



# **White Paper**

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## **The Next-Generation Electric Energy that will Lead an Energy Revolution**

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**2018. 10. 01**

The White Paper herein contains our opinion in relation to informing technical innovation of electric energy, solving the global energy issue with C3 Generators and securing circulation for distribution of C3 Generators.

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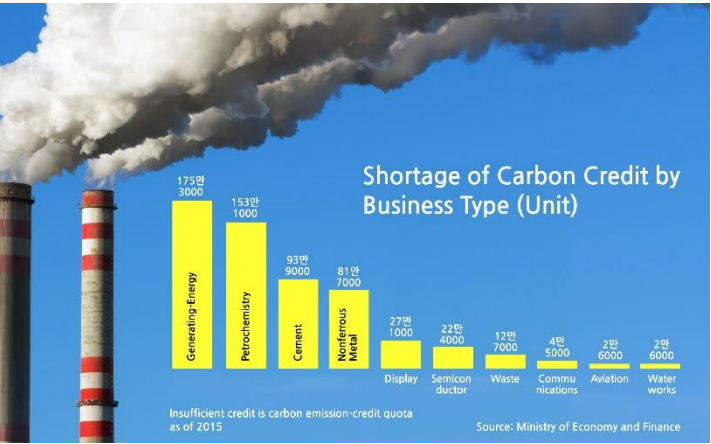


# 1. Summary

Droughts, floods and heat waves arising from global warming have caused a real headache to countries around the world. Annual mean temperature in 2017 has risen 1.62°F (0.9°C) compared to that in 1951~1980, and anthropologists state that people will no longer live on earth if the earth temperature increases over 2 degrees.

The earth temperature is rising because of the devastated forests and green zones, which are the result of industrialization from the major countries of the world that have pursued a rapid economic growth. Additionally, greenhouse gas from power plants or factories is the major cause of ozone depletion which increases the earth temperature, continuing this vicious cycle.

The world’s leading countries adopted the UN protocol to apply taxation for countries that fail to reduce emission of carbon dioxide (CO<sub>2</sub>) and 6 types of greenhouse gas based on the signed Kyoto Protocol. They have put forth a multilateral effort, including enforcing a carbon trading system.



The international society spoke with one voice on the issue of reducing greenhouse gas emission, one of the causes of global warming. As part of its effort, major countries of the world are greatly investing on technical development to reduce electricity plants that use fossil fuels or atomic energy and to produce electricity with alternative energy sources such as sunlight, wind power and water power.

C3 Generator distributed by C3 Electric is a generator applied with the magnetic field. C3 Generator have scientifically proved its outstanding performance by overcoming the barriers that previous magnetic generators have failed to do so. It is capable of producing 1~5kw per hour.

C3 Generator can independently produce electric energy without external sources. This generator is a state-of-the-art technology that may solve the issue of greenhouse gas emission, which is the main cause of global warming. Its relevant technology is under PCT international application and studies on application areas are continuously conducted.

C3 Generator is applicable to all areas of the industry as well as domestic electricity, and it will prevent global warming and change our lives.

C3W issued from C3Wallet is a means for C3 generator distribution and payment, and big data on electric energy use around the world will be gathered from this generator.



C3 Generators may be distributed in 2 ways - a distribution-sales method and rental method. The consumer price of a C3 Generator (600KW/h per month) is 6 million won, and you may purchase the product at 10% discount when paid by **C3W** tokens. The generators will be distributed to sole distributors and agencies located in each region of countries.

Monthly electric charges are made for domestic C3 Generators for rent.

It should be paid with **C3W** tokens issued from C3Wallet.

Monthly rental fee is about 20,000 ~ 40,000 won depending on the generator specifications.

10,000 people will be first registered for the rental service on a first come first serve basis.

The following registration method is applied for domestic C3 generators.

1<sup>st</sup> Rank=Purchased C3W tokens worth about 720,000 won (equivalent to electric charges of about 3 years)

2<sup>nd</sup> Rank=Purchased C3W tokens worth about 480,000 won (equivalent to electric charges of about 2 years)

3<sup>rd</sup> Rank=Purchased C3W tokens worth about 240,000 won (equivalent to electric charges of about 1 year)

C3W tokens can be purchased from a given exchange, and the first exchange will be bitforex.

You may apply from rental of C3 Generators at the following homepage: <http://www.C3Wallet.com>.

You may rent the product for 3 years and users may extend the rental period, if they want to continue its use.

The target market of domestic C3 generators is any household that pays over 50,000 won per month as electric charges. When this generator is installed, the electric charges may be reduced to its half or more. (Average electric charges per month of leading OECD countries: 90\$~100\$)

C3 Generators will be widely spread for domestic, commercial and industrial use. The application technology will be the core energy technology of the Fifth Industrial Revolution, going beyond the Fourth Industrial Revolution.



## 2. Environmental Impact



**Energy-saving**

Saving energy has several meanings for us.

Energy conservation refers to reducing toxic substances that are inevitably generated in the production process, to preserving natural resources and to protecting the natural environment.

Most power plants burn coals, petroleum or other fossil fuels to produce electricity. A lot of harmful substances such as carbon dioxide, sulfur dioxide and nitric oxide are produced as by-products.

When such greenhouse gases are emitted into the air, they absorb the solar heat and elevate the air temperature, having a negative impact on our lives and environment.

Saving energy is equivalent to reducing the greenhouse gas emission of power plants.

Reduced energy consumption will lead to decreased power output from power plants. Ultimately, it will reduce the amount of fossil fuels consumed every day.

However, much more energy is needed for our future.

Total electric energy use will increase as it relates to our lives and industrial sectors, including increased use of electronic appliances, electric vehicles and IoT (Internet of Things).



As the amount of energy required increases, major countries around the world are willing to have a war to secure fossil fuels that are the energy sources on earth. Accordingly, good citizens may suffer from the war.

Major countries are striving to develop energy that may replace fossil fuels, but no distinct alternatives are found yet.



We should create a peaceful earth without oil wars and green earth with no environmental destruction. Then, our descendants will be able to survive on earth.

C3 Generators will build a non-destructive, peaceful society with the revolution of energy generation by replacing the fossil fuels.

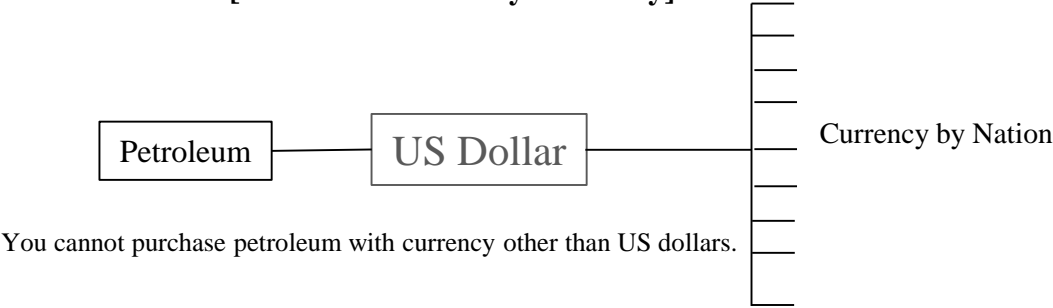


### 3. Conditions of Currency



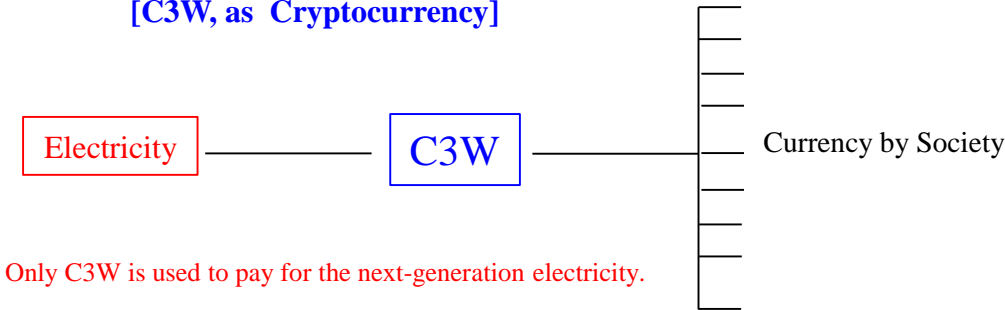
In 1971, Richard M. Nixon abolished the gold standard and it was the biggest issue to have US dollar as the key currency. To do so, America quickly searched for petroleum and allied with Saudi Arabia to build a **Petro-Dollar System**. It indicates that other countries must have dollars to pay for the imported petroleum. With the system, it was possible for US dollar to firmly maintain its status of the key currency without having to be connected with gold.

