KWHCoin

WHITE PAPER

Abstract: KWHCoin is the native token for a decentralized application where prosumers, consumers and other distributed energy resources can connect and configure their energy resources. The KWHCoin is a digital currency backed by a kilowatt hour of electricity that aggregates the energy usage data of distributed energy resources. Any upstream value generated will automatically pair to a digital wallet and payment is valued and dispersed in KWHCoins.

The KWHCoin represents a kilowatt hour of deliverable energy output or equivalent that was generated and distributed as part of work that occurred on our platform. Conceptually, the KWHCoin is a blockchain based solution for a cost effective and network incentive-based structure to help shift from fossil fuels to efficiency and renewables. We intend to apply blockchain as a liberation technology, enabling access to renewable energy from local distribution sources, and to unlock value at the edges of the grid for those who choose to make environmentally viable choices.

https://medium.com/@KWHCoinnetzero/KWHCoin-cryptocurrency-as-a-liberationtechnology-f3ef32fee49e

All transactions on the network are executed in KWHCoins, making it a viable digital currency for the emerging internet of energy. The KWHCoin intends to serve as a baseline compensation model to assist developing business models, which will ultimately lower the cost of solar integration and unlock value at the grid's edges for an independent and net-zero renewable energy future.

Network participants can then use the digital tokens to trade renewable energy, without the need for an intermediary or a trusted third party. The goal of this project is to leverage Blockchain technology using smart contracts. To build a complex network that constitutes a virtual clean energy organization. This organization has no central authority or form of ownership, but is network owned and operated using the latest in technology and innovation.

This digital network of distributed energy producers and consumers is known as 'The Grid'. The Grid is also the name of the mobile and desktop application that will both serve as the open-source database of energy transactions for network participants on the platform and as the platform for collaboration on renewable energy resources. KWHCoin is the native token and the medium of exchange for all transactions on the platform, and is vital to the security and integrity of transactional value for network participants.

The aim of the project is to add value to the emerging internet of energy, based on these principles and overall strategy:

1. Serve as a baseline incentive and compensation model to lower the cost of solar and encourage investment in distributed energy resources.

2. Leverage blockchain as a liberation technology to lower barriers and give renewable energy access to the 1.2 billion globally without electricity. 10% of all funds will go directly to fund Microgrid development and off grid technologies in Africa, South America, the Caribbean, and Southeast Asia.

3. Building decentralized localized networks of renewable energy generation, minimizing transmission costs and carbon intensity in the energy transmission process.

4. Develop a viable business model for a Net-Zero Energy marketplace with an open-source platform and database with peer-to-peer capabilities and without the requirement of a third party. This will give consumers independence and the flexibility to choose an energy source that is 100% renewable.

5. Enable citizens to contribute and benefit from the green economy and directly reduce carbon emissions by digitizing all energy-related operational activity.

6. Peer-to-Peer transition model that unlocks value at the edges of the grid. This will empower prosumers and all network participants to receive maximum leverage in a network setting for their contributions in a green economy.

The purpose of this paper is to explain the function of KWHCoin as an alternative digital currency while outlining the function of its mobile and desktop applications. This paper explains the organizational structure, technical specifications of the project and details the project's mission to deliver clean, reliable energy to a global decentralized network and serve as a baseline compensation mechanism for the emerging internet of energy.

Keywords: KWHCoin, blockchain, on the grid, distributed ledger, smart contract, decentralized energy, distributed energy resources, renewable energy ecosystem, De ko thesis.

1. INTRODUCTION

KWHCoin is a digital currency backed by an equivalent measurement of deliverable kWh output from network participants. Network participants leverage data, smart meters, sensor readings and Green Button data to produce this output. The output is then tokenized to create digital assets on the blockchain.

