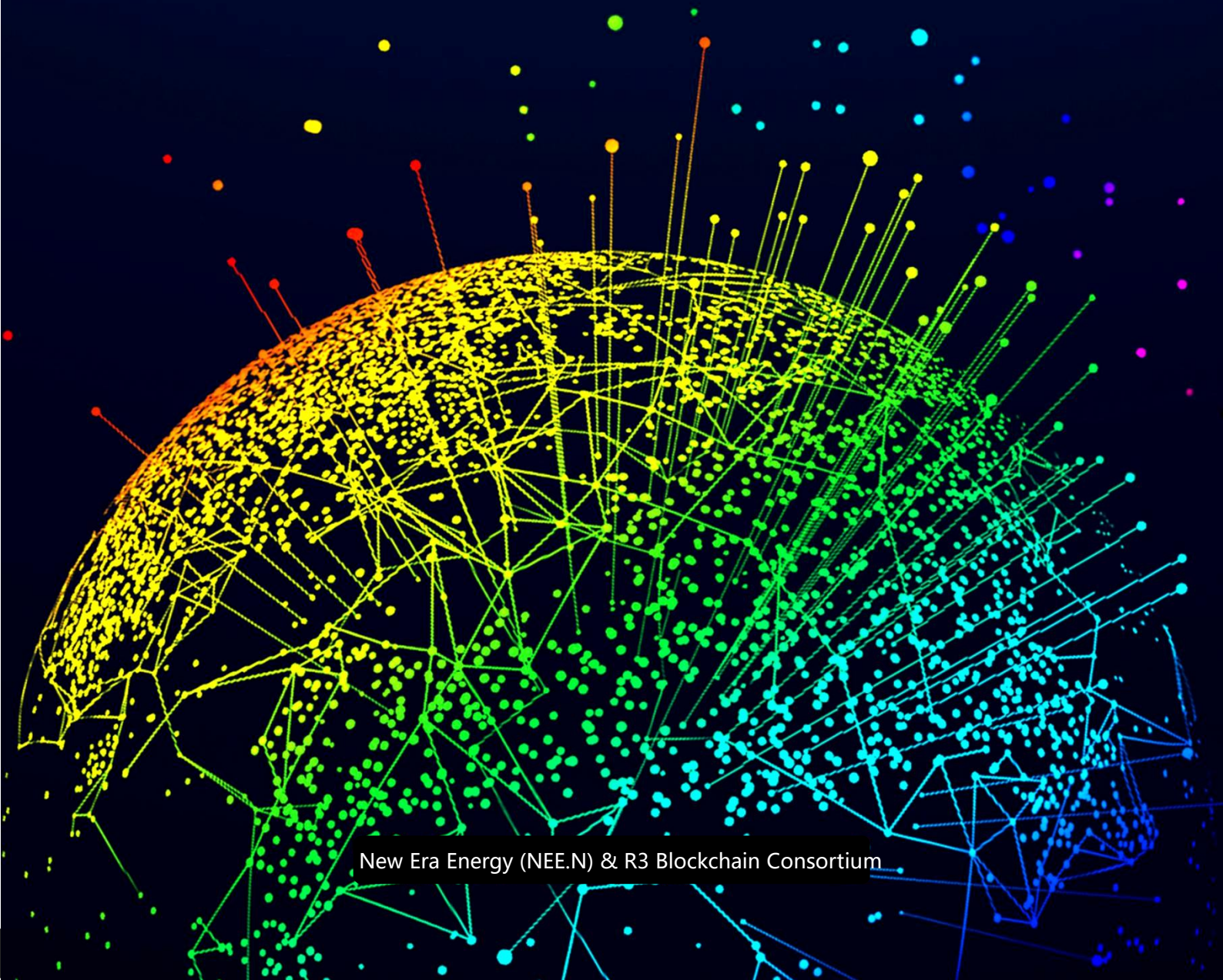
GECC Carbon Coin White Paper

Build an application-oriented carbon neutral main network public chain integrating the underlying emission data recording and carbon asset trading



New Era Energy (NEE.N) & R3 Blockchain Consortium

Preface

In response to global climate change, the major threat posed by rising sea level is about the future of mankind. More and more countries have promoted carbon neutrality as a national strategy, and carbon neutrality has become a global consensus in the middle of this century. A vision of a carbon-free future is proposed.

The so-called carbon neutrality, simply saying how much additional greenhouse gases we emit, how much to absorb from the atmosphere to achieve mathematical "zero emissions". This will disrupt the entire industrial civilization that has been built on coal, oil and natural gas for more than two hundred years, and many of the industries we are familiar with, products and companies will change dramatically.

Low-carbon and circular development path, to achieve high-quality development is of great significance. It is mainly reflected in: the first, to promote the green transformation of economic structure, accelerate the formation of green production mode and lifestyle, and promote high-quality development; the second, to promote the source control of pollutants, reduce the emission of pollutants, and cooperate with the improvement of environmental quality; the third, to improve the ecosystem service function and protect biodiversity; the fourth, to mitigate the adverse effects of climate change and reduce the losses to economic and social society.

Carbon neutrality is the inevitable trend, and no enterprise can escape this trend. Only by conforming to the development of The Times can we have a promising future. At the same time, any change is gradual, and in this process, it will be regulated by the market. If your carbon emissions exceed the standard, then you need to buy carbon assets in the 'carbon market', so as to continue to produce. In the future, some of the tax will standard carbon emissions.

As early as 2020, New Era Energy (NEE.N) Company took the lead to jointly develop and build R3 blockchain alliance technology to build an applied carbon neutral main network public chain integrating the underlying emission data record and trading carbon assets. Aspire to help all the production enterprises of carbon emissions on the chain can be checked and convenient trading.

Listed on January 6,1950, It is one of the largest power and energy infrastructure companies in North America and a leader in the renewable energy industry. It is determined to make contributions to the field of carbon neutrality in the future. At the beginning of its establishment, it uses distributed storage technology to store enterprise information, and uses immovable blockchain technology to conduct fair trading of carbon emission assets on the enterprise chain. Real-time accurate data query on the chain, determined to create an application-oriented main network public chain serving the major enterprises in this field. Let's make our own contribution to our ecological environment together.

This white paper is based on guiding the application of blockchain technology in the field of carbon neutrality and carbon market. The creation of GECC carbon assets will provide efficient value media foundation support for the industry. At the same time, this white paper will outline the prospects of the project from the aspects of industrial development background, blockchain technology core, industry development pain points, technology solutions, etc. In addition, will also be the GECC carbon assets development model, design principles, technical characteristics, technical architecture, application ecology, certificate economic model, the core team, foundation management depth, for users, service providers, partners and investors to provide a new green carbon based on block chain technology market ecological application solutions.

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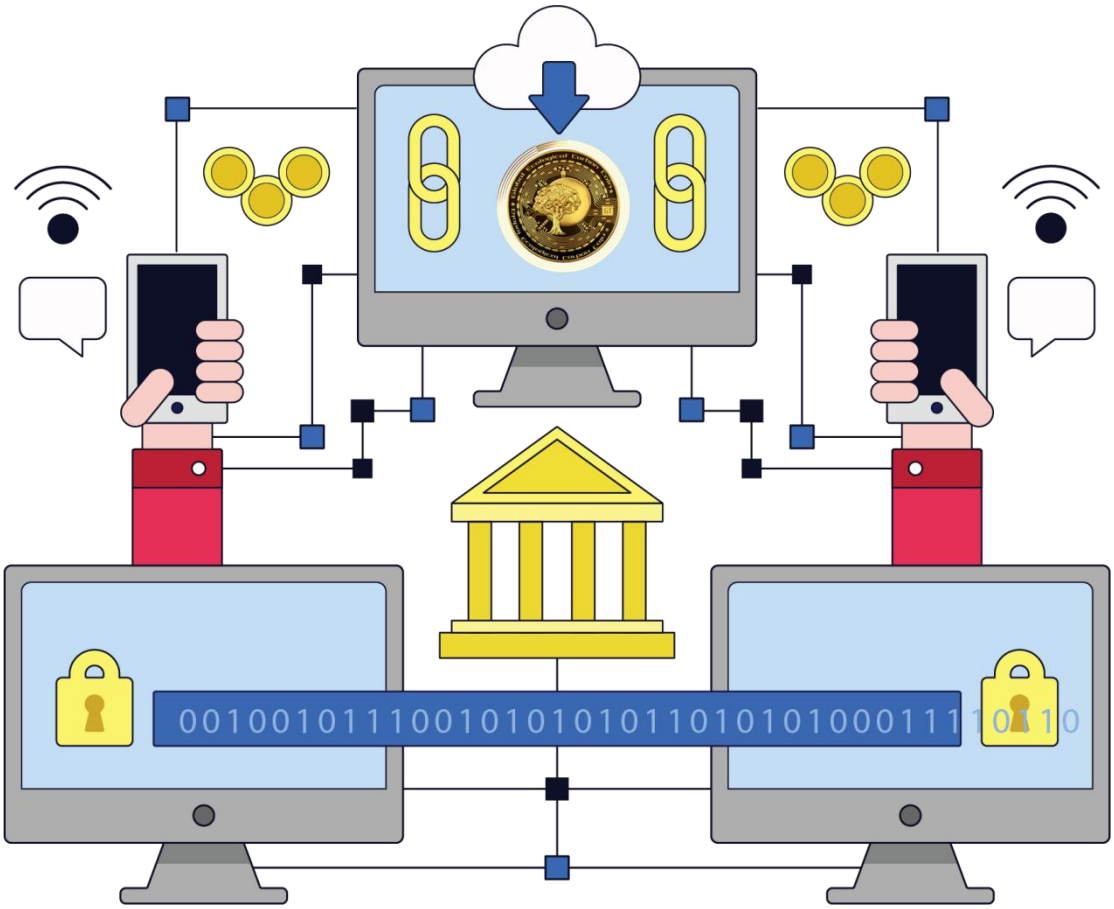


Chapter 1: Overview of the project's birth background

1.1 Profprofile of global climate change

Extreme weather and natural disasters such as cold wave, hot summer, hurricane, flood and forest fire have occurred frequently around the world in recent years. Combined with the impact of global pandemic, issues related to human survival and security and sustainable development of global economy have received more attention. Among them, addressing climate change has long been a key issue. Physical risks, transition risks and liability risks related to climate change are also increasingly coming into view.

United Nations Secretary-General Antonio Guterres has launched the "Our Common Agenda" (hereinafter referred to as the Agenda). The Agenda states that humanity faces a stark and urgent choice: between further collapse or a breakthrough towards a greener, better and safer future.

"We know that GDP is an indicator that does not take into account human well-being, planetary sustainability and non-market services, nor does it take into account the distributional dimensions of economic activity. It is absurd that GDP goes up when people overfish, cut down forests or burn fossil fuels. We are destroying nature, yet we see it as an increase in wealth. This discussion has been going on for decades. Now is the time for a collective commitment to complementary measures. Without this fundamental shift, the targets we have set on biodiversity, pollution and climate change will not be met." Mr Guterres said.

In 2021, while the international community is making every effort to fight the epidemic, many countries around the world are also experiencing frequent extreme weather events, from heat waves to torrential rains and floods, which have caused heavy casualties and economic losses. The pressure brought by global climate change seems to be greater than ever before. In the past two years, not only ngos such as Greenpeace and sustainable development activists have raised their voices, but government agencies in various countries and regions have also stepped up cooperation and participation in the field of climate change.

According to the newly released Blue Paper on Global Climate Change (2021), in 2020, the global average temperature will be 1.2 degrees higher than the industrial level. That is to say, climate change has reached the critical point of 1.2 degrees, which is only 0.3 degrees short of the 1.5 degrees Celsius warming threshold set by the Paris Agreement. Once this threshold is crossed, the probability of the Earth's temperature falling is very low. The data show that 2011-2020 was the warmest decade since 1850, and in 2020, the average Asian land surface temperature was 1.06 degrees above normal, the warmest year since the early 20th century.

Since 2021, there have been frequent extreme weather events around the world, resulting in disastrous weather in many regions. This makes us more intuitive to realize that the consequences of the Earth's climate change problem are really serious. In late June and early July of this year, a rare heat wave swept through the northwestern United States and parts of Canada. The Canadian province of British Columbia set an all-time high of 121 degrees. Marine biologists estimate that 1 billion small creatures, including mussels, died from the heat wave along the Salish Sea coast of western North America alone because of the heat.

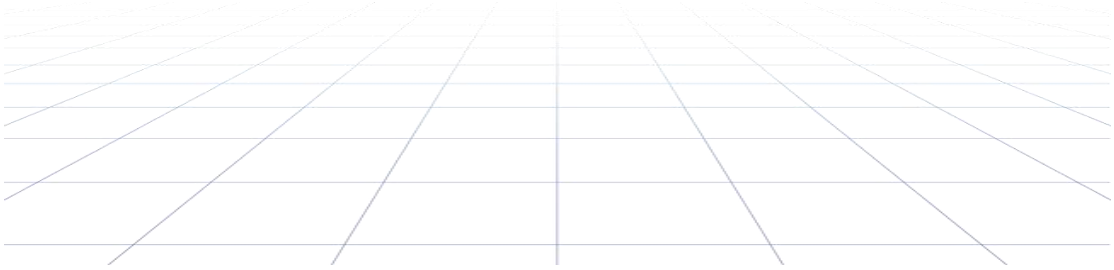
In the western United States, record-breaking high temperatures of 42.2, 44.4 and 46.6 degrees were observed in Portland, Oregon, for three consecutive days from June 26. In Washington State, Seattle also recorded a temperature of more than 42 degrees on June 28, while Pasco recorded a high temperature of 47.7 degrees on that day, already matching the state's all-time high temperature record set on August 5, 1961. In Las Vegas, the temperature exceeded 47.2 degrees Celsius at one point, the highest since 1942. Death Valley National Park in California even hit 52.2C. More than 30 million people in the western United States will be affected by the heat.

