BMECONF
business, management and economics

6th International Conference on Applied Research in Business, Management, and Economics

07 - 09 July 2023

Zurich, Switzerlan

Low-Carbon Urban Construction: The Experience of China

Tang Zhenlian

People's Friendship University of Russia (RUDN), Moscow, Russia

Abstract

Green and low-carbon development has gradually formed a global consensus, and countries around the world are exploring green and low-carbon urban construction. This paper summarizes the theoretical system of low-carbon economy from different angles by sorting out the concept of low-carbon economy at home and abroad, and analyzes the development status of low-carbon economy in three model cities with different levels of low-carbon construction in China, and provides insights for different regions in China. The low-carbon economic development provides case support, and provides a Chinese plan for the low-carbon construction of cities in other countries, aiming to fully promote the construction of human ecological civilization.

Keywords: Low carbon economy; Low carbon city; Low carbon construction in China

Introduction

The UK's "Energy White Paper" pointed out that a low-carbon economy is an effective way to solve energy problems and the future of energy, which is conducive to creating higher living standards and quality, and is conducive to creating more business opportunities and employment opportunities. Conducive to promoting technological innovation and technological progress. Therefore, whether as a model of economic development or as a form of economic development, low-carbon economy can promote economic and social development in the process of reducing environmental pollution. Previous studies have pointed out that under the condition of high-quality economic development, the coordinated development of regional economy, energy consumption and low carbon is the development direction of the future low carbon economy (Ning et al., 2020). At the same time, to achieve low-carbon transformation, it is necessary to analyze the system structure including technology, market, and government governance according to the specific

conditions of different countries (Wu et al., 2018). However, dynamic design of specific policies or policy combinations at different stages can achieve a win-win situation between the economy and the environment (Wang Linhui et al., 2020). Therefore, based on the construction of ecological civilization, to achieve a low-carbon economy, it is necessary to reduce greenhouse gas emissions and improve energy efficiency to solve problems such as climate warming, environmental degradation, and energy shortages, and provide support for the sustainable development of human society (China Council for International Cooperation on Environment and Development, 2008).

Methods

The relevant practices of global green and low-carbon city construction first originated in a few developed countries, and then gradually began to spread to emerging countries and the vast number of developing countries. However, no matter whether it is a developed country or a developing country, a big country or a small country, a tropical country or a frigid country, a coastal country or an inland country, all need to explore unique green and low-carbon urban construction paths that suit their national conditions. So far, the development of China's low-carbon economy is still being explored, and the measures and paths of low-carbon economy in different regions and cities are also different.

On December 29, 2022, China's first "low-carbon city construction level index" was jointly released by China Building Energy Conservation Association and City College of Zhejiang University. The report comprehensively analyzes the dynamic development of urban low-carbon construction from eight dimensions, including energy structure, economic development, production efficiency, urban residents, water carbon sinks, forest carbon sinks, green space carbon sinks, and low-carbon technologies. According to the data, the level of low-carbon construction in Chinese cities is generally low, and the level of construction reflected by each city varies greatly. The construction level of low-carbon economic development and green space carbon sink is relatively good, while the construction level of low-carbon technology dimension is obviously lagging behind. Among them, cities with relatively developed socio-economic levels have higher levels of low-carbon construction than other cities.

Therefore, considering China's national conditions, climate differences, geographical conditions, regional development, and urban basic conditions, this paper selects model cities with different levels of low-carbon construction in different regions of China for analysis.

Results

Development of low-carbon construction in Beijing: As the capital of a major country, Beijing has always regarded green development as a basic strategy for urban development, and has carried out innovative explorations in various aspects such as the "dual control" mechanism of carbon emissions and intensity, and the operation mechanism of the carbon market. Continue to promote the optimization of its industrial structure and clean energy transformation. On December 22, 2022, the State-Owned Assets Supervision and Administration Commission of the Beijing Municipal People's Government issued the "Action Plan for Carbon Peaking of Municipal Enterprises", indicating that it will accelerate the promotion of green and low-carbon transformation of the state-owned economy, and promote the application of heat pump technology according to local conditions.

