Carbon Coin white paper

Carbon neutral ecosystem token based on blockchain

Singapore Carbon Coin Ecological Development Fund• 2022

preface

Climate change is one of the most challenging issues facing the world today. Whether we can quickly control our carbon emissions to avoid the catastrophic effects of climate change is still a big question.

When looking for a solution to this global challenge, most of the work so far has focused on climate agreements, which have enabled the market to price carbon, thereby creating a compliant carbon market. There are also some voluntary carbon markets that have made some progress, allowing companies to offset their carbon emissions by funding certified greenhouse gas emission reduction projects, such as energy efficiency projects, carbon trading projects or rainforest transformation. Both of these markets face the challenges of double counting, transparency, trust, and scalability.

The birth of blockchain technology provides a new technological foundation for the global response to global climate change and carbon neutrality issues. Blockchain's unique characteristics of decentralization, tamper resistance, and high scalability are becoming another emerging technology that will have a significant impact on the future after technologies such as big data, cloud computing, and artificial intelligence. Blockchain is not a pure technology, it is a kind of technical idea or a family of technical standards. In essence, blockchain is a fusion of encryption technology, distributed ledger technology, P2P transmission technology, and smart contract technology. Innovation.

Along with the popularization of the ecological needs of the carbon market itself, the new sector of blockchain is also merging with the carbon industry, and in this way refreshes the public's new understanding. Explorers represented by the Singapore Carbon Coin Ecological Development Fund are working hard to issue the first carbon neutral concept coin in the blockchain field-Carbon Coin, and build the world's first carbon neutral based on blockchain technology The ecological system lays the foundation for the digital presentation of carbon emissions, carbon neutrality, carbon footprint and carbon sink resource certification. It is expected to solve global carbon emissions, carbon neutrality and other issues in the most effective and efficient way, combined with BSC cross-chain technology to promote the world Environmental protection, any individual can independently participate in it.

In addition, with the development of NFT and Metaverse, more value return space has been added to the blockchain ecology. The combination of NFT, Metaverse and games also allows more people to experience the fun of chain gaming, in order to promote carbon coins The development of the project will attract more users to participate. We will also develop low-carbon environmental protection chain games to lead the new trend of Metaverse.

This white paper is written based on guiding the application of blockchain technology in the field of carbon neutrality and carbon market. The creation of Carbon Coin will provide the industry with an efficient value medium foundation support. At the same time, this white paper will outline the prospects of the project from the background of industrial development, the core of blockchain technology, the pain points of industry development, and technical solutions. In addition, the development model, design principles, technical characteristics, technical architecture, application ecology, token economic model, core team, foundation management, etc. of Carbon Coin will also be deeply interpreted for users, service providers, partners and partners. Investors and others provide a new ecological application solution for the green carbon market based on blockchain technology.

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chapter one

Project development background

1.1 Global climate change profile

Global cold waves, intense heat, hurricanes, floods and forest fires and other extreme weather and natural disasters have occurred frequently in recent years. Superimposed on the impact of the new crown pneumonia epidemic, issues related to the safety of human survival and the sustainable development of the global economy have received more pay attention to. Among them, tackling climate change has long become a key issue. The physical risks, transition risks, and liability risks associated with climate change are increasingly entering people's field of vision.

United Nations Secretary-General Guterres released "Our Common Agenda" (hereinafter referred to as "Agenda") in September this year. The "Agenda" pointed out that mankind is faced with a severe and urgent choice: whether to further collapse, or to achieve a breakthrough, to a greener, better and safer future.

"We know that the GDP indicator does not take into account human well-being, the sustainability of the planet, non-market services, or the distribution level of economic activities. The absurd thing is that when people overfish, deforest or burn fossil fuels, GDP will rise. We are destroying nature, but we see it as an increase in wealth. Such discussions have been going on for decades. Now is the time for a collective commitment to take supplementary measures. Without this fundamental change , The goals we set in terms of biodiversity, pollution and climate change will not be achieved." Guterres said.

After entering 2021, just as the international community is doing its best to fight the epidemic, extreme weather in many countries around the world has frequently occurred. From high temperature and heat waves to torrential rains and floods, severe weather has caused a large number of casualties and economic losses, and the global climate change problem has brought people to people. The pressure seems to be greater than in the past. In the past two years, not only Greenpeace and other NGOs and sustainability activists have been calling out loudly, but also government agencies of various countries and regions have strengthened their cooperation and participation in the field of climate change.

According to the newly released "Blue Book on Global Climate Change (2021)",

in 2020, the global average temperature has been 1.2 degrees higher than the level of industrialization, that is to say, climate change has reached the critical point of 1.2 degrees, which is less than the "Paris Agreement". The critical point for temperature rise of 1.5 degrees is only 0.3 degrees away. Once this limit is exceeded, the possibility of the earth's temperature falling is very low. Data show that 2011-2020 is the warmest decade since 1850. In 2020, the average land surface temperature in Asia is 1.06 degrees higher than normal, which is the warmest year since the beginning of the 20th century.

Since 2021, extreme weather around the world has frequently appeared, forming catastrophic weather in many regions. This makes us more intuitively aware that the consequences of the earth's climate change problem are really serious. In late June and early July this year, a rare heat wave swept across the northwestern United States and parts of Canada. British Columbia, Canada, set a record high of 121 degrees Fahrenheit (approximately 49 degrees Celsius). Marine biologists estimate that due to the high temperature, one billion small creatures, including mussels, died of heat waves along the Salish Sea in western North America alone.

In the western United States, starting on June 26, Portland, Oregon, the United States has observed record-breaking maximum temperatures of 42.2, 44.4, and 46.6 degrees for three consecutive days. In Washington State, the temperature in Seattle also exceeded 42 degrees on June 28, while Pasco recorded an ultra-high temperature of 47.7 degrees that day, which has reached the state's high temperature record set on August 5, 1961. The temperature in Las Vegas once exceeded 47.2 degrees Celsius, setting a high temperature record since 1942; the temperature in California's Death Valley National Park even reached 52.2 degrees Celsius. In the hot weather, more than 30 million people in the western United States will be affected.

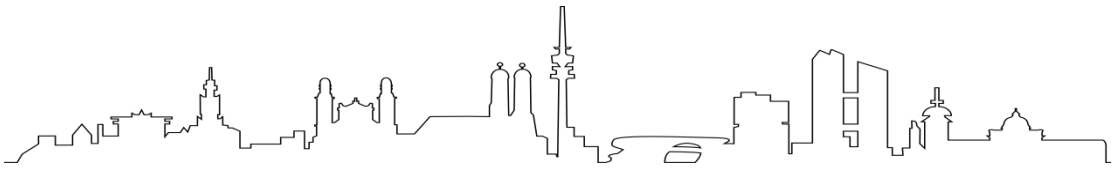
Europe and Asia have encountered extremely rare super floods. In mid-July, the European flood event severely affected Western Europe and other countries: On July 21, local time, the severe flooding caused by extreme rainfall in Western Europe has caused at least 200 people to die in this flood, of which Germany has the largest number of victims, reaching 156. people. In addition to Germany, many European countries such as Belgium, Austria, Switzerland, and the Netherlands have also experienced floods. Stefan Rahmstorf, professor of marine physics at the Potsdam Institute for Climate Impact Research in Germany, said that it is unclear whether the extreme rainfall in Germany is a direct result of global warming, but it

can be said that Due to global warming, this situation will only become more frequent.

China also experienced unusually heavy rainfall in July. In Henan Province in the central region of China, Zhengzhou's rainfall reached 622.7 mm from 2 am on July 20 to 2 am on 21st (extraordinarily heavy rain is the precipitation of more than 250 mm in 24 hours); July 20, the maximum hour in Zhengzhou The rainfall is 201.9 mm. In Hebi City, Henan Province, from July 21 to 22, the 24-hour rainfall reached 777.5 mm.

In South America, a violent cold current recently hit Brazil, which is mostly located in the tropics, and even caused many areas in the south to see no snow for many years. As the polar air mass advances to the central and southern regions of Brazil, the temperature in the higher altitude areas of southern Brazil may drop to minus 10 degrees Celsius. Weather consulting company Rural Clima said it expects this to be the coldest day in Brazil this year. Although most of the crops in southern Brazil have been harvested this year, the real pressure may come next year. Especially last year’ s drought has hit the older coffee trees, and this frost will cause continuous damage to the dwarf seedlings. If coffee trees are replanted, it will take about three years to produce them. In the past 10 years, cold air has been encountered at this time almost every year, but the cold has continued since May this year, which is very rare in history.

Judging from the above-mentioned abnormal weather, global climate change is intensifying. These abnormal climatic phenomena, which occur more and more frequently around people, have already caused a very realistic impact, causing a large amount of loss of life and property, and industrial and agricultural production. In the face of the increasing reality of abnormal climate change, all mankind must take quick measures to respond urgently.



1.2 Climate change and carbon emissions

The United Nations Intergovernmental Panel on Climate Change (IPCC) pointed out in a latest report that unless we drastically reduce greenhouse gas emissions in the next few decades, the magnitude of global warming will exceed 1.5 degrees Celsius and 2 degrees Celsius in the 21st century. Climate change is exacerbating the water cycle, which will bring about stronger rains, even trigger floods, and in many areas it means more severe droughts.

"Stabilizing the climate requires a strong, rapid and continuous reduction of greenhouse gas emissions, and achieving net zero emissions of carbon dioxide. Limiting the emissions of other greenhouse gases and air pollutants, especially methane, is good for health and climate." To reduce greenhouse gas emissions, pricing carbon is one of the important mechanisms. Economists unanimously believe that greenhouse gas emissions are an external factor, which brings costs to society that emitters cannot afford, and the market still cannot internalize them. Therefore, pricing carbon is not only necessary, but also widely regarded as the best way to transition to a low-carbon economy.

The International Monetary Fund (IMF) pointed out in a blog published by it that the incentives generated by carbon pricing can be enhanced by regulations on emission rates or fees. Using carbon pricing revenue to boost the economy and offset the economic damage caused by rising fuel prices can win support for this strategy. At the same time, appropriate transitional measures need to be taken to help low-income families, disadvantaged workers and regions. The clean technology infrastructure network that the private sector may not be able to provide requires public investment, such as electric vehicle charging stations and grid expansion to accommodate renewable energy such as wind and solar. And carbon pricing must eventually be extended to other industries, such as forestry and agriculture.

Judging from the current situation, carbon pricing can mainly be achieved in two ways, one is the collection of carbon taxes, and the other is the carbon emissions trading system. Among them, the carbon emission trading system has been gradually implemented in more and more countries around the world, and has played an important role in the process of promoting carbon emission reduction. A zero-cost thing, while stimulating large emitters to eliminate outdated

production capacity to achieve emissions reduction, it also encourages the innovation and application of low-carbon technologies, and ultimately realizes the transformation and upgrading of the industrial structure.

At the same time, a sound reward and punishment mechanism, quota restriction, and industry-wide carbon market will help more effectively carry out carbon pricing, so as to maximize the effectiveness of the carbon trading mechanism. The future linkage and docking of various countries, regions and markets in the carbon market will help to form a regional and even global carbon market, maximize carbon trading and expand the market scale, and better assist the global green and low-carbon economic transformation.

In addition to promoting carbon emission reduction and economic green transformation through mechanism design, the realization of energy from relying mainly on fossil energy to cleaner energy will help to reduce the carbon emission pollution caused by the use of energy at the root. Guterres has said that immediate energy actions are needed to reduce carbon pollution.

The main measures include: no new coal-fired power plants should be built after 2021. OECD countries must phase out existing coal by 2030, and all other countries must follow suit by 2040; stop all exploration and production of new fossil fuels, and transfer fossil fuel subsidies to renewable energy; by 2030, The production capacity of solar and wind energy should be quadrupled, and investment in renewable energy should be tripled today in order to maintain a net-zero trajectory by the middle of this century.

However, it is worth noting that while continuing to promote the development of the energy transition, we should not ignore the difficulties and challenges faced in the transition process. New energy needs breakthroughs in many aspects such as energy efficiency, stability, cost, and energy storage. First, the energy conversion efficiency of new energy requires further breakthroughs at the technical level. Take photovoltaic power generation as an example. At present, the conversion efficiency of commercial photovoltaic power generation is basically below 25%, which is quite different from the theoretical value of 70%. Second, new energy power generation is greatly affected by natural factors and has strong random volatility. With the continuous increase in the proportion of new energy sources connected to the grid, the fluctuation of power generation will increase significantly, which will increase the difficulty of power balance in various countries and exacerbate the shortage of power supply. Third, the production and storage costs of new energy are relatively

high.

In addition, from the perspective of energy governance, energy security issues may evolve into energy politics issues, which requires countries to abandon differences, achieve cooperation, and treat climate change as a common cause of all mankind. Carry out pragmatic cooperation in areas such as transformation, electrification, and energy efficiency to jointly promote global energy transformation and sustainable development.

1.3 The global consensus on carbon emissions and carbon neutrality

"The 15th Conference of the Parties to the "United Nations Framework Convention on Climate Change" and the 5th Conference of the Parties to the "Kyoto Protocol" were held in Copenhagen, the capital of Denmark, from December 7 to 18, 2009. This meeting is also known as the United Nations in Copenhagen. Climate Conference." This is a conference that has been hailed as "the last chance to save mankind." Countries hope to reach a new agreement to deal with climate change, but the meeting did not proceed satisfactorily.