Europe and Asia have been hit by extremely rare super flooding. In mid-July 2022, European flood events seriously affected Western Europe and other countries: On July 21, local time, severe floods caused by extreme rainfall in Western Europe have caused at least 200 people to die in this flood, of which Germany has the largest number of deaths, 156 people. In addition to Germany, many European countries such as Belgium, Austria, Switzerland and the Netherlands have also suffered floods. Stefan Rahmstorf, a professor of ocean physics at the Potsdam Institute for Climate Impact Research in Germany, said it was unclear whether the extreme rainfall in Germany was a direct result of global warming, 'But it's safe to say they're only going to become more frequent because of global warming.'

China also saw unusually heavy rainfall in July. In central China's Henan province, 622.7 millimeters of rain fell in Zhengzhou between 2 am on July 20 and 2 am on July 21 (an extremely heavy rainstorm is defined as more than 250 millimeters of precipitation in 24 hours); On July 20, the maximum hourly rainfall in Zhengzhou was 201.9 mm. In Hebi city, Henan province, precipitation reached 777.5 millimeters in 24 hours from July 21 to 22.

In South America, a fierce cold snap recently hit Brazil, which is mostly located in the tropics, and even caused many parts of the south to see snowfall that had not been seen in years. As the polar air mass pushes into south-central Brazil, temperatures could plummet as low as minus 10 degrees Celsius at higher elevations in the country's southern regions. Weather consultancy Rural Clima said it was expected to be the coldest day of the year in Brazil. While most of this year's crops have already been harvested in southern Brazil, the real pressure is likely to come next year. Last year's drought, in particular, hit older coffee plants, and this frost will cause lasting damage to smaller seedlings. If coffee plants are replanted, they will take about three years to produce. Cold air has hit this time of year almost every year for the past 10 years, but this year it has been cold since May, which is very rare in history.

These weather anomalies suggest that global climate change is intensifying. These increasingly frequent abnormal weather phenomena around people have caused a very real impact, resulting in a large number of lives and property, industrial and agricultural production losses. In the face of the worsening of abnormal climate change, I am afraid that all mankind must take urgent measures to cope with it.



1.2 Climate change and carbon emissions

In a newly released report, the United Nations Intergovernmental Panel on Climate Change (IPCC) states that unless we drastically reduce greenhouse gas emissions in the coming decades, global warming will exceed 1.5 degrees Celsius and 2 degrees Celsius in the 21st century. Climate change is intensifying the water cycle, which will bring heavier rainfall and even cause flooding, which in many areas means more severe droughts.

"Stabilizing the climate requires strong, rapid, and sustained reductions in greenhouse gas emissions and reaching net zero carbon dioxide emissions." Limiting emissions of other greenhouse gases and air pollutants, particularly methane, is good for health and good for the climate."

To reduce greenhouse gas emissions, putting a price on carbon is an important mechanism. Economists agree that greenhouse gas emissions are an external factor that imposes a cost on society that emitters cannot afford and that markets have so far failed to internalize. As a result, putting a price on carbon is not only necessary, it is also widely accepted as one of the best ways to transition to a low-carbon economy.

In a blog post it published, the International Monetary Fund (IMF) noted that the incentives created by carbon pricing could be strengthened by regulations on emission rates or fees. Using carbon pricing revenues to boost the economy and offset the economic damage caused by higher fuel prices could build support for such a strategy. At the same time, appropriate transitional measures are needed to help low-income families, vulnerable workers and regions. Public investment is needed in networks of clean-tech infrastructure that the private sector may not be able to provide, such as electric vehicle charging stations and grid expansion to accommodate renewable energy sources such as wind and solar. And carbon pricing must eventually be extended to other sectors as well, such as forestry and agriculture.

As things stand, carbon pricing can be achieved in two main ways: a carbon tax and an 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 promoting carbon emission reduction

process. The carbon emission market trading mechanism makes emissions no longer a zero-cost thing by capitalizing and commercializing carbon. While stimulating large emitters to eliminate backward production capacity to achieve emission reduction, it also stimulates the innovation and application of low-carbon technologies. Finally realize the transformation and upgrading of industrial structure.

At the same time, a carbon market with sound reward and punishment mechanisms, limited quotas and industry-wide coverage will help to price carbon more effectively and maximize the effectiveness of the carbon trading mechanism. The linkage and docking among countries, regions and markets in the future will help to form regional and even global carbon markets, maximize carbon trading and expand the scale of the market, and better facilitate the transformation of the global green and low-carbon economy.

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

Among the key measures: 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; Halt all new fossil fuel exploration and production and redirect fossil fuel subsidies to renewable energy; Solar and wind capacity should quadruple by 2030, and investment in renewables should triple to maintain a net-zero trajectory until mid-century. However, it is worth noting that while continuing to promote the development of energy transition, we should not ignore the difficulties and challenges in the transition process. New energy needs to make breakthroughs in energy efficiency, stability, cost and energy storage. First, the energy conversion efficiency of new energy needs to be further broken through at the technical level. Taking photovoltaic power generation as an example, at present, the conversion efficiency of commercial photovoltaic power generation is basically below 25%, which is much different from the theoretical value of 70%. Second, new energy power generation is greatly affected by natural factors and has strong random volatility. As the proportion of new energy connected to the grid continues to increase, the volatility of power generation will increase significantly, making it more difficult for countries to balance their power and exacerbating 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, the issue of energy security may evolve into an issue of energy politics, which requires all countries to put aside differences and achieve cooperation, take tackling climate change as a common cause of all mankind, and carry out practical cooperation in renewable energy, clean energy transformation, electrification and energy efficiency improvement, so as to jointly promote global energy transformation and sustainable development.

1.3 Global consensus on carbon emissions and carbon neutrality

"The 15th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change and the Fifth session of the Conference of the Parties to the Kyoto Protocol, also known as the Copenhagen United Nations Climate Conference, was held in Copenhagen, Denmark, from 7-18 December 2009." It is a conference that has been hailed as "the last chance to save humanity". Countries were hoping to reach a new agreement to fight climate change, but it didn't go well.

At this conference, some developed countries passed the buck to each other, and even demanded that some developing countries emit the same amount of carbon gas as developed countries, which fully reflected the irresponsibility of some countries. In the history of the World climate conference, there are great differences on key issues such as carbon emissions of various countries, because the reduction of carbon emissions will directly affect a country's energy consumption, economic restructuring, technological changes and the transformation of production and lifestyle. And by bearing the cost of reducing carbon emissions, it will affect a country's internal strength and international status and competitiveness.

However, making the carbon emissions of developing countries equal to that of developed countries means that developing countries have to reduce their carbon emissions, which will lead to a series of social problems, such as the closure or adjustment of some factories, slowing down the economic growth rate of the country, increasing unemployment rate, and decreasing the quality of life of people. This is not fair to the developing countries, which also evolved from an agrarian society to an industrial society, and now account for most of the carbon gases in the Earth's atmosphere. The Copenhagen climate conference did not solve the fundamental problem, the governments did not reach a real sense of unity. But all countries have made relevant policies on environmental protection.

Different countries have different attitudes towards carbon emissions, and the United States has always been "high profile, low commitment". Under the pressure of the international community, the Obama administration, after taking office, proposed that the United States should actively respond to climate change. But as a

superpower, the United States has actually committed to reducing emissions by only 4 percent. On the surface, the United States is actively fulfilling its obligations as a major power, but in fact, it is obviously avoiding due responsibility for emission reduction and lacks sincerity, which is not conducive to achieving consensus among countries on climate and other environmental issues.

In 2009, the European Union made its position clear, and further increased its emission reduction from 20% to 30% by 2020. "But only on condition that other world powers sign up to similar plans of action will the EU commit to further reductions." The move is an attempt by the European Union to reassert itself as an international leader.

India, another developing country besides China, pledged to "reduce its CO2 emissions of GDP by 20 to 25 percent by 2020 compared to 2005 levels." As a developing country, India faces many problems with carbon emissions, some of which China also faces.

Australia's pledge is a 25 percent cut in carbon emissions, but it is based on the year 2000, not 1990, as other developed countries do. Australia is the world's largest exporter of coal, and its per capita emissions exceed those of the United States. But in official documents, Australia shirks its responsibility for "subtly" reducing its carbon emissions.

On November 18, 2009, Russian President Dmitry Medvedev made a statement on the issue of emissions reduction, promising to reduce greenhouse gas emissions by 25% from 1990 levels by 2020, but the promise was also conditional on other countries committing to the same level of reduction. As for the target of carbon neutrality, the major economies have also given the control route according to the actual situation:

China -- Target date: 2060, nature of commitment: Policy statement. China announced to the United Nations General Assembly on September 22, 2020, that it would strive to become carbon neutral by 2060 and adopt "stronger policies and measures" to peak emissions before 2030.

United States - Target date: 2045, nature of commitment: Executive order. California's economy is the fifth largest in the world. Former Governor Jerry Brown signed a carbon neutrality order in September 2018, and the state passed a near-simultaneous law to make electricity 100 percent renewable by 2045, but

green policies in other sectors are less mature.

Canada -- Target date: 2050, nature of commitment: Policy declaration. Prime Minister Justin Trudeau was re-elected in October 2019 on a platform centred on climate action, promising a net-zero emissions target and a legally binding five-yearly carbon budget.

European Union - Target date: 2050, nature of commitment: Submission to United Nations. The European Commission is working towards a net-zero emissions target for the whole of the EU by 2050 under the Green Deal unveiled in December 2019, a long-term strategy submitted to the UN in March 2020.

France - Target date: 2050, nature of commitment: by law. The French National Assembly voted on 27 June 2019 to incorporate the net zero target into law. In its June report, the new High Committee on Climate recommended that France must triple its rate of emissions cuts to achieve carbon neutrality.

Germany - Target date: 2050, nature of commitment: by law. Germany's first major climate law came into force in December 2019, and the introduction to the law says the country 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 statement. The Japanese government approved a climate strategy in June 2019, ahead of hosting the G20 leaders' summit, that focuses on carbon capture, utilization and storage, as well as the development of hydrogen as a clean fuel source. Notably, there is no plan yet to phase out coal, which is still expected to supply a quarter of the country's electricity in 2030.

UK - Target date: 2050, nature of commitment: by law. The UK already passed a framework law to reduce emissions in 2008, so setting a net zero target is simple, just change from 80% to 100%. Parliament passed the amendment on 27 June 2019. Scotland's parliament is working on a bill to achieve net zero emissions by 2045, based on Scotland's strong carbon trading resources and the ability to store CO2 in depleted North Sea oil fields.

1.4 Pain points for the development of carbon trading markets

Carbon market, simply put, is a way to reduce carbon dioxide emissions and curb global warming by market means. Its theoretical framework is based on the Kyoto Protocol, the Paris Agreement and other documents. Greenhouse gases, including carbon dioxide, are given a price through carbon quotas, certified voluntary emission reductions, and secondary markets are set up for those with gaps and those with surpluses. At present, there are many problems in the global carbon emission, carbon neutrality and carbon trading markets:

1) The high-end technology level of energy conservation and environmental protection industries needs to be improved

At present, the field of energy saving and environmental protection upstream equipment is a market close to full competition, and a large number of small and medium-sized enterprises compete around price, product and service quality. The industry concentration in the global energy conservation and environmental protection upstream equipment field is generally poor, and the degree of marketization is low. Energy-saving and environmental protection conventional technology products have been relatively mature, but in the high-end technology products are still relatively lacking, the scale of enterprises is generally small, and the phenomenon of low-level operation is 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, slow investment return and greater policy impact, and the service market order is not standardized at this stage, most of the energy conservation and environmental protection service enterprises are small in scale and low in service level, so enterprises generally face the dilemma of "difficult and expensive financing".

3) The scale and product structure of the enterprise are unreasonable

First, the scale structure of environmental protection enterprises is unreasonable, its small scale, has not yet formed a number of large backbone

enterprises or enterprise groups, lack of market competitiveness. Second, the structure of environmental protection products is unreasonable, the level of environmental protection equipment is low, serialization, standardization and localization, 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 systems of various brands all operate in a centralized way, unable to operate cross-platform, let alone unified management of energy, resulting in energy waste.

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

Environmental data may be damaged or altered in the recording process.

6) Data is not transparent

There is no way to know and verify how the content of the data has changed over time.

7) Failure to protect privacy

Users' ids on centralized platforms are fully real-named, leaving privacy to be snooped on.

8) Lack of trust

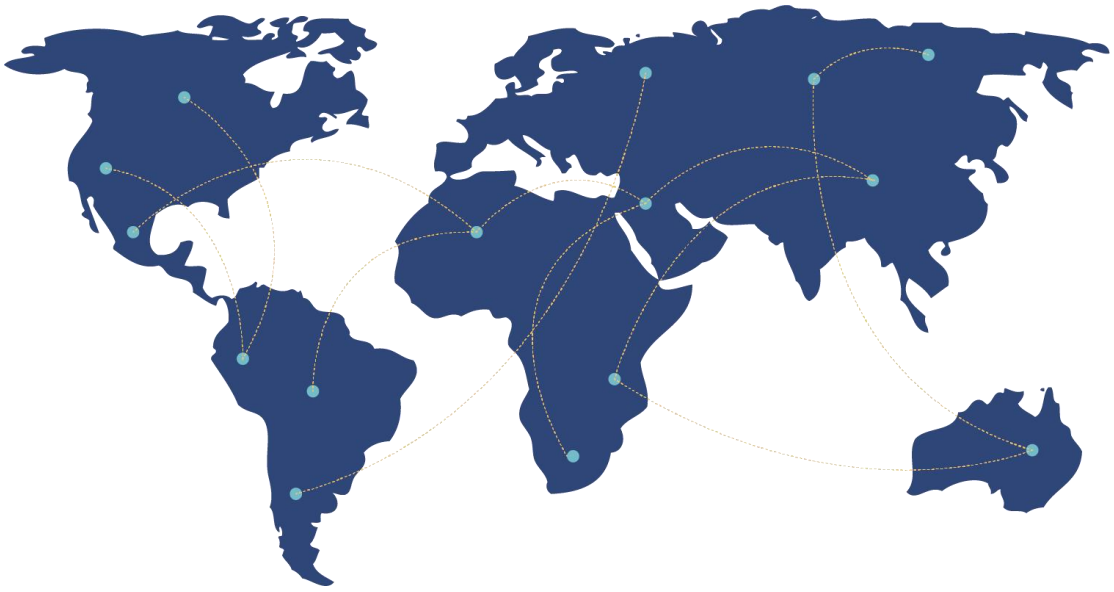
The data between platforms and devices cannot be exchanged due to trust issues, resulting in unnecessary energy waste and not conducive to the detection and analysis of the overall environment; For example: all kinds of instrument testing data, due to the lack of "consensus mechanism", can not meet the requirements of the review, the data can only be collected and analyzed in each centralized local area network.

