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Construction of China's Carbon Financial Accounting System from the Perspective of Sustainable Development

Budowa chińskiego systemu rachunkowości węglowej z perspektywy zrównoważonego rozwoju

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Abstract
Carbon Financial Accounting System highlights the importance of carbon finance and carbon accounting in China's efforts towards sustainable development and reducing its carbon footprint. The article discusses the need to manage and trade carbon assets, develop a comprehensive carbon financing system, and account for and report carbon activities. It proposes constructing a carbon accounting framework that includes all key sources of carbon emissions and carbon sequestration capacity. The article emphasizes the need to integrate carbon accounting into a company's operations and establish a comprehensive carbon finance ecosystem as a critical component of national strategic development. To achieve this, the Chinese government must promote CDM initiatives and relevant policies, enhance support to intermediary institutions, centralize the management of CDM projects, and strengthen carbon financing regulations. The article suggests establishing carbon trading and pricing mechanisms and improving the carbon trading system to create an effective carbon finance regulatory structure. Additionally, a carbon accounting system is required for financial and accounting oversight to support green and low-carbon growth, hence strengthening carbon accounting and reporting regulations of companies. The incorporation of carbon exchange, carbon funds, and carbon sinks banks are also essential in enhancing the financial accounting system.

Key words: carbon, finance, accounting, sustainable development

Streszczenie
System rachunkowości węglowej podkreśla znaczenie finansowania emisji dwutlenku węgla i rozliczania emisji CO_2 w wysiłkach Chin na rzecz zrównoważonego rozwoju i zmniejszenia śladu węglowego. W artykule omówiono potrzebę zarządzania aktywami węglowymi i handlu nimi, opracowania kompleksowego systemu finansowania emisji dwutlenku węgla oraz rozliczania i raportowania działalności związanej z emisjami tego gazu. Proponuje skonstruowanie ram rozliczania emisji dwutlenku węgla, które obejmują wszystkie kluczowe źródła emisji i zdolność do sekwestracji CO_2. W artykule podkreślono potrzebę włączenia rachunkowości emisji dwutlenku węgla do działalności przedsiębiorstwa i ustanowienia kompleksowego ekosystemu finansowania emisji CO_2 jako kluczowego elementu krajowych strategii. Aby to osiągnąć, chiński rząd musi promować inicjatywy CDM i odpowiednią politykę, zwiększyć wsparcie dla instytucji pośredniczących, scentralizować zarządzanie projektami CDM oraz wzmocnić regulacje dotyczące finansowania emisji. W artykule sugeruje się ustanowienie mechanizmów handlu uprawnieniami do emisji i ustalania cen oraz poprawę handlu uprawnieniami do emisji w celu stworzenia skutecznej struktury regulacyjnej dotyczącej finansowania emisji dwutlenku węgla. Ponadto system rozliczania emisji CO_2 jest wymagany do nadzoru finansowego w celu wspierania ekologicznego i niskoemisyjnego wzrostu, a tym samym wzmocnienia przepisów dotyczących rozliczania emisji dwutlenku węgla i raportowania przedsiębiorstw. Włączenie giełd emisji CO_2, funduszy węglowych i banków pochłaniających emisję dwutlenku węgla jest również niezbędne dla ulepszenia systemu rachunkowości finansowej.

Słowa kluczowe: węgiel, finanse,księgowość, zrównoważony rozwój

1. Introduction

Human activities have significantly increased carbon emissions due to the ongoing and fast industrialization and urbanization processes. Global warming is a result of significant greenhouse gas emissions. It has presented a serious danger to human growth and existence. The International Energy Agency (IEA) has released study data showing that the world's energy-related carbon dioxide emissions grew by 6% to a record-breaking 36.3 billion tons in 2021. The major goals of sustainable development are environmental preservation and economic growth. All nations pay close attention to financial instruments while promoting economic development in order to attain ideal environmental quality and judicious resource allocation. UNEP has been releasing the *UNEP statement* since the 1992 United Nations Conference on Environment and Development. Environmental finance is the end consequence of the increasingly visible phenomena of the interplay between money and the environment. Environmental finance and global environmental conservation have recently focused on the growth of low-carbon economies (Hazaea et al., 2022).

