

Research on the Public Welfare Operation of Personal Carbon Credits under the Background of "Low Carbon Economy"

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Abstract

In recent years, governments have made many efforts to deal with climate change, and the development model of "Low-carbon economy" came into being. "Low carbon economy" is gradually becoming the mainstream of world economic development with its unique advantages and huge market. The Chinese government also attaches great importance to Low-carbon development and has successively implemented key measures such as carbon neutralization and carbon emission trading pilot. The report of the 19th CPC National Congress emphasized in the discussion of "accelerating the reform of ecological civilization system and building a beautiful China", "Accelerate the establishment of legal systems and policy guidance for green production and consumption, establish and improve the economic system of green and Low-carbon circular development... Advocate a simple and moderate, green and Low-carbon lifestyle... Carry out actions to create energy-saving organs, green families, green schools, green communities and green travel". As one of the practical and incentive means, the "carbon inclusive" system was first implemented in Guangdong Province with remarkable results, and the concept of "carbon score" began to gradually enter people's vision. Therefore, it is particularly important to fully understand the current situation of the "carbon integral" market when the "carbon integral" reform is implemented. In view of this, based on the understanding of the current situation of the implementation and development of the personal carbon credit system, this program will carry out all-round and in-depth research in the key areas of carbon inclusive pilot cities and other Low-carbon pilot cities to explore the development status and future promotion mode of the personal carbon credit market. Influenced by the novel coronavirus pneumonia, this survey mainly used text mining, online questionnaires and one to one telephone interviews to get residents', enterprises and government's cognition and views on carbon integral reform. Specifically, the team investigated and clarified the implementation of the "carbon credit" reform in Guangdong Province by collecting the main body's key information and secondary auxiliary information, and put forward constructive suggestions to promote the in-depth development of the "carbon credit" reform; At the same time, conduct in-depth case analysis on the practical experience of excellent pilot cities, and summarize the development experience that can be learned and copied, so as to help the effective implementation and smooth progress of the "carbon score" reform in other parts of the country.

Keywords

Carbon Integration; Text Mining; Market Application.

1. Research Background and Significance

1.1. Research Background

1.1.1. Environmental Background: The Climate Crisis has Raised Concerns about Carbon Emissions, and All Walks of Life have Opened up New Ideas for Emission Reduction

With the continuous growth of global population and economic scale, the environmental problems and incentives caused by energy use are constantly recognized by people. The global climate change caused by the increase of carbon dioxide (CO₂) concentration in the atmosphere has also become an indisputable fact. According to a study released by China low carbon network, by the end of 2019, the global carbon dioxide emissions from burning fossil fuels will reach 36.8 billion tons, up from 36.57 billion tons in 2018. The study also shows that with the increasing use of oil and natural gas, global CO₂ emissions may continue to rise. At present, although some countries have begun to use renewable energy, for example, the wind power generation of the United States in 2019 increased by 8% compared with that in 2018, and the solar power generation is estimated to increase by 11%, this trend is not enough to stop the increase of CO₂ emissions, leading to climate change, the melting of polar ice sheets and the intensification of hurricanes. Facing the increasingly severe climate crisis, the "Low-carbon economy" [1] Based on low energy consumption and low pollution has gradually become a development trend. Residents' reduction of carbon dioxide emissions is of great significance to the sustainable development of human economy, and how to form an effective, stable and long-term residents' green behavior incentive system has also become an urgent research direction.

1.1.2. Policy Background: Accelerate the Transformation of Green and Low-carbon Economy and Achieve Sustainable Development

The report of the 19th CPC National Congress comprehensively elaborated the strategic deployment of accelerating the reform of ecological civilization system, promoting green development and building a beautiful China. In order to cope with the increasing pressure of emission reduction, accelerate the transformation to a green and Low-carbon economy and achieve sustainable development, the Chinese government has formulated a series of carbon constraint targets.