At this conference, some developed countries shirk their responsibilities, and even demanded that the carbon emissions of some developing countries be the same as those of developed countries. This fully reflects the irresponsibility of some countries. In the past World Climate Conferences, there have been great disagreements on key issues such as carbon gas emissions of various countries, because the reduction of carbon gas emissions will directly affect a country' s energy consumption, economic structure adjustment, technological changes, and Changes in production and lifestyles, and through the burden of reducing the cost of carbon gas emissions, affect a country' s internal strength and international status and competitiveness.

However, letting the carbon gas emissions of developing countries be the same as those of developed countries means that developing countries have to reduce carbon gas emissions—the closure or adjustment of certain factories slows down the country' s economic growth. , The unemployment rate increases, people's quality of life decreases, etc., which lead to a series of social problems. This is not fair to developing countries. It is important to know that developed countries have also developed from the beginning of agricultural society to industrial society. Now most of the carbon gas in the atmosphere of the earth is emitted by developed countries. The Copenhagen Climate Conference did not solve the fundamental problem, and the governments of all countries did not reach a true sense of unity. However, all countries have formulated relevant policies on environmental protection.

Different countries have different attitudes towards carbon emissions. The

United States has always been "high profile and low commitment." Facing pressure from the international community, after the Obama administration came to power, it proposed that the United States should actively respond to climate change. But as a superpower, the United States actually promised to reduce emissions by only 4%. On the surface, the United States is actively fulfilling its obligations as a major power, but in fact it is clearly avoiding its due responsibility for emissions reduction and lacks sincerity, which is not conducive to reaching a consensus on environmental issues such as climate.

The EU expressed its position in 2009, and the EU will further increase its emission reduction from 20% to 30% before 2020. "But the prerequisite for doing so is: Only when other world powers sign a similar action plan, the EU will make a commitment to increase emissions reduction." This approach of the EU is an attempt to re-establish its international leadership.

In addition to China, another developing country, India, has pledged to "reduce its GDP carbon dioxide emissions by 20%-25% from 2005." As a developing country, India has encountered problems with carbon emissions. There are many problems, some of which China has also encountered.

Australia’ s commitment is to reduce carbon emissions by 25%, but it is based on the year 2000, rather than the 1990 benchmark as in other developed countries. Australia is the world's largest coal exporter, and its per capita emissions exceed those of the United States. However, in the official documents, Australia has "smartly" reduced its carbon emissions and shirks its responsibilities. On November 18, 2009, Russian President Medvedev made a statement on the issue of emission reduction, promising to reduce greenhouse gas emissions by 25% from 1990 levels by 2020, but the prerequisite for the commitment is also: other countries make equal reductions. Commitment to the platoon range.

Regarding the goal of carbon neutrality, major economies have also given control routes based on actual conditions:

- China-target date: 2060, nature of commitment: policy announcement. China announced to the United Nations General Assembly on September 22, 2020 that it will strive to achieve carbon neutrality by 2060 and adopt "stronger policies and measures" to reach its emission peak before 2030.

- United States-target date: 2045, nature of commitment: executive order.

California's economy is the fifth largest economy in the world. Former Governor Jerry Brown signed a carbon neutrality order in September 2018, and the state passed a law almost at the same time to achieve 100% renewable electricity by 2045, but green policies in other industries are not yet mature.

- Canada-target date: 2050, nature of commitment: policy announcement. Prime Minister Trudeau was re-elected in October 2019. His political platform is centered on climate action, committing to a net zero emission target, and formulating a legally binding five-year carbon budget.

- European Union-target date: 2050, nature of commitment: submitted to the United Nations. According to the "Green Agreement" announced in December 2019, the European Commission is working hard to achieve the 2050 net zero emissions target for the entire EU. This long-term strategy was submitted to the United Nations in March 2020.

- France-target date: 2050, nature of commitment: legally required. The French National Assembly voted on June 27, 2019 to incorporate the net zero target into the law. In a report in June this year, the newly established Climate High Commission recommended that France must triple the rate of emission reductions in order to achieve carbon neutrality goals.

- Germany-target date: 2050, nature of commitment: legally required. Germany's first major climate law came into effect in December 2019. The lead of this law says that Germany will "pursue" greenhouse gas neutrality by 2050.

- Japan-target date: "as early as possible in the second half of this century", nature of commitment: policy announcement. The Japanese government approved a climate strategy before hosting the G20 summit in June 2019, focusing on carbon capture, utilization, and storage, and the development of hydrogen as a source of clean fuel. It is worth noting that the plan to phase out coal has not yet been issued. It is estimated that by 2030, coal will still supply a quarter of the country's electricity.

- United Kingdom-target date: 2050, nature of commitment: legally required. The United Kingdom passed an emission reduction framework law in 2008, so setting a net zero emission target is simple, just change 80% to 100%. The Parliament passed the amendment on June 27, 2019. The Scottish Parliament is formulating a bill to achieve net zero emissions by 2045, based on Scotland's strong carbon trading resources and the ability to store carbon dioxide in the depleted North Sea oil fields.

1.4 Carbon trading market development pain points

The carbon market, in simple terms, is a way to reduce carbon dioxide emissions by market means and curb global warming. Its theoretical framework is based on the "Kyoto Protocol", "Paris Agreement" and other documents. People give prices to greenhouse gases, including carbon dioxide, through carbon allowances and certification of voluntary emission reductions, and establish a secondary market for participants with gaps and participants with surplus to trade. At present, there are also many problems in the global carbon emissions, carbon neutrality, and carbon trading markets:

1) The level of high-end technology in the energy-saving and environmental protection industry needs to be improved

At present, the field of energy-saving and environmental protection upstream equipment is a market that is close to full competition, and a large number of small and medium-sized enterprises compete on price, product and service quality. The overall industry concentration in the field of global energy conservation and environmental protection upstream equipment is relatively poor, and the degree of marketization is low. Conventional technology products for energy conservation and environmental protection are relatively mature, but they are still lacking in high-end technology products. Companies are generally small in scale and low-level operations are more common.

2) The midstream financing capacity is weak, and the industrial operation model needs to be improved

Due to the long investment cycle, large capital demand, slower investment returns, and greater policy impacts, and the current service market order is not

standardized, most energy conservation and environmental protection service companies are small in scale and low in service levels. Therefore, companies They are generally faced with the dilemma of "difficult financing and expensive financing".

3) Unreasonable enterprise scale and product structure

First, the scale structure of environmental protection enterprises is unreasonable, their scale is small, and a number of large-scale backbone enterprises or enterprise groups have not yet been formed, and they lack market competitiveness. Second, the structure of environmental protection products is unreasonable, the level of complete, serialization, standardization, and localization of environmental protection equipment is low, and the phenomenon of low-level repeated construction is serious.

4) Centralized operation

Although the Internet of Things technology has been widely used under ICT technology, the APP of each brand is formed into a system, and they are all operated in a centralized manner. They cannot operate across platforms, and they cannot manage energy in a unified manner, resulting in energy waste.

5) The integrity of the data cannot be guaranteed, and it is easy to be tampered with

Environmental data may be damaged or overwritten during the recording process.

6) Data cannot be transparent

It is not possible to know and verify how the data content changes over time.

7) Unable to protect privacy

The user's ID on the centralized platform is completely real-named, and privacy is unobserved.

8) Lack of trust

Due to trust issues, the data between various platforms and devices cannot be

communicated, resulting in unnecessary energy waste, and it is not conducive to the detection and analysis of the overall environment; for example, the detection data of various instruments cannot be exchanged due to the lack of a "consensus mechanism". To meet the review requirements, data can only be collected and analyzed in each centralized local area network.

9) Unorganized community construction

Non-profit organizations are unable to organize environmental protection activities in a reasonable and coordinated manner, and users have a weak sense of participation. As a result, non-profit activities only pursue quantity and lack quality, which results in a waste of resources.

The birth of blockchain technology provides a feasible solution for solving the pain points of the carbon trading market. The target of carbon trading is invisible and intangible gas, and there is no physical delivery link; its starting point is for the better sustainable development of all mankind...In these characteristics, carbon trading is somewhat similar to blockchain token trading Therefore, many blockchain projects are regarded as empowered objects.

chapter two

Blockchain and the carbon-neutralizing market

2.1 Development and application of blockchain technology

Blockchain is a kind of accounting technology that is jointly maintained by multiple parties, uses cryptography to ensure transmission and access security, can achieve consistent data storage, is difficult to tamper with, and prevents repudiation. It is also known as distributed ledger technology (Distributed Ledger Technology).). A typical blockchain stores data in a block-chain structure. As a new computing paradigm and collaboration model that builds trust at low cost in an untrustworthy competitive environment, blockchain, with its unique trust-building mechanism, is changing the application scenarios and operating rules of many industries, and is the future development of the digital economy. , One of the indispensable technologies for building a new type of trust system.

Blockchain establishes a strong trust relationship and value transmission network through a variety of technical means such as point-to-point distributed accounting, multi-node consensus mechanism, asymmetric encryption and smart contracts, making it distributed, non-tamperable, and transferable. And programmable features. In terms of application, the blockchain helps the physical industry on the one hand, and integrates traditional finance on the other. In terms of the physical industry, blockchain optimizes the trust and automation problems encountered in the upgrading of traditional industries, greatly enhancing sharing and refactoring methods to help the upgrading of traditional industries, reshaping trust relationships, and improving industrial efficiency. In the financial industry, blockchain helps to make up for the information asymmetry between the financial and physical industries, establish an efficient value transmission mechanism, realize the circulation of traditional product value in the digital world, and help business, information, and capital flows to achieve a three-stream combination -Play an important role in other aspects.

From the perspective of the characteristics of the blockchain, the blockchain can better deliver value, better protect user privacy and help users obtain more rights, and change the production relationship of the Internet.

First, the blockchain can better deliver value. The Internet can efficiently

transmit information, but it needs to rely on the guarantee of centralized institutions such as Taobao, JD, WeChat to transmit value, while the blockchain does not need to rely on centralized institutions and can directly pass smart contracts and tokens on the blockchain To complete the instant delivery of value. It can be said that the Internet transmits information, and the blockchain transmits value.

Second, blockchain can better protect user privacy. With the development of society and economy, users all over the world are paying more and more attention to the protection of their own privacy, but the current protection of user privacy is seriously inadequate. The blockchain adopts an encryption algorithm, which can better protect user privacy.

Third, users will be able to gain more power and rights. At the moment, Internet giant platforms make full use of new technologies such as big data and artificial intelligence to provide multi-dimensional and in-depth portraits of users, and basically control user data. Under the blockchain, user data is more likely to be owned by you, and you can decide who can use it for yourself.

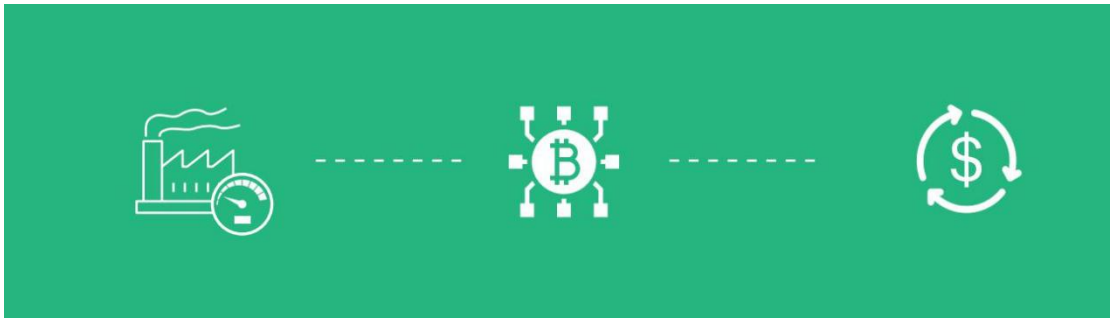
Fourth, the blockchain is not only a huge improvement in productivity, but also a reconstruction of production relations. Blockchain undoubtedly represents new technology and more advanced productivity, but it will bring about more profound changes in production relations, which is mainly reflected in the reconstruction of incentive mechanisms. In the Internet era, Internet giants gain absolute shares, and a small number of highly capable self-media can gain a certain share; and under the application of blockchain, the vast majority of stakeholders will be incentivized, although blockchain application operators It is still able to obtain a higher share, but its share will drop significantly compared to before.

Entering 2021, the development of blockchain will usher in new trends and new opportunities. At present, if the traditional business model wants to liberate the productivity of data elements, it needs to solve three very core problems: one is to provide a solution for secure storage, the other is to provide some means of trusted transmission, and the third is to provide a collaboration The mechanism of production. Therefore, one of the important trends and missions of the blockchain in 2021 is how to exploit its own technical capabilities and how to deeply integrate with other cutting-edge technologies in order to effectively overcome the above three data elements that need to be broken through. Realizing the property rights of data elements can be defined, the value can be stored, and these values can also be evaluated, and can be effectively circulated, and ultimately can truly achieve

the full liberation of data productivity.