9) Unorganized community construction

Public welfare organizations are unable to organize environmental protection activities in a reasonable and coordinated manner, and users do not have a strong

sense of participation. As a result, public welfare activities only pursue quantity, but lack quality, resulting in a waste of resources.

The birth of blockchain technology provides a feasible solution for carbon neutral data linking and solving the pain points of the carbon trading market. The target of carbon trading is invisible and untouchable gas, without physical delivery; Its starting point is for the better sustainable development of all mankind... In these characteristics, carbon trading shares some similarities with blockchain token trading and is therefore seen as an object of empowerment by many blockchain projects.



Chapter 2: Feasibility of blockchain application in carbon market

2.1 Development and application of blockchain technology

Blockchain is a bookkeeping Technology, also known as Distributed Ledger Technology, which is jointly maintained by multiple parties, uses cryptography to ensure transmission and access security, and can achieve consistent data storage, which is difficult to tamper with and prevents denial. A typical blockchain stores data in a block-chain structure. As a new computing paradigm and collaboration model for low-cost trust establishment in an untrustworthy competitive environment, blockchain, with its unique trust establishment mechanism, is changing the application scenarios and operation rules of many industries, and is one of the indispensable technologies for the future development of the digital economy and the construction of a new trust system.

Blockchain establishes a strong trust relationship and value transmission network through a variety of technical means such as peer-to-peer distributed ledger, multi-node consensus mechanism, asymmetric encryption and smart contracts, making it distributed, immutable, value transferable and programmable. In terms of application, blockchain helps the real industry on the one hand, and integrates traditional finance on the other. In the real industry, blockchain optimizes the trust and automation problems encountered in the upgrading process of traditional industries, greatly enhances the sharing and reconstruction and other ways to help traditional industries upgrade, reshapes trust relationships, and improves industrial efficiency. In the financial industry, blockchain can help make up for the information asymmetry between the financial and real industries, establish an efficient value transmission mechanism, realize the flow of traditional production value in the digital world, and help the flow of business, information and capital to reach the three-flow combination. From the perspective of the characteristics of blockchain, blockchain can better transfer value, better protect user privacy and help users obtain more rights, and change the production relations of the Internet.

First, blockchain can better deliver value. The Internet can efficiently transmit information, but it needs the guarantee of centralized institutions such as Taobao, Jingdong and wechat to transmit value, while the blockchain does not need the help of centralized institutions and can directly complete the instant transmission of value through smart contracts and tokens on the blockchain. It can be said that the Internet transmits information, while the blockchain transmits value.

Second, blockchain can better protect user privacy. With the development of society and economy, users all over the world pay more and more attention to the protection of their privacy, but there are serious deficiencies in the protection of user privacy at present. However, blockchain adopts encryption algorithm, which can better protect users' privacy.

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

Fourth, blockchain is not only a huge step forward in productivity, but it will reshape the relationship of production. Blockchain undoubtedly represents new technology and more advanced productivity, but it will bring about more profound changes in production relations, mainly reflected in the restructuring of incentive mechanisms. In the Internet era, Internet giants get an absolute share, and a few powerful we-media can get a certain share; In the application of blockchain, the vast majority of stakeholders will be encouraged, although the blockchain application operators can still get a high share, but compared to the previous share will be significantly reduced.

Entering 2024, 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: first, it needs to provide solutions for secure storage, second, it needs to provide some means of trusted transmission, and third, it needs to provide a mechanism for collaborative production. Therefore, one of the important trends and missions of blockchain in 2024 is how to effectively overcome the problems of the above three data elements through the mining of its own technical capabilities and the deep integration with other cutting-edge technologies, so as to realize that the property rights of data elements can be defined, the value can be stored, and the value can

also be evaluated. And can effectively circulate, and finally truly realize the full liberation of data productivity.

The global pandemic combined with the economic downturn forces countries and industries to accelerate the digitization process, which in turn promotes the further upgrading of Internet services: 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, the need to develop from consumer Internet to industrial Internet. With the development of the industrial Internet, the requirements for the reliability, openness, agility and collaboration of the relevant information infrastructure have increased, and the production factors such as data have been required to flow and allocate more reasonably. Because the blockchain just has the architecture and solution to solve the above series of problems, it is placed high hopes, and the era of industrial blockchain has gradually opened. Based on the digital development thinking brought by the epidemic, as well as the promotion of the global central bank's digital currency exploration, governments have strengthened the strategic deployment of blockchain technology.

It is precisely because of the outstanding advantages of blockchain technology as the underlying technology, like the Internet technology, blockchain is likely to become a new generation of information infrastructure and social operating system, and the future "blockchain +" will empower all walks of life, greatly improve the national governance capacity and better serve the development of the real economy.

2.2 Integration of blockchain and carbon market

In the field of carbon neutrality, carbon trading and other fields, blockchain technology has huge advantages.

1) Sustainable top-level design

Enterprises are the most important actors in the goal of carbon neutrality, and blockchain technology and third-party services are two complementary tools for enterprises to navigate the path of low-carbon transformation. The successful application of blockchain in the fields of anti-counterfeiting traceability and supply chain management has fully demonstrated the powerful ability of the technology to communicate points, lines and surfaces and maintain information integrity. Based on effective framework strategies provided by third-party services and GCSA practices, blockchain can help enterprises strengthen or build carbon emission management systems that meet national standards from scratch.

One of the significant changes that blockchain's data mechanism can bring is coherence and transparency, which can help companies break down information barriers and fill information gaps on key issues; The second is high data privacy, which can solve the contradiction between business information confidentiality and environmental information disclosure, help enterprises flexibly adapt to the disclosure strategy of key issues, and avoid risks under the 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 the link, the time is accurate and the operator is accurate. On the one hand, on-chain data can help enterprises 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 a low-carbon raw material supplier system; On the other hand, it can help enterprises achieve carbon accounting in line with standards and norms, so as to promote scientific emission reduction goals, implement energy saving and emission reduction actions, and achieve carbon leapfrog. From the perspective of

management, enterprises can conduct more effective summary analysis based on on-chain data, find non-compliant carbon management in the first time and trigger an early warning mechanism, and notify relevant responsible persons in time, sort out the best carbon emission management methods, and prevent link errors; Clear supervision can also clarify internal responsibilities, smoothly promote carbon data monitoring and carbon trading related training and education, crack carbon constraints, and fundamentally improve the level of carbon management of enterprises.

3) Capitalizing carbon footprint

The long-term accumulation of low-carbon behavior records on the chain can be more quickly and widely applied to all kinds of clear system standard ratings and digital descriptions, so that enterprises can calmly adapt to credit structure adjustment, or carry out listing information disclosure. At present, with the rapid development of carbon trading and carbon sink ecology, supervision and issuance standards are gradually being established. Carbon sinks are one of the ideal financing instruments to support the US $3 to US $4 trillion in green investment that is expected to be required annually by 2030, when carbon peaks. Based on the carbon emission data and historical transaction information traced by blockchain, enterprises can more easily access third-party certification or audit services, carbon emission right certification, credit measurement, etc., to form a green carbon sink ecology.

4) Help to reach a consensus on carbon emissions

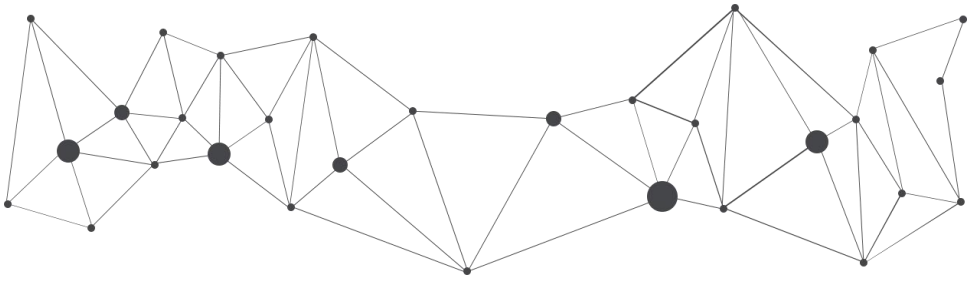
The greenhouse effect of carbon emissions is the same everywhere on Earth, so people want others to emit less and they want to emit more. In order to mobilize the enthusiasm of all people to reduce emissions, it is necessary to reach a consensus on common emission reduction, and the premise of this consensus is that the world must have an open and transparent emission reduction quantification mechanism, which is in the hands of any government or institution will definitely resist due to the distrust of other countries or individuals, which is the biggest pain point that individual emission reduction can not promote. The blockchain technology is the best solution to solve this pain point, its decentralized characteristics make the emission reduction quantification mechanism once online no one can change, the data can not be tampered with the characteristics also make everyone's emission reduction can be recognized globally, can be said to be the best application scenario of blockchain technology

5) Blockchain is expected to make the carbon market transparent

By combining blockchain technology to create digital carbon tokens, transaction costs can be greatly reduced and liquidity increased, thus promoting the development of the carbon trading market. At the same time, blockchain technology will also help to open up an individual-based carbon trading market and generate economies of scale, thus contributing to the establishment of a market and a win-win solution for emission reduction. By building a global industry public chain and establishing norms for carbon rights data circulation and trading, carbon rights data can also be circulated and capitalized on the chain, and through an effective economic incentive model, the rights and obligations of carbon trading entities can be organically combined, and the interests of the industry, regulators, industry associations and individuals can be incorporated into the organic governance system.

Blockchain-based carbon trading platform is increasingly popular, blockchain technology can help carbon asset development, trading, quota auction and other processes to achieve trust and self-organization. It is estimated that by 2030, the cumulative trade volume of carbon emissions could exceed US $100 billion. And the market size of blockchain technology in global carbon trading will usher in a trillion-dollar breakthrough. Companies with native on-chain carbon data may hold more initiative.

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



2.3 Carbon neutrality and "green finance"

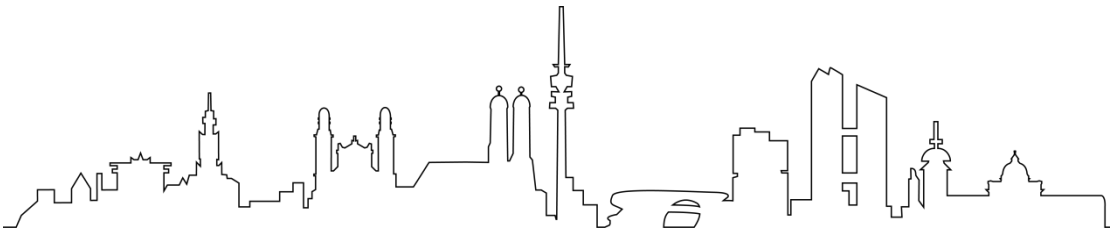
Carbon neutrality has become a major strategic goal for countries, and the financial sector has obligations as well. Carbon neutrality is the focus of current economic and social development and a necessary process for economic structural transformation and upgrading. The realization of carbon neutrality must rely on the coordinated promotion of all industries, and the financial industry is no exception. Promoting the strategy of carbon neutrality means that the economic structure must be green, low-carbon, energy saving and environmental protection. At the medium level, not only traditional chemical energy, transportation, construction and other industries need to transition to low-carbon, but also the service sector, Internet and financial sector should fully implement the carbon neutral strategy.

Since the Industrial Revolution, urbanization has accelerated, and emissions of carbon dioxide and other greenhouse gases from human production and life have increased exponentially, ultimately leading to global warming and damage to the natural environment. In the mid-to-late 20th century, the world's major economies began to reduce greenhouse gas emissions and fulfill their responsibilities in concert.

In the early experience of global exploration of energy conservation and emission reduction, we believed that low-carbon operations could only be achieved through policy control of key enterprises, and the result could not really reach the carbon peak. At this time, we played a more prominent role in the financial sector, guiding the financial sector to tighten carbon emission indicators while allocating resources to green production. The transition from industrial structure to green and low-carbon enterprises has created a huge capital gap, and green finance has emerged at this historic moment.

The so-called green finance refers to the use of environmental indicators such as energy conservation and emission reduction as important risk control factors for credit approval in financial activities to guide funds to environmental protection and resource-saving industries. With the complete statistical system of green finance and the opening and transparency of environmental protection information of industry subjects, green finance is playing an increasingly important role in the strategy of achieving carbonization.

At the same time, the rapid development of fintech has provided technical support for the sinking and penetration of green finance, and some new innovative green finance enterprises have emerged. The financial industry will provide blood for the transformation of low-carbon industries externally, and will also adopt scientific and technological means to achieve green internal governance internally and move toward the goal of carbon peak and carbon neutrality. In the stage where everything can be carbon neutral, the financial industry will integrate carbon neutral construction drawings and road maps into the production and life of entities and consumers, and actively fulfill the main responsibility of achieving carbon peak and carbon neutral goals.



2.4 Birth of GECC carbon assets

We can see that countries in the world today have made solemn commitments to deal with climate change, and at the same time are promoting many projects of sustainable development in various ways, especially in the aspect of carbon trading, which is a market mechanism used to promote global greenhouse gas emission reduction and reduce global carbon dioxide emissions. The mass adoption of new energy technologies is in sharp contrast to the low energy efficiency, large space for emission reduction and low cost in developing countries. This directly leads to different costs for the same emission reduction in different countries, resulting in a price gap. This leads to carbon neutrality and carbon trading markets.