A lot of attention is paid to *carbon financing* globally by academics and policymakers because to the rapidly expanding scope of the worldwide carbon emissions requirement and carbon trading market. To make matters worse, many individuals misunderstand the fact that the core of carbon finance is the creation of a new financial system, not merely financial institutions that know how to assist low-carbon economic growth concerns. As a result, China's development of carbon finance is comparatively lagging behind that of the west-developed nations, which have taken use of inherent advantages in the pricing and settlement currency for carbon trading. China will continue to lose the lead role in the new round of international monetary system reconstruction and will come under the control of others if it fails to seize the key of the carbon financial system and ignores the fundamental decisions regarding pricing and currency settlement for carbon trading (Marlowe and Clarke, 2022).

China will work to reach a carbon peak by 2030 and attain carbon neutrality by 2060 in response to the threat of global warming. The proposed *double carbon* objective will significantly encourage Chinese businesses to adopt green development strategies and low-carbon transition more quickly (Zhu et al., 2020). The requirements of sustainable development can no longer be met by the standard financial performance evaluation system, which is centered on the goal of maximizing economic gains. It is crucial to advance the theory of carbon finance since it will pave the way for the achievement of carbon neutrality as well as sustainable economic and social growth.

In light of this, it is crucial to design a new financial performance evaluation system that adheres to sustainable development principles and takes into consideration economic, social, and ecological advantages (Yang and Luo, 2020). As a result, this article decides to research how to develop and enhance our *carbon financial system* in order to safeguard China's fundamental interests on the global economic stage of the twenty-first century.

Carbon financial accounting system: China's carbon financial accounting system is a crucial tool in achieving sustainable development goals. As one of the world's largest carbon emitters, China has recognized the importance of reducing its carbon footprint and promoting sustainable development. Carbon accounting is a critical component of China's efforts to achieve their goals (Qiu, Wang and Liu, 2021).

Carbon finance: Carbon finance encompasses a range of financial services aimed at reducing greenhouse gas emissions, which includes direct investments and financing, carbon credit trading, and bank loans. It is a subset of Environmental Finance, which seeks to create financial instruments that address environmental objectives and mitigate environmental risks. Commercial banks play a key role in providing credit to businesses with development projects, serving as market makers in the secondary carbon trading market to ensure liquidity, and developing innovative financial products to manage risk associated with carbon emissions (Zhou and Li, 2019) Carbon finance is defined as investment and financing activities in the low-carbon economy sector based on the *Kyoto Protocol* or carbon financing and trading of carbon substances. These financial activities include direct investment and financing, carbon trading, and bank loans used to reduce greenhouse gas emissions through technology and project implementation.

Carbon accounting: Carbon accounting, a management activity to account for the accounting issues and components involved in the process and outcomes of carbon activities of companies or other organizations, is a by product of the low-carbon economy. In order to record, gather, and execute the necessary analysis of climatic changes, as well as to check the data and report on the fundamental components of assets, liabilities, costs, and revenues that have a link, one of the systems known as *carbon accounting* was developed. It was noted (Alsaifi, Elnahass and Salama, 2020) that carbon accounting has advanced significantly during the past ten years. Another findings (Hazaea et al., 2022) demonstrated that carbon accounting is developing quickly because it is one of the key areas in the growth of sustainability management due to the demands of climate change, which demand the search for cutting-edge methods and mechanisms and their development through scientific research.

With the growth of the carbon trading market in recent years, academics both domestically and internationally have been debating how to manage and trade carbon assets, how to build a carbon accounting system, and how to account for and report such activities. In the framework of the new accounting standards another paper (Zhao et al., 2022) looked at the carbon emissions trading mechanism and discussed the foundation for accounting recognition and measurement of carbon emissions trading. From the perspectives of business performance and societal

institutions (Zhu et al., 2022), respectively, looked at the determinants related to carbon disclosure. Scholars often draw attention to the fact that carbon emission rights accounting standards still need to be standardized.

The company in China must have internal mechanisms, such as management systems, leadership, and governance, to establish a carbon accounting system for tracking carbon-related information generated from their carbon strategy. This carbon accounting system serves as the connection between the company's carbon governance and carbon performance. For effective management of carbon strategies and achievement of carbon reduction goals, it is crucial to appropriately integrate carbon accounting into the company's operations. Failure to do so may result in inaccurate measurement of carbon performance (Hazaea et al., 2022).