From the outline of the 12th Five Year Plan to the resolutions of the third and fifth plenary sessions of the 18th CPC Central Committee, as well as the overall plan for the reform of ecological civilization system, corresponding arrangements have been made for the establishment of China's carbon emission trading system.

2016 On October 27, 2003, the work plan for controlling greenhouse gas emissions in the 13th five year plan issued by the State Council pointed out that by 2020, carbon dioxide emissions per unit of GDP will be reduced by 18% compared with 2015, and the total carbon emissions will be effectively controlled. The plan emphasizes the establishment of a national carbon emission trading system, the launch and operation of the national carbon emission trading market, the promulgation of the regulations on the administration of carbon emission trading [4] and relevant implementation rules, the formulation of relevant supporting management measures by regions and departments according to the division of functions, the improvement of the legal system of carbon emission trading, and the launch of the national carbon emission trading market in 2017, By 2020, strive to build a national carbon emission trading market with perfect system, active trading, strict supervision, openness and transparency, so as to achieve stable, healthy and sustainable development.

2020 During the national two sessions in, the emission reduction plan on carbon emissions was taken as the focus of environmental protection. More than 50% of China's renewable energy can be expected to achieve the 2050 target. At the same time, in order to reduce carbon

emissions, Cao Renxian, deputy to the National People's Congress, proposed to levy a carbon tax as soon as possible. With reference to the international carbon market price, China's national conditions and the affordability of enterprises, it is suggested to levy a carbon tax of 50-150 yuan per ton of carbon dioxide, and use the above-mentioned fiscal revenue to support ecological restoration, energy conservation and emission reduction and the development of Low-carbon industries. Wang Jixue, deputy director of the new energy department of the General Institute of hydropower and water resources planning and design, considered linking renewable energy with supply side reform and adopting the policy of carbon tax exemption or carbon tax reduction.

Therefore, the current prospect of China's carbon credit market is optimistic. In the early stage of the construction of carbon inclusive system, the necessary administrative intervention such as government guidance and supervision is indispensable to reduce and resolve the blindness and limitations existing in the carbon credit market.

1.2. Research Significance

1.2.1. National Level: Respond to the National Call for Environmental Protection and Work Together to Protect Low-carbon Homes

As an exploration of deepening the reform of ecological civilization system, the promotion of personal carbon credit system aims to encourage more citizens to actively change their lifestyles, provide an important way to guide the general public to actively practice the action concept of "beautiful Chinese dream, Low-carbon China", and will also contribute to building a new model of Low-carbon life and coping with climate change. Promote economic and social development along the path of green development and high-quality development, make positive contributions, gather the vigorous force of "green home jointly built by the whole people", and create a new green and Low-carbon fashion that everyone cares about, participates in and cares for.

1.2.2. Social Level: Promote Environmental Protection Enthusiasm and Create a New National Green and Low-carbon Fashion

The policy guidance of China's individual carbon credit market is late, and a complete resident carbon credit account system has not been formed at present. People have weak awareness of carbon integration and low initiative in carbon emission reduction. The establishment of individual carbon credit accounts for residents and the introduction of "carbon credit" into people's lives have a positive impact on environmental sustainable development. "Carbon score" can improve people's awareness of environmental protection, improve the green values of the whole society, and permanently reduce pollution from the details of life. On the other hand, guiding and encouraging public participation in carbon emission reduction is still a blue ocean with great potential value. The exploration of this emerging field by the government and enterprises is worth studying.

1.2.3. Enterprise Level: Promote Enterprises to Participate in Carbon Emission Reduction System and Promote the Development of Green Industry

At present, environmental problems have been highly valued by all sectors of society, but enterprises still have the phenomenon of free riding and insufficient incentive in dealing with environmental problems. The innovation of individual carbon credit system will accelerate the development of carbon accounts of small and medium-sized enterprises to a certain extent, encourage all enterprise platforms to actively participate, measure the green degree of enterprises through this means, build a "Green River and green mountain" of digital technology, and guide the development of Low-carbon economy. At present, in China's Low-carbon field, the carbon emissions of Enterprises above Designated Size have been preliminarily measurable and have entered the carbon market, but the small and medium-sized enterprises below

designated size can not be measured. In the future, more and more enterprises will join in the exploration of the carbon credit system, realize the two-way benign interaction between enterprises and individuals through the carbon credits accumulated by users' green consumption, and improve the measurable, tradable and configurable comprehensive carbon benefit mechanism.