Along with the popularization of carbon neutrality and the ecological needs of the carbon trading market itself, the new block chain is also accelerating the

integration with the carbon industry, and thus refreshing the public's new cognition. For investors, more and more people pay attention to and participate in the entire carbon trading market, there will be more and more opportunities, and every link of the transaction will produce positive returns beyond imagination.

The explorers represented by New Era Energy (NEE.N) company are working hard and jointly with R3 blockchain alliance to build an application-oriented carbon neutral main network public chain integrating the underlying emission data recording and carbon asset trading, issue GECC carbon assets, and build the world's first carbon neutral and carbon trading ecosystem based on blockchain technology. Laying the foundation for the digital presentation of carbon emissions, carbon neutrality, carbon footprint and carbon sink resource trading, hoping to solve the global carbon emissions, carbon neutrality and other issues in the most effective and efficient way, combining the blockchain core technology to promote global environmental protection, any individual can participate in it independently.

GECC carbon assets will play an important role in the governance of carbon emissions, carbon footprint, carbon sink trading, etc., and use blockchain technology to solve: data missing, non-standard data, data silos, multi-centralization, cumbersome transaction process, personal participation, closed carbon accounts, lack of other applications of carbon assets, etc. At the same time, the application of GECC carbon assets will also effectively solve the difficulties of dual carbon governance.

By effectively solving the above problems, GECC will establish a carbon market based on blockchain architecture, and use blockchain technology, artificial intelligence and big data analysis technology to establish an "open, equal and safe" carbon neutral and carbon trading application ecology, and create a traceable, decentralized, transparent and open digital environmental protection and ecological application platform.

In the future, the GECC blockchain system will drive the realization of the global carbon neutrality goal and the sound development of the carbon trading market, promote the development of global environmental protection, improve the energy structure, optimize the utilization of renewable resources, advocate a green and environmentally friendly future ecology, and finally realize the coordinated development of global scientific and technological civilization and ecological civilization.

Chapter 3: Overview of GECC project

3.1 Introduction of GECC project

Global Eco Carbon Coin (GECC for short), the GECC project was initiated by New Era Energy (NEE.N) and jointly created by R3 blockchain alliance, an application-oriented carbon neutral main network public chain integrating the underlying emission data recording and carbon asset trading, and issued GECC carbon assets. It aims to establish a comprehensive carbon neutral solution and carbon asset trading market for environmental protection through the application of blockchain technology, and become a key digital green platform supporting the development of carbon sink economy. With international standards as the guidance and technology development and application code of conduct, practice the essence of openness, transparency and decentralization, actively fulfill the goal of achieving carbon peak and carbon neutrality, and ultimately establish a zero-carbon financial system for environmental protection.

- Establish a trustless and highly decentralized infrastructure for data recording and carbon asset trading;

- a GECC carbon asset incentive and governance network based on blockchain technology and cryptocurrencies;

- Cooperate with the government and social organizations to establish an efficient dual-carbon governance system to become a powerful tool for the development of ecological civilization;

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

At present, across the world, tens of thousands of blockchain projects across platforms have cumbersome and inefficient transactions, which makes user traffic cannot be shared and shared across platforms, which directly leads to the lack of breadth and depth of blockchain applications. GECC public chain uses blockchain technology financial tools to help achieve the goal of carbon neutrality, provides a new solution for the ecological creation of carbon assets, and provides an exclusive

environmental protection community platform for environmental enthusiasts.

Through the use of GECC public chain and GECC carbon assets, more environmental enthusiasts will be brought into the construction of dual carbon governance, and more people will be encouraged to get the corresponding carbon asset income through continuous participation in ecological construction. In this way, more people are encouraged to actively participate in the cause of environmental protection, and gather strength for the realization of carbon neutrality. Within the carbon trading system established by GECC public Chain and GECC carbon Assets to promote environmental protection, every participant can share the dividends of the global carbon neutral era and jointly build a better home for the earth.

Currently, the GECC project is supported by New Era Energy (NEE.N) and the R3 blockchain consortium. Has received strong support from top global capitals and like-minded people, including Baillie Gifford, Goodplanet, UPM-Biofore, StoraEnso Oyj, Citadel Investment Group, etc. And has maintained close cooperation with IUCN, IPCC, World Wide Fund for Nature or World Wildlife Fund, Greenpeace and others. Extensive support and cooperation will effectively promote the implementation and realization of GECC carbon neutral market and carbon asset trading system on a global scale.

3.2 Project Background

1) New Era Energy (NEE.N) Company

New Era Energy, which went public on January 6, 1950, is one of the largest electric energy infrastructure companies in North America and a leader in the renewable energy industry.

The company is committed to building a digital innovation platform in the field of zero carbon, and becoming the world's leading digital carbon management one-stop service provider. By relying on self-developed GECC public chain system, carbon management and diversified financial instruments, combined with professional carbon business consulting services and various methodology

development services, and providing trusted carbon emission solutions, the company enables global customers to quickly realize carbon management data visualization and carbon management process informatization, and helps partners grasp carbon neutral strategic opportunities and avoid related risks. To promote the digital low-carbon transformation and upgrading of the global economy.

New Era Energy is determined to contribute to the field of carbon neutrality in the future. At the beginning of its establishment, it adopts distributed storage technology to store corporate information and adopts immutable blockchain technology to conduct fair trading of carbon emission assets on the enterprise chain. Real-time on-chain accurate data query, determined to create an application-oriented main network public chain serving major enterprises in this field. Let us contribute to our ecological environment together.

2) R3 Blockchain Consortium

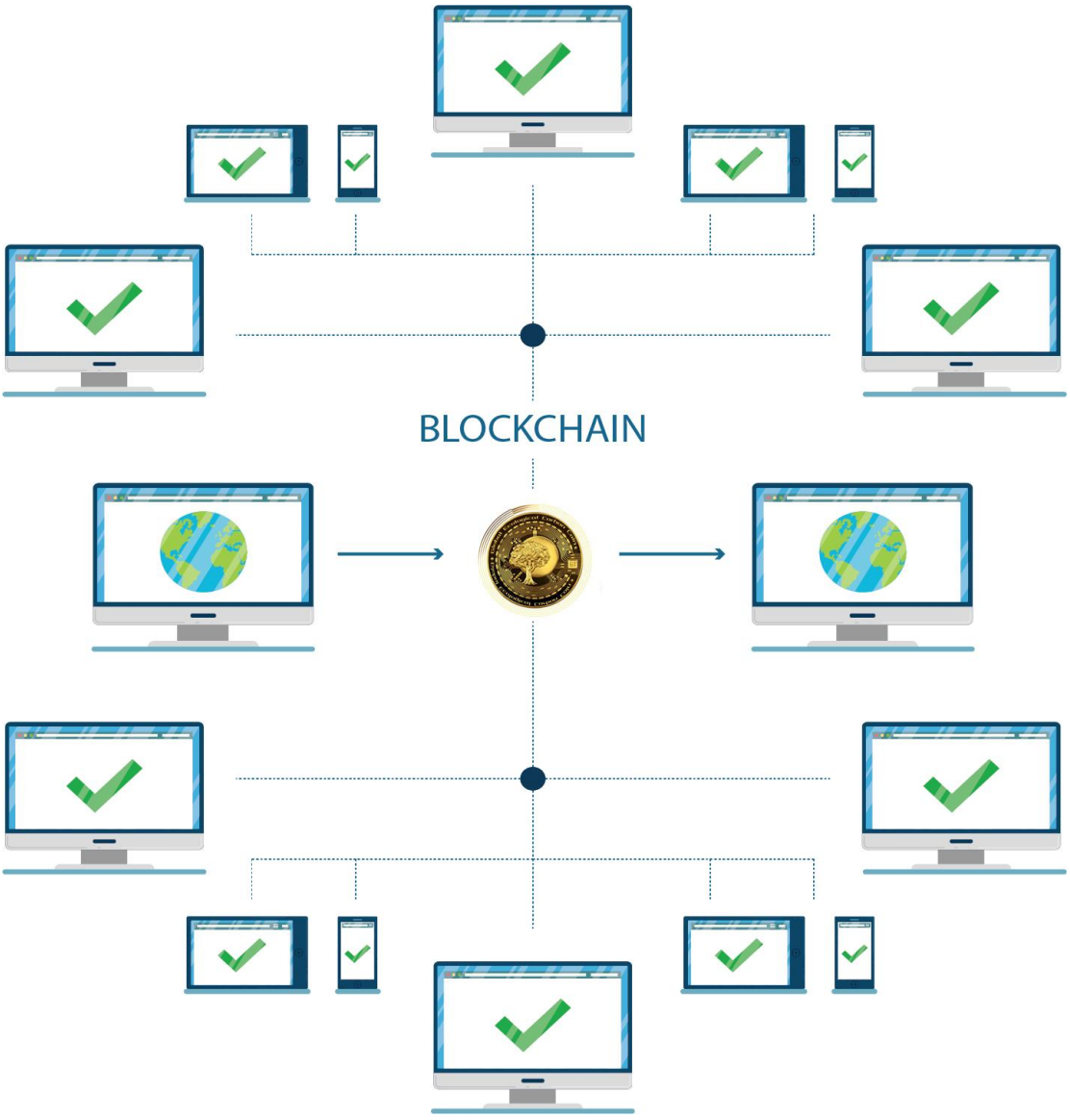
The R3 Blockchain Consortium (R3 Blockchain Consortium) is a consortium of global financial institutions that aims to advance the development and adoption of blockchain technology. Founded in 2014, the consortium is headquartered in New York and has branches around the world. Members of the R3 consortium include banks, insurance companies, financial market operators, as well as other finance-related institutions. By collaborating and sharing resources, the R3 Consortium aims to build a blockchain ecosystem to provide members with innovative and efficient financial solutions.

Members of the R3 Consortium come from financial institutions across the globe, including banks, insurance companies, financial market operators and more. These members represent an important part of the financial industry and play a key role in driving the development and application of blockchain technology. The members of the R3 Consortium share resources and knowledge among themselves to promote innovation and development of blockchain technology through collaboration to meet the needs of the financial industry.

The goal of the R3 Alliance is to improve the efficiency and security of the financial industry by advancing the application and development of blockchain technology. The consortium is committed to building a blockchain ecosystem that provides members with innovative and efficient financial solutions. By collaborating and sharing resources, the R3 consortium hopes to promote the standardization and commercialization of blockchain technology to facilitate transformation and

innovation in the financial industry.

The R3 Consortium has undertaken several important projects in driving the development and application of blockchain technology and has collaborated with a wide range of partners. One of these important projects is Corda, a blockchain platform designed specifically for the financial sector. Corda provides secure, scalable and interoperable solutions that provide financial institutions with innovative business models. The R3 Alliance also works with financial institutions, technology companies and regulators worldwide to advance the development and adoption of blockchain technology.



3.3 GECC Foundation ecosystem

GECC is supported by core technologies, with Turing complete decentralized database, open global carbon neutral and carbon asset trading data through API interface.

GECC can accommodate the world's existing carbon market, carbon footprint, carbon inventory, carbon accounting, carbon accounting, carbon disclosure, carbon audit, carbon futures, carbon neutrality, digital asset exchanges and other ecological scenarios. Form a block ecological platform with landed carbon ecological application solutions as the core, and realize the extension of carbon environmental protection industry to other offline entity industries and the online circulation and trading of carbon emissions.

1) Technology application system

- Decentralization: make everything in the GECC ecosystem from users and nodes, and based on GECC public chain data recording and carbon asset trading, so that carbon emissions and dual carbon governance can be traced, so that low-carbon return to everyone.

- Distributed ledger and storage: ensure the authenticity, integrity and traceability of offline data processing information and online carbon emission data information of the GECC ecosystem.

- Tamper-proof technology: prevents or eliminates interactions between material flows or information flows in non-ecological or abnormal situations, such as when the increase in carbon neutral data is not proportional to the decrease in effective energy.

- Anonymous system: allows all data information in the GECC ecosystem to be converted to each other in a state encrypted by blockchain technology. Each transformed data information has its own ID, including data information generation, use, verification, storage and verification, which is convenient for other systems in the ecosystem or outside the system to call.

- Value transfer: offline carbon processing information and carbon emission

and trading data information in the GECC ecosystem can be transformed into each other, exchange value, and make full use of it.

2) Characteristics of GECC system

Through the GECC system, the carbon market can provide a variety of application scenarios, while providing unified management of multi-blockchain carbon neutral data, carbon trading application payment interoperability, technology unification, traffic sharing. It has the following features:

- One-stop management: GECC manages multiple assets in a single platform, not only supporting the storage and management of mainstream assets, but also supporting the standard protocols of small and medium-sized smart contract platforms, rapidly expanding the storage and management services of carbon assets issued by various platforms.

- Multi-security guarantee: GECC also provides multi-signature technology guarantee and two-step authorization verification for digital asset management on the platform. Users can choose verification methods such as mobile phone verification code, fingerprint, and live body during service transactions to ensure the security of user assets in an all-round way. Users can bind their mobile phones to realize the account management function. When the password is leaked, users can quickly manage the account and change the password through the mobile phone number to ensure the security of the account.

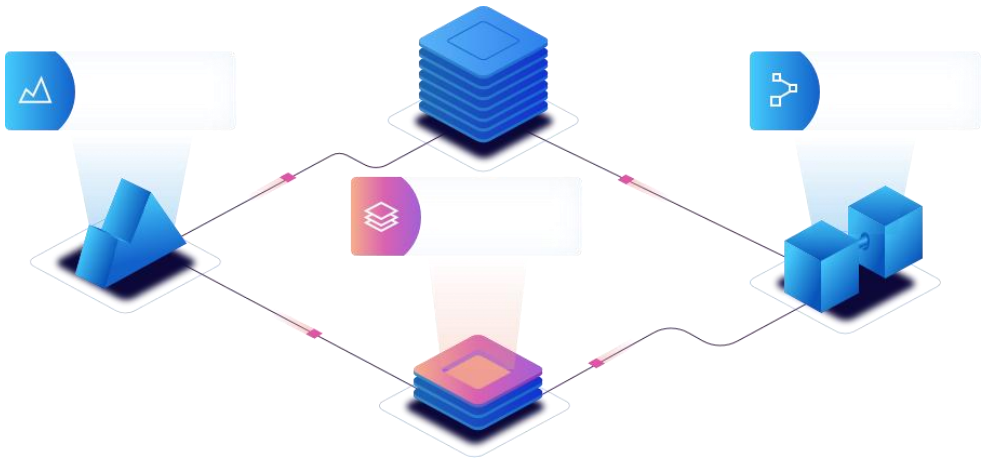
- Multi-language support: GECC supports multiple languages of mainstream digital currency markets such as China, the UK, Japan and South Korea, and is suitable for the trading needs of people of different languages in different countries in different scenarios, creating multi-country interoperability and clearing the language barrier for building world-class carbon-neutral data management and carbon asset trading applications.