The epidemic is forcing the acceleration of the digitalization process in countries and industries around the world, which in turn promotes the further upgrade of the Internet service industry: not only to meet the daily needs of individual users, but also to gradually meet the work needs of commercial institutions including enterprises and a large number of public sectors. That is, it needs to develop from the consumer Internet to the industrial Internet. With the development of the industrial Internet, the requirements for the credibility, openness, agility, and collaboration of related information infrastructure have increased, and the production factors such as data can be more rationally flowed and configured. Because the blockchain happens to have the architecture and solutions to solve the above series of problems, high hopes are placed on it, and the era of industrial blockchain has gradually begun. Based on the digital development thinking brought about by the epidemic and the advancement of global central bank digital currency exploration, governments of various countries have strengthened their strategic deployment of blockchain technology.

It is precisely because of the above-mentioned outstanding advantages of blockchain technology as the underlying technology. Like Internet technology, blockchain may become a new generation of information infrastructure and social operating system. In the future, "blockchain+" will empower all walks of life. Industry, greatly enhance the country's governance capabilities and better serve the development of the real economy.



2.2 The integration of the blockchain and the carbon market

Green environmental protection, carbon neutral field, blockchain technology has huge advantages.

1) Sustainability top-level design

Enterprises are the most important actors for carbon neutrality goals, and blockchain technology and third-party services are two complementary tools for enterprises to take the road to low-carbon transformation. The successful application of blockchain in the field of anti-counterfeiting traceability and supply chain management has fully proved the technology's powerful ability to maintain the integrity of information at the point of communication. Based on the effective framework strategy and GCSA practice plan provided by third-party services, blockchain can help companies strengthen or build a carbon emission management system that meets national standards from zero. The significant changes that can be brought about by the blockchain's data mechanism include continuity and transparency, which can help companies break through information barriers and make up for information deficiencies in key issues; the second is high data privacy, which can resolve commercial information confidentiality and environmental information Disclosure of contradictions helps companies flexibly adapt to key issue disclosure strategies, and avoid risks under a regulatory system composed of government departments, financial institutions, and third-party audits.

2) Weaving carbon management

The production and management data cannot be tampered with after being put on the chain, the time is accurate, and the operator is accurate. On the one hand, on-chain data can help companies improve overall efficiency and resource utilization, control low-carbon or zero-carbon production costs, transform and upgrade processes and technologies, form new market competitiveness under the goal of carbon neutrality, and build low-carbon raw material supply On the other hand, it can help companies achieve carbon accounting that meets standards and specifications, thereby advancing scientific emission reduction goals, implementing energy-saving emission reduction actions, and achieving carbon leapfrogging.

From a management perspective, companies can conduct a more effective summary analysis based on the data on the chain, detect non-compliant carbon management at the first time, trigger the early warning mechanism, and notify the relevant responsible persons in a timely manner to sort out the best carbon emission management methods to prevent Link errors; clear supervision can also clarify internal responsibilities, smoothly promote carbon data monitoring and carbon trading-related training and education, break carbon constraints, and fundamentally improve the level of carbon management of enterprises.

3) Capitalization of carbon footprint

The long-term accumulation of low-carbon behavior records on the chain can be used faster and more widely in various clear system standard ratings and digital descriptions, allowing companies to calmly adapt to credit structure adjustments or to disclose listing information. At present, carbon trading and carbon sink ecology are developing rapidly, and regulations and issuance standards are gradually being established. It is estimated that by 2030, when carbon reaches its peak, the world will need 3 to 4 trillion U.S. dollars in green investment each year, and carbon sink ecology is one of the ideal financing tools to support the required investment. Companies can access third-party certification or audit services more conveniently based on the carbon emission data and historical transaction information traced by the blockchain to conduct carbon emission rights certification, quota measurement, etc., to form a green carbon sink ecology.

4) Contribute to reaching a consensus on carbon emissions

The greenhouse effect of carbon emissions produced anywhere on the planet is the same, so people hope that others can emit less while they can emit more. In order to be able to mobilize everyone’ s enthusiasm for reducing emissions, it is necessary to reach a consensus on reducing emissions. The premise of this consensus is that there must be an open and transparent emission reduction quantification mechanism in the world. This mechanism must be in the hands of any government or institution. It will be resisted because of the mistrust of other countries or individuals. This is the biggest pain point that individuals cannot promote emissions reduction. Blockchain technology is the best solution to this pain point. Its decentralized nature makes it impossible for anyone to change the emission reduction quantification mechanism once it is launched. The non-tamperable data feature also enables everyone to reduce emissions. Recognized globally, it can be said to be the best application scenario for

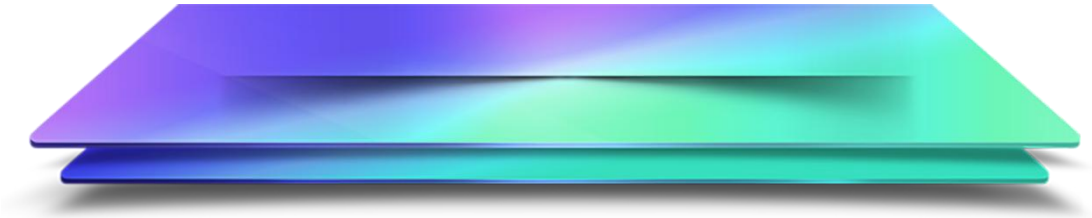
blockchain technology

5) Blockchain is expected to make the carbon market transparent

By combining blockchain technology to create a digital carbon certificate, transaction costs can be greatly reduced, liquidity can be increased, and the development of the carbon trading market can be promoted. At the same time, blockchain technology will also help to develop an individual-based carbon trading market and generate economies of scale, thereby helping to establish a market and a win-win solution for emissions reduction. By creating a global industry public chain, establishing carbon rights data circulation and trading specifications, carbon rights data can also be circulated and capitalized on the chain, and through effective economic incentive models, the rights and obligations of carbon trading entities can be organically combined , To incorporate industry stakeholders, regulatory agencies, industry associations and individuals into the organic governance system.

The demand for blockchain-based carbon trading platforms is increasing. Blockchain technology can help carbon asset development, trading, quota auctions and other processes to achieve trust and self-organization. It is estimated that by 2030, the cumulative trading volume of carbon emissions may exceed US$100 billion. Blockchain technology will usher in a trillion-dollar breakthrough in the global carbon trading market. Companies with carbon data on the protogenesis chain may have more initiative.

At present, there have been many successful cases in the application of the blockchain + third-party service model in the sustainable field. The blockchain-led penetration of supply chain traceability, production certification, data presentation, and value closed-loop implementation of low-carbon reduction Emissions may be able to provide more benign carbon neutrality and carbon trading ecological support for enterprises and society.



2.3 The birth of the Carbon Coin carbon coin

We can see that countries in the world today have made solemn commitments in response to climate change. At the same time, they are promoting many sustainable development projects in various ways, especially in terms of carbon trading. Carbon trading is to promote global greenhouse gas. Emission reduction, the market mechanism adopted to reduce global carbon dioxide emissions, the optimization of the energy structure, and the large-scale adoption of new energy technologies are in sharp contrast with the low energy efficiency, large emission reduction space, and low cost of developing countries. This directly leads to different costs for the same emission reduction amount in different countries, forming a price difference. Thus created the carbon trading market.

It is reported that the carbon trading system, as a key tool for implementing savings and emission reductions, has entered the vision of various countries in recent years. With the gradual opening of carbon trading markets in various countries and the implementation of relevant laws and regulations, this "carbon trading" fever has gradually entered a climax. In carbon trading, the first prerequisite is to price the carbon emission rights with one ton of carbon dioxide as the trading unit. At present, all countries are groping for pricing. There are huge business opportunities in the process of moving towards global unified pricing.

For investors, more and more people pay attention to and participate in the entire carbon trading market, which will generate more and more opportunities, and every link of the transaction will produce positive benefits beyond imagination. , The Singapore Carbon Coin Ecological Development Fund has created the Carbon Coin project, with the goal of developing sustainable technology, through investment and participation in the establishment of sustainable business solutions in countries around the world, with certified carbon emissions, carbon neutrality, and carbon trading The most important thing is to drive global industry changes. Carbon Coin will play an important role in the governance of carbon emissions, carbon footprint, carbon sink trading, etc., and use blockchain technology to solve the following problems:

- Multi-centralization

- The transaction process is cumbersome
- Individuals cannot participate
- Closed carbon account
- Lack of other applications for carbon assets

Through effective solutions to the above problems, Carbon Coin will establish a carbon market based on blockchain, and use blockchain technology, artificial intelligence and big data analysis technology to establish an "open, equal, and safe" carbon neutrality. , Carbon trading, Meta universe low-carbon environmental protection chain game application ecology, to create a traceable, decentralized, transparent and open digital ecological application platform.

In the future, the Carbon Coin blockchain system will drive the realization of the global carbon neutral goal and the sound development of the carbon trading market, promote the development of global environmental protection, improve the energy structure, optimize the use of renewable resources, and advocate a green future ecology. Eventually realize the coordinated development of global scientific and technological civilization and ecological civilization.

chapter three
Overview of the Carbon Coin
carbon coin project

3.1 Carbon Coin carbon currency profile

Carbon Coin is the first carbon neutral ecosystem token in the blockchain field. It upholds the concept of low-carbon green and environmental protection, realizes lossless dividends of USDT, and develops low-carbon environmental protection chain games to lead the new trend of Metaverse. By donating to environmental protection organizations, we will intervene in the global carbon indicator trading market, complete its ultimate application, and become a payment currency in the global carbon trading market.

Carbon Coin is also a pioneering carbon rights proof blockchain network, and is developing into a decentralized application DApp platform with carbon asset management and verifiable carbon rights contracts. Carbon Coin adopts strict and high-reliability formal development and creation to achieve the scalability and interactivity required by applications such as carbon footprint, carbon inventory, carbon calculation, carbon traceability, carbon futures, and carbon trading, and continue to promote global climate change Improvement of the heating problem.

Carbon Coin aims to become a key DApp platform for blockchain applications that supports the development of the carbon rights economy. Carbon Coin is based on the academic research and audit of the Paris Agreement and the Kyoto Protocol, reflecting the spirit of openness, transparency and decentralization. All research and technical specifications supporting Carbon Coin are publicly released, and all Carbon Coin development activities are open to the public. When building Carbon Coin, we are only the supervisor. When the network is completely decentralized, it will belong to the community, and the community will determine its future through the node governance function.

Carbon Coin vision:

- Establish a trustless and highly decentralized blockchain carbon rights trading infrastructure;
- Establish the first carbon trading agreement network on the blockchain;
- Cooperate with governments and social organizations to establish a unified

global carbon market and become a powerful tool for the development of ecological civilization;

• Help the environmental protection public welfare forces to relieve trust and worry, gather the environmental protection forces of the whole society, and create a green earth together.

At present, across the world, tens of thousands of blockchain projects have cross-platform transactions and their cumbersome, efficient and inefficient, making user traffic unable to communicate and share between cross-platforms, which directly leads to blockchain applications. There is no breadth and depth.

Carbon Coin is committed to solving the pain points of the traditional model, and is committed to providing new solutions for the carbon market and providing an exclusive environmental protection community platform for environmental protection enthusiasts. At the same time, it uses blockchain technology to solve the user's platform limitations, break through the limitations of each platform, and achieve Cross-platform payments, cross-platform applications, and jointly build blockchain environmental protection and carbon emission alliances, and carbon sink exchanges to achieve community interoperability, payment interoperability, technology unification, and traffic sharing.

3.2 Basic ecosystem

In the early stage, with the support of Binance Smart Chain BSC, Carbon Coin has a Turing-complete decentralized database that opens global carbon trading and environmental protection data through API interfaces. Carbon Coin can accommodate the global existing carbon market, carbon footprint, carbon inventory, carbon accounting, carbon accounting, carbon disclosure, carbon audit, carbon futures, carbon neutrality, digital asset exchange and other ecological scenarios. To form a blockchain ecological platform that takes the carbon ecological application solution as the core, and realizes the application of the carbon environmental protection industry to extend other offline physical industries and the carbon emission online circulation transaction.

1) Technology application system

- Decentralization: Makes everything in the Carbon Coin ecosystem originate from users and nodes, and is based on the core chain of the Carbon Coin ecosystem, making environmental protection and carbon emissions rule-based, and returning environmental protection to everyone.

- Distributed accounting and storage: to ensure the authenticity, completeness and traceability of the offline environmental processing information and online carbon emission data information of the Carbon Coin ecosystem.

- Anti-tampering technology: in non-ecological or abnormal situations, such as when the increase in environmental protection data is not proportional to the decrease in effective energy, prevent or eliminate the interaction of material flow or information flow.

- Anonymity system: Allow all data and information in the Carbon Coin ecosystem to be mutually transformed under the state of blockchain technology encryption. Each converted data information has a unique identification ID, including data information generation, use, verification, storage and verification, etc., which is convenient for other systems in the ecosystem or outside the system to call.

- Value transfer: Offline carbon processing information and carbon emission trading data information in the Carbon Coin ecosystem can be mutually transformed, exchange value, and make full use of it.

2) Carbon Coin features

Through the Carbon Coin system, the carbon market can be provided in a variety of application scenarios, while providing unified management of multi-blockchain assets, achieving carbon trading application payment interoperability, technology unification, and flow sharing. It has the following characteristics:

- One-stop management: Carbon Coin manages multiple digital currencies in a unified platform. It not only supports the storage and management of mainstream assets such as BSC, Bitcoin, and Ethereum, but also supports the standard protocols of small and medium-sized smart contract platforms,

allowing rapid expansion based on Token storage and management services issued by various platforms.