China's carbon finance: Presently, China's financial institutions are merely providing surface-level assistance for the low-carbon economy through projects such as the Agriculture Bank, Industrial Bank, Shanghai Pudong Development Bank, and Bank of Beijing's carbon financing business. However, the development and implementation of a comprehensive carbon finance system has not been fully realized, including components such as the carbon financial control, carbon financial environment, carbon financial organization, carbon financial regulation, carbon finance business, carbon financial market, and carbon financial instruments (Zhao et al., 2022). Therefore, carbon trading prices and settlement currencies lack structure and competition. To overcome these difficulties, China should consider developing and implementing a carbon financing system as a systematic project. This entails building and enhancing the carbon financial system to match with national strategic development goals, as well as incorporating traditional financial system principles to redefine the carbon finance system's substance. Additionally, it is critical to enhance China's environmental finance programs (Zeng and Zhang, 2011).

2. Construction of China's Carbon financial accounting system

2.1. Carbon accounting framework

The first stage in building China's carbon financial accounting system is to create a carbon accounting framework. The framework should address all key sources of carbon emissions, such as energy consumption, transportation, industrial operations, and agriculture. The carbon sequestration capacity of forests, wetlands, and other natural habitats should also be included in the framework (Kaifeng and Chuanzhe, 2011).

As the largest carbon dioxide (CO_2) emitter globally, China plays a critical role in mitigating global climate change. In order to achieve decarbonization, policies and commitments are essential. While China has made significant strides in reducing its CO_2 emissions, with carbon intensity decreasing by 48.4% compared to 2005 levels by 2020, fulfilling goals set out in the Nationally Appropriate Mitigation Actions and Nationally determined Contributions, it still faces the challenge of peaking its total CO_2 emissions before 2030 and achieving carbon neutrality before 2060.

To achieve carbon neutrality, China must take specific measures, including increasing the proportion of non-fossil energy, scaling up negative-emission technologies, promoting regional low-carbon development, and establishing a nationwide *green market*. Achieving these goals requires top-down socio-economic development plans to be coupled with bottom-up economic incentives and technology development (Hongchun, 2010). The majority of China's CO_2 emissions are ascribed to its fossil-fuel-based energy and manufacturing-based industrial systems. Coal, the principal energy source, was critical to industrialisation and urbanization, accounting for 75% of China's carbon emissions today.

It is critical to correctly assess the carbon (C) storage capacity of terrestrial ecosystems. Climate, in addition to soil nutrients and texture, was the most important factor influencing C storage spatial patterns. China relies heavily on carbon sequestration to achieve its goals of carbon peaking and carbon neutrality. The potential for carbon storage and sequestration varies greatly among different biomes. Forests in China are the primary contributors to soil and vegetation carbon storage, accounting for 38% of it, followed by grasslands (30%), croplands (19%), shrublands (8%), and wetlands (5%). China's forests have changed from a source of carbon to a sink, and they currently represent 56% of total terrestrial sequestration. Programs that incentivize afforestation and reforestation are in place in China, and they are expected to increase the capacity of forests to remove and store carbon. Expanding these programs could significantly offset the country's predicted annual emissions (Kaifeng and Chuanzhe, 2011).

Terrestrial biomes have the potential to either absorb or emit CO_2, depending on various factors. The overall effect on the carbon cycle can be negative or positive. Factors that contribute to a negative impact include net negative forestry changes, degraded grasslands and crops, and emissions resulting from poor soil management. The potential for annual carbon sequestration varies significantly across China's different biomes (figure 1).

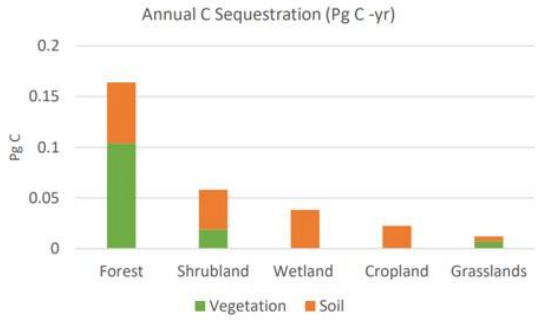

Figure 1. Annual carbon sequestration, based on (Huang et al., 2022)

2.2. Encouraging emission reduction

The government ought to promote Clean Development Mechanism (CDM) initiatives and relevant policies, and ensure that technical staff and consultants are trained to rapidly achieve high-quality standards in carbon measurement, carbon emission trading, carbon risk management and control, and carbon financial innovation. Additionally, the government should enhance support and offer favourable policies to intermediary institutions, and centralize the management of CDM projects across various regions to prevent fragmentation. It would be useful to establish a carbon financing network service that would give information and support demonstration projects (Kaifeng and Chuanzhe, 2011).