#### [US Dollar as the Key Currency]



Although numerous cryptocurrencies are made, they fail to gain their own status in markets and die out. This may be because they could not dominate items that are positively necessary for our society. If only a given cryptocurrency is allowed to purchase an item just like petroleum, such cryptocurrency is likely to become the major currency. It is difficult for a given cryptocurrency to become the major currency if an item meant to be paid by such cryptocurrency is optional in the market. However, C3W is quite different because it is systemized for modern people to pay mandatory “electric charges” with C3W. (There is an institutional barrier in receiving electric charges. Thus, it will be received as contribution and donated for society.)

#### [C3W, as Cryptocurrency]







**Can C3W be realized even when it is not a national institution?**

Yes, it can be realized.  
If a household has an option to select a free system in which only 20,000 won per month is paid by C3W for electricity up to 600kw/h per month (KEPCO electric charges will be about 140,000 won), consumers will choose C3 Generators instead of KEPCO electricity.  
C3 Generator users will definitely comply with the organizing company’s system, and they will possess C3W for payment.

C3W will dominate electricity for domestic use with C3 Generators.  
We cannot live without electricity. And, there are no countries that can carry on economic activities without petroleum.  
Just like “US Dollar” that secures its status as the key currency, C3W will be an inevitable option for households installed with C3 Generators.  
If anyone offers C3W as a payment method, such households will be irresistible in accepting the payment method. Additionally, if C3W can be used instead of cash for payment, such households will make payments with C3W that they have.

C3W is a commodity cryptocurrency interconnected with the electric generator that is scientifically proved for the first time, and it will become the major cryptocurrency someday.



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Electricity is essential.  
(Necessity)

Electric charges must be paid.  
(Compulsory)



## 4. Purpose of Issuing C3W

*-Changes the paradigm of electric energy use.*

Stop worrying about progressive tax! C3 Generator will be a great solution.

Electricity consumption is increasing owing to climate changes caused by global warming.

Accordingly, each household is afraid to receive billing of electric charges because of the progressive tax.

C3 Generator will solve this problem with only 20,000 ~ 40,000 won per month.

*-Energy that makes people happy*

C3W tokens donated with the rental generators will be directly offered to teenagers of family in crisis.

**(“Kangaroo Welfare Campaign”)**

If we could care for those teenagers to grow with less pain, our society will surely be brighter and happier in 5~10 years.

*-From fossil fuels to alternative energy*

About 10 years ago, John Vidney in America first invented a magnetic generator and made an effort to commercialize it in many countries like China and India. However, there were technical limits that were insuperable.

It took 4 years of research and development to build C3 Generators and the unsolved problems were finally solved. We are now in the commercialization stage.

C3W is an Ethereum-based token which is used as commodity money of C3 Generators. It will act as a technical conqueror, spreading the Korean technology throughout the world. Also, it will be an innovative energy source that may replace fossil fuels.

It is difficult to succeed only with prominent blockchain technologies in the current blockchain ecosystem. On the contrary, success is not guaranteed merely with a business model, in other words only with items.

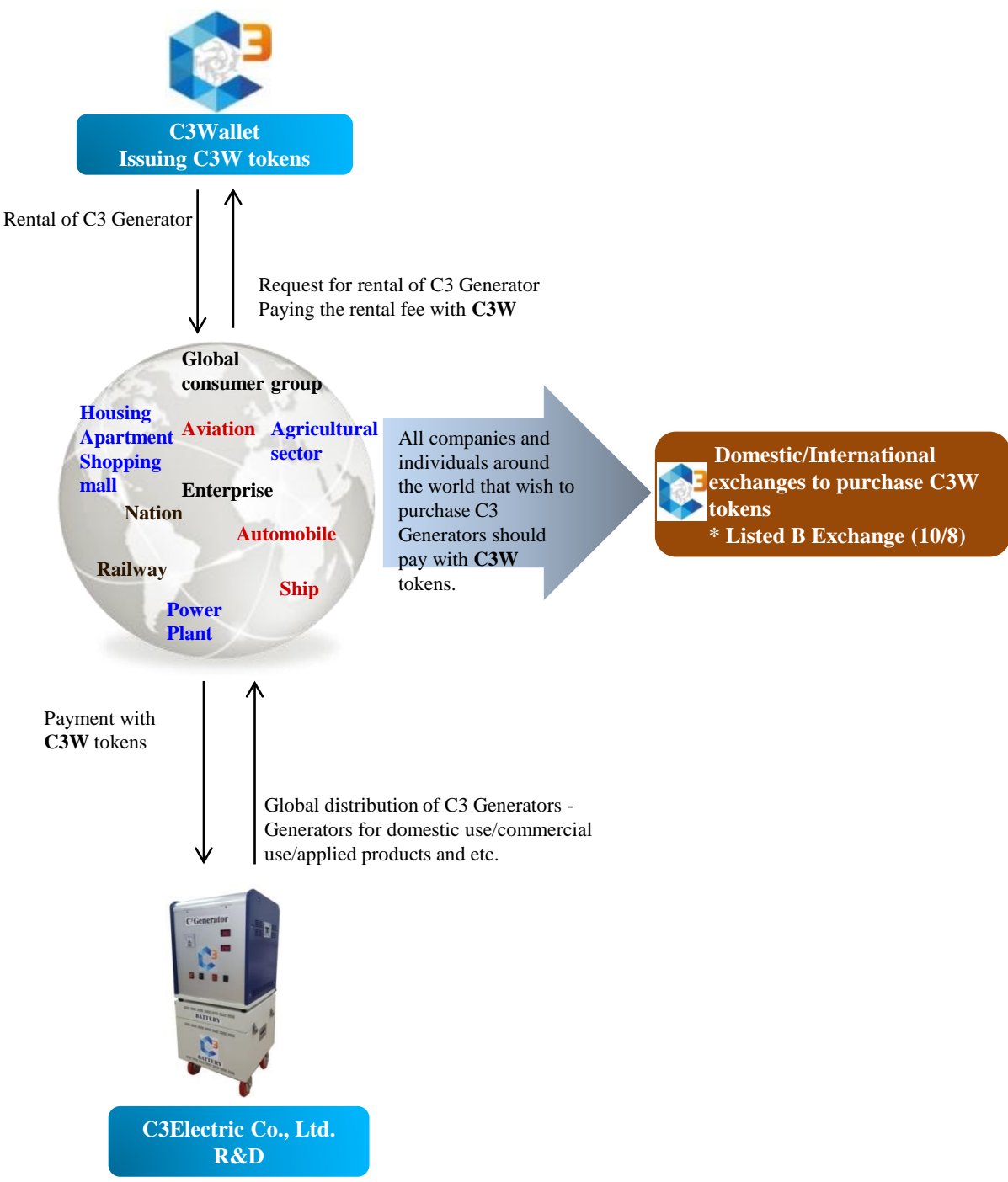
For a blockchain startup to succeed, an unfailing item and definite consumer market should be secured.

**C3W** consists of an unfailing item, a generator for electric energy, and an electric charge payment system. As the first energy welfare project, it converts electric charges into welfare funds to support teenagers of family in crisis. Furthermore, it will become the major cryptocurrency in the fields of energy and welfare.





# 5. C3W Flow Chart





## 6. Technical Specifications of C3 Generator

### Stand-alone Loop-back Electric Power Generator: SaLb-EPG

#### •Overview

Stand-alone Loop-back Electric Power Generator (SaLb-EPG) is in a Magnetic Motor/Generator Structure. The Generator generates actuating (driving) power with its own motor structure without any internal combustion engine or external actuating power and produces current induced by an induction coil as output. With the Motor/Generator Structure, it amplifies input power with no pollution and noise, and performs loop-back.

When it comes to an external force, the generating efficiency is less than 30% of the total actuating power owing to decline of efficiency arising from frictional force and loss factor relevant to rotation of the rotation axis. Such structural loss can be reduced, and input power may be used for rotation of the motor and an induced current from rotation of a permanent magnet may be used as output power. Input power will be amplified during the process.

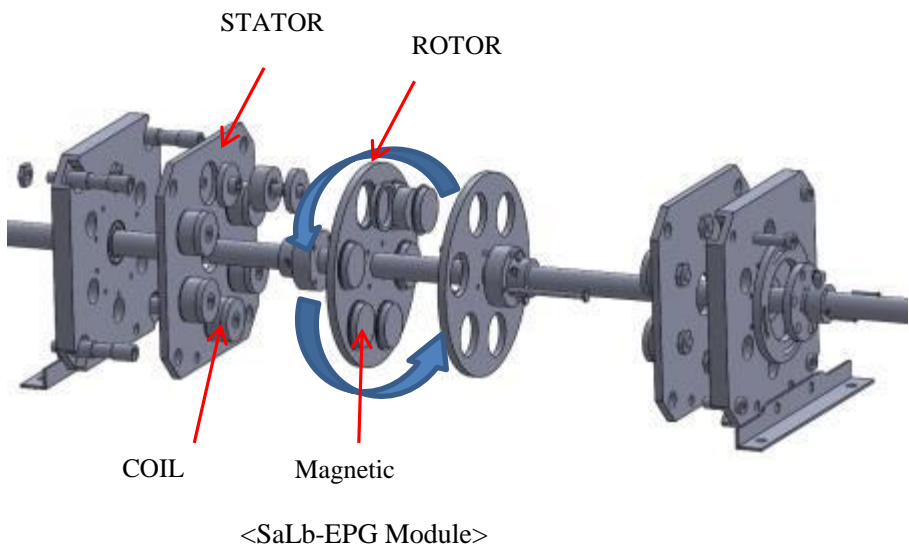
12VDC battery will be applied as the input power for initial driving of this generator to secure actuating power, and the current from induction coil based on rotation of a permanent magnet, the AC output part is converted into DC power with a Bridge Diode. In the process, the motor's actuating power is utilized and DC power is generated as output power.