1.2.4. Personal Level: Open a Green and Healthy Life Mode and Enhance the Enthusiasm for Environmental Protection

Living in an increasingly fast-paced Cement City, people are increasingly eager for nature, environmental protection and health. With the continuous popularization and deepening of the concept of environmental protection, people's pursuit of healthy and environmental protection life has gradually changed from only focusing on themselves to paying more attention to "harmonious survival and sustainable development between man and the earth". "Low carbon LOHAS" life began to be recognized and practiced by more and more people. The opening of personal "carbon account" will guide the general public to actively practice the concept of green life. The public's carbon emission reduction behavior has been continuously measured and affirmed, which will give birth to more Low-carbon enthusiasm among residents and consumers. As an exploration of the continuous deepening of the reform of the ecological civilization system, the personal "carbon account" will guide the general public to open a green and healthy lifestyle and enhance their enthusiasm for environmental protection.

1.3. Research Purpose

With the increasingly prominent problem of global warming and the gradual strengthening of the consensus on green and sustainable development, in order to achieve the goal of reducing carbon emissions, many countries have established carbon emission trading markets. At present, enterprises are the main participants in the carbon market. As a branch of the carbon market, personal carbon score is an emerging market with great potential. In the past few decades, the main battlefield of energy conservation and emission reduction - the space for emission reduction in the industrial sector has gradually decreased, making it more difficult and costly to further reduce emissions. More and more attention has been paid to the demand side management of energy conservation and emission reduction by guiding people to a more environmentally friendly and Low-carbon lifestyle. This study aims at China's personal carbon credit market, investigates its development status and existing problems, and puts forward reasonable development suggestions to help promote energy conservation and emission reduction in the whole society. Based on this, the three purposes of the project are as follows:

1.3.1. Obtain the Cognition of "Carbon Score" and the Willingness of "Carbon Emission Reduction", and Understand the Public Opinion Basis of Social Promotion in Advance

According to the team's previous research, "personal carbon score market" is still in the emerging development stage. At the level of platform users, there are some problems such as low residents' awareness of the new concept and low penetration rate of carbon score platform users. As the main participants of the future personal carbon scoring platform, we set resident users as the key objects of questionnaire survey and one-to-one interview. By means of questionnaires, field interviews and text mining, we can obtain the residents' cognitive status of the concept of personal carbon emission points, their understanding of the promotion platform of carbon points and their willingness to participate, understand and count the main Low-carbon behaviors of residents to reduce personal carbon emissions at this stage, and investigate the form preferences and incentive factors of residents' voluntary participation in carbon emission reduction actions, Provide sufficient public opinion basis for the promotion scheme of personal carbon scoring platform.

1.3.2. Deeply Explore the Carbon Emission Credit Mechanism and Investigate the Operation Status of Personal Carbon Market in Multiple Directions

Starting from China's objective national conditions, the rise and development of specific environmental protection projects cannot be separated from the support of policies. For example, the new energy vehicle industry, which is also an emerging industry in recent years, has developed rapidly with the support of favorable policies. Recently, the construction of enterprise level "carbon trading market" is being promoted in an orderly manner by the government. The central government announced that it is expected to establish a national carbon emission trading plan by the end of 2020. Similarly, for the "individual carbon credits" market, the central and local governments have also formed a certain policy guidance and foundation by issuing relevant documents.