- Digital currency exchange and trading: Through the distributed storage technology of blockchain, GECC has created an original exchange network and comprehensively upgraded the security level of the trading environment of GECC carbon assets; And docking with the international exchange API, always feedback the latest information of international mainstream currencies, truly reflects the characteristics of blockchain trading, to provide

users with simple, convenient and safe exchange and trading services.

- Risk-free currency exchange: GECC develops a exchange network based on the platform, and realizes risk-free carbon asset exchange services through smart contracts and through-chain gateways and cross-smart contract technologies. Users exchange carbon assets through GECC, the platform or other third parties create the exchange of smart contracts, and the contract mechanism monitors and executes the exchange process, avoiding the risk of default of all parties involved in the transaction process. On the GECC chain, there are standard various carbon asset exchange services, and various digital assets can be freely exchanged.

- Simple and convenient trading: to buy and sell digital currencies and carbon assets through exchanges, there are certain entry barriers and learning costs. By connecting with the exchange API, GECC provides users with the best market price and simple operation experience. By optimizing the screening mechanism, GECC presents users with simple buy price and sell price. Users only need to enter the quantity, and they can complete the transaction as easily as on the e-commerce platform.



3.4 Carbon trading market solutions

In order to drive the value fission of GECC carbon assets 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.

GECC system makes use of the unique trust mechanism of blockchain to create digital credit certificates, so that the strong credit part of the entire carbon market supply chain becomes transferable and permeable, instead of only remaining in the core enterprises and their upstream and downstream enterprises. At the same time, it also uses the traceability feature of blockchain to stamp "time stamp" on each transaction data to ensure the authenticity and security of the data on the chain, thus solving the credit problem.

The GECC system proposes a trusted value Internet theoretical model of trusted certificates, trusted contracts, trusted devices, trusted data, etc. It realizes a set of ecological model based on data and Token (issuance, delivery, cross-category circulation, use), and reconstructs the existing carbon sink ecology through its own resources and capabilities in the carbon market. On the one hand, it upgrades the capacity of service providers in credit investigation and precision marketing; on the other hand, it enables C-end users to truly grasp the ownership of their own data and realize the data in the carbon asset economic system. GECC carbon assets will make the circulation of value in the carbon market more friendly and convenient.

In addition, in order to meet the chain transformation needs of users, institutions and energy enterprises in the energy field, GECC public chain will build a grand carbon neutral data management and carbon asset trading interconnection foundation, and promote the development of the whole industrial chain.

GECC public chain will effectively combine blockchain and carbon market, in the system, there is no centralized database, each node saves all the information of the blockchain, rights and obligations are equal. Distributed carbon trading and carbon neutral data will become an important part of GECC, "consumption is production", emphasizing the equal sharing of energy between individuals.

The GECC public chain will have good autonomy and collaboration. The blockchain system is operated and maintained by all nodes in the network, and there is no unified management organization. The self-scheduling and ecological operation of the system are emphasized in the carbon trading Internet system. The use of the underlying technology of the public chain can establish a fair and open market mechanism, and can well serve the trading of other financial products. GECC public chain has 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 ensure the automatic execution of transactions in the carbon market ecosystem through a series of smart contracts.

With the support of global resources, GECC project will also set up a special environmental public welfare community, aiming to promote the cause of environmental protection around the world, through environmental protection activities, let the awareness of environmental protection deeply rooted in the people, for the sustainable development of the environment efforts. Each transaction in the ecology will participate in a public welfare, and a certain percentage of the fund will be drawn to hold carbon environmental protection public welfare activities, through environmental protection public welfare activities, promote environmental awareness, help achieve the goal of global carbon neutrality, and build GECC's carbon environmental protection public welfare brand.

3.5 Business value logic of the project

1) Tokenization of carbon market assets

Combined with core blockchain technology, GECC brings profound changes to the industry by creating a decentralized carbon market service ecosystem. In the GECC model, all carbon information, assets and services will be tokenized and circulated on the chain. Every upload and change of information will be recorded, and the immutable and open and transparent characteristics will effectively prevent false information, regulate the trading conditions on the chain, and promote the generation of trust mechanism.

Point-to-point accurate trading on the GECC public chain allows carbon market actors and platforms to directly connect, saving intermediate transaction fees and processes, allowing users to enjoy the services they want, and enabling carbon market practitioners to maximize profits. Users can also evaluate and appreciate transactions through the GECC public chain network, forming an incentive mechanism for healthy competition in an open and transparent service ecosystem.

In addition, driven by the GECC carbon asset incentive mechanism, tokenized

assets in the entire service ecosystem will realize cross-country, low-cost, short-time trading and transfer, and realize the concept of symbiotic chain covering the world, open autonomy, fairness and trust.

2) Formation of commercial value system

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

◎ Main Body

All participants, including all people, objects, organizations, systems, etc. use a unified identity in the GECC network, GECC network according to identity rights management and business processing, GECC network supports the multi-identity management of the subject. The identity is managed in a decentralized way, including the generation, use, verification and storage of the identity, in order to achieve privacy protection and secure transactions.

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

- Use: The subject of the identity identification uses the private key information to operate all its rights and interests or carbon assets in the GECC network for trading, and initiates an application to the GECC network.

- Verification: GECC network conducts all rights check and transaction verification, and forms network consensus after passing.

- Storage: The public information corresponding to the generated identity will be stored in the distributed ledger of the GECC network as public information.

In addition, ID supports the expansion of smart contracts to achieve richer ID management and meet the requirements of identity management in different

business fields. For example, in the scenario of asset trading in the financial business field, it is necessary to meet the KYC needs of the business supervisor region, and use extended smart contracts to set and store KYC content.

- Trust: One of the more important reasons for the prosperity of blockchain is that blockchain technology realizes a decentralized trust mechanism, making it a trust machine. The GECC network establishes a distributed trust mechanism through trusting subjects, trusting networks, and trusting interactions.

- Value: Blockchain essentially realizes decentralized digital asset value transfer, and all assets registered on the GECC network exist in the form of a specific value, participating in transactions between subjects to achieve the transfer of value. The value management of the GECC network includes value generation, value exchange, and cross-chain transactions.

The value generation of the GECC network is achieved by releasing GECC carbon assets to the nodes participating in the consensus each time a consensus is reached. In addition, it supports participating trust entities to carry out offline asset mapping on the chain. The generated value assets are exchanged based on the GECC network. Flexible link protocols are used to support transactions and value exchange with other chains, and smart contracts are used to lock transactions and complete transaction management.

4) Scenarios

GECC network supports the connection with various blockchain networks, decentralized centralized systems, and various participating entities to achieve the support and connection of business scenarios. As a hub of value exchange, GECC network combines cloud computing, big data and artificial intelligence technology to provide perfect support for carbon neutral data management and carbon asset trading business scenarios.

5) Circulation

The GECC network is positioned to build the first carbon rights trading protocol network on the blockchain and a trustless and highly decentralized blockchain carbon rights trading infrastructure. Therefore, GECC carbon assets not only support new business scenarios, but also will circulate for traditional businesses,

realize the blockchain connection of all businesses, and provide the basis for trust and value exchange for future businesses. To this end, the GECC network provides DApp application development components and SDKS to simplify the development of Dapps, and the combined toolkit does not require developers who focus on business and scenarios to be familiar with the underlying technology of blockchain. In addition, GECC network provides ChainStore, which provides a platform for the use and promotion of DApp.

3.6 Potential of GECC project

As a carbon neutral applied mainnet public chain, GECC public chain will play a key role in specific scenarios such as carbon neutral data recording, management and carbon asset trading, which gives GECC project broad potential in the dual carbon governance market.

- Trusted data -- GECC public chain is a distributed ledger system integrated with distributed network, encryption technology, smart contract and other technologies. It has the characteristics of high reliability, non-forgery, full trace, traceable, open and transparent, collective maintenance, etc. Trusted data is the basis of scientific governance of dual carbon.

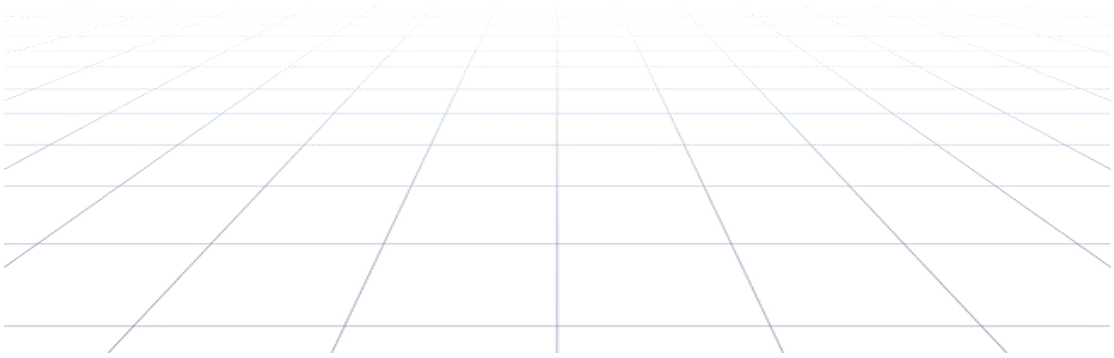
- Trusted collaboration - GECC public chain can build a decentralized infrastructure of trust and multi-party collaboration, help to break the data island in the industry, build a new collaborative production system and capacity sharing platform through smart contracts and other technologies, improve the efficiency of multi-party collaboration, and promote the reduction of the overall energy consumption level and carbon emission level of the society.

- Trusted trading -- GECC public chain can realize real-time, transparent and immutable asset management of carbon assets and carbon emission rights of high-carbon emission enterprises and energy-saving enterprises, enhance the activity of carbon trading market, promote a unified carbon price marketization mechanism, and create a carbon asset trading model jointly built by carbon trading entities, trading institutions, governments and other parties and flexible interaction. To realize the whole process data from the acquisition, trading and circulation of emission rights, to the transaction

verification and elimination, and statistics, the chain storage and trusted sharing application, so that carbon emission allowances can be traded under the condition of "visible", and the circulation process can be transparent and the traceability of the whole life cycle can be realized.

- Trusted supervision -- GECC public chain can enhance information transparency and timeliness in the management and regulatory applications of carbon emission registration, trading, settlement, carbon emission reporting and verification, reduce the cost of information management and supervision, build a trading regulatory environment that can be traced in all links and the whole process, and improve the modernization of government carbon emission supervision and social services.

In the future, GECC public chain will "take blockchain technology and platform as the core of data storage and trust circulation, upgrade the traditional IT construction model of" server + storage + business system "in a digital way, and gradually build a trusted digital data circulation infrastructure supporting multi-dimensional, highly credible carbon neutrality and carbon asset trading of enterprises, institutions, regions, industries and countries.



Chapter 4: GECC public chain system

4.1 Carbon neutral technology

4.1.1 Technical realization of carbon neutrality

According to the definition provided by the United Nations Intergovernmental Panel on Climate Change (IPCC), carbon neutrality, or net zero CO2 emissions, means that global anthropogenic CO2 emissions are equal to the amount of CO2 removed over a specific period of time. It can be expressed by the formula: "Carbon emissions - plant carbon sinks - artificial carbon sinks = 0". From the technical level, carbon emission reduction, carbon storage, carbon capture and carbon utilization are the four basic ways to achieve the final carbon neutrality.

1) Carbon reduction

In terms of carbon reduction, the focus is on industries with high CO2 emissions, mainly including the power sector, the industrial sector, the transportation sector and the construction sector. From the classification of major carbon emitters, the technological update of the power sector and the industrial sector has a greater impact on the production scene, while the transportation sector and the construction sector have a greater impact on the life scene.

The green transformation of the power sector is the basis for achieving carbon neutrality. There are two ways to low-carbon power production: on the one hand, technological transformation of existing power generation enterprises to improve energy efficiency, including traditional technological transformation such as hot spot decoupling and low pressure steady combustion, and intelligent transformation using artificial intelligence, big data and cloud computing. On the other hand, seek to solar energy, wind energy as the representative of renewable energy for power generation, to achieve zero carbon production of electricity, in addition to the use of photovoltaic, wind energy and other clean energy for power generation, power storage and transportation is also crucial. The future renewable energy power generation focus needs to break through energy storage and energy transportation technology, the existing energy storage methods are mainly physical energy storage, electromagnetic energy storage, electrochemical energy storage three categories, of which physical energy storage technology maturity is

the highest, electrochemical energy storage in the field of photovoltaic power generation the most widely used.

The deep decarbonization of the industrial sector is the top priority to achieve carbon neutrality. For the steel industry, efforts should be made to develop short-run electric furnace steelmaking, develop green hydrogen steelmaking processes, and use carbon capture technology to remove carbon emissions from fossil fuels. For cement production, on the one hand, it is necessary to achieve zero carbon emissions at the fuel end, such as the use of green hydrogen, biomass fuel and other alternatives to traditional fossil fuels, on the other hand, it is necessary to actively explore the replacement of cement raw materials limestone, and completely solve the problem of a large number of carbon emissions in the calcination process of limestone; For the chemical industry, we should vigorously develop hydrogen chemical industry to achieve the replacement of fossil energy, and actively explore bio-based polymer materials to replace chemical fiber, plastics, rubber and other petrochemical based materials.

