Africa, which to a large extent can be satisfied using renewable energies, offers promising business opportunities for European Union industries which in many areas are world leaders as regards renewable energy technologies. The modular character of most renewable technologies allows gradual implementation, which is easier to finance and allows rapid scale-up where required. Finally, the general public favours development of renewables more than any other source of energy, very largely for environmental reasons.



Mission

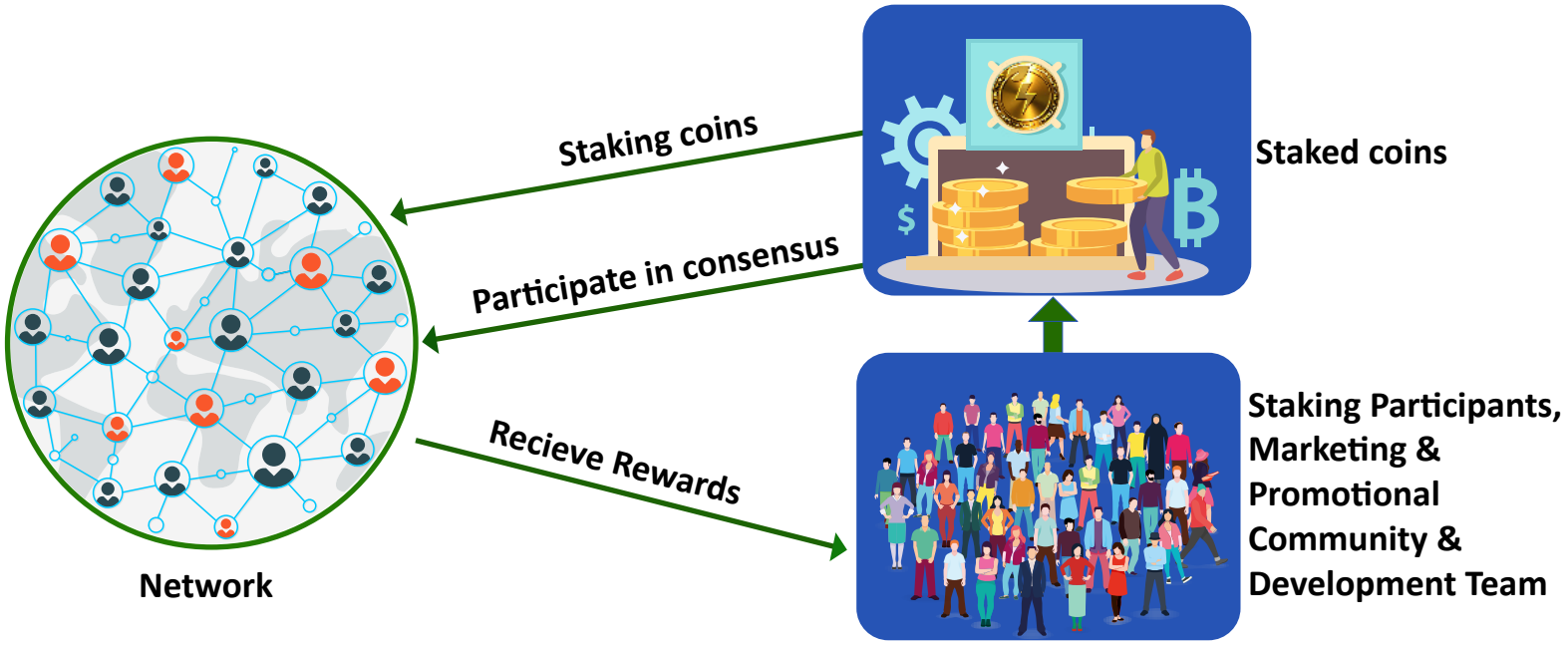
The mission of the Green Energy Solar Mission is to establish India as a global leader in solar energy by creating the policy conditions for its diffusion across the country as quickly as possible. Green Energy's plan called for a maximum-maximum installed solar in the coming years.

Vision

Green Energy’s overall vision for the role of renewable energy in its energy economy is to create an energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy, thus contributing to sustainable development and environmental conservation.

Proof of Stake in a Nutshell

A Proof of Stake (POS) algorithm is a type of consensus algorithm that is used to reach an agreement across a distributed network. As such, it is, together with proof of work, among the key consensus algorithms for blockchain protocols. Proof of stake has the advantages of security, reduced risk of centralization, and energy efficiency.



Proof of Burn

The burn protocol requires users to burn their coins in order to mine on POB block-chains. The users send their coins to a verifiably unspendable address or an eater address.

24% Auto Burn on Sell GE Coin

Tokenomics

Token Name	Decentralized Green Energy
Token Symbol	GE
Technology	BEP-20
Total Supply	900,000,000
Contact Address	0X0d9028f9f14a8ca47b5d4e1c6ccfc7cb363ff4fd

Token Distribution

- 3% Staking Participants
- 3.9% Devlopment Team
- 26.1% Marketing and Promotional Community

Roadmap

Phase - 1

Pancakes Trust Wallet MetaMask Staking/-Farming Gecoin V2 on web3.O Coingecko, Start auto Burning token. coinmarketcap listing.

Phase - 2

Starting the project in solar village and solar city, list our token international exchange like Hotbit, Wazirx, Coindcx.

Phase - 3

Start the coin use in retail merchant, list the big exchange Binance, Kucoin, Huobi exchange.

Phase - 4

Start our own blockchain.

Utility

Charging Station

Metaverse project

Solar City

Solar Village

NFT Project

Renewal Energy

Metaverse

Green Energy is a Blockchain-based MMORPG in Virtual Reality with Realistic Graphics built on the Unreal Engine, created and owned by its users. It is a universal platform that will connect games, decentralized applications, and virtual realities (a Metaverse).