Through consulting the announcements of national and local development and reform commissions, UNEP and other government agencies, understand the support for the promulgation and construction of carbon GSP environmental policies and systems; Through the actual trial of platform products, on-site visits to pilot areas of carbon GSP, in-depth research on the front line of product development and other methods, investigate the promotion and operation status of individual carbon emission credit system of enterprises and social institutions, as well as residents' acceptance and participation, and explore the market transactions of innovative carbon inclusive financial products such as carbon credits and carbon coins.

1.3.3. Based on the Survey Results and Data Analysis, Explore the Influencing Factors of Personal Carbon Integration Platform Participation

As a preliminary in-depth research on the emerging market of carbon credits, understanding the factors affecting the participation of the platform is very key information for potential market entrants. It can become an effective reference for enterprises or relevant operating institutions to formulate promotion strategies, and also provide reference for the government's macro-control. Based on the multi-dimensional survey information obtained in the survey process, this paper explores the influencing factors of the user participation of the carbon integration platform from the two levels of platform operation and participating residents, uses the relevant measurement model and constructs the specific mathematical expression of the influencing factors. Get targeted suggestions for improving the public's enthusiasm for environmental protection and the sustainable use of carbon products under different development levels and emission reduction pressures.

2. Investigation Contents and Methods

Affected by the epidemic in 2020, it has been proved impractical to carry out a large-scale field questionnaire survey. However, the Internet era provides us with convenient technology and support conditions for carrying out network survey, and the mainstream user group of the Internet is also in line with the probability of the survey object. Therefore, in the early stage of obtaining the survey data, we mainly adopted web crawlers. Obtain first-hand information in the form of online questionnaire and one-on-one interview.

Through the previous research on major well-known portal websites, we found that "Low-carbon and environmental protection" topics have higher attention and discussion among a wide range of Zhihu user groups than other communication platforms; For environmental protection professional forums and portals, we chose the "Polaris Environmental Protection Forum" with more general industry participation and higher comment quality. Web crawler analysis of these two websites can make us first check the emotional tendency and cognitive level of resident users in "personal carbon score", so as to lay the foundation for follow-up

research. The main body of the online questionnaire is a random sample of residents from all industries and age groups all over the country, mainly understanding residential areas.

People's understanding of carbon credits, demand direction, willingness to participate, etc. For senior users of the platform, we selected senior users of the platform, including "ant forest" and "Guangzhou carbon inclusive exchange platform", to conduct one-on-one interviews to understand the use needs, habits and improvement suggestions of this part of the group; For the existing platform operators, six personal carbon integration platforms, including "ant forest", "Low-carbon military transportation" and "Shenzhen carbon account", are selected as representatives to master the actual situation of the promotion and development of carbon integration since the launch of the platform, and look for its advantages and disadvantages; For potential development entrants, take the personal carbon emission scoring system to be developed by baweitong technology company as the starting point to clarify their project development needs, technologies and implementation means that can be provided. For the government departments promoting the development of carbon GSP, we selected the Guangzhou carbon GSP platform with good work in Guangdong Province as the representative of the specific survey object to understand the government's support for carbon GSP, including the progress of data platform construction, promotion means and preferential policies for private enterprises, so as to have a glimpse of the basic conditions for the implementation of individual carbon credit market.

3. Evaluation and Analysis on the Operation Status of Carbon Integration Platform

3.1. Personal Low-carbon Behavior Incentive Mechanism

The most fundamental purpose of personal carbon account is to promote the public to change their lifestyle and reduce carbon emissions, so as to reduce the total emission of greenhouse gases such as carbon dioxide. However, the change of living habits will inevitably affect the public's daily life. At present, although the concept of environmental protection has been popularized among the public and has been responded and supported by more and more people, the behavior of supporting environmental protection by derogating from their own interests has not been widely accepted. At the present stage, the individual carbon account represented by "ant forest" mainly encourages users to change their living habits in the form of reward (planting trees in the name of users). There are many users, but the reward mechanism will bring huge expenses. At present, "ant forest" is supported by public welfare fund, and it will face the problem of sustainability in the future. The individual carbon account platform for the purpose of carbon neutralization requires individual investment to purchase carbon emission reduction to make up for their own emissions, and the public participation enthusiasm is not high. The carbon GSP pilot tries to bring phcer into the carbon emission trading market, realize the voluntary carbon emission reduction of small and micro enterprises, families and individuals, participate in the carbon emission trading market, and solve the problem of incentive mechanism, which is a positive attempt and exploration. However, it is still in its infancy, and there are still many problems to be solved.