KWHCoin is the native digital currency of The Grid applications and will be the decentralized currency that powers peer-to-peer transactions, token swaps, digital exchange trades and all transactions that take place on The Grid.
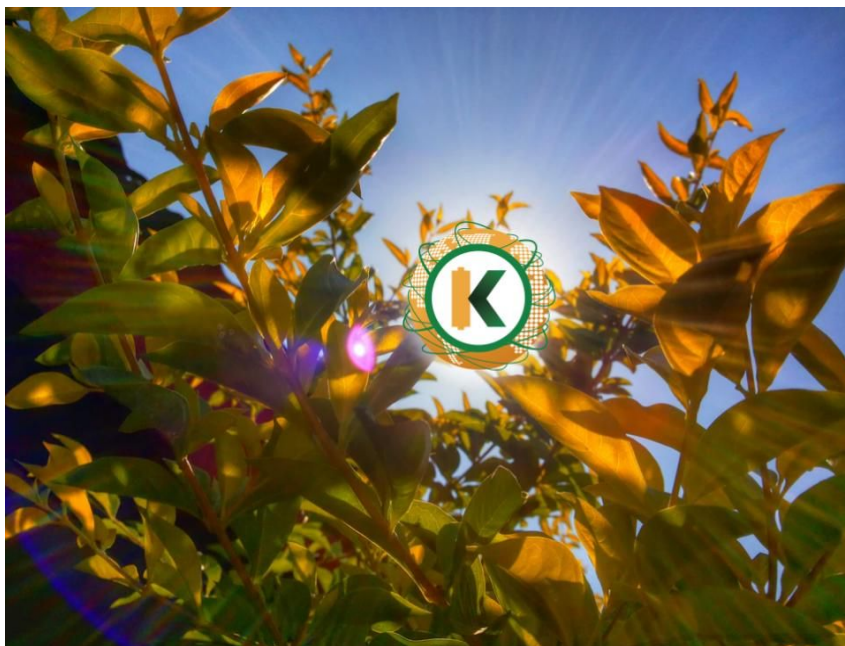
KWHCoin has been developed for mass adoption and is designed to become the leading digital currency for the emerging Internet of Energy.

What separates KWHCoin from other cryptocurrency projects in the renewable energy sector is that our focus is on the "grid's edges". We define the "edges" of the grid as smaller distributed energy resources, such as solar panels in the residential market, electric vehicles, microgrids, wind farms and demand response technologies, to name a few. These comprise the elements for a new two-way generational model of energy distribution. This presents a great opportunity for local communities to directly participate in the renewable energy economy.

https://medium.com/@KWHCoinnetzero/KWHCoin-empowering-choice-for-thegrids-edge-1700c3a11589

2. THE GRID

The Grid is a mobile and desktop application that serves as the open source database of energy transactions for network participants. KWHCoin is the digital currency that provides the medium of exchange for transactions on The Grid platform.

The Grid consists of a decentralized global community of peer-to-peer clean energy prosumers, consumers, environmentalists, clean energy advocates, renewable energy providers and industry professionals. All community members will contribute their collective distributed energy resources to assemble a global and virtual clean energy cooperative.

The core technical offering is a mobile and desktop application for use on web, Android and IOS.

The Grid features an open ecosystem with Application program interfaces, (API's). This enables developers and entrepreneurs to develop more applications and service offerings, as network participants. The purpose of The Grid is to model a new and dynamic energy company of the future. In addition, The Grid aims to build a social impact platform to advocate clean and affordable electricity for all.

3. MISSION

KWHCoin is a digital currency that converts the data of distributed energy resources to digital tokens on a blockchain. These distributed energy resources will be received from solar power generators, solar communities, microgrids, electric vehicles, energy storage, wind energy, and hydroelectric power generators. All distributed energy resources that are used to convert to KWHCoin are generated through 100% clean renewable energy.

We are building an application that will provide the platform for network participants to trade, exchange, donate and democratize the value of two-way generation to the electricity grid. Our virtual power company will be peer-to-peer and will use the internet as a digital rail to deliver clean, localized energy to all members of the network, without the need of a trusted third party or centralized grid in our conversion process. We will not use any forms of energy that come primarily from fossil fuel production.

OUR MISSION
To improve the lives of the 1.2 billion people across the globe without reliable energy access.
KWHCoin

The KWH team will leverage blockchain technology and the use of smart contracts to build a decentralized network of distributed clean energy resources.

The Grid network uses software and cooperation between peers to provide a global virtual power company. It will not require central authority or a trusted third party. The execution of power generation, its distribution, and delivery of clean electricity will be fully decentralized. We are building a global, borderless, peer-to-peer, virtual power grid. Hence, no barriers to access and a zero-carbon footprint, in relation to the generation of energy.