- Multiple security guarantees: Carbon Coin also provides multi-signature technical guarantee and two-step authorization verification for platform digital asset management. Users can choose to verify mobile phone verification codes, fingerprints, and live body verification methods during service transactions to ensure the security of user assets in all aspects . The user can bind the mobile phone to realize the account management function. When the password is leaked, the user can quickly manage the account through the mobile phone number and change the password to ensure account security.

- Multi-language support: Carbon Coin supports multiple languages in mainstream digital currency markets such as Chinese, English, Japanese, Korean, etc. It is suitable for the transaction needs of people in different countries and different languages in different scenarios, creating multi-national interoperability, in order to create a world-class carbon The trading platform application clears language barriers.

- Digital currency exchange and trading: Carbon Coin has created Carbon Coin's original exchange network through the distributed storage technology of the blockchain, which has comprehensively upgraded the security level of Carbon Coin's trading environment; docked with international exchange APIs, and always fed back the international mainstream The latest currency information truly reflects the characteristics of blockchain transactions, providing users with simple, convenient and safe exchange and transaction services.

- Risk-free currency exchange: Carbon Coin develops an exchange network based on the platform, and realizes risk-free digital currency exchange services through smart contracts, chain gateways and cross-smart contract technologies (see the description of technical features for details). Users use Carbon Coin to exchange between digital currencies. Platform parties or other third parties create smart contracts for exchange. The contract

mechanism monitors and executes the exchange process, avoiding the risk of default by all parties involved in the transaction. Compared with centralized platform services, smart contracts avoid the subjective risk of default or objective attacks on the platform and bring losses to users. Even for tokens issued by new projects in the blockchain industry, as long as the Carbon Coin platform supports them, they can be exchanged and traded risk-free through the exchange platform services. On the Carbon Coin chain, there are standard various digital asset exchange services, and various digital assets can be freely exchanged.

- Simple and convenient trading: There are certain entry barriers and learning costs to buy and sell digital currencies through exchanges. Carbon Coin provides users with the best market price and simple operation experience through the docking exchange API. Carbon Coin presents users with simple buying and selling prices through an optimized screening mechanism. Users only need to enter the quantity and Can complete transactions as easily as on an e-commerce platform.

3.3 Carbon trading market solutions

In order to drive the value fission of Carbon Coin in carbon neutrality, carbon footprint, carbon inventory, carbon accounting, carbon accounting, carbon disclosure, carbon audit, carbon futures, digital asset exchange and other scenarios, we provide innovative carbon trading market solutions .

Carbon Coin uses the unique trust mechanism of the blockchain to create digital credit certificates to make the strong credit part of the entire carbon market

supply chain transmittable and permeable, rather than just remaining in the core enterprises and their upstream and downstream enterprises. At the same time, it also uses the traceability feature of the blockchain to stamp a "time stamp" on each transaction data to ensure the authenticity and security of the data on the chain, thereby solving the credit problem.

Carbon Coin proposes a trusted value Internet theoretical model of trusted vouchers, trusted contracts, trusted devices, trusted data, etc., and has implemented a set of data-based and Token-based ecological models (issuance, release, cross-category circulation, use) , To reconstruct the existing carbon sink ecology through its own resources and capabilities in the carbon market, on the one hand to upgrade the capabilities of service providers in the ecosystem in terms of credit investigation and precision marketing, on the other hand, to allow C-end users to truly control their own data The ownership of, and the realization of data in the token economy system. Carbon Coin will make the value circulation of the carbon market more friendly and convenient.

In addition, in order to meet the chain reform needs of users, institutions, and energy companies in the energy field, in the future, we will also build the Carbon Coin ecological public chain, build a huge carbon trading Internet basic ecology, and promote the development of the entire industry chain. In our plan, the Carbon Coin public chain effectively combines the blockchain with the carbon market. In the system, there is no centralized database, and each node saves all the information of the blockchain, with equal rights and obligations. . In Carbon Coin, distributed carbon trading and carbon neutral data will become an important part of "consumption is production", emphasizing equal sharing of energy between individuals.

The Carbon Coin public chain will have good autonomy and synergy. The blockchain system is operated and maintained by all nodes in the network, and there is no unified management organization. The carbon trading Internet system emphasizes the self-dispatching and ecological operation of the system. The use of the underlying technology of the public chain can establish a fair and open market mechanism and at the same time serve the transactions of other financial products. Does the Carbon Coin public chain have more valuable advantages of intelligence and contract? The system can realize the automation and intelligence of contract execution through smart contracts or "programmable currency", and guarantee the carbon market ecosystem through a series of smart contracts The transactions etc. are automatically executed.

With the support of the foundation and the global community, Carbon Coin will also set up a special environmental protection public welfare community, aiming to promote environmental protection worldwide, through environmental protection activities, let the awareness of environmental protection penetrate into the hearts of the people, and strive for the sustainable development of the environment. The foundation will participate in public welfare for each transaction, and will draw a certain percentage of funds to hold carbon environmental protection public welfare activities, through environmental protection public welfare activities, promote environmental protection awareness, help achieve the global carbon neutral goal, and create Carbon Coin's carbon environmental protection public welfare brand.

3.4 The business value logic of the platform

1) Realize the tokenization of carbon market assets

Combining BSC public chain technology, Carbon Coin brings profound changes to the industry by creating a decentralized carbon market service ecosystem. In the Carbon Coin model, all carbon information, assets, and services will be tokenized and circulated on the chain. Every upload and change of information will be recorded. The non-tamperable and open and transparent features will effectively prevent false information, regulate the transaction conditions on the chain, and promote the creation of a trust mechanism.

The point-to-point precise transaction on the Carbon Coin platform allows carbon market actors and the platform to directly connect, saves the handling fees and procedures of intermediate transactions, allows users to enjoy the services they want, and enables carbon market practitioners to achieve maximum Profitability. Users can also evaluate and appreciate transactions through the Carbon Coin network, forming an incentive mechanism for healthy competition in an open and transparent service ecosystem.

In addition, Carbon Coin is driven by the token model incentive mechanism, and the tokenized assets in the entire service ecosystem will realize cross-country, low-cost, short-term transactions and transfers, and realize the global coverage of the symbiosis chain, open autonomy, fairness and credibility. idea.

2) Formation of commercial value system

Taking the carbon neutral market as the entry point, the core value of the Carbon Coin project is the connection of the five dimensions of subject, trust, value, scene, and circulation. Carbon Coin will serve as the connector of the blockchain world and lead the future blockchain world.

☑ main body

All participating entities, including all people, things, organizations, systems, etc., use a unified identity in the Carbon Coin network. The Carbon Coin network manages and processes business based on identity identity rights. The Carbon Coin network supports multiple identity management of entities. Identity identification is managed in a decentralized manner, including the generation, use, verification, and storage of identification identification to achieve privacy protection and secure transactions.

• Generation: Each identity is generated using an asymmetric encryption PKI encryption mechanism to generate address information that is publicly available. The owner of the identity mark keeps the address and private key information. In addition, some participants are supported to select certificates issued by digital certification centers for identification.

• Use: The subject of the identity uses the private key information to operate all rights and interests or digital assets in the Carbon Coin network for transactions, and initiates an application to the Carbon Coin network.

• Verification: The Carbon Coin network conducts all equity checks and transaction verifications, and forms a network consensus after passing.

• Storage: The public information corresponding to the generated identities will be stored as public information in the distributed ledger of the Carbon Coin network.

In addition, the identification supports the expansion of smart contracts to achieve richer identification management and meet the identification management requirements of different business fields. For example, in the scenario of asset transactions in the financial business field, it is necessary to meet the KYC requirements of the business supervisor area, and the extended smart contract is

used to set and store the KYC content.

☑ trust

One of the more important reasons for the prosperity and development of blockchain is that blockchain technology has realized a decentralized trust mechanism, making it a trust machine. The Carbon Coin network establishes a distributed trust mechanism through trust subjects, trust networks, and trust interactions.

☑ value

The blockchain essentially realizes the value transfer of decentralized digital assets. All assets registered on the Carbon Coin network exist in the form of specific values, participating in transactions between entities and realizing value transfer. The value management of the Carbon Coin network includes value generation, value exchange, and cross-chain transactions.

The value of the Carbon Coin network is generated by releasing tokens to the nodes participating in the consensus after each consensus is reached. In addition, the participating trust subjects are supported to map offline assets on the chain. The generated value assets are exchanged for value based on the Carbon Coin network. The Carbon Coin network uses a flexible link protocol to support transactions and value swaps with other chains, and uses smart contracts to lock transactions and complete transaction management.

☑ Scenes

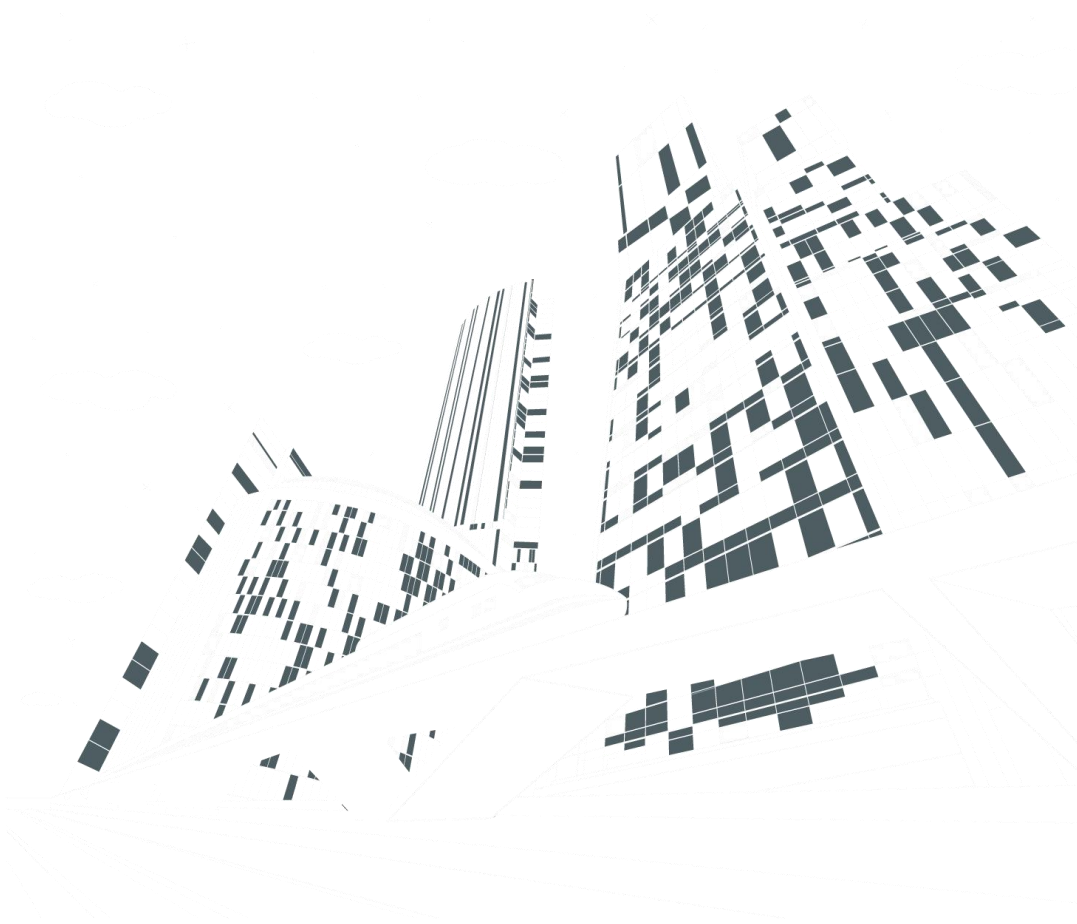
The Carbon Coin network supports connections with various blockchain networks, decentralized centralized systems, and participating entities to realize support and connection in business scenarios. As a hub for value exchange, the Carbon Coin network combines cloud computing, big data, and artificial intelligence technology to provide comprehensive support for business scenarios.

☑ Circulation

The Carbon Coin network is positioned to establish the first carbon trading protocol network on the blockchain and a trustless and highly decentralized blockchain carbon trading infrastructure. Therefore, Carbon Coin not only supports

new business scenarios, but also circulates traditional businesses, realizes that the blockchain connects all businesses, and provides a basis for trust and value exchange for future businesses.

To this end, the Carbon Coin network provides DApp application development components and SDKs to simplify the development of DApps. The combined toolkit does not require developers who focus on business and scenarios to be familiar with the underlying technology of the blockchain. In addition, the Carbon Coin network provides ChainStore, which provides a platform for the use and promotion of DApps.



chapter four

Low-carbon environmental protection chain tour based on

In order to attract more people to participate in the Carbon Coin ecology, we will create a low-carbon environmental protection chain tour with interest and high value returns with the latest models such as NFT and metaverse.

4.1 The Metaverse upgrades the game

With the in-depth development of blockchain technology, various new concepts and models emerge in endlessly. Among them, the concept of meta universe is valued by the market and is known as the manifestation of the "Next Generation Internet". The most promising scenario for Meta Universe is chain games.