3.2. It is Objectively Difficult to Collect User Behavior Information

The personal carbon account collects the corresponding information of users' daily life behavior and converts it into the corresponding carbon emission reduction value according to certain methods. Therefore, the operation of the personal carbon account is inseparable from the accurate and comprehensive collection of personal relevant information. Different from the enterprise level, in the operation of the existing carbon scoring platform, personal information collection is more voluntary at the current stage, and there is no accurate and unified

information source. Although this can reduce the difficulty of collecting information, it will also question the scientific accuracy and universality of personal carbon accounts.

At present, due to the reasons of statistical technology, it is difficult to take all carbon emission behaviors into account in the personal carbon account, but a comprehensive collection of personal relevant information is the premise of accurately calculating the value of personal carbon account. If the accuracy of information collection is not guaranteed, the public will doubt its fairness, which will fundamentally limit the development of personal carbon accounts.

In addition, how to ensure that personal information is not leaked is also a very important issue. People's increasing attention to information security requires that personal carbon accounts can properly deal with this problem in the process of its continuous development. Information security directly affects whether people are willing to provide relevant information.

3.3. Scientific and Reasonable Calculation Method Requirements

The calculation of individual carbon emissions and emission reductions needs to be scientific, reasonable and fair, so as to be accepted by the public. At the present stage, the calculation method behind the personal carbon account is mainly to achieve the corresponding conversion through the carbon emission factor. The determination of carbon emission factors is an extremely complex process. Different emission factors need to be considered for different regions and different situations. Therefore, we should constantly improve this calculation method to make it more scientific and accurate. In addition, the determination of the baseline in the calculation of emission reduction is also a crucial issue. In the face of complex public behavior, it is difficult to reasonably determine the baseline. In the future, with the continuous improvement of big data, it is expected to continuously improve the rationality of the determination of the baseline.

3.4. The Platform does not Plan the Full Range of Regional Operation Attributes

From the operation of many carbon integration platforms in China, it shows the characteristics of multi location distribution. In addition to the Alipay users who are facing the whole country, other platforms are mostly concentrated on their respective operations. Users are mainly willing to participate. This is naturally related to the objective environment with different development speeds of carbon integration promotion in different regions. With the gradual deepening of carbon neutralization in cities in the future, more and more local platforms will join. The positive side is that more attempts will bring more exploration experience and lay a good foundation for the popularization and promotion of personal carbon points.

4. Current Situation of Personal Carbon Score Awareness and Participation

4.1. Residents' Understanding of Carbon Score

More than three-quarters of the respondents have a preliminary understanding of carbon points, and nearly one-third of them record the points of Low-carbon behavior daily for exchange, trading and other activities. It can be learned from the side that the vast majority of respondents have a positive attitude towards carbon score. When asked whether the carbon integration platform will help reduce carbon emissions, the vast majority of people hold a positive opinion that the carbon integration platform will help reduce carbon emissions.