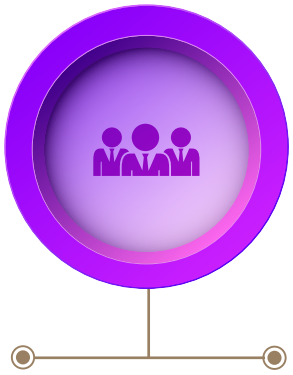
Our revolutionary development, the combination of the latest generation of emerging technologies, a highly skilled, experienced and competent team together with strong, market-leading strategic partners, means we are now able to offer users an experience unlike anything ever seen before.

We have designed Green Energy from the ground up with our citizens empowered to build and develop the future of the world themselves, with the world evolving and living without its original creators.

Built on the blockchain, all assets, whether received in the game or directly created by the users, are registered on the blockchain as NFT's. Citizens will be able to build, create, and securely trade both in and out of world NFT's securely within The Big Market VR.

EDUCATION

+ Schools & Universities
+ Training Courses



PRODUCTIVITY

+ Business Meetings & Conferences
+ Government Services
+ Government Services

ECONOMY

+ Marketplace to Trade Goods & Services
+ A New World Economy
+ New Business Model Creation

ENTERTAINMENT

+ Gaming
+ Shopping
+ Sporting Events & Concerts
+ Explore, Rest & Relax

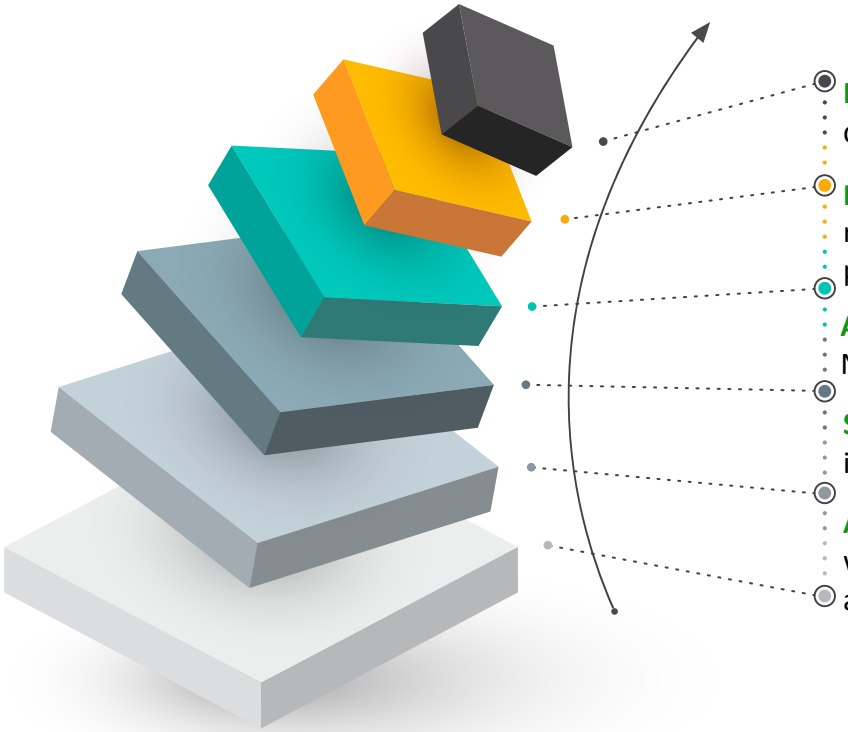
Green Energy has been developed to be future-proofed with a fully upgradeable engine and technologies. Built as a Decentralized Autonomous Organization, Green Energy will be fully owned by its citizens and the community, who are empowered to determine the future of the world and create the laws.

We will be creating a Never-Ending Motivating Economy where all creators and active citizens are regularly and fairly rewarded for their work, voting, reviews, completing Quests, staking VR Tokens, and also random airdrops within the world.

Existing businesses and brands will want to establish their presence in Green Energy, to connect with our citizens and support them by providing goods and services, both for digital delivery and in real life. A new generation of innovative entrepreneurs will be created, as traditional barriers to entry are removed and new opportunities identified.

Citizens and Businesses will be able to own their own digital real estate in Green Energy, buying their own VR Lands by auction, These lands can then be mined for resources and be able to build anything they can imagine.

Competitive market forces and financial rewards will motivate the community to create the most appealing, entertaining or desirable content, games, applications, or lectures for the community as quickly as possible.



People owning digital land registered on the block-chain will be able to either use, rent or resell.

Businesses will locate new retail stores and show-rooms offering lower costs 24/7 availability and perfect scalability.

Artists and Creators will be able to showcase their NFT's in the gallery and sell them in The Big Market.

Schools, colleges and universities will be transition-ing their learning over to VR in the coming years.

A new form of advertising will be created in VR, which will be more entertaining, engaging, targeted and with higher conversions.

The Market

It is undeniable that virtual reality will change our world. With timing being critical, we've been waiting for the right moment when technology and adoption will allow us to be the best on the market. Thanks to the combination of several newly created technologies, what we can send into virtual glasses has not been possible in virtual reality in multiplayer so far.

Bringing together a winning combination of best-in-class technology solutions, including Oculus, Unreal Engine, Blender, Reality Capture, Motion Capture, Face Capture, and our own proprietary technology, will both define trends and set firm foundations for our future evolution as we create a world without equal.

Our analysis and research into the marketplace and our competitors has provided us with significant insight into the challenges they face and the various mistakes they have made, whether through bad timing or inappropriate choices of technology that will restrict their future development and upgradability.