The carbon emission proportion of the transportation sector is increasing, and the replacement rate of fossil energy needs to be strengthened. On the one hand, short-distance transportation should promote the process of electrification and use new energy batteries as a source of energy supply, so as to achieve decarbonization. This requires further improving the energy density and charging speed of new energy batteries, and promoting the new building distribution system with the integration of photovoltaic charging piles.

On the other hand, considering the limited battery life, long-distance transportation such as aviation, ships and railways should try to use fuels such as hydrogen energy, biomass fuel and liquid ammonia to replace traditional fossil fuels.

The construction sector is the highest source of end-consumption carbon emissions, including direct emissions from household heating and cooling, direct emissions from building construction, and indirect emissions from the production of building materials. To achieve carbon neutrality in the building sector, multiple measures are required. First, decarbonize heating equipment, use heat pump technology or actively explore heating technologies such as biomass energy and geothermal energy; Second, the use of prefabricated buildings in the construction process to reduce carbon emissions; And third, zero-carbon construction can be achieved by means of industrial decarbonization technology or substitution of

green materials.

2) Carbon storage

Whether it is to reduce the carbon emissions in the use of fossil energy, or to study the replacement of non-carbon energy, it is to discuss how to reduce emissions from the emission side. To achieve the double carbon goal, we also need to exert efforts at the carbon sequestration end. The so-called carbon sequestration, also known as carbon sequestration and carbon storage, refers to measures to increase the carbon content of the carbon pool outside the atmosphere, storing excess carbon and not releasing it into the atmosphere.

At present, there are two main ways of physical carbon sequestration and biological carbon sequestration. One is physical carbon sequestration. It is the long-term storage of carbon dioxide in exploited oil and gas Wells, coal seams and deep oceans. At present, the main carbon storage method is to inject captured carbon dioxide deep underground. At present, the depth suitable for storing carbon dioxide is salt formation and oil and gas formation. In the future, more carbon storage sites can be further developed through technological innovation, such as basalt layer and saline aquifer have the conditions for carbon storage. In addition to terrestrial storage, there are also large potential storage Spaces in the ocean. The second is biological carbon sequestration. It uses the photosynthesis of plants to convert carbon dioxide into carbohydrates, which are fixed in the plant body or soil in the form of organic carbon. Using terrestrial ecosystems to sequester carbon is the most economically viable and environmentally friendly way to slow the rise of atmospheric carbon dioxide concentrations.

The carbon sequestration process requires increasing the concentration of carbon dioxide to improve efficiency, increase storage and thus reduce costs. At the same time, most utilization scenarios also require high concentrations of carbon dioxide to improve the utilization conversion rate. Therefore, the capture technology has become the key technology in the process of carbon dioxide utilization and storage.

In the 1980s, the United Nations Intergovernmental Panel on Climate Change proposed the technology of "carbon capture and storage", which mainly transport the captured carbon dioxide to a suitable place for storage through a certain way, so that it can be isolated from the atmosphere, reduce carbon dioxide emissions to the atmosphere, and promote the rebalancing of atmospheric carbon cycle. But the

biggest problem with this technology is the high cost of construction and operation.

Carbon capture, utilization and storage is a new trend in carbon capture and storage technology, that is, the carbon dioxide emitted during the production process is purified, and then put into a new production process, can be recycled, rather than simply stored. Compared with carbon capture and storage technology, it can reuse carbon dioxide as a resource, which can produce economic benefits and is more practical.

3) Carbon capture

The main current technologies for carbon capture are chemical absorption and physical sequestration. Chemical absorption consists of two steps: first, a gas containing carbon dioxide and other chemicals is captured using a chemical solvent that can absorb carbon dioxide. After that, pure carbon dioxide is separated in the solvent. This technology is currently mainly used in power plants and industrial facilities. Physical isolation is the use of activated carbon, alumina, metal oxide or zeolite substances to absorb carbon dioxide gas, and then through temperature or pressure regulation to release pure carbon dioxide, the technology is mainly used in natural gas plants.

In addition, there are membrane separation, calcium cycling, chemical cycling and other technologies are being explored, and may become an important innovation direction in the future. The basis of membrane separation technology is the selective capture of carbon dioxide gas compound device, which can efficiently capture and separate carbon dioxide gas; Calcium cycling is also a new type of carbon capture technology, using quick lime (CaO) as an adsorbent to capture carbon dioxide and form calcium carbonate ($CaCO_3$), and then calcium carbonate decomposing to produce quick lime and pure carbon dioxide, can be recycled, this technology has a good application prospect in the field of steel and cement production; Chemical cycle is the use of metal oxides to capture carbon gas technology, in coal, natural gas and oil and other energy fields have a wide range of applications.

4) Carbon utilization

At present, more ways of using carbon dioxide are being opened up through technological innovation: first, to further improve the technology of using carbon

and hydrogen together to produce hydrocarbon synthetic fuel; The second is to use carbon dioxide as a substitute for fossil fuels for industrial production (some chemicals need to incorporate carbon elements to enhance their structural stability); The third is the use of carbon dioxide in the production of building materials, for example, carbon dioxide can replace the role of water in concrete, a technique known as "carbon dioxide curing", carbon dioxide can react with minerals to form carbonates and strengthen the concrete.

4.1.2 GECC public chain products

GECC public chain introduces blockchain technology in the realization process of "carbon emission reduction, carbon storage, carbon capture, carbon utilization" and other technologies, improves carbon sink capacity, and enables ordinary users to create benefits through carbon neutrality and carbon asset trading in the system, so as to encourage more people to participate and realize the goal of carbon neutrality.

Specifically, the partners get incentives by participating in the process of carbon emission products, wind power generation projects, carbon neutral electricity, etc. In the GECC public chain system, users can save carbon emissions through daily life and be counted as "GECC carbon assets" to cultivate and motivate more people to participate in low-carbon environmental protection behavior.

While supporting the ecological construction of GECC carbon sink, people also participate in the green environmental protection cause, raising the user community's awareness of low-carbon protection and accelerating the arrival of the era of carbon neutrality. Through the continuous accumulation of carbon assets, participants (institutional partners, ordinary users, etc.) can receive continuous rewards.

4.1.3 Technical realization

The components of GECC public chain system, as an organic part of the system, will provide technical support for users' carbon income. Components of GECC public chain system are as follows:

- Flexible multi-chain blockchain, capable of reaching millions of TPS, formalized blockchain with Turing-complete smart contracts, scalable rules, and support for multiple types of carbon asset value exchange. The GECC

public chain system offers some novel and unique features, such as a "self-healing" vertical blockchain mechanism and instant hypercube routing, making it fast, reliable, scalable and consistent at the same time.

- Peer-to-peer network for accessing the GECC public chain system, sending transaction requests, and receiving blockchain updates of interest to users (e.g., smart contract updates related to customer accounts), but it can also support arbitrary distributed services, whether on the blockchain or not.

- Distributed file storage technology, accessible through the GECC public chain system network, is used by the GECC public chain system to store archived copies of block and state data (snapshots), and can also be used to store arbitrary files of users or other streaming technology services running on the platform.

- Distributed hash tables like Kademlia, used as torrent trackers for GECC public chain system storage or as "input tunnel locators" for GECC blockchain system agents and as service locators for GECC blockchain services.

- A platform that supports any service, accessible through the GECC public chain network and the GECC blockchain system proxy, similar to a browser or smartphone application that can interact with a unified formal interface. These formal interfaces can be published in the GECC public chain system; Information published in the GECC system can be found via the GECC DHT to find the actual node providing the service at any given moment. The service can be guaranteed by creating smart contracts in the GECC public chain system.

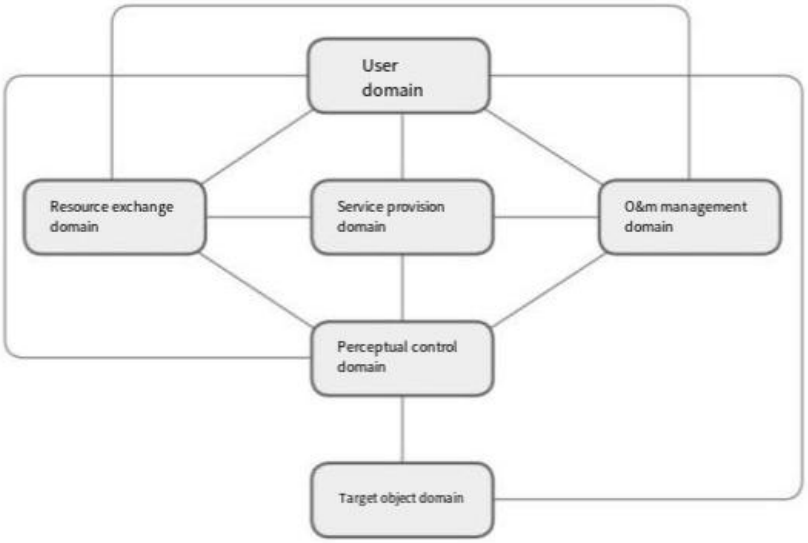
- Platform for payment, payment channel and micropayment channel network. It can be used for fast off-chain value exchange that will pay for Services supported by GECC Services.

In the future, the GECC public chain system will explore the implementation and construction of carbon neutral data recording technology and carbon asset trading in a self-developed or collaborative manner with the support of companies and partners.

4.2 Infrastructure

In the face of complex ecosystems, carbon-neutral data recording and carbon asset trading have limited self-exploration power in the market, and it is necessary to find a more efficient construction and operation model, promote the orderly organization of ecological stakeholders and establish a collaborative operation system, so as to realize the true integration of blockchain and the industry. To this end, GECC public chain system from the following three aspects of the top-level architecture design. The first is to extract the commonalities of carbon neutral data record, carbon asset trading field and related industries; The second is to support the customizability and extensibility of the industry without affecting the innovation of the industry; The third is to promote collaboration and sharing between different industries to break through the bottleneck of single application.

The traditional layered architecture has limitations in the application of carbon-neutral data recording and carbon asset trading systems, so the GECC public chain system architecture was born. This system provides a top-level framework for how to effectively deconstruct important components of the blockchain ecosystem in the application of carbon neutral data recording and carbon asset trading, and how to establish business correlation logic.



The GECC public chain systematically combs the complex carbon neutral data record and the associated elements of carbon asset trading application, analyzes it from different angles, divides the system-level business function as the main principle, and sets the user domain, target object domain, perception control domain, service provision domain, operation and maintenance management domain, resource exchange domain, etc. Network connections between domains are then established according to business logic, thus forming a single industry ecosystem. The individual industry ecosystem then forms a cross-industry and cross-field collaborative system of carbon neutral data recording and carbon asset trading through their respective resource exchange domains (see the figure above).

The first step in the construction of GECC public chain system is to determine user subjects and user needs, that is, to explore the problems between user subjects and carbon neutral data records and other factors in carbon asset trading in the user domain, and propose improvement needs. Among them, the correlation between multiple user subjects and the demand boundary are the entrance to determine the application ecology of carbon neutral data recording and carbon asset trading. For complex systems, the model of demand iteration can be gradually promoted.

In the second step, according to the attributes determined by the target object and the information source acquisition requirements, determine which kind of technical connection means to use in the perceptual control domain to realize the connection with the target object. From the current technical status, it mainly includes the objective induction represented by sensors, the subjective label information reading and writing represented by RFID and two-dimensional code bar code, and the embedded network communication module data operation represented by M2M module.

The third step is to further process a large amount of data from the device in the service provision domain according to user needs, combined with blockchain, cloud computing, big data, artificial intelligence algorithms, etc., to form various services and interfaces provided to different user subjects in the user domain, and realize the sharing of "objects" and "information sources".

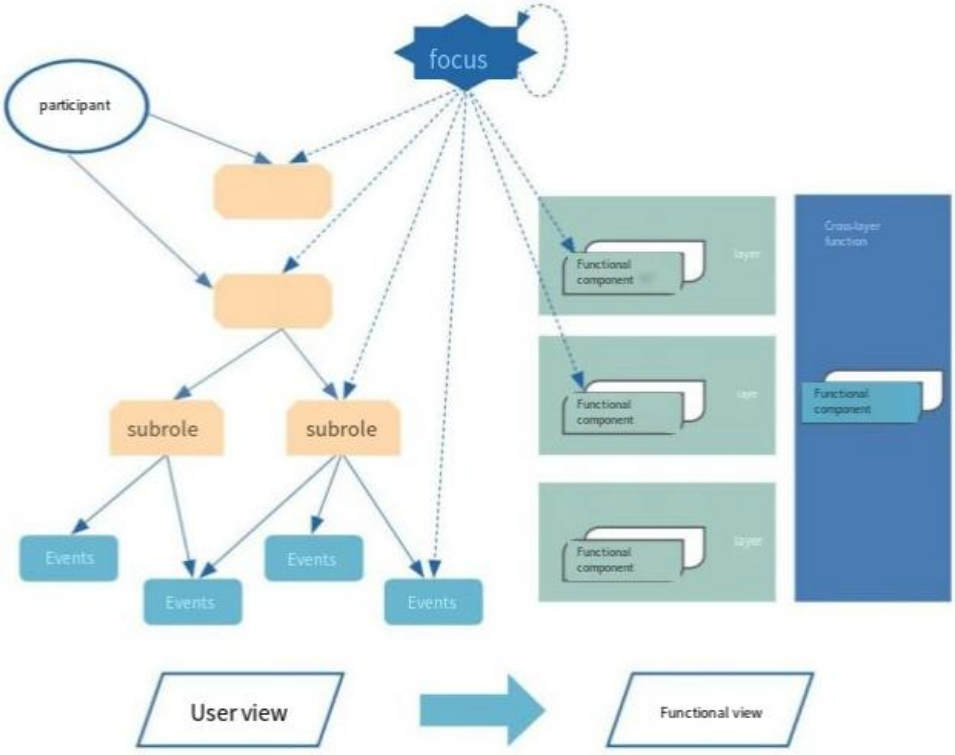
In the fourth step, in the operation and maintenance control domain, from the system technical operation and maintenance to the industry laws, rules and other two levels of supervision and guarantee the safe, reliable, stable and accurate operation of the system.