4.2. Publicity and Reception of Carbon Credits

To investigate people's understanding of "carbon score", we set up seven options: newspapers, books, television broadcasting, mobile network, family and friend communication, introduction of promoters, understanding at work and others. Through the professional analysis of the

questionnaire, among the many ways to understand the "carbon score", the mobile network has become the most important way, followed by newspaper data and communication with relatives and friends, while the people know less about the "carbon score" related policies through television broadcasting and work than others. As a communication channel with low cost and high timeliness, mobile network can help people understand "carbon score" from a comprehensive and macro perspective, which is conducive to the wide popularization and publicity of policies. However, considering the educational level of the people, it is difficult for the people to really understand and support the implementation of the pilot of "carbon credits" only by theoretical publicity. The most effective way is to publicize the successful pilot cases in a simple and understandable way. Therefore, the diversification and popularization of publicity channels will help to achieve better publicity results. By publicizing the successful cases of the pilot, the masses will feel the benefits brought by "carbon points" Practical benefits, which is conducive to the people's better understanding of policies, so as to realize the two-way communication between the people and the government and help the smooth promotion of "carbon credits".

4.3. Participation of Typical Carbon Integration Platform

Nearly 90% of the respondents knew, contacted or used ant forest carbon. More than 60% of the public welfare products have used the product, more than 30% of the respondents are senior active users of ant forest, and nearly one-third of the people are active users. They often use the "ant forest" platform to participate in environmental protection public welfare activities, which shows that the people are interested in "Ant forest" and other carbon scoring platforms are willing to accept the way of combining games with public welfare, which is interesting. Among all age groups, people under the age of 39 have basically heard of "ant forest", of which nearly three-quarters have used "ant forest", indicating that young people prefer the combination of games and public welfare.

At the same time, we should see that most middle-aged and elderly groups over the age of 40 do not pay much attention to the "ant forest" platform. Even if they have heard of it, they are rarely willing to take action and contribute to afforestation in a virtual way. It should have something to do with their lifestyle. The middle-aged and elderly people have regular work and rest time, spend less time using electronic products, and have more hobbies in self-cultivation activities such as fishing and Tai Chi. Therefore, new publicity methods for carbon credits should be developed and expanded to better integrate the middle-aged and elderly groups.

5. Investigation Conclusion

Actively developing Low-carbon economy and realizing energy conservation and emission reduction is the only way and inevitable choice for China's sustainable economic development. With the official launch of the national unified carbon market, individual carbon credit accounts are also being explored. In view of this, our team complies with the development trend of the carbon integration market, integrates the multi-body and all-round survey results, and makes an in-depth analysis to draw research conclusions from the public acceptance of individual carbon integration, the development status of carbon integration platform, the future development mode and construction points of carbon integration platform, in order to make suggestions for the future promotion of carbon integration platform.

5.1. Public Acceptance of Personal Carbon Score

5.1.1. Residents' Awareness of Green Life is Positive, and the Promotion of Carbon Credits has a Good Foundation

Through principal component analysis and comprehensive evaluation of the influencing factors of the promotion of carbon integration platform, it can be seen that the influence of

environmental cognitive factors is closely related to the promotion of carbon integration platform. According to our questionnaire survey, nearly 70% of the respondents showed a positive trend towards Low-carbon life, of which 16.30% said they had always been concerned about the relevant trends of green and Low-carbon and had initiated or participated in relevant environmental protection activities; 54.45% of residents said they would support environmental protection and Low-carbon with practical actions in daily life. Generally speaking, residents have a strong awareness of green environmental protection, actively participate in Low-carbon behaviors in life, and praise and affirm environmental protection information. Ant forest has gradually increased its influence on Low-carbon environmental protection, and has also accumulated a good mass base for the promotion of carbon integration platform.

5.1.2. It can Make Substantive Judgment on the Meaning of Carbon Integral, Which is Easy to Understand, and the Guidance Method is the Best