#### •Structure

Stand-alone Loop-back Electric Power Generator (SaLb-EPG) is in a Magnetic Motor/Generator Structure.

Previous generators rotate the rotation axis with external forces (internal combustion engine, water power, fire power, atomic power, wind power and etc.) and convert an induced current induced from an induction coil into AC power output.

However, SaLb-EPG uses a Rotor mounted with a permanent magnet and Stator with an induction coil to input driving power in this Motor Structure, and Time Disc that supplies the actuating power is applied for the basic driving principle.



•Performance Index Input Power Range: 12VDC Max 1A;  
Output Power Range: 120VDC ~ 180VDC Max 10~20A



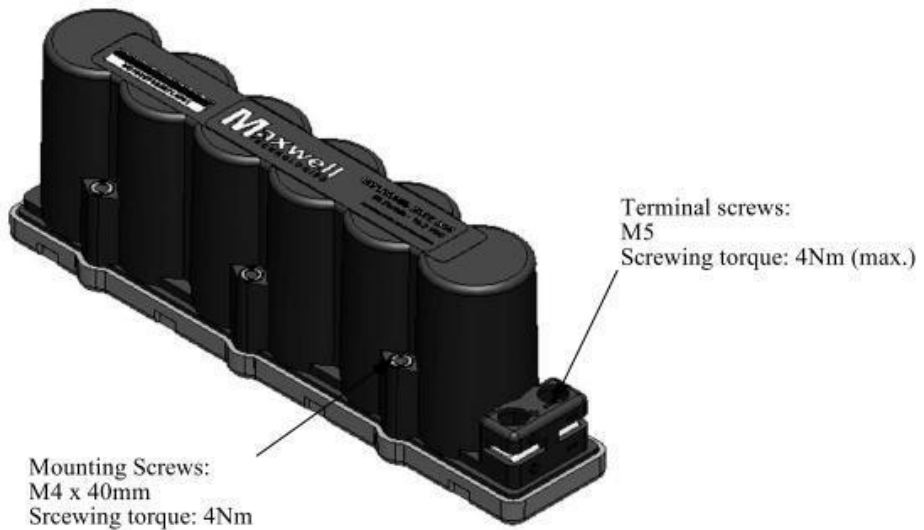
Specifications of Stand-alone Loop-back Electric Power Generator (SaLb-EPG)

◆ Input power: 3W~8W (12V-03~05A variable)

◆ Charging module: Ultra capacitor Modules

(58 Farads - 16.2V DC X 2)

BMOD0058 E016 B02 (16 V) and BMOD0006 E160 B02 (160 V) energy storage module is a stand-alone energy storage unit composed of 6 or 60 individual ultra capacitor cells. The module includes tiny capacitor cells that are wave-soldered on a printed circuit board and manually balanced. The unit may be connected in series to obtain a higher operating voltage, connected in parallel to provide an additional energy storage unit, or combined with series/parallel connection for higher voltages and energy. Manual balancing for a longer shelf life is used to supply the same voltage bias to an individual cell.



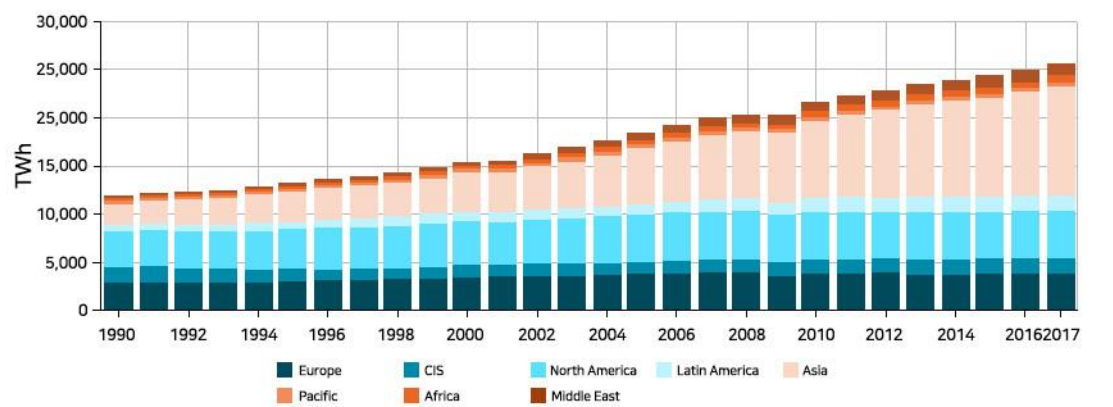
◆ Driving, resonance voltage: After generating 500V~600V in 2 seconds, 5~6 Ultra Capacitor Modules are charged.



## 7. Market Size

The world's total electric power consumption in 2017 was 25,000 TWh. 43% of the consumption is from Asian countries and 27% from the American continents. China and India accounts for 58% and 12% of the Asia's electric power consumption respectively. It indicates that China has used up to 25% of the world's consumption in 2017.

(Global Energy Consumption Graph)



C3 Generator is applicable to any industrial sector that requires electricity. In particular, OECD member countries with higher electricity consumption per person are the first targets. Also, developing countries such as China and India as well as countries suffering from energy shortage will be our first target markets.



The monthly average electricity consumption of 21 million households in Korea is 400kw/h and the electric charges is about 53,000 won. On the other hand, the monthly average electric charges of OECD member countries' households is about 90~100 US dollars, which is more expensive than that of Korea. Also, electricity consumption in those countries are higher than that of Korea. C3W is targeting households around the world that pay more than \$50 as the monthly electric charges to distribute C3 Generators. Additionally, the generators will be distributed to small/mid-sized stores such as restaurants or coffee shops.

Our C3 Generators will be used in all industrial sectors that need energy for domestic/commercial use and we will make a new paradigm of the world's energy market.

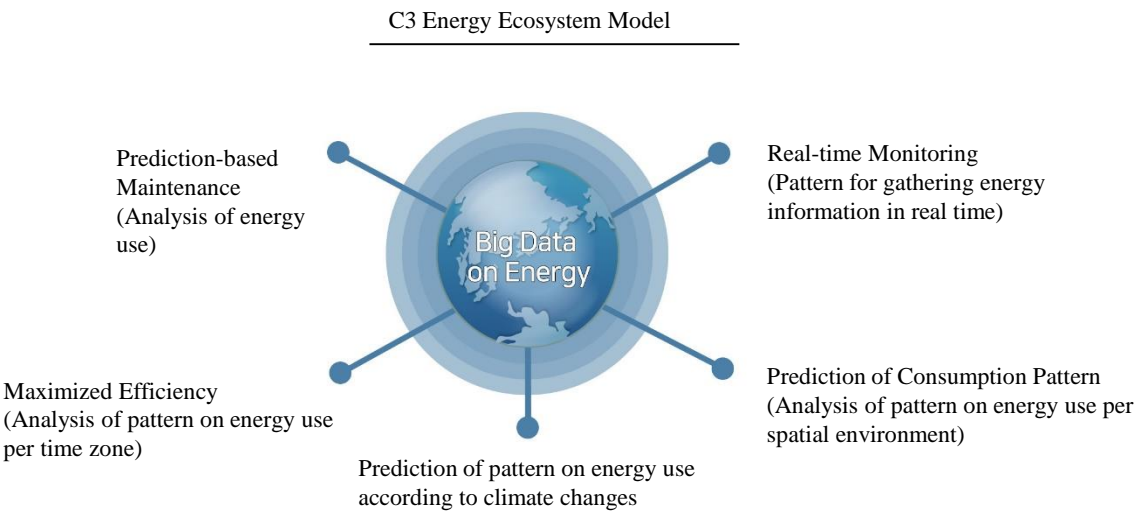


## 8. Big Data on Energy

With the developed IoT in 2020s, all electronic appliances will be installed with artificial intelligence (AI), which will make our lives faster and more convenient. It is “Blockchain” that provides high-quality data for AI to learn and it is “Artificial Intelligence” that makes a Blockchain smarter and intelligent. Such AI development is in big data and the big data enhances a Blockchain. The blockchain supports easier and safer data sharing, which will ultimately secure more data to create an outstanding AI model. The future petroleum is regarded as data and business models based on such big data are rapidly developing. The blockchain enables exchanges and transactions of data and models into intellectual assets.