Unlike some of our competitors, Green Energy is a world built for the future. We have specifically designed to be fully upgradeable, with our graphics and world capabilities continuing to improve in-line with the latest innovations and trends in the VR, blockchain and gaming sector. We will never stand still. The world will continue to evolve into the future.

VR offers a revolutionary way of passing on information, advertising, presenting projects, communicating with people, and gaming. We have already arranged a large number of influential partners who already want to open their branch with us – for example, in the form of a virtual salon, showroom, or portal to an external application, etc.

The most important thing is for us to bring users to the platform and give them reasons to stay, explore, and keep coming back.

Imagine you want to open a retail store. How would you decide on your location? Will you open it in the middle of a populous city with a high footfall of passing traffic, or in the desert? Of course, in the city! Why? because there are no people in the desert. This is the problem that the other virtual worlds are currently unable to overcome. Their worlds are not engaging for the users, and they have no reason to keep returning.

If you want to present yourself in those other VR worlds, it is about as interesting as building your store in the middle of the desert.

That's why we have designed the entire world of Green Energy to entertain and reward users for completing quests, exploring, and discovering. There will be new opportunities every day, encouraging users to return and engage with the world. We will host competitions and give daily, weekly, or monthly rewards to users, and work with the top tier of In keeping with the gaming industry, we will be creating a series of quests and mini-games drawing on the rich experience gained from our predecessors.

The entire world of Green Energy is designed specifically for virtual reality, and the entire world is available in realistic graphics.

We will be targeting a wider demographic of users than our competitors. Our development technologies and scalable servers mean we are the first VR world to host millions of users online at one time. We will connect a rapidly growing community of crypto enthusiasts with an already very large community of players.

Our primary focus will be targeting users of cryptocurrencies and speculators as early adopters. These users already have a good understanding of blockchain technologies and will be able to easily understand our vision for the world and be an early adopter, purchasing VR Tokens as they believe in the potential of the project and see it as a good investment.

Our secondary target will be the giant global gaming community, which will want to become a pioneer of this new world.

We will become one of the main global marketplaces for NFT's (non-fungible tokens). Within Green EnergyVR, users will be able to create NFT Tokens (art, 3D objects, customization of other objects) and securely trade both their in-world and out-world NFTs in The Big Market VR.

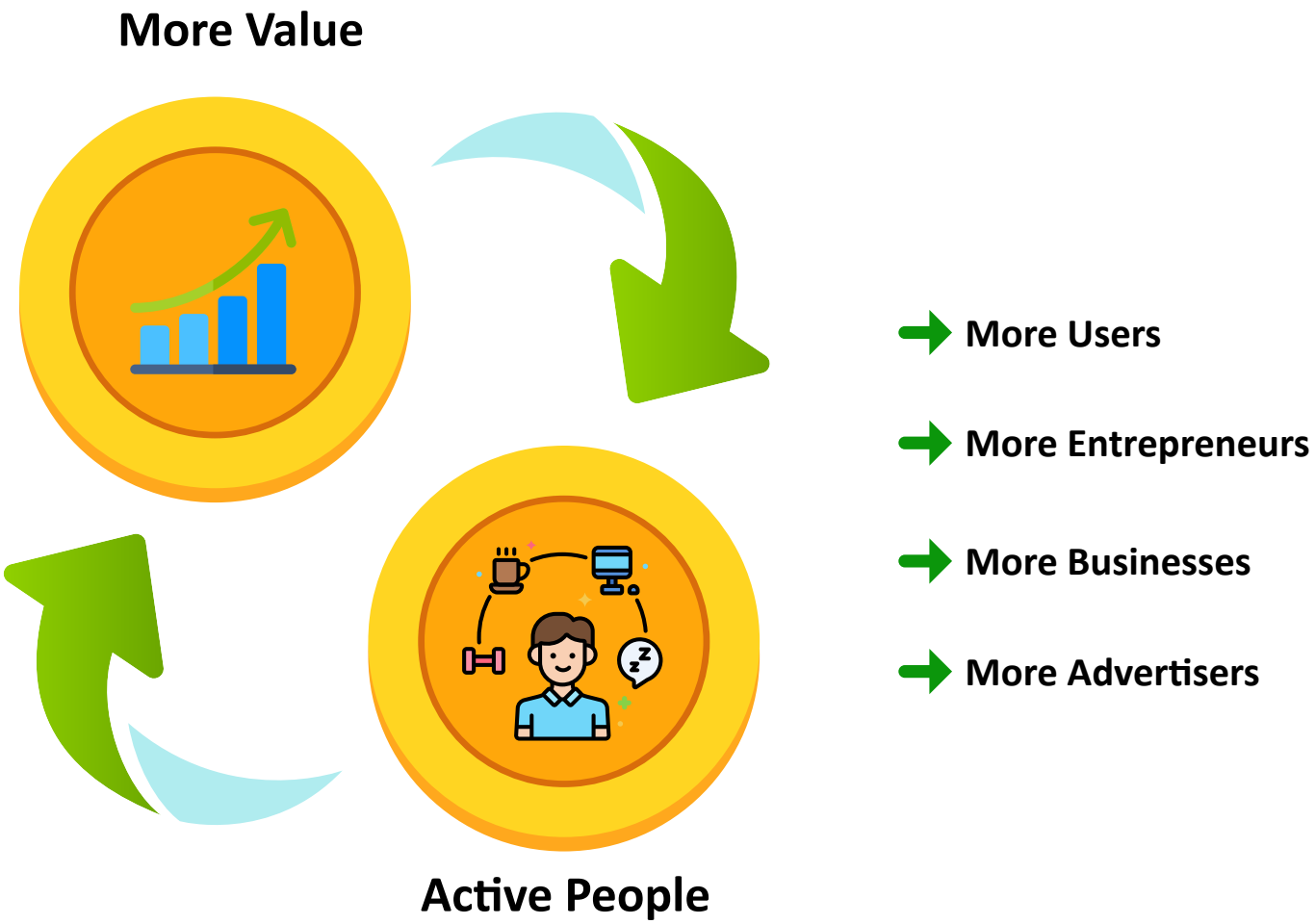
How Tokenomics will Boost The World

Green Energy will become a self-sustaining economy. Traditional businesses will establish locations for themselves in Green Energy, where they will be able to sell and promote their digital and real-world goods and services.