Through the survey, we found that about 35% of the residents have a clear understanding of the concept and function of carbon score, and nearly 40% of the people do not know the specific meaning, but think it is a green emerging industry worthy of development in the future. At the same time, through the case study and analysis of ant forest, even if users do not know the relevant meaning of "carbon integral" at the beginning, they can still form a preliminary understanding of carbon integral by participating in the simple and understandable activity of "collecting energy and planting trees". It can be seen that guiding the public to take practical actions in a more simple and understandable way, transforming unfamiliar and difficult concepts into a simple participation process of users, and grasping the concept of carbon integral in the process of actual participation can not only achieve good results, but also effectively reduce the threshold of publicity and education. According to the survey results, the carbon score platform has a certain user cognitive foundation, but it still needs to imperceptibly increase the influence of resident users, achieve the penetration from participation to cognition, and slowly convert the participation rate into cognition rate. Due to the wide range of potential users involved, the simple and easy to understand direct participation guidance method is more appropriate than the theoretical concept explanation, so that more people can join the personal carbon integration platform even without understanding the specific connotation of carbon integration. In addition, more targeted participation and guidance methods can be selected according to different age groups, so as to effectively save resources and maximize publicity efforts.

5.1.3. The Vast Majority of Residents are Willing to Participate in the Carbon Integration Platform, with a Huge Number of Potential Users

Through grey correlation analysis, it is concluded that residents' willingness to participate has played a role in promoting the carbon integration platform. In the data obtained from the questionnaire, 95.72% of the respondents held a positive attitude and only 4.28% held a negative view on whether the promotion of carbon scoring platform is conducive to energy conservation and emission reduction. After popularizing the relevant knowledge of carbon credits to residents, most residents expressed that they are optimistic about the development prospect of personal carbon credits account and agree with its significance. Through text mining, it is found that the word frequency of "support" and other positive words in the word cloud is high, indicating that netizens mainly hold a positive and recognized attitude towards the promotion of carbon points, express their praise for the carbon points platform, and look forward to its future development. Using emotion analysis to further analyze the emotional tendency of netizens' blog posts and comments, it can be concluded that about 80.52% of netizens hold a positive attitude towards the carbon score platform. Therefore, under the current social and environmental conditions, the vast majority of residents support carbon

credits and environmental protection. After continuous improvement and gradually put into the market, the personal carbon credits platform has a huge number of potential users and good development prospects in the future.

5.2. Development Status of Personal Carbon Integration Platform

5.2.1. One Company is Dominant and Blooming Everywhere: Multi-point and Multi platform Layout of Personal Carbon Credit Market

According to the descriptive analysis, the ant forest based on the Alipay client occupies a leading position in China's carbon scoring industry due to its strong user base and strong financial strength. In addition, various provinces, cities and regions also have multiple platforms to successively layout the personal carbon credit market. For example, the voluntary emission reduction platform of Beijing Environmental Exchange, Shenzhen "carbon account 4.0", Guangzhou GSP promotion platform, breakfast planet and Low-carbon military transportation have formed a certain impact in their respective locations. Because most platforms are still in the early stage of promotion and limited by local operations, the current number of registered users is difficult to match that of ant forest. However, there is still a huge market potential in each location.

5.2.2. The Carbon Integration Platform Helps the Cause of Environmental Protection and Achieves the New Goal of Energy Conservation and Emission Reduction

In recent years, the concept of Low-carbon environmental protection has gradually taken root in the hearts of the people. Everyone is willing to contribute to the cause of environmental protection, but the traditional public welfare activities are time-consuming, laborious and ineffective. The emergence of carbon integration platform has aroused more people to take practical actions to support environmental protection. Our survey shows that 500 million ant forest users have created a milestone of cumulative carbon emission reduction of 7.92 million tons in 2019; More than 70000 Wuhan citizens donated "personal carbon points" for the "Low-carbon military transport" during the military games, neutralizing more than 100 tons of carbon emissions from urban transportation during the games. The carbon score platform will collect and record users' Low-carbon behaviors and calculate them as carbon scores for commodity service transactions and public welfare projects, which imperceptibly changes users' behavior and values and makes them develop towards green and Low-carbon. Users have their own "carbon account" through the carbon score platform, which also meets their desire for a Low-carbon life. The launch of carbon score platform has promoted the formation of users' green consumption concept and healthy life mode and consumption mode, and helped to achieve the new goal of energy conservation and emission reduction.