We want to lead the way in supplying the globe with clean energy. With support from clean energy advocates, nations, companies and charitable organizations, we plan to provide a viable solution for the 1.2 billion people who currently lack access to energy. The Grid will provide 100% clean and renewable energy sourced directly from the sun and distributed energy resources, that access all renewable elements. The aim of the project is to provide an alternative marketplace for the exchange of clean energy. Also, to provide a model for a decentralized and network-owned energy company for the future. KWHCoin will utilize a renewable energy platform and encourage sustainability.

3.1 RELEVANCE

As a morally and socially conscious community, we plan to implement blockchain technology with renewable clean energy, to provide millions of people with electricity and weaken the world's dependence on fossil fuels. We will build new business models and institutions using decentralization and autonomy as the guiding principles. We strongly believe that the centralization of our social, political, economic, governmental and financial institutions are suppressing individuals in their attempts to create a better future for themselves.

We want to help governments and people in developing countries escape corruption, establish property rights and vote effectively, all while gaining access to decentralized global energy and financial markets. Our goal is to serve the 2.1 billion people lacking electricity and the 5.1 billion unbanked around the world.

We will implement our unique new blockchain infrastructure and tools to bring people access to our decentralized clean energy community.

3.2 VALUES

Openness and Inclusion are our mantras. As a community, we want everyone from all walks of life to interact and participate with us on some level. As people show their capabilities, they will be given the opportunity to work their way toward the core group. We support the open communication of information as we will operate an open-source platform with access for all.

- **Emergence and Agility** - At KWHCoin there are no titles, no positions, no job descriptions, no interviews, and no limits. Our team has an insatiable enthusiasm for the mission and a willingness to collaborate for the good of the project. In general, there will be very few specialists and many generalists. We believe everyone has something to offer and that a fresh outlook on a new area can often prove fruitful. Emergence means people rise to take the initiative and achieve beyond expectation, but does not imply full consensus. Agility relates to our ability to think and understand quickly and apply this to market trends.

- **Humanitarianism -** We believe that we are global citizens all living on the same planet, and there is a common denominator that connects us all. We want to change the world through humanitarianism by removing barriers to access that impede the improvement of the human condition. We are humanist, and we believe in peace and prosperity for all humanity.

- **Social Consciousness** - We believe in creating a dynamic and thriving online community, and want to build a decentralized hive mind of people working toward the goals of the project.

- **Systematize -** To systemize means that we intend to get information out of people's heads and into systems. We believe in being fanatic about creating systems and software around any repetitive work. Many of the companies that have inspired our mission work with this belief.

- **Education** - We want to teach the world about blockchain, the same way Internet pioneers taught the world in the 1990s. We are dedicated to learning and sharing what we know.

We strive for internal and external education. Our team wishes to work towards educating companies and governments on the blockchain revolution. We recognize that answers do not breed innovation, rather questions and a spirit of continuous inquiry.

3.3 GOALS

All our goals at KWHCoin are based around building and maintaining a strong community with belief in the project and its mission. To build a strong and active community, we shall reach out on all relevant forums and internet websites. Specifically: Reddit, Github, Medium, Slack, Facebook, Twitter, and Bitcointalk.

All our community-based goals can be classified as follows:

- Build a community network for cryptocurrency enthusiasts, developers and hackers through an internal Slack channel.

- Build a community for entrepreneurs, bootstrappers, marketing, social, business, and sales people.

- Build a community for renewable energy, environmentalists, climate change advocates and energy professionals.

- Build a fun and interactive community of socially inspired Individuals with the sole intention of improving the global quality of life. Plus, give the next generation the opportunity for a safe environment.

- Build a community of people who wish to join and to lead, including anyone interested in building decentralized solutions to today's business problems.

- Build a community of strategists and visionaries to create a vibrant culture that is agile and flexible.

- Build a community of multidisciplinary professionals to provide structure and leadership as we develop the project.

4. STRUCTURE

The organizational structure of KWHCoin will be built by our team of company founders, principal investors, partners and an interdisciplinary team of core members. This group will build the strategy and define the vision for the platform.