Fifth, in the resource sharing domain, on the one hand, open up the sharing and coordination of vertical industries, external systems and resources of carbon neutral data recording and carbon asset trading; on the other hand, assist the other five domains to establish an internal business closed loop, especially in the aspects of carbon neutral data recording and carbon asset trading storage, payment, credit information, financing, etc. So as to better deal with the coordination problem between vertical closed system and external system.

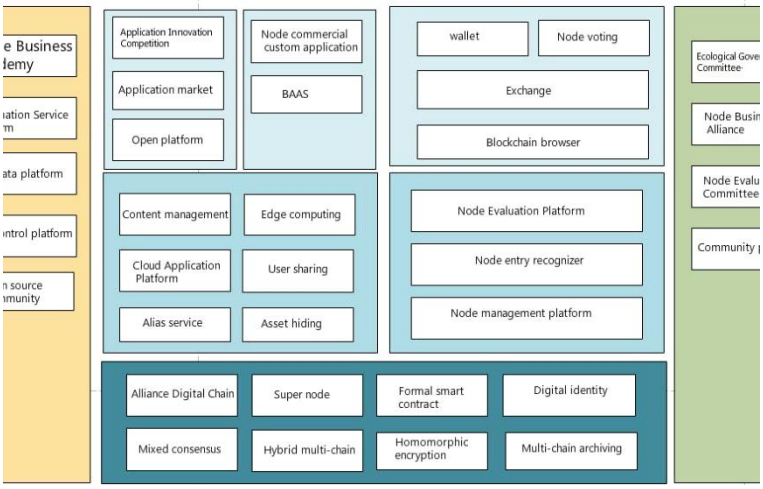
4.3 Technical Architecture

GECC public chain system describes stakeholder groups and basic characteristics through user view and functional view, standardizes blockchain activities and functional components, identifies the guiding principles for blockchain design and improvement, and clarifies the relationship between user view and functional view of blockchain.

Firstly, the stakeholder analysis of the user view is carried out, and the stakeholder group of the blockchain is described by subdividing the roles and sub-roles, as well as the corresponding blockchain activities and common concerns. Combined with the characteristics of blockchain services, the composition of the blockchain system is investigated from the user perspective, three roles of blockchain service customer (BSC), blockchain service provider (BSP) and blockchain service associate (BSR) are proposed, and fifteen sub-roles and their respective activities under these three roles are described.



Secondly, combined with the characteristics of blockchain services, the GECC public chain system examines the composition of the blockchain system from the perspective of the blockchain function, and proposes the functional view of the blockchain reference architecture. Through the "four horizontal and four vertical" hierarchical structure, the functional view describes the typical functional components of the blockchain system and the functions achieved (as shown in the figure below), including the user layer, service layer, core layer, base layer and cross-layer functions.



- User layer: user-facing portal, through which to perform customer-related management functions, maintain and use blockchain services, the user layer can also output blockchain services to other resource layers, providing support for cross-layer blockchain services;

- Service layer: provides services such as unified access and node management to provide users with reliable and efficient service capabilities;

- Core layer: it is the core functional layer of the blockchain system, including modules such as consensus mechanism, timing service, privacy protection, encryption, summary and digital signature. In addition, according to different application scenarios, smart contract modules that can automatically execute preset logic can be added selectively;

- Base layer: provides the basic operating environment and components required for the normal operation of the blockchain system, such as data storage, operation container, communication network, etc.

In addition, in order to meet the production research and operation

requirements of carbon neutral data recording and carbon asset trading, the functional view also includes four cross-layer functional systems of development, operation, security, supervision and audit. The functional components contained in the four systems interact with the components of the above three layers to provide support for the system.

4.4 Ecological architecture system

The particularity of carbon neutral data recording and carbon asset trading of GECC public chain system requires that it must be combined with the Internet of Things. The integration of the system and the Internet of things includes the integration of the architecture and related parties. Architecture fusion fully integrates the Internet of Things model and the blockchain functional architecture of the GECC system, so as to integrate the technical characteristics such as trust and consensus of the GECC system into the Internet of Things environment, and solve the problems such as single point of network failure and lengthy technology industry chain faced by the Internet of Things under the application ecology of carbon neutral data recording and carbon asset trading. Stakeholder fusion regards the relevant elements of the Internet of Things model as the service customers of the blockchain, and promotes the establishment of a collaboration system, trust system and value system among all stakeholders of the Internet of Things. The addition of the Internet of Things will make carbon neutral data recording and carbon asset trading more intelligent in the future.

4.4.1 Application framework

GECC public chain from bottom to top: communication and infrastructure, blockchain, carbon neutral data recording and carbon asset trading and other applications.

- Communications and infrastructure provides basic hardware environment and communications-related equipment and facilities for carbon neutral data recording and carbon asset trading applications.

- Blockchain, as the middle layer, uses the hardware resources of communication and infrastructure to provide trust, consensus and other mechanisms or services for the application layer of carbon neutral data recording and carbon asset trading.

- The carbon-neutral data recording and carbon asset trading application layer utilizes the services provided by the blockchain layer to enhance its security, privacy and other capabilities.

The relevant components of the blockchain reference architecture can provide service support for the relevant systems in each domain of the carbon-neutral data recording and carbon asset trading application. The service support provided by the blockchain component includes security, trust, consensus and tamper-proof function service guarantee. At the same time, the cross-layer function of the blockchain reference architecture can also provide comprehensive services for the system, communication and infrastructure related to carbon neutral data recording and carbon asset trading applications.

From the perspective of the carbon neutral application model, the GECC public chain can be regarded as an enhanced service component of the underlying network related to carbon neutral data recording and carbon asset trading applications. The user layer provides functions such as business user interface, transaction submission, data exchange, user management, monitoring and management. The service layer provides functions such as access services in line with the blockchain mechanism, node transaction processing and ledger records based on blockchain. The core layer provides multi-node mutual consensus and confirmation, distributed storage mechanism, security mechanism, summary algorithm, signature algorithm, timing mechanism and other related functions. The base layer provides distributed network protocols, data storage services and computing power support.

4.4.2 User Framework

GECC public chain user framework is a combination of the user view in the blockchain reference architecture and carbon neutral data recording and carbon asset trading application model. The blockchain can be used as the underlying infrastructure of the system to support the application of the upper layer. From the perspective of the blockchain system, the relevant parties of carbon neutral data recording and carbon asset trading application assume the role of blockchain service users, and realize their related activities by invoking blockchain services, especially the core layer of blockchain functions. At the same time, in the application system for carbon neutral data recording and carbon asset trading, the blockchain service users are further opened into different types of users for different applications.

Through the above architecture, it can be seen that GECC public chain is not only used for one aspect, GECC is based on wedge-type side chain technology, and can provide diversified services for all related industries and products and merchants in the field of carbon neutral data recording and carbon asset trading. Therefore, GECC public chain has three major characteristics:

- The first is to protect users from developers. In the GECC public chain, developers have no right to interfere with users, and can protect users who use the programs they develop.

- Second, the access barrier is low. Anyone with sufficient technical ability can access it, as long as a computer with Internet access is able to meet the conditions for access.

- Third All data is publicly available by default. Although it is common for all associated participants to hide their true identities, each participant is programmed to see all account balances and all trading activity.

4.5 IPFS distributed storage

In the GECC public chain architecture, the core lies in the innovation of storage mode to provide support for distributed data storage, carbon asset trading information network construction and big data circulation. GECC public chain adopts IPFS distributed storage mode to support the whole system.

IPFS, full name of The InterPlanetary File System, Interplanetary file storage system is a peer-to-peer distributed file system, a hypertext transfer protocol, it is connected to the computing devices have the same file management mode. In some ways this concept is similar to the original idea of the Web, but in reality IPFS is more like a single group of Bittorrent users forwarding Git targets to each other. IPFS has the qualities to be a subsystem of the internet, and can effectively replace the traditional HTTP transport protocol when properly configured.

IPFS is a globally oriented, peer-to-peer, distributed version of the file system. The goal is to complement (or even replace) the Hypertext Transfer Protocol (HTTP) that currently rules the Internet, connecting all computing devices that share the same file system. The idea is to replace domain-based addresses with content-based addresses, where users are looking for content stored somewhere rather than at an address, without verifying the identity of the sender, but only the hash of the content, by making web pages faster, more secure, more robust, and more durable. How does IPFS store and read content? The storage and reading of IPFS files is similar to the principle of BitTorrent upload and download. The index structure adopted by IPFS is DHT (distributed hash table), and the data structure is Merkle DAG (Merkle directed acyclic graph).

GECC public chain perfectly integrates flash memory technology and IPFS distributed storage. On the infrastructure platform, it provides decentralized flash memory, cloud database storage and full-node edge computing to support carbon-neutral data recording and carbon asset trading. Moreover, GECC public chain is based on horizontal scalability and sharding technology, providing high-speed trading capabilities. While retaining the characteristics of blockchain decentralization, disintermediation, trustless, data transparency and immutable, it also greatly improves the processing speed and reduces energy consumption, making it very easy to realize millions of transactions per second or even tens of millions of transactions in the future, and expand the unlimited capacity of data

storage.

GECC public chain through the improvement of technology, to achieve data storage at the same time, but also to achieve the dynamic balance of encryption and deduplication, user data storage than the traditional storage mode is more secure and more efficient; GECC public chain organically links low-power sensors, edge computing and cloud computing to realize the integration of chain, node and cloud, on this basis, it can build a variety of distributed applications such as big data applications and artificial intelligence.

In terms of application value circulation, GECC public chain establishes GECC carbon asset economic model, which not only meets the needs of miners to participate in storage mining gold mining, but also meets the needs of users for stable storage prices, while user payment will be more convenient and smooth, and the unit storage price of GECC carbon assets is fixed pricing, which is more convenient for users to use. Based on the IPFS storage model, we will build carbon neutral data recording and carbon asset trading mining function in the system. The more node consensus, the higher the GECC carbon asset generated.

In the future, we hope that the GECC public chain can be an applied carbon neutral main network public chain integrating the underlying emission data recording and carbon asset trading, with advanced blockchain technology and IPFS protocol as the underlying support, adhering to the principle of absolute openness and justice, so that the data content, use and transaction can be systemized and transparent, and enjoy the data protection rights of the whole process. With the power of IPFS, the circulation of energy big data can reach hundreds of millions of users from all walks of life, so that every participant in the ecology can benefit, improve the efficiency of the industry, and maximize the value of the industry.

4.6 Technical Advantages

The goal of GECC public chain is to establish an open and easy-to-use blockchain technology system and system service integration that is suitable for a wide range of application scenarios, meets the application requirements of carbon neutral data recording and carbon asset trading.

In the process of research and development and application, we always pay attention to the five aspects of performance, function, security, contract and compliance, and focus on the optimization of technical capabilities in these five aspects.

4.6.1 Better performance

GECC public chain uses optimized consensus protocol and P2P communication to support multi-chain parallel consensus. Support dynamic adjustment of network topology, node dynamic join and active exit. At the same time, users can also choose non-Byzantine consensus protocols (such as Raft) with better performance according to their own needs to improve the efficiency of the entire blockchain.

In order to cope with diverse carbon-neutral data recording and carbon asset trading business scenarios, meet information security requirements, and improve business throughput, GECC public chain supports multi-chain architecture. Unrelated businesses run on multiple parallel blockchains, which gives us the ability to scale linearly for the business. For the interoperation between multiple chains, we adopted the relay chain model, and the participants submitted proposals to the relay chain nodes, and the results were confirmed by consensus.

GECC public chain also supports horizontal scaling and dynamic expansion to realize massive transaction processing and data storage; Through testing and analysis, it is found that there are performance bottlenecks in the password module and contract module of the consensus node when the system processes massive transactions. In order to reduce the impact of this problem, the password module and contract module are divided into separate stateless microservices, so that the horizontal expansion of the password and contract microservices can be targeted when processing massive transactions.

4.6.2 More comprehensive functions

- Support user real name and authentication;
- Support enterprise carbon neutral data recording and carbon asset trading data governance;
- Support the event-driven collaboration model of carbon neutral data recording and carbon asset trading;

• Support for multiple ledgers to manage on-chain data by business dimension.

4.6.3 Better security

• Pluggable password algorithm, which can flexibly develop the corresponding password system;

• The platform implements multiple sets of password algorithms by default, including national secret algorithm and hardware encryption devices.

4.6.4 More diversified contracts

• Support for reusable carbon asset trading smart contracts;

• Support for debugging of smart contract languages.

4.6.5 Greater focus on compliance

• Support for CA-based account authentication;

• Support the access of carbon neutral and carbon asset trading regulatory nodes;

• Support carbon neutral data recording and carbon asset trading data filing.

Chapter 5: GECC carbon asset economic model

5.1 GECC Token Economics

As the original asset of the carbon neutral application-oriented mainnet public chain -- GECC carbon asset, users holding GECC carbon asset can carry out all kinds of consumption in the GECC public chain ecology and carbon neutral and carbon trading market at any time, and can also trade freely on the exchange. GECC carbon assets can be used in the following specific circulation scenarios:

- When trading in the ecosystem, users can use GECC carbon assets for payment and settlement;
- acting as a payment medium in specific business scenarios (carbon neutral data recording, carbon asset trading);
- make payment and settlement through GECC carbon assets when enjoying the services provided by third-party cooperation of GECC public chain;
- Holding GECC carbon assets can participate in relevant carbon neutral industry investment, participate in the development of carbon asset trading economy, and share industrial development dividends.

GECC, supported by the concept of carbon neutrality and environmental protection, GECC aspires to become the global payment currency for carbon index trading.

Total carbon assets issued by GECC: 80 million

GECC Carbon Asset Issue Price: 0.18/ piece (US $)

The GECC carbon asset distribution scheme is as follows:

- NFT mining reserve: 20%
- Eco Fund: 14.7%

- Community fund: 10%
- Bonus Fund: 25.6%
- Environmental groups: 15.3 percent
- Liquidity pool: 14.4%

5.2 Value-added logic for GECC carbon assets

GECC carbon assets are the only digital assets in the parent chain of the entire GECC ecosystem, and any cross-chain data interaction and asset exchange need to consume the parent chain digital assets. When the ecosystem is formed, cross-chain data interaction becomes a high-frequency event, and the demand for GECC carbon assets is constantly increasing. GECC carbon asset holders have the original right to distribute the development direction of GECC public chain.