3. Strategic planning for the development of the carbon finance system and enhance the legal framework for carbon management

China must build and strengthen a strategic carbon financing system. Since it is a systematically engineering of carbon finance development, it necessitates the cooperation of different regulatory bodies and financial sectors, particularly the linked sufficient and systematic service on credit investment, tax, and so on. Thus, there is a need to establish a comprehensive national policy framework for the carbon finance system, with a particular emphasis on stimulating enterprise enthusiasm for financing within the external environment. The government can achieve this by drafting a *Carbon Finance Systems Law* building on existing legislation such as the *Energy Conservation Law, Cleaner Production Promotion Law* and Circular Economy Law. This law should strengthen the development and utilization of new and clean energy and introduce carbon financial regulations to support energy-saving, emission reduction, and environmental protection efforts. Moreover, states should develop a *Low-carbon Government Procurement Law* to direct and push low-carbon company production, investment, and sales activities by implementing restrictions such as priority and ban purchasing. This will benefit both low-carbon economy and environmental conservation.

4. Promote the development of national carbon finance during international negotiations on carbon emissions

Being a highly regulated market, there are several flaws in international carbon exchange, which are fundamentally anchored in the inadequacies of international collaboration. The disparity in carbon emission reduction objectives, regulatory systems, and market design results in market fragmentation, policy risk, and high carbon transaction costs. As a result, unifying understanding and strengthening collaboration are the most crucial challenges for removing future growth roadblocks. As a result, China should meet our international commitments while also protecting our national interests in international carbon discussions in order to build a more robust environment for national carbon financing growth. Table 1 shows the main worldwide standards for carbon emissions and carbon trading (Deng et al., 2017).

Table 1. The primary worldwide standards for carbon trading and carbon emissions (Kaifeng and Chuanzhe, 2011)

Document	Year
United Nations Framework Convention on Climate Change	1992
Kyoto Protocol	1997
Bonn Political Agreement	2001
Marrakesh Accord	2001
Bali Roadmap	2007
Copenhagen Accord	2009
Mexico 2010 Cancun Conference	2010

4.1. Carbon trading and pricing mechanisms

To facilitate the trading of carbon emissions and establish a standardized pricing system, it is recommended that government agencies create specialized organizations. These organizations should be responsible for overseeing local carbon reduction projects, with sub-competent organizations established at the local level for unified management. In order to increase the scale of international carbon trading, it is essential for government, businesses, financial institutions, and the private sector to actively participate in carbon emissions reduction activities. Furthermore, there needs to be a shift away from the current seller-oriented carbon trading system by introducing constructive rules and procedures for international carbon emissions. To promote innovation in carbon finance, financial institutions should establish carbon finance-related business units and invest in carbon management technology and carbon technology development fields. Lastly, support should be given to energy-saving emission reduction and environmental protection projects by issuing carbon industry funds and encouraging the issuance of bonds in these areas (Huang et al., 2022).

4.2. Improve the carbon trading system to create an effective carbon finance regulatory structure

To establish a national carbon trading market system in China, the three major environmental exchanges need to work together to prevent fragmentation and develop a carbon trading system and standards. This system should be supported by policies, legal protection, and a financial system. Initially, the exchanges should focus on spot business transactions before expanding into derivatives such as futures and options, gradually building an open carbon trading market. To deal with problems encountered in national carbon trading, China should use the methodology of other countries, such as Brazil, India, and Honduras, to create a unified project design guide, integrate various resources and information, and enhance international carbon trading pricing by establishing a unified carbon trading platform. To accelerate the pace of carbon trading, China needs to develop and improve voluntary emission trading rules and explore the use of carbon intensity assessment systems to mature carbon trading in specific regions or industries. The People's Bank of China and the China Banking Regulatory Commission should establish an independent unified carbon finance plan and regulate factor, while financial institutions should establish carbon finance investment management limited or carbon finance division. The regulatory system for international carbon finance is shown in Table 2.