The essential roles of the team will be as follows:

Founders
- Provide advice and perspective that will leverage smart contracts to execute network decision making.

- Use available resources to build a productive network for collaboration and contributing to the success of the platform.

- Provide support for platform initiatives and advise in the management of corporate affairs.

Board of Directors
Our members are the research and development apparatus for the platform. The role of the Board of Directors is to build the core libraries and provide the intellectual framework for the platform. There will be a strong focus on developing economic and social decentralization models for distributed energy resources. The board will also focus on building The Grid, new theory of work models and new models for growth with renewable energy. The board will have an interdisciplinary composition to promote innovation and diversity in thought.
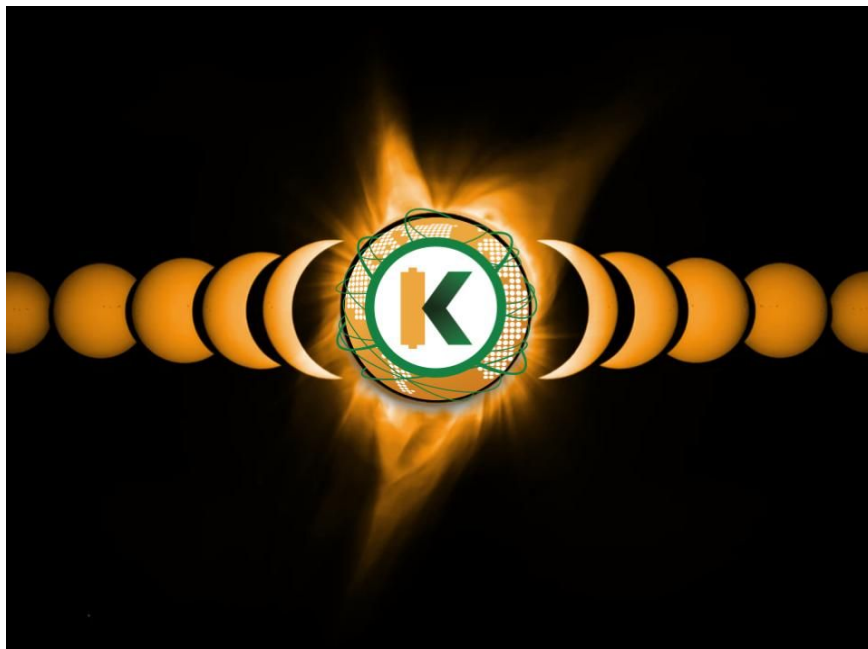
Primary Network Contributors

These are network generalists that participate in various projects related to their specific industries. Network contributors will generally come from renewable energy, decentralization, energy independence, digital currency, economic freedom, technology, smart cities and circular economic backgrounds.

Developers, Software Engineers, and Technical Staff

Members will consist of our technology and development apparatus for all core technologies and technological development. The technical team will play the key role in application development and innovation on the platform.

Community

The Community will consist of all members of the organization, including affiliates and business partners. The community represents the entire network and all members will have specified voting rights, determined by the community.

Funding

We are set for KWHCoin in a public Initial Coin Offering (ICO) for late January 2018. We are confident that we will raise sufficient funds for the project's initial costs and will be able to fund app development and the official launch.

Salaries

Initially all salaries will be paid in KWHCoin unless otherwise stipulated. There will be services with cash payments but initially those that collaborate on the platform will be asked to accept tokens for initial payment.

Equity

We plan to officially go public in unison with our launch and ICO initial coin offering in late January 2018. While KWHCoin will not be liquid during this period, we strongly believe that the value of our token will see a steady rise in value after our ICO. Before we go public, we have attracted significant interest in our platform with a private presale contributing to over 4,000,000 KWHCoins distributed to existing coin holders. Coin holders are contributors and therefore part owners of the project. All participants will be given the option of payment in KWHCoin and which may be traded when it hits the exchanges.

STATEMENT: KWHCoin is working on final arrangements for development of the decentralized application with multiple partners to develop a comprehensive application to handle the estimated transaction volume from the platform. More detailed technical analysis will be published prior to the ICO in a revised white paper that will include technical application details.