We gather a lot of big data relevant to energy use from chips installed in our C3 Generators and will offer a new, convenient service in the field of energy with the data.

Any big data acquired from C3 Generators will further improve the generators and will become a big asset of the C3 Ecosystem. Accordingly, those with C3W will be compensated soon.



More efficient energy management is realized by collecting, analyzing and visualizing the big data on energy in real time. Additionally, the consumer’s energy consumption trend can be made into patterns based on a large-scale data stream such as energy consumption and climate for optimized energy management and effective energy consumption culture. C3Energy will offer you with systems and services necessary for auto energy control and C3Energy transactions based on our big data. With the above, power transactions among individuals and microgrid will be realized, and all systems and services needed to build a new renewable energy business will be offered to you.



## 9. Kangaroo Welfare Campaign

### *Building a community to embrace our weak neighbors*

Among mammals, kangaroos are the only ones that embrace the young in their pouch. As mother kangaroos jump with the vulnerable young in their pouch, we launched this “Kangaroo Welfare Campaign” to jump with and embrace those in need around us.

>> Kangaroo Welfare Campaign System



### **Kangaroo Welfare Campaign System**

#### 1. Teenagers of family in crisis with unknown sorrow

They want to go to educational institutes just like other friends, receive a birthday cake and have pizza and fried chicken after mid/final exams.

#### 2. Local stores ready to support those in need

Local stores and offices with their own business contents may willingly donate talents and products.

#### 3. Local offices

With expenditures for office supplies, coffee and meals, we would like to support teenagers in need.

#### 4. Kangaroo coffee (a coffee machine operable with a mobile phone is developed)

A coffee machine is placed in an office and a teenager of family in crisis is matched with the coffee machine. Every time, the machine operates, a donation is reserved to support the teenager. Here, a local minister will act as a coordinator.

The monthly-donated C3W will create a transparent donation culture and ecosystem, and it will make the campaign soar higher.





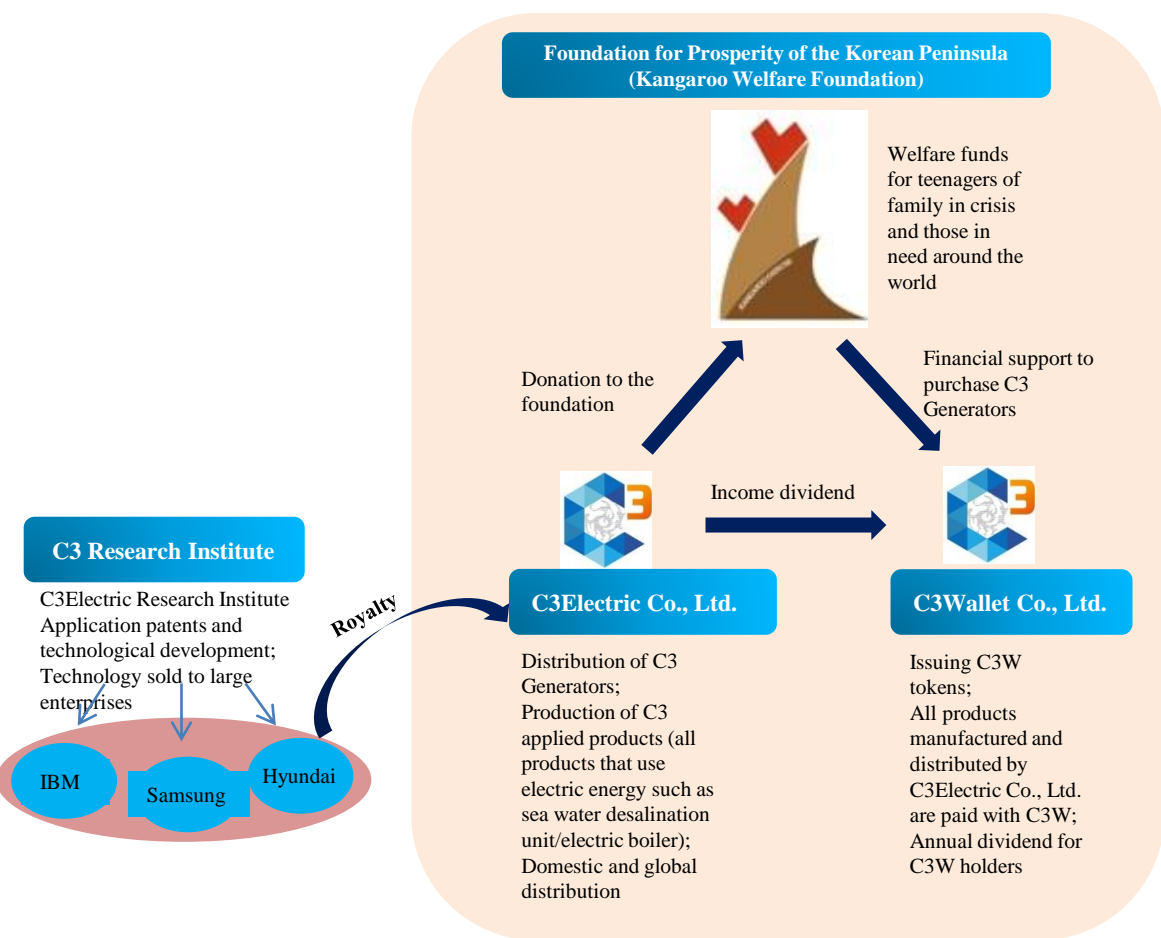
# 10. C3 Ecosystem

## Business (Revenue) Model

The most important factor in C3 Ecosystem is a C3 Generator. There are endless business models interconnected with the generators.

C3 consists of 2 corporations and 1 foundation corporation.

- 1.C3Electric Co., Ltd. – Global distribution corporation
- 2.C3Wallet Co., Ltd. - C3W Token issuing company
- 2.Foundation for Prosperity of the Korean Peninsula (Hanbando) - (foundation corporation)



C3Electric Co., Ltd. is a corporate body that produces and distributes C3 Generators for domestic use and applied products. With the core source technology of C3 Generators, it is the key to the business (revenue) model.

C3Wallet is a blockchain system for payment means, donation and data collection when C3 products manufactured by C3Electric Co., Ltd. are distributed throughout the world. It functions as the default currency of C3 Ecosystem where all transactions are made with C3W.

C3 Research Institute is continuously applying for patents on technologies of application areas. The application technologies with patents are first transferred to domestic firms and the firms pay royalty to C3Electric Co., Ltd. that possesses the source technology.

Foundation for Prosperity of the Korean Peninsula is a non-profit foundation that spreads the Kangaroo Welfare Campaign throughout the world to support the vulnerable in the culture and welfare blind spot and to contribute to co-prosperity of humankind.



## Compensation

As C3 Generators are spread throughout the world, the number of users will increase and C3W tokens will be used more frequently, rising their value.

According to the basic logic of market, appreciation and depreciation of cryptocurrency is determined by selling and buying.

Approximately 5% of the issue amount presold, which is very little, is released (C3W).

There will be a lot of buyers as soon as C3W is listed on the stock exchange.

We will promote and advertise C3 Generators through the press and advertising medias, and those who have seen the ads will rush into the exchange to rent C3 Generators.

For a free rental of C3 Generators, people (citizens) should purchase C3W tokens that are worth at least 240,000 won and up to 720,000 won from the exchange.

C3W tokens that people purchased will be spent as the monthly electric charges (20,000 ~ 40,000 won).

The monthly electric charges paid in C3W tokens will be donated to the welfare foundation to save the starving children in the world.

C3W is a 'token used to pay for electric charges' which will become the key currency and its status as the 'token for contribution' will be firmly established. As a result, its value will definitely rise.

C3W will develop an artificial intelligence-based 'Mobile Wallet' in the near future. With the advanced AI technology for the first time in the world, we will launch a mobile C3Wallet that is safer and more convenient than even quantum computers can overcome.

Along with the development of C3Wallet, C3W will open 'C3 Crypto-Asset Exchange' in Jeju Island based on the state-of-the-art AI technology.

C3Wallet and C3 Crypto-Asset Exchange will be interconnected to offer users with quicker and more convenient services, building a smart crypto-economy.

Additionally, all C3W holders will receive the profits of C3Electric Co., Ltd. as dividends at the end of December every year. You will be pleased to receive dividends at the end of the year and it will increase every year. It will be paid in C3E tokens.

C3E tokens will be issued with launching of C3W Main Net and create C3 Ecosystem.

C3W will expand the currency for electric charges and donation to the entire living territory and the value of our tokens will increase as they are used as the key currency.

The above are the benefits and compensations C3W holders may obtain.