We will facilitate the development of new business models and a new breed of digital entrepreneurs by removing barriers to their ability to provide innovative goods and services to the global green energy community.

GE Tokens will be used to buy and sell goods from traders and creators.

Green Energy World will be the place where people will come to work, learn, rest, shop, and play.



GE Tokenomics has been designed to encourage new users to explore and experience the world, whilst motivating more seasoned users to build, complete quests, and further develop our new world together.

These incentives will drive the rapid adoption and growth of Green Energy. It will keep users engaged and returning.

This will be good for users but also for entrepreneurs, businesses, and advertisers, who want to be where their potential customers are.

As the sole currency of Green Energy, users will receive GE Tokens as a reward for time spent in Green Energy and their activities such as:

- Fulfilling Quests
- Creating Anything
- Extracting Resources
- Their Activity

Users will be able to acquire items that will help them earn GE tokens faster.

At the start of the game, only basic items will be available to the user, with resources having to be extracted manually.

Users will be able to use their GE Tokens to purchase a shovel, enabling them to extract resources faster. Eventually, the user will be able to purchase machinery such as a digger or miner to extract the resources automatically, even when they are not playing in-game.

What is an NFT?

To understand NFTs, it is important to first understand cryptocurrencies.

Cryptocurrencies are issued and exist on a public database maintained by what is commonly referred to as a blockchain. The database is distributed across computers that are running blockchain software. No single entity owns or controls the database, and anyone can access the database, prove ownership, and transfer cryptocurrency via the private keys associated with their crypto wallet.

Like cryptocurrencies, NFTs are issued on a blockchain and are used to designate ownership of a certain asset. Each NFT is tied to some unique data, typically a digital content file of some kind (or reference thereto) and governed by a "smart contract."* The process of converting a media file into a non-fungible token is referred to as "minting" an NFT, and, just like cryptocurrency, the NFT is written to the applicable blockchain database.

Unlike cryptocurrency, NFTs are not fungible, meaning each NFT is unique and not interchangeable with another NFT. In other words, while one bitcoin is equivalent to another bitcoin, no two NFTs are the same. And just as with bitcoins, the ownership record of NFTs is recorded on a blockchain database.

Because NFTs are new, there is limited information on how existing laws and regulations apply to NFTs. Despite these uncertainties, NFTs are an interesting medium for creators. For the first time, content on the internet in the form of an NFT can be definitively owned by a specific person independent of a centralized intermediary, and this is unlocking exciting opportunities for digital commerce and engagement.

Unlocking New Commerce and Engagement Opportunities

Sports businesses are being challenged to find ways to harness the latest technology and deliver an experience that meets the expectations of their fans. Even more so, with the limitations of COVID-19, athletes are turning to technology to engage their fans. An estimated $18 billion of global sports revenue has been lost during the pandemic, further driving the need to diversify revenue and focus on technology to reposition businesses for growth opportunities and capture the attention of fans.

NFTs appeal to collectors, fans, teams, leagues, and talent, amongst others. They have become a great way for individuals and businesses to capitalise on unique assets, engage fans, and potentially generate revenue, while staying ahead of the curve and keeping pace with innovations in commerce. Because the opportunities for growth with NFTs are still evolving, businesses should define what their end goals are around NFTs. Some of the common ways brands are using NFTs to grow their business include:

Fan Engagement —

Brands are recognising that the most successful and long-term-relevant NFTs will be ones that leverage the full potential of NFTs. that has ongoing value and utility. For example, NFTs can better connect fans to their favourite teams or brands by offering voting rights on team decisions, access to exclusive offers, and the ability to earn rewards.

Customer Relationship Management —

Unlike physical goods, NFTs are trackable, so it can be possible to see what wallet address they reside in. NFTs can enable unique segmentation and engagement strategies based on trackable factors related to the NFTs owned or purchased. This might include the types of NFTs owned, the quantity owned, or the duration they've been held.

New Potential Revenue Streams —

Because NFTs enable digital scarcity, brands can sell exclusive, limited digital goods. Unlike physical goods, NFTs can include a smart contract that codes in a royalty percentage designated by the content creator. As such, subsequent sales or auctions of the NFT can generate revenue for the original NFT creator, providing an ongoing potential revenue stream as it is sold or auctioned.

How to Integrate NFTs

There are seven steps to consider for successfully integrating NFTs into a business. Having infrastructure partners that are flexible and able to support multiple use cases, marketplaces, and blockchains through these seven steps is important in considering NFTs. Many of the solutions today are vertically integrated; in the future, the expectation is that there will be more flexible enterprise solutions.

1. Identify the NFT use case

First and foremost, there should be alignment on how NFTs will be used. Depending on the use case, there are different mechanisms to design an NFT, like edition size and distribution. Some of the most prominent use cases seen to date include collectibles, art, gaming, and experiences.

2. Determine the appropriate blockchain

Selecting the appropriate blockchain requires evaluating tradeoffs across multiple dimensions, including throughput, transaction cost, an existing ecosystem of applications, and degree of decentralization. Additionally, while a business may start creating NFTs on one blockchain, there are likely to be many other blockchains that support NFTs in the future, and they may want to create NFTs on multiple blockchains. The ideal infrastructure partner would support multiple blockchains and enable the interoperability of assets between blockchains.