5. KWHCOIN BLOCKCHAIN

Blockchain and other distributed ledger technology systems are the underlying protocol used to secure KWHCoin and the execution of energy transactions on the platform.

This technology will enable the safe and secure transmission of energy data and ownership information by transacting all details in a public ledger, processed by decentralized computers all around the world.

This capability now provides us with the incredible potential to create a virtual, clean renewable energy company where the energy that is generated is stored on the network as KWHCoin.

These distributed energy tokens created will be assigned energy token identification on The Grid. KWHCoin has no central repository and no single administrator so the entire network owns this energy company of the future, maximizing value at all points of creation and generation of the distributed energy resources. This energy company model will provide a balancing effect on all resources that contribute to the generation of value.

5.1 DECENTRALIZATION
Our decentralized system utilizes the distributed power of a network to enhance security, remove the need for central authorities, mitigate costs and empower all network participants. Decentralized networks are open for anyone to use and based on the lack of

command and control features, encourage all participating members of the organization to share, innovate and contribute. The ultimate goal of this project is to build a decentralized peer-to-peer energy network that allows participants to share, trade and exchange distributed energy resources that have been verified on the platform.

5.2 IMMUTABILITY

Once data is written and stored on the blockchain, it becomes part of a permanent database. The concept is analogous to etching a permanent and unique digital footprint. Over time this sequence of transactions develops an immutable audit trail which is useful for provenance tracking, land registries and other sectors sensitive to the authentication of data.

KWHCoin uses these capabilities to provide integrity and authenticity to high volumes of network-participant energy data and usage information. This will both ensure the integrity of the digital tokens that are generated and verify the proper accounting and distribution of tokens.

5.3 ASSETS/EXCHANGES

With a store of data that no one can own, alter, or control, we now have the framework and digital foundation to rely on data that is stored. This immutable store of data is the essence of the network and goal of this project to use technology as a medium to lower the barriers to energy markets and economic freedom. This also removes the pressure of creating peer-to-peer exchanges without the need for a third party or central institution unilaterally controlling decision making and functionality.

KWHCoin will be the token used to store data and assign the appropriate context to determine value. The Grid will be a user- friendly application and desktop interface that will serve as a public distributed ledger of all the energy information and transactions that take place as part of the network. These components paired with the emerging Internet of Things and Internet of Energy represent an exciting opportunity to contribute to building the 21st century global renewable energy grid.

6. DISTRIBUTED ENERGY RESOURCES (DER)

Distributed energy resources (DER's) are physical and digital assets that are deployed across the distribution grid, typically close to load, and usually behind the meter. They can be used individually or in aggregate to provide value to the grid, individual customers or both.

Advancements in renewable energy and the increased cost of the delivery of electricity through inefficient, centralized command control have created an opportunity for an alternative system.

KWHCoin will aim to reshape the 21st-century grid and allow all energy consumers and producers the ability to generate value.

Distributed energy resources provide a dynamic solution to not only mitigate costs, but democratize wealth and value to individuals and the small businesses who create these distributed energy resources. Distributed energy resources such as solar, storage, energy efficiency, and demand management can be aggregated to provide services to the electric grid and therefore generate value that should be compensated at the edges of the electrical grid where most people interface.

6.1 DECENTRALIZED ENERGY

Decentralized energy is generated or stored by a variety of small, grid connected components referred to as distributed energy resources, or distributed energy resource centers. This market is new and the development is ongoing, but it is positioned be the energy system and storage process of the future.

Decentralized energy utilizes a two-way flow of energy which allows customers to contribute directly to an electricity generation. A decentralized energy marketplace allows participants to take a more active role in the generation of their energy, which encourages local creation and is both less expensive and more efficient for the electric grid.

KWHCoin and The Grid will align the principles of a decentralized energy marketplace with the innovation of blockchain technology to build a virtual, decentralized energy platform. The token models that we have developed are based on standards from the Electric Power Research Institute (EPRI), and will provide the basis for our network based token system to compensate participants for distributed energy resources.

6.2 DISTRIBUTED RATE COMPENSATION

In recognizing dramatic changes to the electricity grid, The Electric Power Research Institute (EPRI) established the Integrated Grid Initiative. The EPRI is a program that seeks to realize the optimal integration of distributed and centralized energy resources and establish standards as the power system transforms.