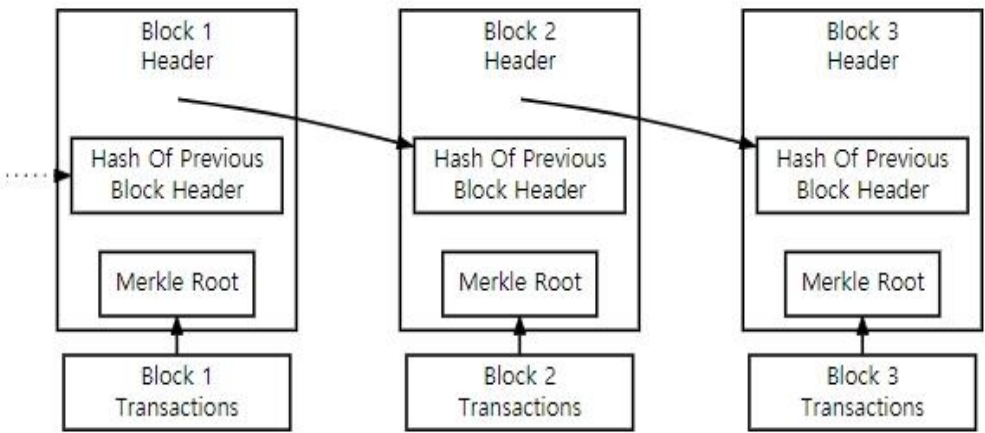


# 11. Technical Specifications of C3W

## Basic Understanding of the Blockchain Technology

Typically, a transaction in each node that participates in the blockchain network is gathered in a Block and this Block is completed when it becomes a specific size and after a specific time. Transaction details are included in the block with hash and each block is connected with the same method to create the blockchain structure.

A key to the blockchain is hash and it is impossible to infer the original text with a combination of the hash values, making it highly secure. With the hash, it is possible to connect the blocks in sequence. In other words, blocks are regularly created and the hash values that contain information of all previously-created blocks are recorded in the newly-created blocks. Thus, a key to the blockchain is to make it difficult to counterfeit or falsify the transaction details recorded in blocks through hacking.



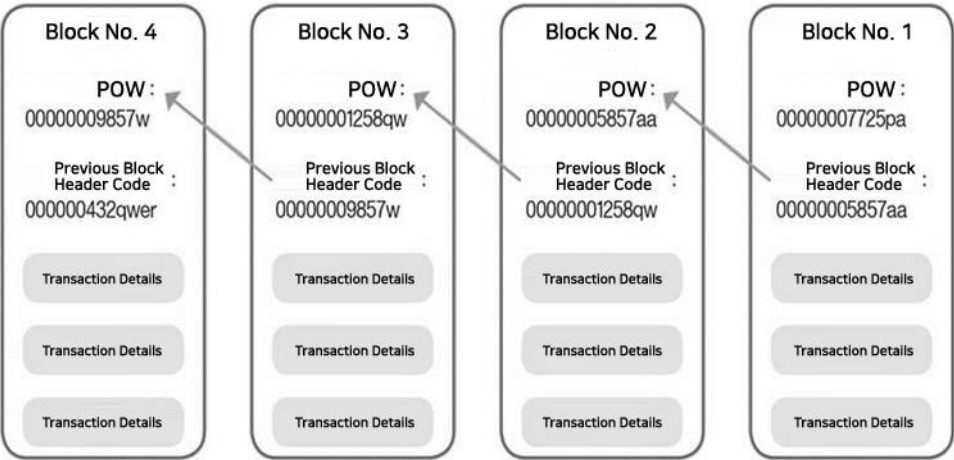
Simplified Bitcoin Block Chain

The coin hash at blockchains is mostly SHA-256 which is an irreversible one-way encryption. It makes and stores a hash string in 256bit size and when the hash values in each node are completely same, the transaction details can be immediately cross-checked. Thus, with less data, numerous data can be compared with the original and any forgery of public ledgers can be prevented. Therefore, the longer the chain, the more reliable it may be. No brokers or trusted third parties are needed for transactions and payments, so benefits such as improved efficiency in transactions and cost reduction appear, and the blockchain platform has become a legitimate tool that enables cost reduction and risk management.



**Limits of PoW (Proof-of-Work) and Environmental Destruction**

Any data changes generated from malicious nodes of the blockchain network may cause fatal system errors, so various consensus algorithms exist for prevention. PoW (Proof-of-Work) is also a type of consensus algorithms, and bitcoin is one of the cryptocurrencies applied with this. The PoW method may secure blocks of a blockchain based on consensus of nodes as it aims for decentralization. Thus, the related algorithms are operated by working out the encrypted puzzles with unconditional computation and a Miner who solve the puzzle for the first time will receive a reasonable compensation.



Cryptocurrencies that adopted PoW algorithms are mostly composed of encrypted puzzles with a low level of difficulty in the early stage. Thus, it may be possible to perform mining only with hardware of good specifications in the initial issuance stage. However, people with a lot of expensive equipment will be more rewarded in such system. In the end, Mining Farms were built in every corner of the world and bulk mining from areas that produce electricity with fossil fuels caused tremendous problems related to environmental pollution. To make matters worse, multiple Mining Farms gather to organize a Mining Pool, which was contradictory to the algorithms that intend for decentralization. An association of big mining pools is possible to realize 51% Attack to control the entire blockchain, resulting in Byzantine general problem. In other words, if 51% of nodes with manipulated data come into the protocol, it may distort the fact or the manipulated information may be mistaken as the fact, and may approve the transaction.



Several types of manipulation are possible because of nodes that occupied Hash Power of 51% or more. Such manipulation will inevitably cause Double-Spending.

The conventional PoW (Proof-of-Work) method involves expandability of blockchains. Of course, with diverse response systems, it may be supplemented. However, it will be less stable. Thus, if insisting stability of 100% PoW method, it should stand capacity that exceeds tens of gigabytes as blocks are piled up, slowing down the speed of forming blockchains. There will be a barrier to expandability, that is the speed to connect new blocks with the existing ones. With more participants, it may get more secure, but less speedy. This is why it takes more time to approve transactions of bitcoins as time passes.

C3W decided to adopt a previously-verified platform instead of developing a mid/long-term independent platform because it wished to preoccupy and secure the blockchain ecosystem of the energy and welfare sectors in advance in this reality where we head toward the Hyper-Connected Society. We chose to issue tokens with a stable Ethereum platform because we could not neglect the environmental destruction caused by mining resulting from PoW algorithms.



**Basic Concept of Ethereum**

It is a web framework to implement programmable blockchains, created by Vitalik Buterin in 2013. It is an entity that provides platforms to make scalable decentralized applications. C3W has adopted the Ethereum platforms because we are convinced that these platforms are the optimal ones that may effectively realize our philosophy.

Ethereum is based on Turing Complete Language and supports Smart Contract Coding. Thus, it has overcome the limits of bitcoins that could not fulfill various applications. A welfare culture ecosystem arising from our philosophical values can be created with applications on the Ethereum blockchains.

Of course, Ethereum platforms may have to cope with a diversified number of cases. Thus, what techniques are applied for platform integrity should be checked. In this regard, the White Paper states the features of basic Ethereum technologies, which is the key factor, and ways to overcome its instability.

The main elements of Ethereum are Smart Contracts and Decentralized Applications. It is essential to verify whether the predefined codes are properly executed (a contract function). With Contract Standardization, its Consistent Execution has been improving. This also indicates that solidity programs are getting more strengthened.

Ethereum structure is similar to bitcoins in terms of block number, previous block information, hash tree, transaction information and nonce. Uncle blocks and gas are new concepts. The structure of Ethereum blockchains is as summarized and illustrated in the figure below.

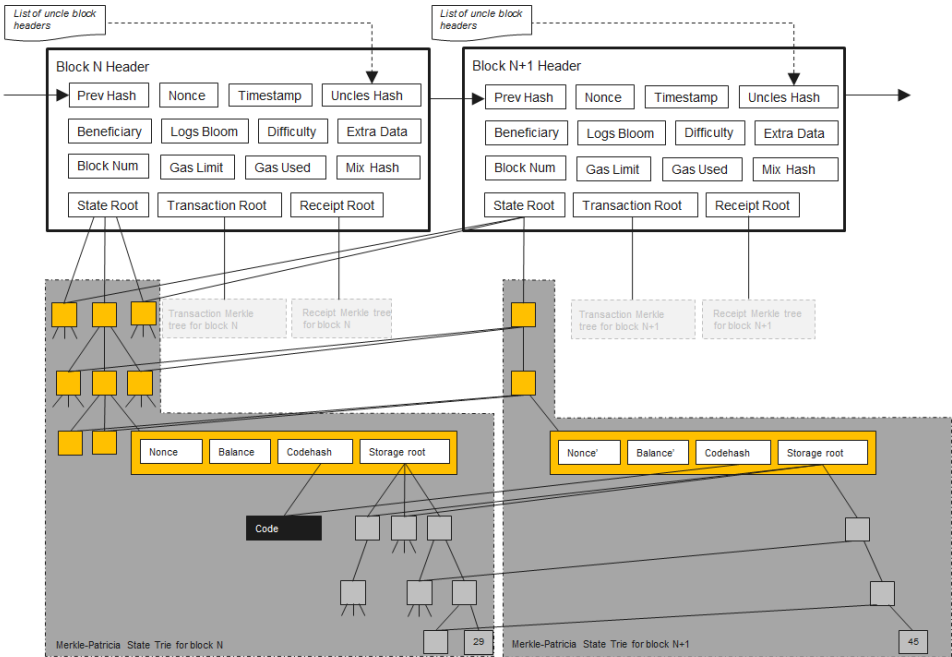


Figure (Ethereum Stack exchange)

The above items include Prev Hash, Nonce, Timestamp, Uncles Hash, Beneficiary, Logs Bloom, Difficulty, Extra Data, Block Num, Gas Limit, Gas Used, Mix Hash, State Root, Transaction Root and Receipt Root. Please refer to the footnote for further information.