3. Mint the NFTs

After determining what content to use, the NFT needs to be created or minted. To mint an NFT, a cryptographic key is used to create a token on the blockchain that represents a piece of digital media. Important characteristics, like the name, description, and edition size, can be included within that token. Once an NFT is minted, it is immortalized on the blockchain. It is important to have a minting platform that gives flexibility and control over the features of the NFT.

4. Decide how to store digital assets in a long-term sustainable way

NFTs are either minted to contain the digital content file itself or to contain a reference

to the digital content. Accordingly, it is important to understand how the digital content being distributed by the NFT is being stored. Many of the existing platforms that creators can use to create NFTs will host the media files through either decentralized or centralized storage methods.

5. Store and access NFTs securely and easily

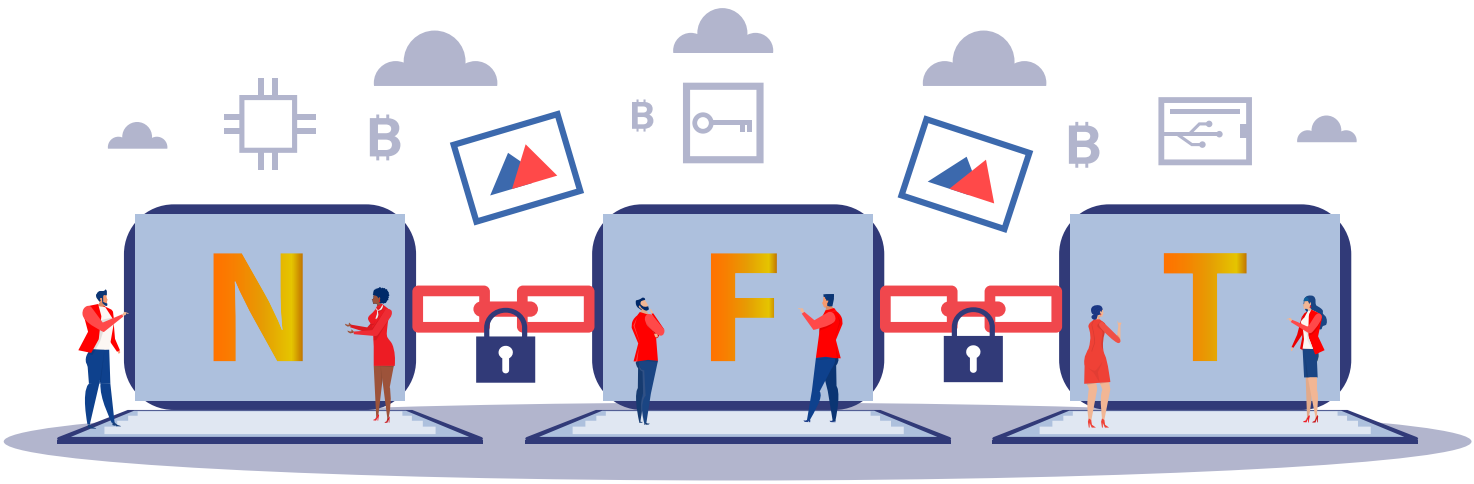
Similar to cryptocurrencies, NFTs are stored in a crypto wallet – the digital equivalent of an address. There are several crypto wallets available, from wallets from top exchanges that manage assets on the consumer's behalf to wallets that give consumers direct control over their assets. To maximise the addressable market, it is important to be able to integrate with many of these wallets so that NFTs can be delivered to a maximum number of digital addresses.

6. Distribute across an applicable marketplace

Another important consideration is how to distribute NFTs. Factors for evaluating NFT marketplaces include flexibility and control over the branding of the user experience; whether the marketplace allows users to purchase NFTs with fiat currency (dollars) or requires users to use cryptocurrency for purchases (for mainstream appeal, it is important to accept card payments); and the general audience of the NFT marketplace.

7. Identify additional opportunities to engage fans

Today, selling art and collectibles is the primary use case for NFTs. While these use cases can generate revenue, there are untapped strategic opportunities that may be realized.



Solar Charging Station

There are several reasons to develop the concept of solar energy and shaded parking in conjunction with newly needed charge stations for plug-in electric vehicles and plug-in hybrid vehicles. For the past three years, Green Energy supported undergraduate students have participated in visioning efforts to investigate the potential feasibility of using parking lots as locations to generate electricity with solar panels, charge plug-in electric vehicles, and enjoy the social benefits of shaded parking. In this paper, social value, environmental considerations, and economic aspects will be included in order to look at several aspects that are important for good decisions. The cost of petroleum now and in the future, the air quality impacts of combustion on health in urban centers, greenhouse gas emissions, the dynamics of electrical power, the transmission costs associated with electrical power, the desire to have full employment, the balance of payments with other countries, the value of shade, and the value of a positive image will be considered below.

Solar Powered, Shaded Charge Stations

The cost of gasoline for transportation by car is about $0.10/mile, while the cost of electricity for an electric vehicle is much less. There is an opportunity now for individuals to use plug-in electric vehicles to come to work at K-State and other locations and save on operating costs. For an individual that has a 100-mile round-trip commute, the cost of gasoline is of the order of $10/day. For 250 days/year, the cost of the gasoline is about $2500/year for coming to work. With a plug-in electric vehicle, there is a need to charge the batteries while at work and at night at home. A reserved stall with solar panels, shaded parking, and a charge station can meet the needs for a place to park, battery charging, and a shaded car. If one adds $50/month to the current cost of $600/year for a reserved stall, one has $1200/year or $100/month for the income to pay for the charge station, which may cost between $10,000 and $20,000. An hourly charge may serve the needs of those wanting to plug-in without having a reserved stall. These numbers are intended to be illustrative. These charge stations would be connected to the K-State electrical grid, so power produced could be delivered to K-State if it is not needed to charge vehicles.