The initiative has developed a benefit-to-cost framework and provides a methodology for determining the full value of (DER). KWHCoin and The Grid network will use this compensation model as a format to create digital, distributed energy resources that will be created, generated and exchanged on the platform.

The (EPRI) provides the following definition of (DER):

Distributed Energy Resources (DER) is electricity supply sources that fulfill the first criterion, and one of the second, third or fourth criteria:

1. Interconnected to the electric grid, in an approved manner, at or below IEEE medium voltage (69kV)

2. Generate electricity using any primary fuel source

3. Store energy and can supply electricity to the grid from that reservoir

4. Involve load changes undertaken by end use (retail) customers specifically in response to price or other inducements or arrangements

The following components make up the basic characteristics in defining DER:

1. The resource is connected to the distribution grid and not the bulk transmission system

2. A relatively small source, certainly under 10 MW but generally much smaller

3. Generally not individually scheduled by an RTO or ISO

This framework is the foundation and model for the creation of digital tokens that will be generated and exchanged on the platform. Network participants will be able to use the mobile app or desktop app to access the tokens and will have access to the entire open source network to freely trade distributed energy resources.

Smart contracts will create a digital representation of the energy data and usage of network participants converting this data into digital tokens. All digital tokens can then be exchanged peer-to-peer without a utility or a trusted third party to execute the transaction.

7. TOKEN MODEL

One of the goals of this project is to explore concepts and possibilities related to the theory of a circular economy and the future of work. Blockchain and other decentralized technologies will enable compensation for work inside the new digital circular economy.

These platforms are independent, self-organizing digital ecosystems that can operate independently, exclusive to the network. These platforms are similar to KWHCoin in that they use their network currency as the medium of exchange on the platform.

This currency is also interoperable and can be traded on digital currency exchanges around the world to enhance user scale.

The platform that we are building will create a renewable energy ecosystem that uses the Internet as the rail to deliver and exchange clean energy with no central authority or trusted third party as controlling the platform.

This provides the opportunity for individuals to take ownership and control of their energy future, and also delivers a platform to monetize energy-related work. The collection, storage, and tokenization of distributed energy resources make KWHCoin a viable option as the digital currency of choice for the emerging internet of energy.

7.1 KWHCOIN TOKEN MODEL

KWHCoin tokens will consist of unbundled distributed energy resource data from multiple sources to generate token using the following model:

Energy Efficient Tokens (EE)

> Token granted to network participants in energy efficient programs that effectively shift of shave load, or both. Measurement and forecasting play a large part to determine EE consideration.

Energy Storage Tokens (ES)

> Energy storage can be used as a resource to add stability, control and reliability to the electric grid. Energy storage technologies provide need power during periods of low generation.

Electric Vehicle Tokens (EV)

> Electric vehicle tokens will be granted to network participants with bidirectional flow of the vehicle power systems. Electric vehicles are stationary for most of the day, the battery from the EV can be used as a storage device that can provide additional services to the electricity grid.

Demand Response Tokens (DR)

> Demand response can be used as a resource by utilities and grid operators to balance supply and demand. This lowers the wholesale cost of electricity which help lower retail rates.

Microgrid Tokens (MG)

> Microgrids are localized grids that can disconnect from the traditional grid to operate independently. Local load usage and transmission further increase the efficiency of the grid.

Solar Photovoltaic Tokens (SP)

Solar PV systems use solar cells, formed into solar panels, to convert sunlight into electricity. PV systems can be used to meet energy requirements for the home or building, or energy from the system can be exported to the grid.

Combined Heat and Power Tokens (CH)

Renewable energy that is a byproduct of cogeneration, are capable of islanding or offering off-grid services and increasing load efficiency.

Humanitarian Tokens (HE)

Central to the aim of this network is to have an enormous social impact and to improve conditions for the billions of people globally without clean, reliable electricity.

7.2 KWHCOIN

The KWHCoin is a digital token that represents a promise on a delivery of work, measured in kilowatt hours, and made available by the participation of distributed energy resource producers on a network. KWHCoin will use verified meter readings from network participants, data from ancillary service providers and Green Button Data to generate tokens that will be rewarded to distributed energy producers.