Table 2. The primary existing global framework for regulating carbon finance (Kaifeng and Chuanzhe, 2011)

1. Financial industry carbon finance self-regulatory guidelines and norms
(1) Equator Principles
(2) London Sustainable Finance Principles
(3) World Business Council for Sustainable Development Financial Industry Statement
(4) Financial Institutions' Manual on the Environment and Sustainable Development (UNEP)
(5) Banking' Manual on the Environment and Sustainable Development (UNEP)
(6) Insurances Environmental Initiatives (UNEP).
2. Financial Industry Environment Standard System
(1) IFC Social and Environmental Sustainable Policies and Performance Standards

4.3. Incorporating carbon accounting

According to Tu et al. (2022), under the *double carbon target*, a carbon accounting system is required for financial and accounting oversight to support green and low-carbon growth, hence strengthening carbon accounting and reporting regulations of companies. The carbon financial index utilizes mature carbon accounting information to provide a comprehensive summary of the carbon-related activities of enterprises from a financial accounting perspective. This index effectively communicates information about the sustainability of enterprises to investors. A comprehensive set of financial indicators can also enhance comparability of information among enterprises, provide a reference point for national control, and serve as a reference for other industries, making it highly valuable for research purposes (Friedlingstein et al., 2022).

5. Carbon exchange, carbon funds and carbon sinks bank

5.1. Enhancing the financial accounting system

To develop China's carbon financial organization system, there are two main aspects to consider. The first is to encourage existing financial institutions to develop their carbon finance business, such as Societe Generale, Agricultural Bank, Bank of Beijing, and Shanghai Pudong Development Bank. These institutions can attract foreign currency accounts of CDM business owners in green accounts, develop green loans through international cooperation, participate in domestic and international carbon markets, and engage in related fund preparation and management. They can also actively develop financial innovations related to carbon emissions trading, such as the

swap between CERs and ERUs, CERs and EUAs, and the spread option based on the spread of CERs and EUAs, to accelerate the integration of the international carbon market. They can also provide credit enhancement services and intermediary business services for CDM projects. Insurance companies should establish an environmental pollution liability insurance system and work to transfer and avoid risks. Securities firms should fulfil the duties of *green securities*, while institutional investors bear the trust responsibility for environmental management. Finally, the Carbon Fund is responsible for the carbon market dealing subject. Another aspect is to establish new full-time financial institutions that specialize in carbon finance business.

5.2. Creating stable carbon financial accounting system

After the establishment of the Beijing Environment Exchange, Shanghai Environment Exchange, and Tianjin Emissions Rights Exchange, several more exchanges including the Shanxi Luliang Emission Reduction Projects Trading Center, Wuhan, Hangzhou, and Kunming Carbon Exchanges were established in 2009. Currently, preparations are underway for the Guizhou, Dalian, Shanxi and Hebei Exchanges. This has created a trend of establishing more environment exchanges throughout the country. The Beijing, Shanghai, and Tianjin Environment Exchanges have all launched voluntary carbon emissions trading mechanisms such as the Shanghai Green World Expo Voluntary Emission Reduction Platform and Tianjin Enterprises Voluntary Emission Reduction Joint Actions. In 2015, voluntary carbon trading and emission reduction quotas will be developed in parallel (Hua et al., 2018). Additionally, the Beijing Environmental Exchange may develop and promote *Panda standards*, which could lead to marketization of carbon exchange in the future. Table 3 displays the world's leading carbon trading market and its operational features.