The situation for plug-in hybrid vehicles differs from all electric vehicles because the size of the battery is smaller and the overall electric range is less. The amount of charge needed is of the order of 3 to 6 kilowatt hours, sufficient to travel about 15-20 miles.

These vehicles can best be served by having solar powered charge stations at many locations so individuals can plug in at work, shopping centers, restaurants, grocery stores, homes, etc. Because the amount of power needed is often small, free charging with free parking may be the most efficient way forward in many locations. The cost can be paid for by businesses that serve the drivers and by sales tax.

Petroleum Costs and Supplies

It is well known that petroleum supplies are limited and that the cost of crude oil production has increased over the last 50 years. There is a need to make use of solar and wind power for transportation. One benefit of using electrical energy for transportation is that it will reduce the amount of crude oil that is used. The current generation of students will benefit greatly from efforts that are made to reduce petroleum use because of the impact that will have on gasoline prices. A 50% shift to electrically powered vehicles would have a significant effect on petroleum use and future prices of gasoline.

Urban Air Quality

There are many urban communities in which reducing emissions from vehicles would help the community meet air quality standards. There is a cost associated with meeting air quality regulations. The health of citizens is impacted by air quality, and emission requirements depend on being in compliance. Coal-burning power plants impact air quality, and there are many citizens that do not support additional coal-burning power plants. Solar-powered electric vehicles have the potential to reduce emissions compared to other alternatives that depend on combustion.

Health Effects of Vehicle Emissions

In two recent studies by Wellenius et al. (2021) and Mills et al. (2020), investigators found that the risk of heart attack and stroke increases with an increase in the concentration of air pollutants associated with vehicle emissions and that small particulates from combustion induce vascular effects. Green Energy points out that there is significant public health value to efforts to further reduce small particulates related to the combustion of vehicle fuels. Thus, the electrification of transportation will improve air quality and public health.

Greenhouse Gas Emissions

Vehicles powered by gasoline, coal-burning power plants, and natural gas-powered vehicles and power plants release carbon dioxide into the atmosphere. Climate change associated with increased concentrations of carbon dioxide in the atmosphere is a major concern. The future cost of climate change is expected to be very great and is a major reason why it is important to develop solar-powered charge stations (Stern, 2007). Nicholas Stern advocates action now to reduce future costs of climate change. Developing and installing solar-powered charge stations with shaded parking will reduce future costs associated with climate change.

Transient and Dynamic Aspects

There is a need to supply electrical power on demand in most applications, such as lighting. This makes electrical power more expensive during peak power periods, which often occur in the late afternoon in support of air conditioning. There is some potential to manage vehicle charging and avoid charging vehicles during peak power times. However, there is a need to charge vehicles prior to returning home after work. Fortunately, vehicle charging at work sites and the generation of power using solar panels fit well together. This is one of the excellent reasons for developing solar powered charge stations with shade. At night, there is sufficient power that can be used for charging batteries. The time when power is produced using the sun fits very well with the daily vehicle charge that is needed.

Transmission Costs

The cost of transmission of electrical energy from the location where it is produced to where it is used has a cost associated with it. Because the power at the charge stations is being produced close to the location where it is used in this system, the transmission costs are very small. With millions of electric vehicles being charged, the impact on transmission could become important if transmission distances are larger. This is another reason to develop solar-powered charge stations.

Employment and Charge Stations

Employment in the United States will be positively impacted by the installation of solar-powered charge stations. The electrical power that is generated using the solar

panels will be produced where people work. Local jobs will be created to install the solar powered charge stations, service them and manage them.

International Aspects and Balance of Payments

With the growth of the number of electric vehicles, there will be a reduced use of motor fuels and a reduced flow of dollars to petroleum-producing countries. The solar-powered charge station has the potential to be installed in many locations around the world. It can be used with a local grid in locations where power transmission lines have not been connected to a larger grid. Growth in use of electric vehicles in other countries will reduce the cost of petroleum in the world compared to not having alternative sources of energy for transportation.

Value of Shade

The shade that is provided by the solar panels has social value when one gets into a vehicle on a hot sunny day. When purchasing a new vehicle, the trade-in value is higher if the vehicle has been parked in a shaded location each day.

Research, Education and Engagement

There are many research, education, and extension aspects associated with solar-powered electric charge stations with shade. Moving ahead with the plan will be beneficial to the university with respect to research, education, and extension.

Renewable Energy

Renewable energy harnesses naturally occurring non-depletable sources of energy, such as solar, wind, biomass, hydro, tidal, wave, ocean current, and geothermal, to produce electricity, gaseous and liquid fuels, heat, or a combination of these energy types.

Solar energy can be used to generate electricity; heat water; and to heat, cool and light buildings. For example, photovoltaic systems capture the energy in sunlight and convert it directly into electricity. Alternatively, sunlight can be collected and focused with mirrors to create a high intensity heat source that can be used to generate electricity by means of a steam turbine or heat engine.

Wind energy uses the naturally occurring energy of the wind either directly as in windmills or to generate electricity, and can be used, for example, to charge batteries or pump water. White Paper on Renewable Energy large modern wind turbines operate together in 'wind farms' to produce electricity for utilities. Small turbines are used to meet localised energy needs.