Metaverse, the concept originated from science fiction, or pointed to the "ultimate form" of the Internet. The term Metaverse comes from the science fiction novel "Avalanche" by writer Neal Stephenson, which describes a world where people interact with various software in a three-dimensional space as virtual images. Wikipedia ' s description of the meta-universe is: through virtual augmented physical reality, presenting the characteristics of convergence and physical persistence, based on the future Internet, a 3D virtual space with the characteristics of link perception and sharing.

Conceptually, the term Metaverse is composed of Meta and Verse. Meta stands for transcendence, and verse stands for universe. Together, they usually mean the concept of "transcending the universe": an artificial space that runs parallel to the real world. Looking back at the development of the Internet, from the PC LAN to the mobile Internet, the immersion of Internet use has gradually increased, and the distance between virtual and reality has gradually decreased. Under this trend, Metaverse, which peaks in immersion and participation, or the "ultimate form" of the Internet.

Technically, based on the traditional Internet, Metaverse has put forward higher

requirements in terms of immersion, participation, and sustainability. Therefore, it will be supported by many independent tools, platforms, infrastructures, and protocols. run. With the increasing maturity of AR, VR, 5G, cloud computing and other technologies, Meta Universe is expected to gradually move from concept to reality.

From a functional level, Metaverse is a platform that carries virtual activities. Users can conduct social and spiritual activities such as social interaction, entertainment, creation, display, education, and trading. Meta Universe provides users with rich consumption content, fair creation platform, reliable economic system, and immersive interactive experience. Metaverse can entrust human emotions and give users a psychological sense of belonging. Users can experience different content in Metaverse, make friends in the digital world, create their own works, and conduct social activities such as trading, education, and meetings.

As a virtual world parallel to the real world, the meta universe will form a new value support for the game field. Roblox is known as the "Meta Universe First Unit", this is a sandbox game that seems to have a strong "Lego style". The so-called sandbox game is where players can play their individuality and use the elements provided by the sandbox to create freely.

Roblox provides players with game development tools, virtual currency and virtual goods. Players who develop their own games on the game can get virtual currency, which can be exchanged for virtual goods, and player developers can also get a share of the real income of the game.

And with the rise of NFT, new space has been brought to the meta-universe chain tour. NFT will become an important infrastructure of the meta universe. Its uniqueness and irreplaceability will provide a reliable basis for people to map things in the real world to the meta universe, and it has initially shown its value at this stage, but in the future The core and extension of NFT still have a lot of room for imagination. According to our assumptions above, NFT will become an important infrastructure of Metaverse, and Metaverse will become the most outstanding application of NFT. From this perspective, the two are interdependent and mutually prosperous.

As we all know, the development context of the Internet from Web1.0 to Web3.0 indicates that NFT and meta-universe will also go through the process of discovering and confirming the value of the individual and all the values

created by each individual on the Internet. From the overall point of view, Web3.0 will be an important part of the meta-universe, so the rediscovery of individual values will also be an important core of the meta-universe.

Based on the above analysis and the unique advantages of NFT, it is not difficult to find that with the development of human society, especially the deepening of the exploration of the origin of human society, the "unique" value of each individual and the "unique" recording function of NFT will Increasingly deep integration, this will undoubtedly continue to strengthen the interdependent relationship between NFT and meta-universe.

Many people call 2021 the "first year of the meta-universe", especially in the game field, which is showing an explosive trend. At present, Metaverse follows the basic laws of social development, and it is still in its infancy at this stage. Like the real world, the meta universe also evolves in accordance with certain development laws. People enter the meta universe through virtual clones. After virtual humans appear, social interaction behaviors occur, which in turn leads to collaboration and transactions between each other, and finally forms an independent basis on this basis. Social rules and economic system.

At this stage, many players have created a second identity in the game to make friends. Some VR games can provide immersive experience, and some games based on blockchain technology have initially established an economic system, but games as content applications are only part of the meta-universe. We are still far from the mature form of high immersion, openness and freedom. In the future, we need to drive the development of the meta-universe society through technological progress on the supply side and upgrades on the demand side.

The next stage of the Internet must be a virtual world supported by various terminals and technologies such as perception terminals, high-speed Internet, and blockchain. Human beings have been constantly emerging from the virtual world.

4.2 Carbon coin dollar universe low carbon environmental protection chain tour

On the basis of our technology and resource accumulation, as well as the integration of NFT, meta universe and other modes, we will launch a carbon coin

meta universe low-carbon environmental protection chain tour to create value for global ecological and environmental protection and lead the new trend of meta universe.

The carbon coin yuan universe low-carbon environmental protection chain tour will play a key role in promoting the development of environmental protection, reducing environmental pollution, realizing scientific carbon emissions, high-value carbon trading, and innovative carbon sink trading that integrates the token incentive model. As a global ecological civilization construction space that uses blockchain technology to solve the current pain points of the environmental protection industry, in the carbon coin meta universe low-carbon environmental protection chain tour, big data can be used to effectively monitor the environmental conditions of each area in the meta universe parallel world. Record carbon emission data tamperingly, use platform token C to encourage low-carbon emission reduction behaviors, and at the same time, form a linkage with offline environmental protection rewards based on token holdings. Each user holding a token will obtain the property rights of the corresponding amount of carbon sinks, which can be traded on the carbon exchange to realize carbon environmental protection and create more revenue value.

Through the connection of offline entities and online metauniverse virtual reality technology, everyone can conveniently use C anytime and anywhere, enriching the offline entities and online blocks of blockchain technology and digital currency, self-finance, supply chain, Application scenarios such as transaction and payment promote its service to the new environmental protection industry and the progress of carbon sink trading and social development. The carbon sink ecological meta-universe game is determined to create the world's first digital currency C for carbon options on the blockchain, to influence more people to participate in carbon dioxide emission reduction activities, and to build C into a global carbon sink through the supervision of all parties. As a token on the exchange.

In addition, the low-carbon environmental protection chain tour in the carbon coin meta universe perfectly integrates elements such as NFT, meta universe and play to earn. In the game, you can achieve:

- Create a foundation for NFT, Meta Universe and diversified carbon coin Meta Universe low-carbon environmental protection chain game functions;

- Assets are controlled by individuals, and through the application of

aggregation tools provided by the C Carbon Sink Ecological Meta Universe platform, more users can freely shuttle between the NFT and Meta Universe worlds;

• The clearing and settlement of the low-carbon and environmentally friendly chain of the Yuanyuan Universe is completed through smart contracts in real time, realizing more efficient, convenient and safe clearing and settlement;

• Carbon coin meta universe low-carbon environmental protection chain tour reduces the trust cost between individuals by minimizing dependence on trust;

• Promote the in-depth development of the play to earn model, making it more convenient for users to "play while earning" in the process of participating in the carbon coin meta universe low-carbon environmental protection chain tour.

The carbon coin meta universe low-carbon environmental protection chain game expects that everyone is their own master, everyone can freely schedule their own assets, and will not be peeped, supervised, and blocked by centralized institutions. Therefore, the carbon coin meta universe low-carbon environmental protection chain game will build a game ecology on the basis of decentralization, privacy, and fairness, ensuring security and fairness of each player' s participation, while stripping away the harm of centralization and building a real decentralization. The centralized ecosystem and value closed loop establish a connection between the virtual and the reality, allowing NFT and Metaverse to promote the progress of the carbon coin Metaverse low-carbon environmental protection chain while creating personal value.

4.3 Play-to-earn schema application

Plan to earn (abbreviation: P2E) is a popular business model currently staying in the world of blockchain games. It corresponds to the common F2P (Free to Pay) model in the real-world game industry. The latter refers to Players can play for free, but they need to recharge if they need a better gaming experience. In fact, the P2E business model has a long history in traditional games, and some traditional games have a group of players who make money by selling equipment or equipment. In blockchain games, this model has been upgraded. Players can earn real money by playing games with cryptocurrency-based assets (NFTs). By actively participating in these virtual economies, players can earn rewards, such as in-game assets, which

can then be traded or sold on the open market. This is an important change in the game world, because traditionally, in-game asset transactions are only in the game ecosystem, and it is difficult for players to trade or sell their digital assets outside the platform.

The Play-to-earn model is the core of the low-carbon environmental protection chain game of Yuanyuan Universe. Playing and earning is the biggest selling point of Yuanyuan Yuanuniverse low-carbon environmental protection chain game. Participate in environmental protection, supervision, upgrades, etc. in the game. Not only get the joy of the game, but also tokens and equipment, props, NFTs, etc., all of which can be sold in the blockchain market.

- Earn in-game tokens: Carbon Coins Meta Universe low-carbon environmental protection chain game has in-game native token C. Tokens can give the holder the right to govern the game, buy and sell NFT items in the game, and even be used for staking. Players earn tokens while playing the game, which can then be exchanged for other tokens or legal currency through the platform, or tokens can be exchanged for BTC, ETH, USDT, BNB, etc., so as to bring the income to the real world.

- Earn in-game NFT assets: NFT includes but is not limited to in-game items, characters, skills, tools, etc., as it can be used in games, it can also be other purely decorative collectibles. Players can obtain these NFT assets through the carbon coin meta universe low-carbon environmental protection chain game, and trade them in the secondary market to other players in need to achieve the effect of earning income.

In the future, the carbon coin meta universe low-carbon environmental protection chain game may also support third-party developers to program, debug, and release decentralized game applications and hybrid architecture game applications oriented to the blockchain environment. At the same time, the integration of carbon coin meta universe low-carbon environmental protection chain game includes distributed user account system based on blockchain, wallet and NFT digital asset circulation, which can realize the off-chain permanent storage and cross-chain use of in-app game assets NFT.

4.4 NFT assets in the game

In order to realize the fission of the value of the assets in the game, the carbon coin yuan universe low-carbon environmental protection chain tour is based on the NFT to create a bidding system for the carbon assets and environmental protection assets in the game.

NFT can be traced back to the first 17 years, when the most popular DAPP encryption cat CryptoKitties, as the first phenomenon-level DAPP, was once all the rage. It has made many people understand what DAPP is, and it has caused large-scale congestion in Ethereum for the first time, and it has also brought the concept of NFT into flames. The main application areas of NFT tokens are games, artworks, domain names, collectibles, virtual assets, and real-world asset tokenization (STO). In particular, games and collectibles have attracted a lot of attention in the market. Some game props and artworks are naturally unique and inseparable, which are just coupled with NFT, so NFT can effectively prevent the forgery and fraud of such items.

NFT, as a non-homogeneous token, perfectly solves this problem. Each NFT is uniquely corresponding to a certain reality. Users can truly enjoy the unique digital ownership of Web3.0 based on unique value. Scarce value anchors, and then conduct transactions. With transactions, there will be commerce, and the various economic exchanges in commerce also make the metaverse truly work. Therefore, the NFT assets in the low-carbon environmental protection chain game of the carbon coin yuan universe create a bidding channel.

The bidding of items and value products in the low-carbon environmental protection chain of the carbon coin meta universe is based on the development of the underlying chain and is oriented to global players. At the same time, the carbon coin yuan universe low-carbon environmental protection chain tour will also set up a special NFT investor protection fund, including: investment and deployment of top NFT platforms and works, incubation of top top NFT items, and a bridge for traditional games to enter NFT, etc. Many aspects.

For the real world, the biggest advantage of the carbon coin meta universe low-carbon environmental protection chain game is to create new value for the game industry. Help existing game assets to obtain better liquidity, from the capital

side, to solve the core difficulty of retail funds difficult to enter the market. For the world on the chain, the NFT assets in the low-carbon environmental protection chain game of the carbon coin meta universe also bring a new concept category to all digital currency investors. At present, the growth dividend of the NFT industry is visible to the naked eye. In the future, for all investors, the best way to participate is to enter the low-carbon environmental protection chain travel ecology of the carbon coin meta universe, in order to share the industrial development dividend.

4.5 Game landing support

Adhering to the concept of deeply applying the concepts of NFT and meta universe to the chain game, the carbon coin meta universe low carbon environmental protection chain game, supported by the core ecology of the meta universe parallel world concept and game payment, will open a new era of value internet. Benefiting from the advantages of continuous development and innovation of technology, wide range of commercial applications, and refined governance, the value logic and support of the low-carbon environmental protection chain tour of the carbon coin yuan universe are competitive in the following aspects:

- Technology: Carbon coin meta universe low-carbon environmental protection chain game has very mature and powerful technical support, and has accumulated rich industries and technologies in blockchain, games, artificial intelligence, NFT, meta universe, VR/AR and other fields Experience has made industry-leading breakthroughs in the development and application of the underlying technology of the blockchain. The team perfectly brings together veterans from multiple industries, many years of actual operation experience, and deep insights into the development of the industry.

- Industry resources: Carbon Coin Meta Universe low-carbon environmental protection chain tour will sign a strategic cooperation agreement with top leading companies in the target industry, which will provide strong support for the platform to enter the target industry, so as to truly promote carbon coin Meta Universe low carbon The actual landing of the environmental protection chain game application.

- Business governance: Different from general game projects, the low-carbon

eco-friendly chain game of Yuanyuan Universe has a clear and definite strategic plan for the target industry, and uses an autonomous community model to continue to empower a free, fair and high-value ecological prosperity . Carbon coin meta universe low-carbon environmental protection chain games are more focused and professional with the help of blockchain technology's distributed decentralization, non-tampering, encrypted security and point-to-point transmission value characteristics, to penetrate the chain game industry and quickly gain the market Share.