Table 3. Leading Carbon trading market globally

Name of the carbon trading market	Start time	Type
International Environment Derivative Exchange	2008	Enforcement,Voluntary
France Powernext	2007	Enforcement
ECX	2005	Enforcement
Norway's emission trading system	2005	Enforcement,Voluntary
American CCX Exchange	2003	Voluntary
EEX	2002	Enforcement
EUETS	2002	Voluntary
Denmark Power Industry Pilot	2001	Enforcement
Shell Group STEPS Plan	2000	Pilot
BP Oil Company	2000	Voluntary
Australia SFE Exchange	2000	Voluntary
American CVEAA Plan	1999	Voluntary
Canada GERT Plan	1998	Voluntary
NordPool	1996	Enforcement

5.3. Multi-level carbon finance accounting system

Financial institutions have a variety of services they can offer in the carbon financial assets business, liabilities business, intermediary business, insurance business, securities business, consulting, and intermediary services to cater to the diverse needs of financial players. In terms of credit, financial institutions can provide funding to industries and enterprises that have achieved different carbon mandatory reduction targets, as well as to environmental protection enterprises that can use carbon emission reductions as collateral. They can also provide business loans for energy-saving emission reduction technological transformations and equipment upgrades, as well as special loans for emissions trading buyers (Huang et al., 2022). Regarding intermediary business, commercial banks can provide equipment finance leasing services for Clean Development Mechanism (CDM) projects through their subordinates' financial leasing centers or professional leasing companies. Financial institutions can also use their information advantages to act as CDM project consultants, coordinating business relations among government departments, project sponsors, foreign investors, and financial institutions. They can also participate in managing carbon funds, which are growing rapidly and becoming large-scale in China, leveraging their experience advantage in fund management. Moreover, they can actively promote factoring finance instruments for energy-saving emission reduction project financing. Financial institutions are encouraged to provide account facilitation, research and development support, and intermediary services for emissions trading.

5.4. Creating more diverse carbon financial accounting instruments system

To develop low-carbon credit products, it is necessary to have specialized institutions that can coordinate the content, standards, and procedures of green credit operations. Investment and financing tools should be diversified and include carbon bonds, carbon funds, product payment, carbon stocks, leveraged leases, and project finance asset securitization. Additionally, related derivative products such as carbon swaps, carbon asset securitization

products, carbon futures, and carbon options should be gradually developed. These efforts play an invaluable role in perfecting the carbon finance system, acquiring pricing rights, and accelerating the flow of funds (Hua et al., 2018).

6. Discussion

Here we discussed China's carbon financial accounting system, carbon finance, and carbon accounting. It highlights that carbon accounting is a crucial component of China's efforts to reduce its carbon footprint and promote sustainable development. Carbon finance includes direct investments and financing, carbon credit trading, and bank loans to reduce greenhouse gas emissions. Carbon accounting involves accounting for the components involved in the process and outcomes of carbon activities. It also notes that China's financial institutions are providing surface-level assistance for the low-carbon economy, and the development of a comprehensive carbon finance system has not been fully realized. It suggests that to overcome these difficulties, China needs to develop and implement a carbon financing system as a systematic project. The first stage of building China's carbon financial accounting system is creating a carbon accounting framework that addresses all key sources of carbon emissions, such as energy consumption, transportation, industrial operations, and agriculture. The limitations of carbon accounting include the need for standardized carbon emission rights accounting standards. It emphasis incorporating carbon finance into national strategic development and establishing a comprehensive carbon finance ecosystem in China. The key findings suggest that the government should promote Clean Development Mechanism initiatives and relevant policies, and ensure that technical staff and consultants are trained to achieve high-quality standards in carbon measurement, trading, management, and financial innovation. It is also recommended to enhance the legal framework for carbon management, develop a national policy framework for the carbon finance system, and establish a carbon financing network service to support demonstration projects. It highlights China's efforts to reduce carbon emissions and promote sustainable development through carbon finance and carbon accounting. It notes that carbon accounting is a crucial component in achieving sustainable development goals, and the development of a comprehensive carbon finance system is essential for mitigating climate change. It suggests that a carbon financing system should be built and enhanced to match national strategic development goals. Moreover, the development of national carbon finance during international negotiations on carbon emissions is crucial to build a more robust environment for national carbon financing growth. The text recommends improving the carbon trading system, establishing an effective carbon finance regulatory structure, and incorporating carbon accounting. The implications of this study include the implementation of a comprehensive carbon financial accounting system would provide a more accurate picture of carbon emissions and help organizations make informed decisions regarding carbon reduction. Carbon finance can play a significant role in promoting the adoption of low-carbon technologies and facilitating investment in green energy. China's development of a carbon financing system could contribute significantly to global efforts to mitigate climate change. It also include building a low-carbon economy, reducing carbon emissions, and promoting environmental protection. The study also recommends enhancing the financial accounting system, developing carbon exchange, carbon funds, and carbon sinks bank, and promoting international cooperation in carbon emissions reduction activities. It doesn’t discuss the challenges or potential limitations of implementing a comprehensive carbon financing system in China.