After the launch of GECC carbon assets, in addition to continuously strengthening the technical leadership of the project, it will continue to release new technologies and applications on the chain, and comprehensively expand the vitality of carbon neutral data recording and carbon asset trading business. At the same time, through the active preaching of the global offline carbon neutrality cause, GECC carbon assets will be influenced, and a product with social value will actually generate commercial value through carbon neutral data recording and carbon asset trading, thus producing a more far-reaching social impact.

5.3 Basic attributes of GECC carbon assets

1) Property property

In ecology, users with GECC carbon assets enjoy ownership and disposal rights, that is, they enjoy the real right of GECC carbon assets, and can dispose of GECC carbon assets arbitrarily within the scope stipulated by law.

2) Currency attributes

The API centered on cryptographic coins can realize the flow of data and the circulation of tokens. On the platform built by the GECC public chain, user behavior data, electronic coins and purchases can be recorded on the chain, and effective behaviors can be further converted into GECC carbon assets. Each member has an independent node and shares ledger data, effectively enhancing the transparency of the use of GECC carbon assets. In other words, GECC carbon assets build a "value exchange" bridge.

3) Equity attributes

GECC carbon asset is a digital token of GECC public chain and derivative carbon neutral and carbon asset trading platform as one of its use scenarios. Users who hold GECC carbon assets own the equity of the platform. That is, when holding GECC carbon assets to a certain amount, it is manifested as holding coins and dividends.

4) Decentralized governance model

In the GECC decentralized governance system, any decision is voted on within a fixed time frame, which changes depending on the proposal. If and only if enough votes of high interest are collected, the proposal will be acted upon, otherwise the proposal will be closed. In a decentralized autonomous system, instead of a single decision by those with high stakes, those with low stakes can band together to balance those with high stakes. The content of decentralized autonomy includes but is not limited to user registration, statistical functions, mortgage marker range, etc. These upgrades can be decided through the collective voting of autonomous system participants.

5.4 Circulation value of GECC

GECC carbon asset itself is a blockchain asset, with the basic characteristics of decentralization, trust, openness, autonomy, imtamability and anonymity of blockchain assets. Different from the broad concept of cryptocurrencies, GECC carbon assets are designed as reward vouchers and lubricants within the ecosystem, aiming to encourage users to participate and jointly build the ecosystem and enjoy the benefits of rapid development along with the ecosystem. As a result, GECC carbon assets can be efficiently circulated within the project ecosystem, using scenarios such as: ecological governance, application consumption and carbon market trading circulation.

1) Ecological governance

Holders of GECC carbon assets can participate in the platform governance, participate in the decision of online products, platform commission distribution ratio and way, future development direction and other decisions. The governance system is implemented through five roles:

- GECC carbon asset holders
- Verification nodes
- Carbon Assets Review Committee
- Carbon neutrality Management Committee
- Community Operations Foundation

Any GECC carbon asset holder can be elected to become a verification node and gain rights within the ecology's governance structure.

2) Eco application consumption

GECC carbon assets will mainly serve as a reward for the contribution of GECC public chain infrastructure, and will be the value medium consumed by carbon-neutral data recording and carbon asset trading applications. GECC carbon assets can be exchanged with all digital currencies, supporting the circulation and payment of all aspects of the ecosystem:

- Support receipt and payment, transfer, trading, charging, withdrawal, voting, STO gateway after the exchange;

- Settlement with fiat currencies around the world and exchange with mainstream cryptocurrencies around the world.

At the same time, GECC carbon assets can be obtained through computing power exchange, node rewards, and community consensus. In terms of application rate circulation, users can purchase or use various trusted devices and third-party Dapps supported by GECC carbon assets to join the entire carbon neutral data recording and carbon asset trading ecosystem.

3) Carbon market trading circulation

Through the circulation of GECC carbon capital, market entities (including enterprises, governments, international organizations, investment institutions, consumers, etc.) can make profits through self-produced carbon market assets or decentralized storage solutions, and use the obtained GECC carbon assets to directly participate in carbon trading. Specifically, GECC carbon assets use smart contracts to create transparent, worse-free, and efficient low-carbon life services in combination with decentralized carbon emission scenarios. In addition, the circulation of GECC carbon assets in a carbon trading scenario facilitates more seamless collaboration among participants and a shared ledger of data records at any node in the multi-node network, which will significantly reduce the development time of carbon assets.

GECC carbon assets can adapt to diverse business needs and meet the data sharing across the business chain, which means that the underlying protocol of GECC carbon assets has enough common and standard data recording methods, can represent a variety of structured and unstructured information, and can meet the cross-chain requirements required with the expansion of business scope. This provides a value basis for the universality of GECC carbon assets. GECC carbon assets can be more easily circulated in various industries and scenarios around the world.

Chapter 6: Global team and project development

6.1 Core Team

The GECC project has been designed by a global team of experts who are industry leaders in everything from DApps to distributed systems programming languages and the theory of carbon markets. Their extensive skills and experience guide the strategic planning, technology development and operations of the GECC project. The team includes crypto digital asset trading experts, blockchain technology development experts, software engineers, and a board of directors made up of real-world technology experts with extensive experience in carbon neutrality and carbon trading markets.

1) The technical team

Ackerman - Blockchain technology pioneer, blockchain architect, carbon neutral management system development expert. He has more than 10 years of experience in the development and management of the Internet industry. Familiar with mainstream blockchain technology architecture and principle, deep research on IBM Hyperledger fabric, leading the development of decentralized big data risk control blockchain in carbon neutral industry.

Bartholomew -- core developer. Both front/back end software project development experience, front-end HTML, CSS, JS has a deep technical foundation, good at solving compatibility problems, in-depth 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, energy big data system, etc.

FitzGerald -- Graduated from the Department of Computer Science at Yale University, and obtained a doctorate degree in computer and big data. He is an architect, database expert, and chief technical expert of exchange construction. He has been engaged in database application, data warehouse, big data and blockchain development in the trading industry for a long time, and has rich experience in blockchain project development.

2) Advisory team

ROBIN LI - has extensive regulatory and fintech experience. Previously responsible for all fintech, blockchain and crypto-related business and regulation at Baltics-Sorainen's largest law firm. ROBIN specialises in investor relations and the legal side of the business and is a consultant on overall strategy and business development for projects.

ArtOras Asakavicius - Technical consultant providing guidance on defining control centre use cases in all major environmental technology development and implementation projects, including carbon neutral information systems, multiple asset management systems and smart metering systems.

Heikki Kolko -- Operations consultant, with more than 10 years of marketing experience in the Internet industry, specializing in environmental protection marketing, marketing planning, etc., used to serve large Internet technology companies in Silicon Valley, USA.

6.2 GECC Ecological Development Foundation

The GECC Ecological Development Foundation has played a key role in the development of the project, supporting $8 million of Consensus carbon assets in the first phase. The GECC Ecological Development Foundation will establish a governing body to manage the GECC project.

The GECC Ecological Development Foundation will drive the establishment of the first network of carbon rights trading protocols on the blockchain and a trustless and highly decentralized infrastructure for carbon-neutral data logging and carbon asset trading. Through the incremental value of GECC carbon assets, the Foundation will enable its members to promote the importance of ecology globally and gain the advantages and benefits of carbon market trading integration.

1) The Foundation's governing body

In order to ensure the openness and transparency of the GECC program, it is managed through the establishment of the highest decision-making body, the Decision-making Committee. Under the decision-making committee, there will be a business committee, a technical committee, a General 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 are each elected for a term of two years. The first decision-making committee consists of core team members, well-known figures in the blockchain industry, legal experts and early investors. The subsequent decision-making committee will be partially elected by the community.

2) Supervision by the board

In order to ensure the efficient, transparent and healthy operation of the foundation, the entire activity must be regulated. Thanks to the application of blockchain technology, all kinds of data generated by the platform are recorded and cannot be tampered with. Therefore, on the one hand, GECC can conduct internal supervision and trust by itself; On the other hand, the platform sets up GECC Carbon Assets Autonomous Committee, which is responsible for the investor community assembly, and is responsible for its management and supervision functions to ensure the interests of the platform and the stakeholders of the

platform. The autonomous committee will be replaced every year according to the number and coin age of GECC carbon assets held.

In addition, the Council sets up audit, legal, financial and other advisers to provide regular and irregular information disclosure in the form of reports and news. The contact information of the principal person in charge of the council must be made public, and the contact and supervision of all parties must be accepted. Through the two-way channel of supervision and reporting, the Council welcomes users, users and investors of the renewable resources cooperation platform to participate in the management and supervision of the operation, and to report problems, major crises, fraud, fraud and other issues in the operation of the platform, and must ensure the information protection of whistleblowers.

In daily affairs, the Foundation will set up resident functional units, such as research and development department, market development department, operation department, finance and human resources department, etc., to deal with regular affairs. At the same time, a professional functional committee will be set up to make decisions on important functional matters of the Foundation. Unlike functional units, functional committees exist in a virtual structure. Members of the committees can come from all over the world and do not need to work full-time. But they must meet the requirements for expert credentials and be able to commit to attending and speaking out when the committee is required to deliberate. Functional committees will also set up regular meetings to ensure the effective promotion of major decisions.

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

The Foundation is committed to building a risk-oriented and sustainable business blockchain community. The Foundation will conduct ongoing risk management of the Foundation's operations. It will include a series of activities such as risk system establishment, risk assessment and risk response. For major risks, the Foundation's Strategic decision-making committee shall discuss and make decisions. The Foundation will classify the events according to their characteristics, such as the degree of impact, the scope of impact, the amount of impact tokens and the probability of occurrence, and make decisions according to the priority level. For the events with high priority, the relevant committees of the Foundation will be organized to make decisions as soon as possible.

6.3 Promotion of Cooperation

In order to drive the market value of GECC carbon assets and the development of GECC public chain users and developers, we will achieve all-round publicity through community, media and exchange channels.

1) Community

Decentralized values are embedded in the DNA of the GECC project. At present, our partners all over the world, especially in the community field, are extremely influential, and we will publicize through community channels. In the future, we will carry out GECC in 120 communities in many countries including the UK, Australia, the US, Dubai, Japan, France and Korea.

2) Media

As more application functions of GECC carbon assets and GECC public chain are launched, we will also promote them in global media. For example, the Wall Street Journal, Global Energy, Yahoo Finance, Google News, Meta, Bloomberg, etc.

3) Shopping Mall

In terms of offline commerce, GECC carbon assets will be advertised in the world's most popular shopping malls, and at the same time, advertising will be broadcast on online e-commerce shopping platforms in various countries to maximize the global value of GECC carbon assets.

4) Star partners

To help secure the GECC public chain, we have recruited a group of all-star partners from the fields of mathematics, computing, public chain, carbon neutrality, and carbon trading to serve as validators of our network.

5) The Exchange

GECC Carbon Assets first went live on the Binance exchange, sharing the exchange's promotional channels. And continue to launch the global mainstream exchanges including Coinbase, Huobi, Ouyi, etc. With the circulation of GECC

carbon assets in more scenarios, it will become a new 10,000-fold currency in the era of carbon neutrality.

In the future, the GECC project is determined to develop more carbon neutral application ecology and GECC carbon asset incentive model based on GECC public chain business with the support of the community, media, exchanges and investment partners, join hands with global users to create brilliant, and continue to improve the decentralized carbon neutral and carbon asset trading value consensus of global users.

Chapter 7 Disclaimer

This document is for informational purposes only and its contents are provided for informational purposes only and does not constitute any investment advice, solicitation or solicitation for the sale of shares or securities in the GECC Project and its related companies. Such solicitation must be made in the form of a confidential memorandum and must comply with applicable securities and other laws.

Nothing in this document should be construed as forcing participation in a Token public offering. No action in connection with this white paper shall be construed as participation in the Token public Offering, including requesting a copy of this white paper or sharing this white paper with others. Participation in the Token public offering means that participants have reached the age standard 达, have full capacity for civil conduct, and the contract signed with the GECC project is real and effective. All participants sign the contract voluntarily, and have a clear and necessary understanding of the company before signing the contract.

The GECC team will constantly 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 mechanics, tokens and their mechanisms, and token distribution. Parts of the document may be adjusted in the new white paper as the project progresses, and the team will make the updates public by Posting an announcement on the website or in the new white paper. Participants should be sure to get the latest white paper in time and adjust their decisions according to the updated content. Therefore, the GECC team expressly disclaims any liability to participants arising from (a) reliance on the contents of this document, (b) inaccuracies in the information herein, or any actions resulting from this document. The team will spare no effort to achieve the objectives mentioned in this document, however, due to force majeure, the team cannot fully commit to completion.

The GECC carbon asset is an important tool for platform performance and is not an investment. Owning a token does not grant its owner ownership, control, or decision-making rights over the platform. Tokens, as crypto assets used in the ecosystem, do not belong to any of the following categories of currencies; (a) securities; (b) equity in legal entities; And (c) stocks, bonds, notes, warrants, certificates, or other instruments conferring any rights.

The value of GECC carbon assets depends on the market and the demand after the application, it may not have any value, the team makes no commitment to its value, and is not responsible for the consequences of its value increase or decrease.

To the maximum extent permitted by applicable laws, the team shall not be responsible for any damages and risks arising from participation in the Token public offering, including but not limited to direct or indirect personal damages, loss of business profits, loss of business information or any other economic losses.

The GECC team complies with any regulatory regulations and industry self-regulation statements that are conducive to the healthy development of the industry. By participating, participants will fully accept and comply with such inspections. At the same time, all information disclosed by Participant to complete such inspection must be complete and accurate. The Platform clearly communicates the possible risks to the participants. Once the participants participate in the Token public offering, they confirm that they understand and accept the terms and conditions in the detailed regulations, and accept the potential risks of the platform at their own risk.