## Conversion to PoS (Proof of Stake)

Ethereum applied the revised PoW (Proof-of-Work) which is called Ethash as its consensus algorithm, but currently it is being converted into PoS (Proof of Stake).

The previous consensus algorithms of bitcoins is a repetition of simple computations (PoW). Thus, there is a risk that a specific minority may monopolize the mining output with ASIC. When a competition over hardware through the abuse of ASIC gets fierce and a specific group possesses more than 51% of the mining output, an attack may occur. Thus, Ethash algorithms are adopted to prevent such consensus from becoming centralized, increase memory operation to block production of ASIC and to facilitate verification. It is designed for user-friendly GPU operation.

PoS is applied with a randomized voting method to determine which node will validate the next block and each node should retain a stake of the network to become a candidate for voting. The amount of stakes will increase the probability of being elected as a Validator to receive compensation and to validate the next block. The Validator will receive fees for transactions within the validated blocks. A waste of electricity is significantly less than with PoW because others are not allowed to perform mining. Unlike PoW, it is impossible to organize a mining pool and relatively less money is required to build nodes. Therefore, it is more decentralized and highly secure than PoW.

## ERC223 TOKEN Technology applied to C3W

Unlike ERC20, there are two advantages of ERC223

- ※ A fallback function is defined to distinguish contracts that support tokens and those that do not.
- ※ When sending tokens to Smart Contracts, ERC20 uses 2 functions - approve() and transferFrom(), in other words 'gas' should be inserted twice. However, only 1 function – transfer() is enough for ERC223.

Sending and receiving tokens between users are similar to those of ERC20, but developers of token-based Smart Contracts should add tokenFallback() to Smart Contracts. The codes applied for the fallback function are as shown below.

```
function tokenFallback(address _from, uint _value, bytes _data) public pure {
    TKN memory tkn;
    tkn.sender = _from;
    tkn.value = _value;
    tkn.data = _data;
    uint32 u = uint32(_data[3]) + (uint32(_data[2]) << 8) + (uint32(_data[1]))
    tkn.sig = bytes4(u);

    /* tkn variable is analogue of msg variable of Ether transaction
    * tkn.sender is person who initiated this token transaction (analogue of msg.sender)
    * tkn.value the number of tokens that were sent (analogue of msg.value)
    * tkn.data is data of token transaction (analogue of msg.data)
    * tkn.sig is 4 bytes signature of function
    * if data of token transaction is a function execution
    */
}
```

TKN struct may be declared in the function and directly input to the Contract, but it is recommended to inherit it into the Smart Contract where the following codes are to be developed.

```
contract ContractReceiver {

    struct TKN {
        address sender;
        uint value;
        bytes data;
    }
```



## 12. Tokenization of C3W

### ※ Means of Electric Charges Payment

Ethereum ERC-20-based C3W can be purchased from the cryptocurrency exchange.

C3W will be used to pay (donate) monthly electric bills charged on C3 Generator users.

Currently, bitcoins account for over 51% of the cryptocurrency market volume. Bitcoins have won a majority of total markets because of its symbolism that it is the first blockchain and it is the only cryptocurrency that may be used to sell and buy alt-coins at global exchanges.

For a cryptocurrency to secure its recognition and to develop in the cryptocurrency ecosystem, users must exist and it should be a key currency instead of an optional currency.

There will be more C3W users and the value of C3W will steadily increase, just like bitcoins that are valued as assets.

### ※ Means of Donation

C3W used to pay for the monthly electric charges will be donated to the welfare foundation and used as welfare funds for teenagers of family in crisis.

Any support and contribution up to now were to maintain one's lives rather than to realize qualitative improvement in lives, and public awareness on donation has vanished because of the foundation management's fund operation that is not transparent. Blockchain technologies must be adopted now to enhance transparency of support and donation. C3W tokens with Ethereum-based ERC223 blockchains will change the paradigm of our donation culture and save those in need around us as well as teenagers of family in crisis who suffer from difficulties that we have not recognized.

As 'tokens for payment' of energy consumption and as 'tokens for donation', C3W will become the key cryptocurrency of the energy and welfare sectors at the blockchain ecosystem.

C3W holders will obtain greater values from the users of C3 energy ecosystem.



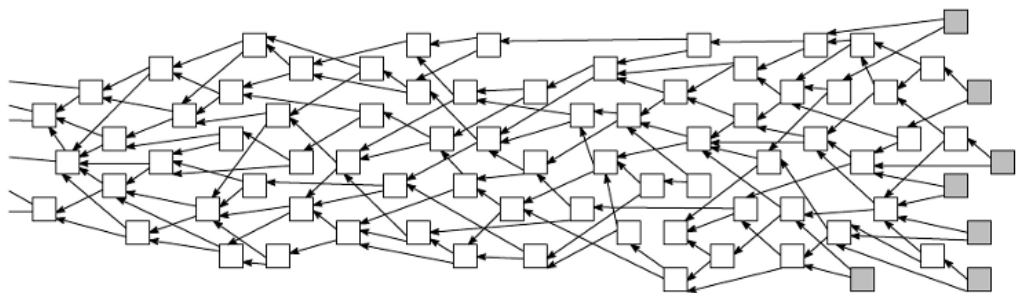
# 13. Expansion of Technologies

## Expansion of Technologies

This section informs you with several technologies and techniques adopted to build C3W platforms in the fields of energy, welfare and culture. It includes response plans for the upcoming era of quantum computers and there are parts that describe matters under construction in the Ethereum Blockchain platforms.

## DAG(Directed Acyclic Graph) Algorithm

DAG algorithm refers to a directed acyclic graph in a two-dimensional array and a cycle graph without a route to come back to its original point. Blockchain is to verify data when blocks pile up and a connection with the next block is formed. When there are too many transactions, they may not be completed in time and waiting time may be generated. It naturally leads to a speed issue. DAG algorithm is a chain type without blocks and a transaction verifies and approves the next transaction.

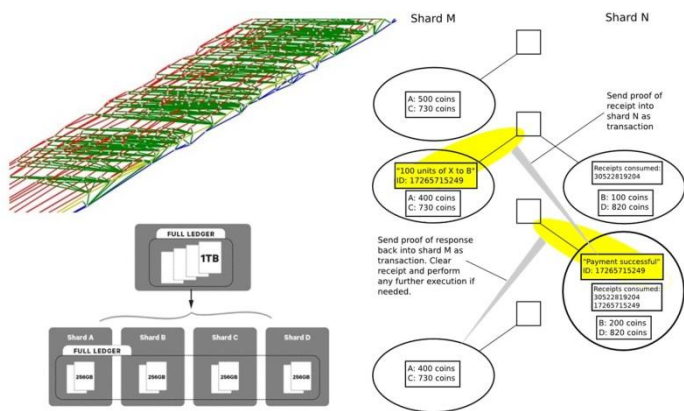


Directed Acyclic Graph

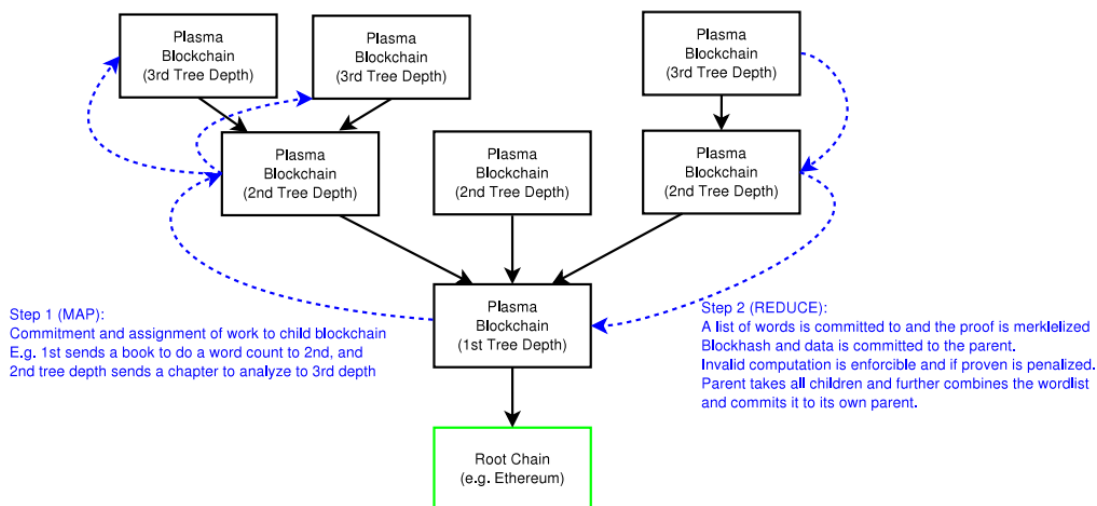
DAG algorithm verification line is in parallel instead of in series for one transaction to verify and approve the next transaction. The level of block is split into the level of transaction and such verification is performed simultaneously. In general, increased use in blockchains may lead to the increased number of transactions against blocks, resulting in bottleneck. However, with DAG, increased use will make more previous transactions that can verify new transactions, which will ultimately improve reliability of verification and speed up the process. This is an advantage that is suitable for popularization of the blockchain technologies.