Biomass energy (from organic matter) can be used to provide heat, make liquid fuels, gas and to generate electricity. Fuelwood is the largest source of biomass energy, generally derived from trees. However, fuelwood is used unsustainably when new trees are not planted. replace the ones that are used. Fuelwood derived in this way cannot be properly defined as renewable. Other types of biomass include plants, residues from agriculture or forestry, and organic components in municipal and industrial wastes. Landfill gas is considered to be a biomass source.

Bio-fuels in liquid form can be produced from the conversion of biomass and used for example, for transportation. The two most common bio-fuels are ethanol and bio-disel. Fermenting any biomass that is rich in carbohydrates, such as maize, makes ethanol. Biodiesel is made using vegetable oils, animal fats, and algae.

Hydropower uses the movement of water under gravitational force to drive turbines to generating electricity.

Wave power, tidal power, and ocean currents can be used to drive turbines to generate electricity. Technologies to harness these forms of power are presently being developed to the stage of commercialisation.

Geothermal activity in the earth's crust derives from the hot core of the earth. Examples are The natural geysers and hot water sources are employed for power generation and space heating. Deep hot dry rock can be used as heat exchangers by pumping water through it fissures to produce steam for power generation.

Purpose of The Policy

The purpose of this White Paper is to set out Green Energy principles, goals, and objectives for renewable energy. It furthermore commits Green Energy to a number of enabling actions to ensure that renewable energy becomes a significant part of its energy portfolio over the next ten years.

Green Energy intends to strategically develop renewable energy resources in the future in a systematic way. The challenge for the Green Energy will be to provide sufficient incentive for the renewable energy-based industries to develop, grow and to be sustainable in the longterm. India's fiscal resources are limited, however. The limited financial resources available for the renewable energy programme will be optimally used with a specific emphasis on ensuring that the global climate change resources and other financial resources are accessed to facilitate its implementation.

Green Energy will continue to benefit from the innovativeness of its people in industry and academia to meet the challenge of providing renewable energy alternatives that can initiate the renewable energy programme without the requirement of exorbitant subsidy demands. It is the aim of Green Energy to set proper boundaries within which the renewable energy industry can operate and grow, thus contributing positively to the Indian economy and to the global environment. This will include changing the basic framework of how energy is produced, sold, traded, transferred, and bought. The long-term goal is the establishment of a sustainable renewable energy industry with an equitable GE share and job market that will offer in future years a fully sustainable, non-subsidised alternative to fossil fuel dependence.

Development Process

With an increasing demand for energy predicted and growing environmental concerns about fossil fuel-based energy systems, the development of large-scale renewable energy supply schemes is strategically important for increasing the diversity of domestic energy supplies and avoiding energy imports while minimising the environmental

impacts. Consequently, the Department of Minerals and Energy has been engaged for a number of years in a process for the development of a renewable energy policy, whose need and urgency has been underlined by the Green energy. Various studies have been undertaken and discussions, meetings and workshops have been held with a wide range of stakeholders to discuss the development of a renewable energy policy.

Strategic Goals, Objectives and Deliverables

Strategic goals and supporting objectives are part of the enabling framework that supports Green Energy's purpose in meeting its commitment to promoting renewable energy. Achieving this requires that the following four key strategic areas are addressed given below. In addition to the goals and objectives, associated deliverables have been identified.

- Financial instruments
- Legal instruments
- Technology development
- Awareness raising capacity building and education

Solar Village

A young population, low-income families, and middle-income families are facing a massive housing crisis that requires a sustainable solution. We need to create communities that make housing, food, and energy affordable for all. Many countries are currently facing a housing crisis when it comes to middle-to low-income residents. According to a recent Mcleans Magazine article, a combination of soaring real estate values, high rents, stagnant wages, and a premium on urban space have conspired in recent years to make it difficult for regular working people to acquire stable, affordable family housing. Healthy food, local jobs, and long-term economic security require a new type of community.

Affordability

Many factors need to be addressed in order to make housing, food, transportation, and communities affordable. Four critical factors that Solar Village aims to address include size, cost to build, location, and on-going operating costs. Innovation will include re-using waste materials; open-sourcing the design/build process in order to rapidly optimise it for a wide variety of circumstances; and developing a research institute to further these aims.

Sustainability

Affordable housing and food in a world collapsing from climate change impacts also must be addressed. Young people are the ones that will be affected by these changes, and they expect their housing and healthy food to address the critical factors causing climate change. These impacts include the need to address building materials; ongoing energy consumption; water conservation; resource management; food production; and integration with clean transportation options.

Community

Critical to the vision of Solar Village is the need to address the social, cultural, political, organizational, health, and psychological requirements of community members. In an increasingly complex world, with ever greater challenges to community and human health, we must look deeply at the patterns of social dislocation and economic inequality that are the root cause of the challenges people in communities face.

Use case of solar village

We will show people just how easy it is to grow food using their own hands, build their own homes, generate their own energy and how to access all of these open source resources available to everyone to make it easy to do. People will come and trade their labour for crops, as is common among some market farms, where people will work for a day and take home a small box of food. During a permaculture course, people will learn how to design and build their own home and farm, taking away the open source designs to build it themselves.

Food

We are building a community centre similar to EverGreen Brickworks where there are garden greenhouses. A restaurant/-café, and a bed and breakfast type place.

Hands-on Workshops

Similar to Everdale we will offer workshops and classes for people interested in all aspects of Solar Village.

Community Gardens

Solar Village will allow people to come in and use shared facilities as their own, by having a community garden and kitchen, tool library and different work spaces.