• Fund management: The fund management of the low-carbon environmental protection chain game of Yuanyuan Universe will be under the leadership of the development team, strictly abide by the principles of fairness, justice and openness, and the development of the low-carbon environmental protection chain game of Yuanyuan Universe will be the primary goal . Establish an investor protection foundation for special custody and ensure the safety and sustainability of funds. The use of all funds in the low-carbon environmental protection chain tour of the Yuanyuan Universe will be regularly disclosed to all investors to ensure the openness of the use of funds.

• Development space: The carbon coin meta universe low-carbon environmental protection chain game development team drafts a complete governance structure to effectively manage general affairs, code management, financial management, salary management, and privileged operation scope to ensure sustainable development .

With the support of global resources, low-carbon environmental protection chain tourism will set up an environmental protection public welfare community linked with chain tourism, and promote and promote the cause of environmental protection all over the world. Through environmental activities, the awareness of environmental protection will be deeply rooted in the hearts of people's hearts, and strive for the sustainable development of the environment.Each transaction in the chain tour will participate in a public welfare share, and a certain proportion of funds will be drawn to hold carbon environmental public welfare activities. Through environmental public welfare activities, publicize environmental awareness and help the realization of global carbon neutrality goals.

Chapter Five

Carbon Coin Platform technology architecture

5.1 The underlying system architecture

Blockchain technology is more like a technical architecture that uses a synthesis of different technologies. In the generalized blockchain technology architecture, it can be roughly divided into three levels:

• Protocol layer: In this layer, it represents the core content of the blockchain. It is the underlying technology currently called on the market. It contains the structure of data storage, consensus algorithm, encryption mechanism, network communication protocol and so on. All of this content is wrapped in this layer for operation, and provides upper-layer calls in the form of APIs or services.

• Extension layer: The extension layer is more like the V layer in the traditional MVC architecture and handles part of the business logic. Smart contracts are built on this layer. Therefore, at this layer, we can extend blockchain technology to various scenarios through smart contracts, such as AI artificial intelligence, VR/AR, Internet of Things <IOT>ERP/MES, big data <Bigdata> cloud platform< Cloud> can be implemented here.

• Application layer: The application layer is for end users. For those who have been exposed to virtual currency, various "electronic wallets" belong to this layer. However, in practical applications, due to the limitations of blockchain technology itself. In addition to facing the needs of users, the development of the application layer must also take into account the logic and technical requirements of the extension layer and the protocol layer. This leads to a blockchain development project that will require more complex teamwork.

From the above architecture, it can be found that the blockchain technology may be a different programming language and independent operation logic in each architecture layer. At the same time, it must cooperate with the business's own encryption algorithm requirements, etc., which will form a complex collaboration process. Behind it is the need for complete business logic to meet the real needs of the market.

The PoW consensus mechanism represented by Bitcoin, guarantees the

security of the blockchain system in a decentralized scenario, and the 51% computing power attack threshold makes the saboteurs to pay a huge price. However, the energy consumption caused by the calculations in the PoW mechanism is too large, especially for the public chain with a huge ecological volume, which seriously violates the concept of environmental protection and also increases the operating cost of the business.

Some new public chains propose to replace the PoW mechanism with a PoS consensus mechanism. Essentially, the mining difficulty is determined by the currency value of the node. The node with a high currency value is less difficult to mine, which shortens the time for consensus. Performance is improved and energy waste is reduced, such as the POS consensus mechanism for betting on consensus results in the Ethereum Casper proposal.

The main chain of the Carbon Coin system adopts the DPoS consensus mechanism based on the BSC technology. This is a more efficient solution derived from the PoS mechanism. It uses a voting mechanism similar to the Congress to elect N proxy tokens periodically. Account nodes. These nodes are responsible for generating and agreeing on a new batch of subsequent blocks. As the number of nodes participating in the formation of a consensus is greatly reduced, the time for consensus formation is greatly shortened, the overall performance of the system is greatly improved, and the computing energy that needs to be consumed is also greatly reduced. The mechanism of voting to elect proxy bookkeeping nodes also ensures that malicious nodes will be replaced. In addition, the DPoS mechanism is more resistant to the consensus challenge of large mining pools than the PoW and PoS mechanisms. The DPoS consensus mechanism has been verified to be reliable and efficient after a long period of operation on some public chains.

Using the DPoS mechanism, the single-chain performance of the Carbon Coin system can exceed 100,000 TPS, and the overall performance will continue to be expanded through side-chain technology. At the same time, the low resource consumption characteristics of DPoS also enable the Carbon Coin system to charge extremely low gas for Token transfer transactions between users, thereby reducing user thresholds and increasing business activity.

5.2 Carbon Coin System Technology

In addition to the simplest one-dimensional chain structure, the current blockchain system also has innovative chain structures such as DAG (Directed Acyclic Graph). Although these innovative structures have the advantages of high performance, they are complex in structure. , And essentially at the expense of lowering the consensus threshold and sacrificing overall security.

In view of this, the main chain of the Carbon Coin system will adopt an innovative multi-dimensional chain structure, and use the latest technology (such as chain technology, multi-side chain, shard chain, etc.) to obtain as high as possible on the premise of ensuring consensus. Performance to support the commercial application requirements of the Carbon Coin system.

The main chain of the Carbon Coin system has now completed the architecture design work on the basis of the BSC bottom layer. It is determined to be written in C++ language, and use STL and Boost as the bottom development library, support Linux and Windows platforms, and use SHA256 digest algorithm and ECC encryption algorithm . Store core data in a decentralized manner, execute smart contracts, and use blockchain technology to comprehensively ensure the credibility of data and contract performance. And in the future, following the advancement of blockchain technology, continue to introduce new technologies to evolve themselves.

Link technology (main chain-sub-chain-sub-chain):

1) The definition of communication technology

In order to cope with the future performance challenges of the huge business volume of the Carbon Coin system to the underlying blockchain system, the Carbon Coin system blockchain will adopt link-chain technology, that is, side-chain collaboration technology, such as user ID, credit evaluation, feature portrait and other core The function is placed on a dedicated side chain, keeping the main chain as the carrier of basic data, smart contracts and basic Token transactions, and distributing complex application processing to each side chain, thereby improving

the overall performance of the system. At the same time, the Carbon Coin system will adopt an appropriate chain coordination mechanism to effectively ensure the effective and reliable transfer of consensus and value between internal parallel chains and with other public chains.

Independent blockchains complete value production in highly relevant business areas. In order to realize socialized products and large value circulation, a chain trading market is required. The cross-chain value exchange market provided by the chain can satisfy the freedom of value in different subjects, etc. Price circulation. Tolink is compatible and can be compatible with various existing and future blockchains; Tolink is open, and Tolink has the ability to allow any block link to enter; Tolink has the potential for standardization, allowing any block to link in, An access standard will gradually be formed, which will help promote the standardization of blockchain protocols.

2) Business side chain

According to the needs of business functions, privacy protection, data isolation, or performance capacity expansion, the Carbon Coin system establishes multiple independent chains to work in parallel. The chains can interact through chain services, such as sending transactions and querying transaction results. Read configuration data, etc.

The smart contract data interaction between different blockchains enables interoperability between blockchains. In complex business scenarios, independent sub-chains (logical/physical) with fine-grained operations can be designed and passed through the parent- Sub-smart contracts meet different business needs and increase the flexibility of the overall "bloated" ledger.

3) Calculate the side chain

In the Carbon Coin system, the computing side chain (CSC) has a structure similar to DSC, which is also linked by hash, and also includes block headers, transaction sets, Carbon Coin system network contracts, and data distribution. The transaction still uses the Merkle tree structure. The client sends a calculation request to the network, and this request is propagated through the network. Each node uses a computing side chain to obtain tasks. When a task is completed, the working node will send a confirmation to the computing side chain to update the task status and get rewards.

The solver and verifier in the computing side chain (CSC) will load the code and data into the Carbon Coin system virtual machine (DVM), and execute the code in the Carbon Coin system virtual machine (DVM), which includes parallel computing tasks And verification tasks.

The nodes of the computing side chain (CSC) need:

- Check the format of the block;
- Check the deduction, the deposit is valid;
- Check whether the data and codes related to the task are valid;
- If necessary, verify task results;
- If necessary, read/write data from DSC;
- Summarize transactions and send them back to the main chain;

4) Link operation mode

The Carbon Coin system integrates the business-type private chain/consortium chain into the consensus network of the main chain through the chain technology, while maintaining the privacy and permission protection measures of the private chain/consortium chain. According to the needs of business functions, privacy protection, data isolation, or performance capacity expansion, multiple independent chains are established to work in parallel, and chains can interact through chain services. For other digital assets to enter the Carbon Coin system, they first need to complete the registration on the Carbon Coin system, and they can be connected to the Carbon Coin system through independent or customized development to achieve interoperability.

In the Carbon Coin system blockchain network:

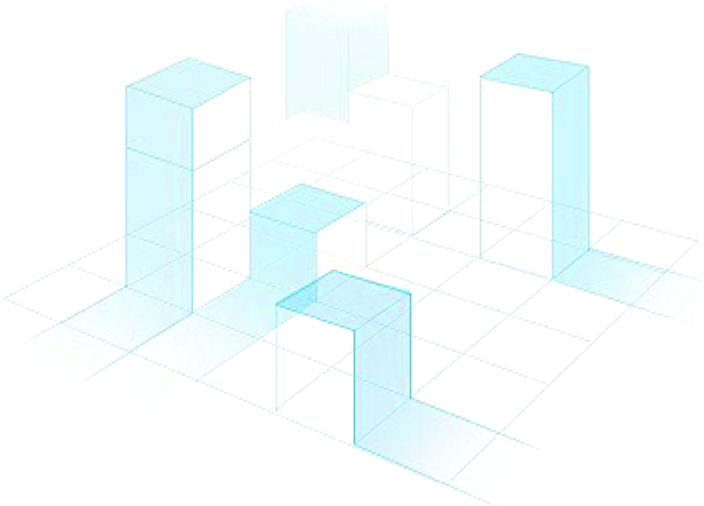
The "main chain" constitutes the main information road, and different parent chains exchange information through the link protocol. At the same time, a main chain carries different isomorphic sub-chains. These sub-chains are distributed ledger implementations of a certain vertical field or multiple clusters of different

industries.

The communication between the sub-chains is realized by the cross-chain communication protocol. Through the sharding of the blockchain, the transaction processing capability of the blockchain system is improved. Compared with a single blockchain system, the chain cluster system can increase the transaction processing capacity linearly by connecting multiple sub-chains.

Transaction requests enter different sub-chains through the distribution of link routing, which can effectively avoid centralized requests for one sub-chain. In addition, we can deploy clusters with different numbers of nodes of homogeneous sub-chains on the link. For homogeneous chains, clusters with multiple nodes will have relatively higher security, and clusters with fewer nodes will have higher processing speeds. quick.

In addition, according to different needs such as the number of nodes, geographic location, business classification, etc., different chain clusters are deployed, and requests are distributed to the appropriate clusters for processing according to different needs, helping the chain network to deploy flexibly according to business needs and provide users with higher quality Blockchain services.



5.3 Distributed storage structure

News reports about data breaches in the past few years have shown us that the frequency of such breaches has increased by as much as 10 times between 2005 and 2020. The process of distributed storage to protect data makes data leakage more complicated than the current methods used in data centers. In the Carbon Coin system, the concept of a distributed storage network (DSN) is introduced. At the same time, considering the purpose of large-scale storage and commercial use, we propose a hybrid data storage solution based on the three storage media of TIPFS/Storj/Cloud Service, aiming to provide faster, safer and more reliable storage for the underlying traceability chain system.

1) IPFS

IPFS is a point-to-point network hypermedia protocol, its full name is Interplanetary File System. Its goal is to become a faster, safer, and more open next-generation Internet.

IPFS is a content-addressable peer-to-peer hypermedia distribution protocol. Each node in the IPFS network will form a distributed file system, making the network faster, safer, and more open.

Since IPFS is based on content addressing instead of file names, it uses content addressing instead of traditional IP and domain name-based addressing. Therefore, users do not need to care about the location of the server, and do not need to consider the name and path of file storage. At the same time, IPFS calculates a unique encrypted hash value based on its content, which directly reflects the content of the file. When IPFS receives a file Hash request, it will use the DHT algorithm to find the node where the file is located, retrieve the file and verify the number of the file data.

In Carbon Coin, we use IPFS as one of the underlying data storage infrastructure, which is perfectly integrated with the blockchain. The virtual machine can read the information on the IPFS chain and store the results after execution in the IPFS network. At the same time, as a public network, IPFS can be seamlessly integrated with BaaS and enterprise-level management cloud platforms to support richer big data analysis scenarios.

2) Storj

Storj aims to be a cloud storage platform that is resistant to censorship, monitoring, or downtime. It is one of the first batch of decentralized, end-to-end encrypted cloud storage platforms. Storj is composed of a large number of interlocking parts that cooperate to create a unified system. Because people interact with different parts of the system, their understanding of Storj is different. Home users can share storage space without any knowledge about Bridge or protocol, and developers can use StorjAPI without knowing any home users. Therefore, in Carbon Coin, Storj is also used as one of the underlying data storage protocols.