## Sharding

Sharding is a technology that may be the solution to blockchain scalability (speed). As data pile up, it should deal with a large scale of information and it slows down the formation of blockchains. In such a case, it is natural to observe a failure in scalability. Increased nodes that take part in blocks are good in terms of security, but not so good in terms of speed. Thus, a solution to speed is required and Sharding is an applicable technology.



Vitalik Buterin [sns /github system](https://github.com/vbuterin)- The blue line at the left image is a main chain; yellow line is a shard node; red line is a shard; and green line is a node-node connection.

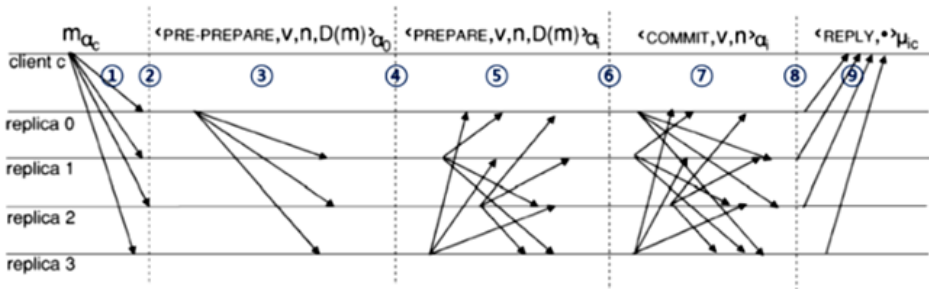


Plasma Diagram

With plasma, a blockchain system that is quick and scalable can be implemented. Additionally, it will get rid of its inefficiency of recording every transaction onto blockchains when transactions occur frequently, and several transactions may be processed at off-chain mode and only the final information may be recorded onto blockchains.

### PBFT(Practical Byzantine Fault Tolerance)

With a variety of consensus algorithms such as PoW, PoS and DPOS applicable these days, PBFT(Practical Byzantine Fault Tolerance) is a new algorithm that can both solve the attacks of malicious nodes and realize speed that is practically available at the asynchronous systems. PBFT-based network is capable of realizing quick speed because it comes to consensus even when nodes less than  $(n-1)/3$  are malicious among total nodes ( $n$ ). However, it is less secure than PoW, so when applied to build Coguryeo Cyber Country platforms, a supplementation method should be adopted. Since all nodes need to communicate in network, it takes more time to create blocks when the number of nodes increases. Thus, the number of nodes cannot be increased. Thus, the proper number of nodes should be defined and PBFT consensus should be properly finalized. PBFT(Practical Byzantine Fault Tolerance) is processed in 9 stages.



<https://steemkr.com/crypto/@energist/blockchain-study-pbft-practical-byzantine-fault-tolerance>

- ① A Client requests for Confirm of the present state for all nodes.
- ② The Primary Node chosen among the nodes will gather transactions received from the Client.
- ③ The Primary Node delivers blocks created with gathered transactions to other nodes.
- ④ All nodes receive blocks from the Primary Node.
- ⑤ The nodes that received blocks deliver the information that they have received blocks to all other nodes.
- ⑥ Each node puts together whether other nodes have received blocks and when the number exceeds 2/3, relevant blocks are verified.
- ⑦ The validity result is all delivered to other nodes.
- ⑧ Each node collects the validity results sent by other nodes and when the same result exceeds 2/3 of the total result, such result will be regarded as 'true' and an action that matches the value will be performed. When the number of nodes exceeding 2/3 has sent a valid result, such block is added to its blockchain. When the number of nodes exceeding 1/3 has sent an invalid result, such block is not added to its blockchain.
- ⑨ The present state value is sent to the Client.





### **C3W Platform Construction**

Centralized power was within the monopolized information and data, and verification and payment through the third party was essential for transfer of ledgers. In other words, monopoly became power, and verification and reliability became finance. And, these two combined became the central axis of control systems.

To overcome the above, blockchains have inevitably emerged. It is a common sense among the public that a blockchain is a decentralized ledger technology that all participants in the network may verify, record and store the transaction information. The advantages of the technology include secure transparent, P2P and instantaneous properties. However, a failure in instantaneous property which is one of the merits of blockchain platforms was seen and in the process of solving the failure, factors that impact security was generated. As coordinating these properties, issues that limit transparency and P2P are continuously adjusted and revised.

However, they are not negative issues and it is a vital procedure to secure popularity of blockchains. Additionally, alternative platforms with quick technical upgrades are consistently developed. Lack of technical standardization has preferably driven to focus on scalability, and it is rapidly developed into a technology that may maximize the efficiency of transaction and data verification processes. In particular, the advent of new platforms to overcome the limits of blocks is very hopeful. The bitcoin system with only a cryptocurrency function and technologies to record mostly asset information onto public ledgers without the national certification just like Ripple have now developed into blockchain technologies of Ethereum-based application platforms and permissioned distributed ledger.

The purpose of C3W is to build an ecosystem focusing on the fields of energy and welfare and to secure a mediation role for connection with other ecosystems. Thus, it puts emphasis on scalable application platforms.

C3W will come up with “C3W Platforms” that may develop and operate various application programs focused on contents relevant to energy and welfare in the decentralized network, and have users produce programs and offer services that they desire.

#### ***“The most significant matter is not the common technology but philosophy!”***

The purpose of issuing C3W is to secure the ecosystem of energy and welfare based on blockchains and to realize values with support of technologies.

Blockchain technologies will not be applied only to finance services, but will be widely spread to all sectors, including manufacture and distribution, public services and socio-culture.

Non-financial industrial sectors are securing their own blockchain technologies and preparing to advance to a new level of ecosystem.

Our business model is very simple and clear.

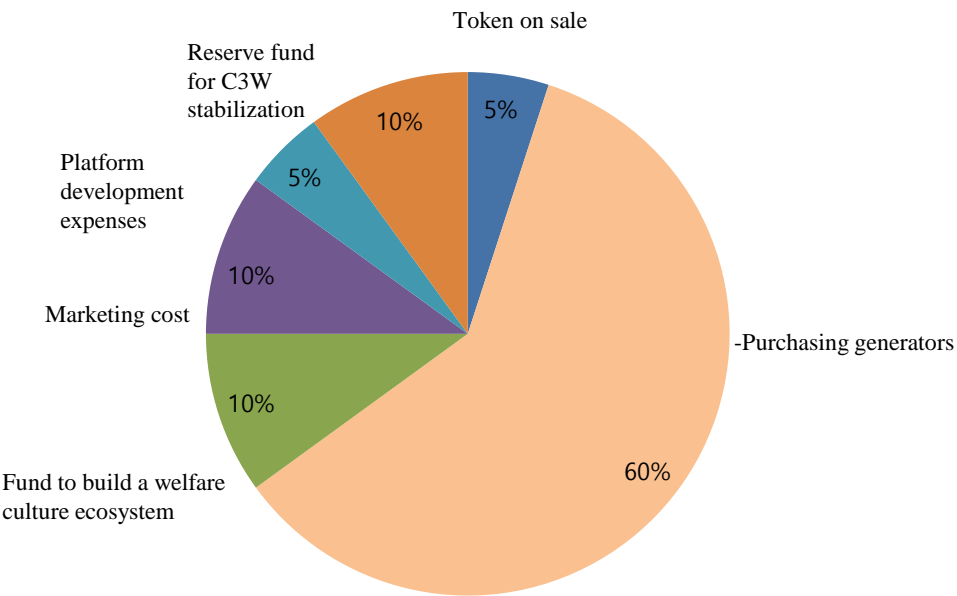
Keeping up with the times, C3W is building platforms to lead the ecosystem of energy and welfare culture. C3W Platform will be a fundamental frame to secure cooperation between each node and participants, transparency and stability without intervention of the third party in connection with platforms of each area.