7. Conclusion

In conclusion, the construction of China's carbon financial accounting system from the perspective of sustainable development is vital for achieving carbon neutrality and mitigating the adverse effects of climate change. Carbon accounting serves as a fundamental tool for monitoring and managing carbon emissions, facilitating emission reduction, and promoting sustainable development. A robust carbon financial accounting system should be comprehensive, standardized, and transparent, integrating both financial and non-financial data. Additionally, effective policies, regulations, and incentives should be implemented to encourage the adoption of low-carbon technologies and practices. With the successful implementation of a carbon financial accounting system, China can achieve its goal of carbon neutrality, promote sustainable economic growth, and contribute to the global fight against climate change. Overall, those who are able to take the lead in carbon finance and create a well-functioning environmental finance system will have a competitive edge in the global carbon trading market. Therefore, it is crucial for the Chinese government, businesses, financial institutions, and private investors to prioritize the establishment and improvement of the carbon financial system. This involves developing control, regulatory, organizational, market, business, and instrument systems, as well as striving for priority pricing and a say in currency quoting. Ultimately, these efforts will promote the internationalization of the RMB and give China more power to discuss and make decisions in the global economy of the 21st century, while also advancing the development of environmental finance.

References

1. ALSAIFI K., ELNAHASS M., SALAMA A., 2020, Carbon disclosure and financial performance: UK environmental policy, *Business Strategy and the Environment*, 29(2): 711-726.
2. DENG L. et al., 2017, Past and future carbon sequestration benefits of China's grain for green program, *Global Environmental Change*, 47: 13-20.
3. FRIEDLINGSTEIN P. et al., 2022, Global carbon budget 2021', *Earth System Science Data*, 14(4): 1917–2005.
4. HAZAEA S.A. et al., 2022, Past, present, and future of carbon accounting: Insights from scholarly research, *Frontiers in Energy Research*, https://doi.org/10.3389/fenrg.2022.958362.
5. HONGCHUN Z., 2010, Development of Carbon Market in the World and its Implications, *Chinese Soft Science*, https://api.semanticscholar.org/CorpusID:156316257.
6. HUA F. et al., 2018, Tree plantations displacing native forests: The nature and drivers of apparent forest recovery on former croplands in Southwestern China from 2000 to 2015, *Biological Conservation*, 222: 113-124.
7. HUANG Y. et al., 2022, The role of China's terrestrial carbon sequestration 2010–2060 in offsetting energy-related CO_2 emissions, *National Science Review*, 9(8): nwac057.
8. KAIFENG L., CHUANZHE L., 2011, Construction of carbon finance system and promotion of environmental finance innovation in China, *Energy Procedia*, 5: 1065-1072.
9. MARLOWE J., CLARKE A., 2022, Carbon accounting: A systematic literature review and directions for future research, *Green Finance*, 4(1): 71-87.
10. QIU S., WANG Z., LIU S., 2021, The policy outcomes of low-carbon city construction on urban green development: Evidence from a quasi-natural experiment conducted in China, *Sustainable Cities and Society*, 66: 102699.
11. YANG J., LUO P., 2020, Review on international comparison of carbon financial market, *Green Financ*, 2: 55-74.
12. ZENG S., ZHANG S., 2011, Literature review of carbon finance and low carbon economy for constructing low carbon society in China, *Low Carbon Economy*, 2(01): 15.
13. ZHAO X. et al., 2022, Challenges toward carbon neutrality in China: Strategies and countermeasures, *Resources, Conservation and Recycling*, 176: 105959.
14. ZHOU K., LI Y., 2019, Carbon finance and carbon market in China: Progress and challenges, *Journal of Cleaner Production*, 214: 536-549.
15. ZHU L. et al., 2022, Single-junction organic solar cells with over 19% efficiency enabled by a refined double-fibril network morphology, *Nature Materials*, 21(6): 656-663.
16. ZHU N. et al., 2020, Green financial behavior and green development strategy of Chinese power companies in the context of carbon tax, *Journal of Cleaner Production*, 245: 118908.