5.2.3. The Nature of Public Welfare Attracts People's Participation, and Non-profit Projects Create "National Low-carbon"

Taking the ant forest carbon score platform with 500 million users as an example, its public welfare social attribute is one of the important factors to attract people to participate. Through a series of participation modes such as public welfare interaction, the user stickiness of the platform is improved, and the Low-carbon environmental protection behavior of users is cultivated and encouraged. But at present, the individual carbon accounts represented by ant forest are mainly encouraged by the form of users (in the name of users) to encourage users to change their habits and habits, and there are more users. But the reward mechanism will bring huge expenses. At present, the success of ant forest cannot do without the massive manpower and financial resources invested by Alipay. The follow-up is likely to face the sustainability problem of Non-profit nature. In addition, according to our survey results, 72% of the respondents expressed their willingness to contribute to environmental protection and participate in the carbon scoring platform, and 63% of the respondents rated the conversion of

the carbon scoring platform into public welfare projects as one of their favorite forms. People's enthusiasm for public welfare participation gives more space for personal carbon scoring platform.

5.3. Key Points of Future Development and Construction of Carbon Integration Platform

5.3.1. Unified Policy Guidance and Platform to Effectively Promote the Popularization of Individual Carbon Credits

In the preference survey on the promotion form of carbon credits, more than half of the respondents hope that the carbon credits platform can achieve national unity and facilitate participation, statistics and management; At the same time, 54% of respondents believe that policy guidance and top-down participation are effective means to expand the range of users. Due to the particularity of carbon credits, if market regulation is allowed, moral hazard and free riding behavior may occur, which needs the guidance and support of the government. For government departments, environmental protection and promoting green economic development should be placed in an important position. For the promotion of carbon integration platform, we can learn from the advanced experience of the current excellent platform to provide fresh ideas and reasonable suggestions for the development of domestic carbon integration market. At the same time, we should further promote the relevant concepts of the carbon credit market and unify the platform to make the carbon credit market receive the same attention as other markets. In addition, for some personnel engaged in relevant industries, regular training and relevant audit will be carried out to keep more thoughtful talents in the carbon credit market and shine for China's carbon inclusive cause.

5.3.2. Improve the Docking of Laws, Regulations and Data, and Respond to the Voice of the Masses to Improve Public Credibility

In the data obtained from the questionnaire, residents scored an average of 3.85 (out of 4 points) for "improving laws and regulations" on the aspects that need to be improved. It can be seen that residents have a strong awareness of their own information protection; On the "risk of information disclosure", the public gave it an average score of 3.65. The participation of carbon score platform requires users to fill in relevant personal information. We should pay attention to how to protect consumers' privacy and effectively avoid the disclosure of personal information in the design. Speed up the introduction of laws applicable to China, combined with strong supervision mechanisms, such as ensuring the reliability and security of personal account information and carbon score trading, and formulate a strict punishment system for enterprises and individuals who violate market rules, so as to provide good legislative and supervision guarantee for the healthy operation of carbon score Market, so as to improve the credibility of the platform and eliminate the concerns of residents' participation.

5.3.3. Set up a Reasonable Incentive Mechanism to Meet the Substantive Needs of Residents

In view of the problem of how to attract potential users to participate in the carbon integration platform, nearly 80% of the people choose incentive factors that can provide practical benefits to users; Among the ratings of various participation forms of carbon credits, 64% choose to deduct living expenses as the highest level, and 60% exchange for real goods or services. For participating in the carbon integration platform, most residents want to see substantive feedback. In view of this, we believe that we can set up a reasonable incentive system to provide substantive convenience for residents' life and meet the needs of users. For example, invest funds in exchanging real goods or services, deducting living expenses and improving personal credit, explore the policy linkage between carbon points and public service products such as travel expenses, housing and taxation, so as to enhance the sense of acquisition of residents

who adhere to a green and Low-carbon lifestyle, create a good reputation of the platform and optimize the user experience, Stimulate greater market potential.

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