# 14. Overview on C3W Token Issuance

※ Token: Energy Welfare Token (C3W)  
Total amount of issuance: 50,000,000,000  
Type : ERC20 (Ethereum-based token)  
Token price: 1 ETH = 15,000 C3W  
1C3W = 0.00008000ETH  
Lockout period: Contributor before September 16<sup>th</sup> = Locked for a month from the date of listing  
Contributor after September 16<sup>th</sup> = Locked for at least 1 month up to 24 months depending on the amount of contributions  
C3W is divided into the following items as shown in the graph below.

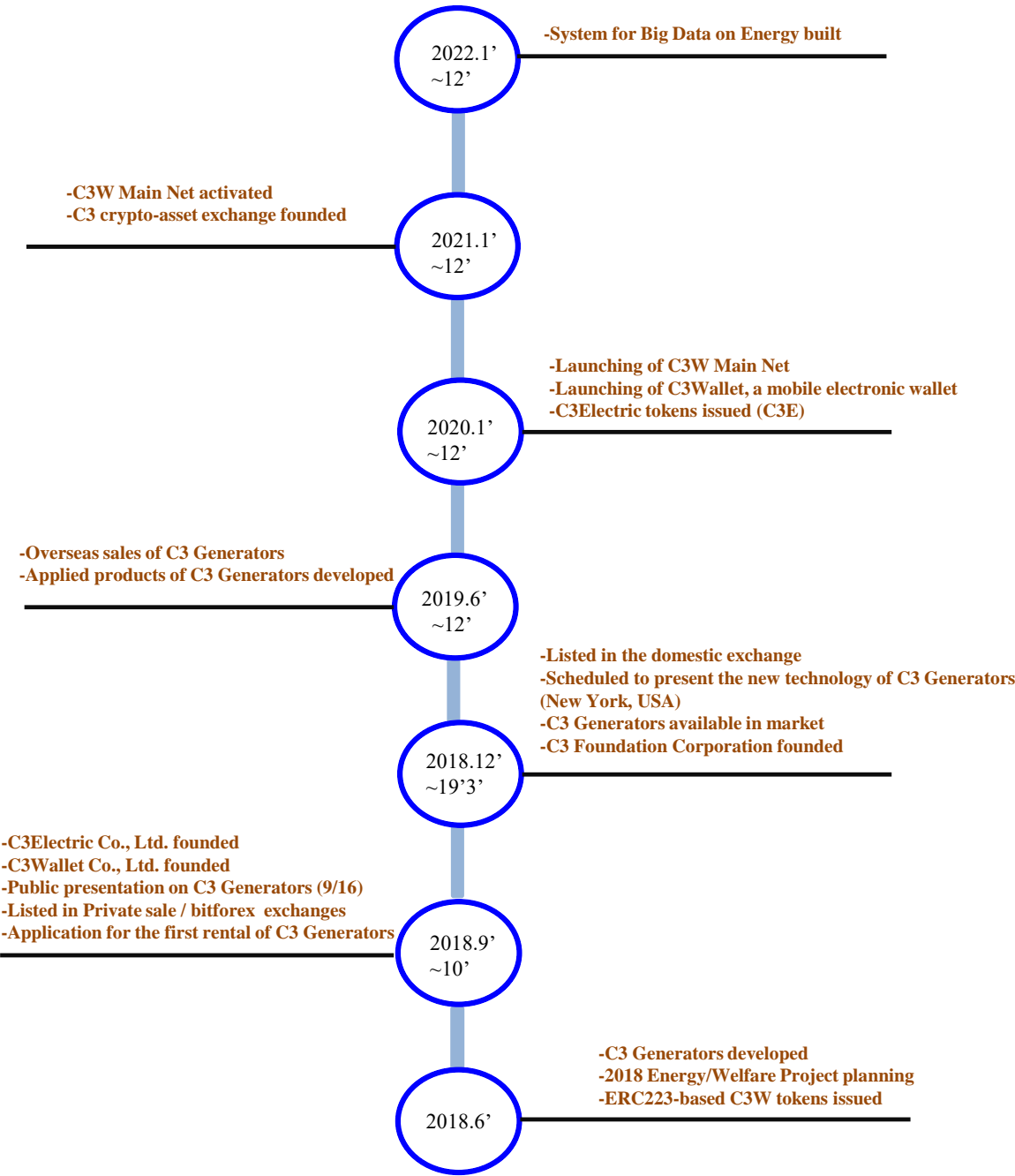


※ C3W is released only when “C3 Generators” are installed.

**Amount of C3W released = Quantity of C3 Generators**  
**C3W is not released without the purpose of installing “C3 Generators”.**



# 15. Roadmap





## 16. Legal Considerations & Exemption Clause

- 1) The White Paper herein is prepared to provide specific information on direction and philosophical values of C3W as well as on building an ecosystem of welfare culture platforms for corporations, organizations, groups or individuals that are already or will be in partnership with the C3W Project Team.
- 2) Any statements, information or details contained in the White Paper may include predicted information following the trend at that times along with the progress of the current C3W Project. The predicted information and details do not reflect related laws, regulations, policies, unknown risks or any other variables, so you should be aware that the stated details may not correspond with the reality.
- 3) The White Paper is not legally binding on C3W partners, participants and users, and the entire or part of information in the White Paper may be changed, revised, added and deleted at any time without restraints from anyone according to the progress of the C3W Project. We would like to inform you that we have no obligation to notify any changes, revisions, additions and/or deletions of the information.
- 4) The White Paper does not contain advices on investment, legislation, regulation, accounting, taxation and finances, and no information in the White Paper is intended to recommend or propose transactions or investment contracts. The details in the White Paper do not indicate securities, stocks, liabilities, loans or any similar matters related to C3W, and they do not induce sales and purchases regarding C3W. Therefore, all readers should acknowledge that the C3W Project Team, SPC corporation and any related Project corporations are not liable for any matters specified in the White Paper.
- 5) Any organization, group or individual already in partnership or will be in partnership that takes part in the project or uses and purchases the product should be fully aware that C3W is not a security, the White Paper is not intended to issue securities, and that no dividend or voting right is given in relation to C3W.
- 6) All legal damages, including any loss, damage, debt or any other financial damages arising from use of the White Paper or decision-making based on the White Paper by any organization, group or individual already in partnership or will be in partnership will not be compensated by the C3W Project Team, SPC Corporation and other related Project corporations. Furthermore, any project risk that the C3W Project Team, SPC corporation and related Project corporations should handle in relation to issuance and operation of C3W will not be vested in C3W holders. Thus, C3W holders should not enjoy any financial gain or grant benefit in return related to the project performance.
- 7) The main body of C3W issuance and operation may be transferred overseas owing to changes to the project purpose without C3W holders' consent, and the relocated overseas corporation may be in charge of C3W issuance and operation.
- 8) C3W should not be provided, distributed, resold or transferred for people, citizens, natural persons and corporations (hereinafter referred to as "those prohibited for participation") at regions where transactions of cryptocurrency are banned or restricted in accordance with the laws, regulations and/or policies.
- 9) When any corporations, organizations, groups or natural persons that wish to purchase C3W are suspected as those prohibited for participation, or when information given to the C3W Project Team, SPC corporation and related Project corporations is insufficient, inaccurate or misleading although those qualified to take part in the transactions are involved, any request for C3W can be rejected or cancelled at any time. Moreover, when those prohibited for participation purchase C3W and qualified participants purchase C3W through an illegal and unapproved route, please note that transactions may be restricted at any time and even be cancelled or invalidated.



10) Any organization, group or natural person wishing to purchase C3W should make its own decision on whether C3W can be legitimately bought in their regions and whether C3W can be resold to other buyers in specific regions, and the White Paper does not contain any information that may be the basis for the above. Additionally, it is hereby notified that those prohibited for participation and any corporations, organizations, groups or natural persons offering, distributing, reselling and transferring C3W to those prohibited for participation will be liable for any matters arising from intervention of those prohibited for participation.

11) When listing C3W is determined in the future according to its natural expansion, C3W holders have no right to designate or request for its period, method and result, and only the C3W Project Team, SPC corporation and related Project corporations will be responsible and authorized for its listing.

12) When building a C3W Platform of the welfare culture for the purpose of creating an ecosystem of energy, welfare and culture based on the direction of C3W and realization of philosophical values, all responsibilities and authorities related to the platform construction will be vested in the C3W Project Team or SPC corporation and related Project corporations.

13) Any matters related to adoption of AirDrop for C3W, its period and method, and deciding the target for AirDrop and its quantity should be determined by the C3W Project Team or SPC corporation and related Project corporations. C3W holders have no right to designate or request for its period, method, target and quantity when AirDrop is adopted for implementation.

14) C3W Project Team and/or SPC corporation and related Project corporations will contribute to expanding the blockchain ecosystem throughout the areas of energy, welfare and culture based on the direction of C3W and its philosophical values and do their best to reform our society into a brighter and more just one.

**C3W Project Team**