Solar City

Meeting energy demands sustainably is one of the most important challenges for the future of society. With more than half of the world's people living in cities and about 75% of the population that will live in urban areas by 2050, The implications of urban population growth on global issues of energy consumption, energy security and climate change call for effective solutions to support the indispensable change towards more energy efficient cities. In this context, enhancing the use of solar energy in urban areas may play a fundamental role in reducing energy loads and greenhouse gas emissions (GHG) and other pollutants. During the last decade, this necessity has stimulated the interest of researchers to develop suitable approaches for solar energy integration in urban planning. The concept of turning city districts and neighbourhoods themselves into solar power stations is a complex challenge that requires comprehensive and inter-related approaches. The elaboration of future scenarios which simulate the widespread installation of photovoltaic systems and potential spatial changes in the urban context is particularly well suited to support this assumption. The literature, with an explicit focus on scenario development using 3D models and advanced daylight simulation, shows operational outcomes of methods and tools for the calculation and visualisation of the solar energy potential of building roofs and facades [2,4,5,6,7,8]. But an effective scenario has to include a comprehensive description of the existing urban model and its development patterns and dynamics in order to understand the factors and parameters that determine the solar potential and support its concretization and management. In this framework, cellular urban models are excellent vehicles for exploring the spatial complexity of cities, especially if predominantly based upon areas of local interactions. This paper presents solar energy integration in urban planning by using the Green Energy model based on the CA concepts of urban cellular subdivision.

Indeed, the issue has come to look for and implement concepts and practises for urban planning and design that relate to solar potential and other fields, including land use and street pattern, buildings and open space conception, and smart grids. Furthermore, urban planning has to take into account results from relating economic, social, and environmental factors with solar energy integration. In this sense, once electricity generation from solar energy grows, its costs decline, making it more economical to develop in the future. Moreover, reducing the energy load of cities by means of solar energy integration is essential to achieve the mitigation of GHG emissions and provide a significant contribution to a mixed renewable energy portfolio in the present and future.

Description of the model

Green Energy is a model that provides operational support for the definition and implementation of urban planning practises for solar energy integration at the city scale. It supports two concepts:

- Energy supply from widespread installation of photovoltaic systems and its management by using smart grids has to take into account the spatial and functional features of the urban model

- Energy flows through the whole city have dynamics linked to production and consumption patterns that have to be analysed and controlled.

Cellular unit and grid

The geometric configuration of the cell used to represent spatial data and the criteria for its delimitation can have profound effects upon subsequent analysis and interpretation.

In this sense, the Green Energy model assumes the division of the city into "cellular units" according to four delimitation criteria: construction timeline, population density, urban morphology, and land-use patterns. These criteria are extremely important to understand the urban model and its relationship with energy aspects, and thus define, in a coherent manner, the cellular unit.

Taking into account that CA models need not be spatial per se or spatial in the two-dimensional sense either, most models appeal to the idea of representing the spatial system on a regular lattice such as a grid.

In the Green Energy model, the grid is structured on the statistical subsections which divide the urban areas according to the smallest homogenous area, whether built-up or not, existing in the statistical section. This statistical grid-based system enables the associations between cellular units and the geo-referenced information based on population and housing census.

Cellular unit state and transition rules

In most urban modelling applications, cell states depend on the focus of the model.

In the Green Energy model, the state of any cellular unit depends upon the potential of solar energy supply and the energy consumption patterns that are related to what is already in that cell.

The differential between energy production and consumption defines the set of the possible cellular unit states, which can be either (1) positive or (2) negative. The transition rules of the Green Energy model are inspired by the structure of the atom, where protons, electrons, and neutrons are the cellular units that behave as particles with positive, negative, or no electrical charge according to their energy performance. In this sense, the transition rules relate the cellular units to what is happening in their immediate neighbourhoods in order to implement the energy balance of the whole cellular system—the city.

Scenarios elaboration workflow

The scenarios are elaborated by modelling the current state of each cellular unit at time T to an outcome state at time (T+1), which predicts the solar energy potential of the cellular unit if photovoltaic systems are integrated into the existing suitable roof and façade areas.

To do this, the Green Energy model is calibrated to collect a selection of data inputs, which are the basis of a workflow that combines GIS with parametric modelling and solar dynamic analysis.

Conclusion

A Strategy on Renewable Energy will be developed, which will translate the goals, objectives, and deliverables set out herein into a practical implementation plan. Underpinning the Renewable Energy Strategy is a macro-economic analysis to guide cost-efficient green energy financial assistance based on a least-cost and employment-maximizing supply model to reach the target. A number of important investigations will be undertaken during the strategy development, including, inter alia, how the renewable energy target will be periodically reviewed with respect to the different primary energy carriers; the mechanism that is selected for the feed-in of electricity generated from renewable resources into the national electricity network; and the modalities of the various financial, legal, and regulatory instruments to be employed as part of the enabling framework of mechanisms to support the promotion of renewable energy.

The main aim of this white paper is to create the conditions for the development and commercial implementation of renewable technologies. Green Energy will use a phased, managed and partnership approach to renewable energy projects that are well conceived and show the potential to provide acceptable social, environmental and financial returns for all investors and stakeholders. This will lessen the strain on fiscal resources and hold greater potential for successful implementation. The focus will be on delivery. An appropriate enabling environment towards full commerciality will nurture the technologies that are proven to best meet Green Energy's policy objectives. Through this policy document, Green Energy is venturing into an entirely new area.

Progress towards meeting the targets, objectives, and deliverables of the White Paper will be evaluated at mid-term, after five years, to see if these are being achieved and to determine whether the policy direction remains appropriate. The White Paper may be revised in the light of progress made. Sustainable development criteria – economic, environmental, and social priorities – will continue to guide strategy in a balanced way for the longer term. At the same time, Green Energy will monitor worldwide technological developments in renewable energy with a view to identifying technologies that may be particularly appropriate to the all-over situation in the long term, making the best use of partnerships where possible, both locally and internationally.

Thank You