3) Cloud Service

At present, with the development of cloud computing, cloud storage is increasingly favored and supported by many blockchain manufacturers. On the one hand, cloud storage can provide massive, secure, and low-cost cloud storage services, providing 99.9999999999% of data reliability . On the other hand, cloud storage generally uses RESTful APIs, which can be stored and accessed anywhere on the Internet, with flexible expansion of capacity and processing capabilities, and a variety of storage types for selection to fully optimize storage costs.

The Carbon Coin hybrid storage model system is aggregated and stored by multiple independent storage providers and self-coordinated data networks to provide data storage and data retrieval to clients. Based on blockchain technology, all data will be fragmented before being sent to the tenant of the hard drive space (or user), and each fragment will be sent to a separate node. Even if someone has the key, it is already difficult to find all the pieces. Redundant fragments are created through a process called Reed-Solomon erasure coding. Even if a few fragments disappear, files can still be retrieved and new fragments can be redistributed.

5.4 Consensus mechanism value

The modular design of the Carbon Coin system supports the replacement and insertion of all core functional modules including the consensus mechanism. Anyone can participate in the blockchain network, each device can be used as a node, and each node is allowed to obtain a complete copy of the database. Based on a set of consensus mechanism between nodes, the entire blockchain is jointly maintained through competitive computing. If any node fails, the remaining nodes can still work normally.

The consensus mechanism is a core issue of blockchain technology. It determines the generation rules of blocks in the blockchain and ensures the honesty of each node, the fault tolerance of the ledger, and the robustness of the system. Based on the different application scenarios of blockchain technology and the characteristics of various consensus mechanisms, evaluation and comparison can be made mainly in terms of performance efficiency, resource consumption, fault tolerance, and supervision level. The functional components of the consensus mechanism have the following functions:

- Support multiple nodes to participate in consensus and confirmation;
- Support independent nodes to verify the validity of the relevant information submitted by the blockchain network;
- Prevent any independent consensus node from recording or modifying information in the blockchain system without confirmation by other consensus nodes;
- It should have a certain degree of fault tolerance, including non-malicious errors caused by physical or network failures of nodes, malicious errors caused by illegal control of nodes, and uncontrollable errors caused by uncertain behaviors of nodes.

5.5 Smart contract

The Carbon Coin system creates a smart contract that combines a non-Turing complete main chain and a Turing complete side chain. Smart contract is an assembly language programmed on the blockchain. Usually people don't write bytecode by themselves, but compile it from a higher-level language, such as a dedicated language like Solidity and Javascript. These bytecodes do provide guidelines for the functionality of the blockchain, so the code can easily interact with it, such as transferring cryptocurrency and recording events.

The execution of the code is automatic: either it executes successfully, or all state changes are undone. This is important because it avoids partial execution of the contract (for example, in a securities purchase transaction, the owner of the securities has already transferred and sent the securities, but the transfer of cryptocurrency payments has failed). In the blockchain environment, this is especially important because there is no way to undo the bad consequences of execution errors (and there is no way to reverse the transaction if the opponent does not cooperate).

Blockchain-based smart contracts can not only take advantage of the low-cost and high-efficiency advantages of smart contracts, but also avoid the interference of malicious behaviors on the normal execution of the contract. The smart contract is written into the blockchain in a coded form, and the blockchain technology is used to realize the data storage, reading, and execution process to be traceable, transparent and non-tamperable. In addition, the state machine system constructed by the consensus algorithm of the blockchain can enable the efficient operation of smart contracts. The functional components of the smart contract include:

A development and operating environment, including:

- Provide programming language support, and provide a supporting integrated development environment when necessary;
- Support static and dynamic checking of contract content;
- Provide support for operating carriers, such as virtual machines, etc.;

• For smart contracts that interact with external data in the blockchain system, the scope of influence of external data sources should be limited to the scope of the smart contract and should not affect the overall operation of the blockchain system.

B storage environment, including:

• Prevent tampering with the content of the contract;

• Support the upgrade of contract content under multi-party consensus;

• Support for writing contract content into the ledger.

5.6 Sandbox and Seccomp

A sandbox is an execution environment that restricts program behavior in accordance with security policies. In the early days, it was mainly used to test suspicious software. For example, in order to use certain viruses or unsafe products, hackers can often run them in a sandbox environment. The classic sandbox system is generally implemented by intercepting system calls, monitoring program behavior, and then controlling and restricting the program's use of computer resources according to user-defined policies, such as reading and writing disks.

Seccomp (securecomputingmode) is a simple sandbox mechanism supported by the Linux kernel (since version 2.6.23). It can make a process enter a "safe" operating mode, the process in this mode can only call 4 kinds of system calls (systemcalls), namely read (), write (), exit () and sigreturn (), otherwise the process Will be terminated. Seccomp was designed by Andrea Arcangeli in 2005. [Sentence has problems] Its application is to solve security problems in gridcomputing. For example, you plan to rent out your CPU resources, but you are worried that untrusted code will damage your system.

Then, Seccomp can provide a safe (SAFE, notSECURE) operating environment for "untrusted pure computing code" to protect the normal operation of your system and applications from being interfered by untrusted code. In the Carbon

Coin system, the core Dapp code runs in a sandbox, and its capabilities are restricted within a certain range to ensure the security of the custodial node.

5.7 Transaction model design

A transaction abstraction layer is built in the Carbon Coin system. Almost all functions of the core system are based on transactions, such as transfers, voting, application stores, deposits and withdrawals. The side chain itself can also implement its own different types of transactions. The main difference between transactions is transaction type and asset. The data structure of the basic transaction is as follows, and the extended part will be stored in different asset tables depending on the type.

```
Transaction {
    required VARCHAR(20)    id;
    required VARCHAR(20)    blockId;
    required TINYINT        type;
    required INT            timestamp;
    required VARCHAR(21)    senderId;
    optional VARCHAR(21)    recpientId;
    required BIGINT         amount;
    required BIGINT         fee;
    required BINARY(64)     signature;
    optional BINARY(64)     signSignature;
    optional TEXT           signatures;
    required BINARY(32)     senderPublicKey;
}
```

Take the voting transaction as an example. The vote entity is associated with a basic transaction through the transaction id.

```
Asset_Votes {
    required VARCHAR(20)    transactionId:
    optional TEXT                   votes;
}
```

5.8 Quantum entanglement encryption technology

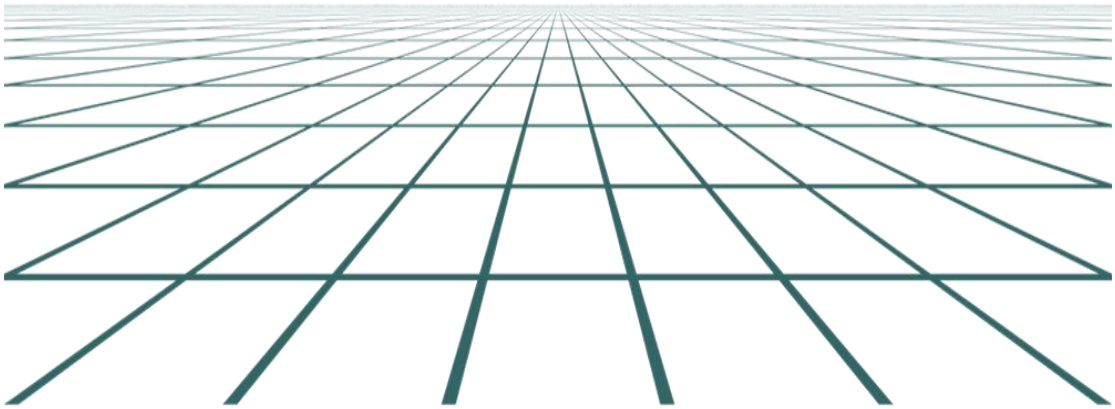
The Carbon Coin system uses quantum entanglement technology, which is an encryption technology for secure transmission of information. Related to the transmission of information beyond the speed of light. The speed of "communication" between these particles is very fast, using this connection to control and transmit information at such a fast speed.

At the same time, asymmetrically encrypted public and private key pairs are also used in the blockchain to build trust between nodes. The asymmetric encryption algorithm is composed of a corresponding pair of unique keys (that is, a public key and a private key). Anyone who knows the user's public key can use the user's public key to encrypt information and achieve secure information interaction with the user. Due to the dependency between the public key and the private key, only the user holding the private key can decrypt the information, and any unauthorized user or even the sender of the information cannot decrypt this information. The encryption function component has the following functions:

- Support international mainstream encryption algorithms, such as symmetric encryption algorithms such as AES256 and asymmetric encryption algorithms such as RSA and ECC;
- Support commercial encryption algorithms, such as symmetric encryption algorithms such as SM4 and SM7 and asymmetric encryption algorithms such as SM2 and SM9;
- There should be a clear key management plan to ensure the normal

operation of the underlying security mechanism of the blockchain;

- Encryption algorithms should have the ability to resist cracking, and the security of the encryption algorithms should be reviewed regularly, and if necessary, encryption algorithms with higher computational complexity for cracking should be adopted.



5.9 Technical advantages of the system

The goal of Carbon Coin is to build the first carbon trading protocol network on the blockchain and a trustless and highly decentralized blockchain carbon trading infrastructure. Therefore, in the process of Carbon Coin development and application, we always pay attention to the five aspects of performance, function, security, contract, and compliance, and focus on the optimization of blockchain technology capabilities in these five aspects.

1) Better performance

It adopts optimized consensus protocol and P2P communication to support multi-chain parallel consensus. Supports dynamic adjustment of the network topology, realizing the dynamic joining and exiting of nodes. At the same time, users can also choose non-Byzantine consensus protocols with better performance (such as Raft) according to their own needs to improve the operating efficiency of

the entire blockchain. In order to respond to diversified business scenarios, meet information security requirements, and improve business throughput, Carbon Coin supports a multi-chain architecture. Irrelevant businesses run on multiple parallel blockchains, which provides us with linear expansion capabilities for businesses. For the interoperability between multiple chains, we adopted the relay chain model. Participants submit proposals to the relay chain nodes, and the results are confirmed after consensus.

Adopt microservice processing architecture. Carbon Coin supports horizontal scaling and dynamic expansion to achieve massive transaction processing and data storage. Through testing and analysis, it is found that when the system processes massive transactions, there is a performance bottleneck between the cryptographic module and the contract module in the consensus node. In order to reduce the impact of this problem, the cryptographic module and contract module are split into separate stateless microservices, so that the cryptographic and contract microservices can be horizontally expanded in a targeted manner when processing massive transactions.

2) More comprehensive functions

- Support user real name and authentication;
- Support enterprise data governance;
- Support event-driven business collaboration model;
- Support multiple ledgers to manage data on the chain according to business dimensions.

3) Safety is better

- Pluggable password algorithm, can flexibly formulate corresponding password system;
- The platform implements multiple sets of cryptographic algorithms by default, including national cryptographic algorithms and hardware encryption devices.

4) More diversified contracts

- Support reusable smart contracts;
- Support the debugging function of the smart contract language.

5) Pay more attention to compliance

- Support CA-based account authentication;
- Support the access of supervisory nodes;
- Support data filing.

chapter six

C-currency economic model design

6.1 Carbon Coin Economics

Carbon Coin is abbreviated as C coin. Supported by the concept of carbon neutrality and environmental protection, Carbon Coin aspires to become a global carbon indicator transaction payment currency.

1) Distribution and distribution scheme

- Total issuance: 500 0000 0000 0000
- NFT mining reservation: 100 0000 0000 0000
- Ecological Fund: 50 0000 0000 0000 (reserved by the project party, locked state, and only dividends will be drawn)
- Community Fund: 25 0000 0000 0000 (permanently locked, used for community building and volunteer rewards)
- Reward fund: 10 0000 0000 0000 (used for major contributors or large community entry rewards)
- Environmental protection organization: 20 0000 0000 0000 (donated to environmental protection organization to support community planting trees to obtain carbon indicators)
- Liquidity: 295 0000 0000 0000 (first increase of 25 trillion-30 trillion, the rest in batches)

2) Token use

- Handling fee 8%
- 2% community wallet: 2% of each transaction is converted into USDT for community building and marketing promotion
- 2% repurchase wallet: 2% of each transaction is converted into USDT for token repurchase, and sealed after repurchase.

- 2% USDT for holding currency: 2% of each transaction is converted into USDT and entered into the reward pool, which is distributed to currency holders according to the proportion of holdings. Once every 72 hours.

- 1% drop red envelope: 1% of each transaction is converted into USDT, and 100 transactions are triggered once, and 100 position holders are randomly selected.

- 1% added liquidity: 1% of each transaction is converted into BNB paired C coins and added to the liquidity pool.

3) Mining mechanism

The pledge of NFT mining C coins is halved every three years, of which the first three-year mining is 100 trillion, the second three-year mining is 50 trillion, and the third three-year mining is 25 trillion. And so on.