Electricity assets do not require physical characteristics to leverage value from their creation since they can be utilized as power purchase agreements. This provides a profoundly innovative way to leverage technology to create a decentralized peer-to-peer energy exchange network that operates under the control of sophisticated programming, without the need of centralized authorities and institutions. The Grid will be the application offering and the expression of the network features and services.

The Grid will operate like a comprehensive, real-time map of energy creation and transmission that network participants will use to interface with the network energy market. The Grid is the manifestation of the network-owned renewable energy enterprise, and will operate as the nerve center of transactions on the platform.

7.2.1 KWHCOIN ASSET PROFILE

KWHCoin aims to be the currency of choice for the Internet of Energy. KWHCoin generates value at the grid's edges in a peer-to-peer network without a third party by creating tokens based on the output of distributed energy resources. All coin holders are owners of the platform and there is no central authority governing decisions.

10% of all revenue from KWHCoin will fund renewable energy projects for the 1.2 billion globally without access to renewable energy. Puerto Rico will be the first beneficiary and we are excited to contribute to the rebuilding of a clean renewable and decentralized Puerto Rican grid. We have partnered with Renewables in Africa: the Alliance for Rural Electrification (ARE) to develop future projects.

https://medium.com/@KWHCoinnetzero/KWHCoin-renewable-energy-networkannounces-renewable-energy-expert-tony-tiyou-advisor-55e9c3c342a2

KWHCoin, unlike many other cryptocurrency projects, has value at the generation of a Kwh of renewable energy, creating tremendous value based on a network of active renewable energy generation and distribution.

7.3.2 KWHCOIN DISTRIBUTION

The total supply of KWHCoin and its rate of issuance will be decided by the scale of assets that created, based on distributed energy resource generation. The results below are subject to change based on final input from the Board:

- 195,000,000 KWHCoins will be created to start this decentralized peer-to-peer energy economy

- 19.5 million KWHCoins will be used to fund the building of microgrids and developing off grid technologies in Africa, Puerto Rico, South America, Southeast Asia and the Caribbean

- 50,000,000 KWHCoins for Founders and Partnerships with Social Impact organizations to build local sustainable economies

- 101,169,000 KWHCoins will be publicly released the end of January for public Initial Coin Offering

8. DE KO THESIS

The De Ko Thesis states that electrical energy in the form of delivered kilowatt can be a more stable asset for backing currency than gold or debt.

KWHCoin intends to serve as a stable exchange rail for clean energy using the kWh of network participants as underlying asset value. It will also provide a stable energy backed digital currency for areas of the world that lack access to affordable energy and exchange markets. For prosumers, energy efficiency is the largest distributed energy resource value, but quantifying the value accurately is very difficult.

KWHCoin aims to solve this by trading its tokens to network participants in exchange for access to data to better capture the value opportunity. KWHCoin is a digital representation of a kilowatt hour of electricity that has been, or will be, delivered as a unit of work or energy thats value was created as part of The Grid. Network participants will trade a digital currency that is backed by the renewable energy generation of a network of numerous resources.

KWHCoin is a digital representation of a kilowatt hour of electricity.

9. PROOF OF CONCEPT

We are partnering with PATH, an organization committed to ending homelessness for individuals, families, and communities. KWHCoin has connected with 10 local businesses that will accept KWHCoin as currency in exchange for goods and services.

PATH members will receive KWHCoins for their recycling, street sweeping, and other circular economic efforts, providing the framework for us to build a local, digital economy with cryptocurrency. KWHCoin is exploring other use cases.

KWHCoin will allow renewable energy to expand and bring newfound power to the farthest reaches of the world.

PATH (San Jose) http://www.epath.org/site/PATHSanJose/index.html

As the world's poorest begin to gain access to global markets, KWHCoin aims to provide access to clean energy markets to anyone with a smartphone or computer.

We will build the energy profiles necessary to connect microgrid developers, clean energy advocates, humanitarian workers, and others in order to deliver rails of energy to underserved populations globally.

Volunteers and Community Members
We are all global citizens and this is a global project, so we're hoping that all walks of life interested in an independent energy future and contributing to the goal of powering the world will join the KWHCoin platform.

KWHCoin

contact@kwhcoin.com