6.2 Circulation value of tokens

C currency itself is a blockchain asset, with the basic decentralization, trustworthiness, openness, autonomy, immutability, and anonymity characteristics of blockchain assets. Different from the broad concept of cryptocurrency, C currency is designed as a reward voucher and lubricant in the ecology, aiming to encourage users to participate and build the ecology together and enjoy the benefits of rapid development along with the ecology. Therefore, C coins can be efficiently circulated within the project ecology, using scenarios such as ecological governance, application consumption, and carbon market trading and circulation.

1) Ecological governance

Holders of C coins can participate in platform governance, participate in decisions about products to be launched, the distribution ratio and method of platform fees, and future development directions. The governance system is implemented through five roles:

- C coin holders

- Verification node
- Carbon Assets Review Committee
- Carbon Neutrality Management Committee
- Community Operation Foundation

Any holder of C currency can become a verification node through election and obtain rights within the ecological governance structure.

2) Ecological application consumption

C currency is mainly used as a reward for the contribution of blockchain infrastructure and will be a value medium for ecological application consumption. C currency can be exchanged with all digital currencies, supporting circulation and payment in all links of the ecology:

- After listing on the exchange, it supports payment, transfer, transaction, deposit, withdrawal, voting, STO gateway;
- Settlement with the legal currency of all countries in the world, and exchange with the world's mainstream cryptocurrency.

At the same time, C coins can be obtained through mining machine mining, node rewards, and community consensus. In terms of application rate circulation, users can purchase or use various trusted devices supported by C coins, third-party Dapps, etc., to join the entire ecosystem.

3) Carbon market trading and circulation

Through the circulation of tokens, the C currency ecology can enable consumers to profit through asset carbon market assets or decentralized storage solutions, and use the obtained C currency assets to directly participate in carbon trading. Specifically, the C-coin Ethereum smart contract, combined with decentralized carbon emission scenarios, creates a transparent, worry-free, and efficient low-carbon life platform. In addition, the circulation of C currency in the carbon trading scenario can promote more seamless collaboration between various

participants, and the data recording and sharing ledger of any node in the multi-node network, which will greatly reduce the development time of carbon assets.

C currency can adapt to diversified business needs and meet the data sharing on the business chain of cross-industry. This means that the underlying protocol of C currency assets has sufficient generality and standards for the data recording method, and can express various structured and unstructured methods. Information, and can meet the cross-chain requirements as the business scope expands. And this provides a value foundation for the versatility of C currency assets. Let C currency assets circulate more calmly in various industries and various scenarios around the world.

4) Acquisition and circulation of meta-universe chain games

• Value creation: Including (A) the contribution of creating digital assets, that is, developing games and making props. For a single digital asset (including games, applications, games/in-app props), the amount of platform incentives is proportional to the value of the asset created by participants, and inversely proportional to the platform's lifetime and the total asset value of the system; (B) The contribution of creating the value of digital assets means that the creation of assets reaches a certain fee and the scale of asset circulation can obtain C coins. For a single digital asset (including games, applications, games/in-app props), the amount of incentives issued is proportional to the total asset circulation of the asset created by the developer;

• Platform contribution reward: Users who contribute to the community can get C coins. In the initial stage, we issued C coins based on the historical contribution of the developer community (code contribution points to the engine, online community interaction points, etc.). In the later stage, the platform will adopt various forms such as bounty tasks, free assets (such as free gifts of developers' game characters) and other forms to encourage developers to develop new features, upgrades, bug modifications, and tests on the platform and other community behaviors. This part will be allocated from the platform foundation's asset reservation and platform division;

• Asset Circulation: Selling prop assets acquired in the game to get C coins. The incentives for this part are related to game play and economic system, and are determined by game developers and market rules;

• Behavioral incentives: A variety of effective behaviors in the community and games will be converted into C currency according to a certain degree of contribution. For example, users can register for platform accounts and participate in various interactions in the community to obtain C coins. The platform confirms whether the user's behavior is valid by analyzing the dimensions of access validity, information integrity, and behavioral rationality, and carries out the issuance of C currency incentives. The number of incentives in this part is directly proportional to interactive content (such as posting, likes, replies, etc.), and inversely proportional to the total number of users on the platform, and the duration of the platform. There is an upper limit on the total amount of incentives.

For game players, C currency can be used for game consumption. C currency usage scenarios include but are not limited to:

• Exchange development resources from third-party developers (for example: meta-universe game character image, etc.);

• Exchange value-added services such as developing functional components from the game;

• Purchasing game characters and environmental assets from the game. Based on the asset rights management mechanism of the platform, the developer will be paid a certain fee for each transfer of the props in its complete life cycle;

• Post reward tasks in the community, initiate and participate in community affairs voting.

In terms of versatility, in the future, the Carbon Coin platform will continue to improve and explore business models to adapt to more diversified business needs and meet data sharing across the business chain of enterprises. This means that the Carbon Coin system has sufficient data recording methods. The universal and standard can express a variety of structured and unstructured information, and can meet the cross-chain requirements required by the expansion of business scope. And this provides a value foundation for the versatility of C currency. Let C coins circulate more calmly in various industries and various scenarios around the world.

Chapter SEVEN

Global team

Carbon Coin is designed by a global team of experts, from DAPP to distributed system programming language and carbon market theory, these experts are industry leaders. With their rich skills and experience, they guide Carbon Coin's strategic planning, technology development and operation. This team includes encrypted digital asset trading experts, blockchain game development experts, software engineers, and a board of directors composed of experienced real-world technical experts.

1) Technical team

Ackerman-a pioneer in blockchain technology, a blockchain architect, and an expert in chain game development. He has more than ten years of experience in the development and management of the Internet industry. Familiar with mainstream blockchain technology architecture and principles, have in-depth research on IBM Hyperledger fabric, and led the development of a decentralized big data risk control blockchain in the game industry.

Bartholomew-core developer. He has both front-end and back-end software project development experience, has a deep technical foundation in front-end HTML, CSS, JS, is good at solving compatibility problems, and has a deep grasp of jQuery, Bootstrap, react, Less, Sass and other technical frameworks. Participated in the development of several large and medium-sized projects such as ERP, internal OA, and energy big data systems.

Carmen-with 17 years of experience in the Internet industry, proficient in multiple computer languages, good at massive high-concurrency architecture design, and rich R&D management experience.

Copperfield-has been conducting blockchain research and investment in Silicon Valley since 2015, and is a deep participant in the Quantum and Ethereum communities.

FitzGerald——Graduated from the Department of Computer Science at Yale University with a Ph.D. in Computer and Big Data, architect, database expert, chief technical expert in exchange construction, has long been engaged in database applications, data warehouses, big data and blockchain in the trading industry Development, has a wealth of experience in blockchain project development.

2) Consultant team

Robin Li-has extensive experience in supervision and financial technology. He used to be responsible for all financial technology, blockchain and cryptocurrency related businesses and supervision of the largest law firm in Baltics-Sorainen. Robin focuses on the legal aspects of investor relations and business, and is a consultant for overall project strategy and business development.

ArtOras Asakavicius-technical consultant, provides guidance on defining control center use cases in all major game development and implementation projects, including game information systems, multiple asset management systems and smart metering systems.

Heikki Kolko——Operational consultant, with more than 10 years of marketing experience in the Internet industry, good at game marketing, market planning, etc., has served a large Internet technology company in Silicon Valley in the United States.

Chapter eight

The Singapore Carbon Coin Ecological Development Fund

The Singapore Carbon Coin Ecological Development Fund will set up a governing body to specifically manage the Carbon Coin project.

With the purpose of protecting the environment, caring for the earth, maintaining the ecology, promoting the construction of carbon environmental protection and carbon market transactions, we will create a Carbon Coin ecosystem and chain game space that focuses on protecting the environment, so that more people can participate in the team that protects the environment. Come in. Drive Carbon Coin to build the first carbon trading protocol network on the blockchain and a trustless and highly decentralized blockchain carbon trading infrastructure.

Through the gradual appreciation of C coins, the foundation allows members to promote the importance of ecology globally and obtain the benefits of carbon market transactions and Carbon Coin.

1) Foundation governing body

In order to ensure the openness and transparency of the Carbon Coin project, it is managed by the establishment of the highest decision-making body-the decision-making committee. The decision-making committee consists of a business committee, a technical committee, a comprehensive affairs committee, and a community development committee. The management body will be composed of developers and functional committees. The members of the decision-making committee have a term of two years. The members of the first decision-making committee are composed of core team members, celebrities in the blockchain industry, legal experts and early investors. Some members of the subsequent decision-making committee are elected by the community.

2) Supervision by directors

In order to ensure the efficient, transparent and healthy operation of the platform, the activities of the entire platform must be supervised. Due to the application of blockchain technology, various data generated by the platform will be recorded and cannot be tampered with. Therefore, on the one hand, the Carbon Coin platform can self-supervise and trust each other; on the other hand, the platform sets up a C currency autonomous committee, which is responsible for the investor community meeting, and is responsible for its management and

supervision functions. The dual supervision guarantees the platform and the platform. The interests of stakeholders. The Autonomous Committee is renewed every year according to the number of tokens held and the age of the currency.

In addition, the board of directors should set up audit, legal, financial and other consultants to conduct regular and irregular information disclosure in the form of reports and news. The contact information of the main person in charge of the board of directors must be open and accept the contact and supervision of all parties. In addition, through the two-way channel of supervision and reporting, the council welcomes renewable resource collaboration platform users, users, and investors to participate in management, supervision and operation, and report problems, major crises, fraud, fraud and other issues in the process of platform operation. At the same time, the information protection of the whistleblower must be ensured.

Under daily affairs, the foundation will set up permanent functional units, such as R&D department, market development department, operation department, finance and human resources department, etc., to handle current affairs. At the same time, a professional functional committee is set up to make decisions on important functions of the foundation.

Unlike functional units, functional committees exist in a virtual structure, and committee members can come from all over the world and do not need to work full-time. However, they must meet the expert qualification requirements of the committee and be able to promise to attend and express opinions when the committee needs to conduct discussions. The functional committee will also set up a regular meeting system to ensure the effective advancement of major decision-making matters.

As an innovative technology, blockchain is not only a subversive breakthrough in the core computer technology, but also an innovation in this industry field. Therefore, the importance of the risk management system is self-evident.

The foundation upholds the establishment of a risk-oriented and sustainable blockchain community. The foundation will carry out continuous risk management for the operation of the foundation. Including a series of activities such as the establishment of risk system, risk assessment, and risk response. For major risks, it is necessary for the Foundation's Strategic Decision Committee to discuss and make decisions.

The foundation will classify events according to the characteristics of the event, such as the degree of impact of the event, the scope of impact, the amount of affected tokens, and the probability of occurrence, and make decisions based on priority. For the highest priority events, the relevant committee of the foundation will be organized to make decisions as soon as possible.

Chapter nine disclaimer

This document is only for the purpose of conveying information. The content of the document is for reference only, and does not constitute any investment advice, abetting or invitation to sell stocks or securities in Carbon Coin and its related companies. Such invitations must be made in the form of confidential memorandums and must comply with relevant securities laws and other laws.

The content of this document shall not be interpreted as forcing participation in the public issuance of tokens. Any behavior related to this white paper shall not be regarded as participating in the public issuance of Token, including requesting a copy of this white paper or sharing this white paper with others.

Participating in the Token public offering means that the participants have reached the age standard and have complete civil capacity. The contract signed with Carbon Coin is true and effective. All participants signed the contract voluntarily and had a clear and necessary understanding of Carbon Coin before signing the contract.

The Carbon Coin team will continue to make reasonable attempts to ensure that the information in this white paper is true and accurate. During the development process, the platform may be updated, including but not limited to platform mechanisms, tokens and their mechanisms, and token distribution. Part of the content of the document may be adjusted accordingly in the new version of the white paper as the project progresses. The team will publish the updated content to the public by publishing announcements on the website or the new version of the white paper. Participants must obtain the latest version of the white paper in time, and adjust their decisions in a timely manner based on the updated content. Carbon Coin makes it clear that it will not be responsible for participants' reasons (a) Relying on the content of this document, (b) the inaccuracies of the information in this article, and any losses caused by any actions caused by this article.The team will spare no effort to achieve the goals mentioned in the document. However, due to the existence of force majeure, the team cannot fully make the promise.

C currency is an important tool for the efficiency of the platform, not an investment product. Owning a token does not mean granting its owner ownership, control, and decision-making power over the platform. Tokens, as encrypted assets used in the ecology, do not belong to any type of currency in the following categories:(a) Securities; (b) Equities of legal entities; (c) Stocks, bonds, notes,

warrants, certificates or other instruments granting any rights.The value-added of C currency depends on the market rules and the demand after the application is implemented. It may not have any value. The team does not make a commitment to its value-added, and is not responsible for the consequences of its value increase or decrease.

To the fullest extent permitted by applicable laws, the team is responsible for damages and risks arising from participating in the public issuance of Tokens, including but not limited to direct or indirect personal damage, loss of commercial profits, loss of commercial information or any other economic losses. Not liable.

Carbon Coin complies with any regulatory regulations and industry self-discipline declarations that are conducive to the healthy development of the industry. Participants' participation means that they will fully accept and comply with such inspections. At the same time, all information disclosed by participants to complete such inspections must be complete and accurate. The platform clearly communicates possible risks to participants. Once participants participate in the public issuance of Tokens, it means that they have confirmed their understanding and approval of the various terms and conditions in the detailed rules and accept the potential risks of the platform at their own risk.