From the perspective of sustainable development of low-carbon economy. On the one hand, in order to encourage the public to actively practice green and low-carbon travel, Beijing has established a carbon inclusive project based on the framework of the carbon market. By registering on the carbon trading project platform, citizens can obtain corresponding carbon emission reductions through green travel methods such as buses, subways, bicycles, and walking. The project organizers will report these carbon emission reductions to the competent authorities, and the approved and issued emission reductions can be sold on the Beijing carbon market. Citizens participating in the project can use the rewards distributed by the project organizers to support public welfare activities such as tree planting and water system protection, and can also be exchanged for public transportation coupons, shopping vouchers, etc.

On the other hand, the national plan will launch the China Greenhouse Gas Voluntary Emission Reduction (CCER) trading mechanism to encourage enterprises that do not undertake mandatory emission reduction obligations to actively develop forestry carbon sinks, methane recycling, and solar and wind energy utilization to reduce greenhouse gas emissions. row items. After verification, the emission reductions generated by the project can be traded in the market as carbon emission reduction products, guiding social capital to invest in new fields and new technologies such as clean energy, and realizing cross-regional ecological compensation.

The development of low-carbon construction in Sichuan Province: In terms of academics, the province has first-class institutions such as Sichuan University, University of Electronic Science and Technology of China, and Southwest University of Technology; in

terms of enterprises, the province has top technology companies such as Huawei and Tencent; in terms of geography, The province has the sixth largest oil and gas basin in China and is one of the earliest areas in the world to develop natural gas. At present, the proven natural gas reserves in Sichuan Province have reached 1.65 trillion m3, and the production of natural gas exceeds 170 billion m3, with an annual production capacity of 15 billion m3 of natural gas production.

From the perspective of sustainable development of low-carbon economy. On the one hand, the pilot project of a near-zero carbon emission park. In August 2022, Suining Anju Economic Development Zone was identified as a pilot park of near-zero carbon emissions in Sichuan Province, which is also the only pilot park of near-zero carbon emissions in Sichuan Province in the city. The near-zero carbon emission park is a new model to promote the green, low-carbon, sustainable and high-quality development of the park under the new situation of carbon peak and carbon neutrality.

On the other hand, the ecological civilization construction demonstration zone. On January 19, 2022, Qingchuan County was officially named as the sixth batch of national ecological civilization construction demonstration zones. First of all, Qingchuan County has done a solid job in the prevention and control of environmental pollution, innovatively established a small watershed water ecological compensation fund, and implemented a "feedback" mechanism for downstream compensation for upstream water ecology. Secondly, Qingchuan County invested 154 million yuan to build 20 sewage treatment stations and 8 domestic garbage transfer stations. The urban domestic sewage treatment rate will increase from 86.34% in 2019 to 89.42% in 2021. The harmless disposal rate of urban domestic waste will increase from 92.99% in 2019 to 96.45% in 2021. Finally, promote ecological governance in an all-round way, strive for more than 1.2 billion yuan in various central, provincial and municipal special funds to implement ecological restoration and treatment projects in Qingjiang River, Bailong Lake and other watersheds; invest more than 20 million yuan to complete the restoration and treatment of soil pollution in Shiba and Magong; actively Carry out forest tending, afforestation and greening, and consolidate the achievements of returning farmland to forests. The forest coverage rate of the county has reached 74.01%. The ecological conservation capacity of the county and the ecological quality of the watershed have been continuously improved. The ecological environment status index has increased from 83.3 in 2018 to 84.6 in 2021, and the ecological environment status index is classified as excellent.

The development of low-carbon construction in Henan Province: Henan Province, supported by agriculture as the main industry, has natural advantages in the development of low-carbon economy, but the agricultural production mode in this area is still dominated by traditional manual farming, which makes it unable to modernize On the basis of agricultural technology, the advantages of ecological agriculture are fully utilized, so Henan Province is

trying to upgrade the kinetic energy of industrial development by optimizing the industrial structure.

From the perspective of sustainable development of low-carbon economy. At the conceptual level, first of all, the investment of national financial funds can be guaranteed. Because the low-carbon economy puts forward higher requirements for technological innovation, it is bound to require enterprises to increase technological research and development and produce high-value machinery and equipment or core technologies. This often requires a huge amount of financial support in order to maintain the high cost investment in the early stage and promote the successful transformation of the enterprise development model. Second, relevant laws and regulations can be gradually improved. Gradually include low-carbon industries in the special financial subsidy plan, affirming its legitimacy and rationality.

At the practical level, with the establishment of demonstration parks as the main body, it provides a reference template for economic organizations in Henan Province to develop low-carbon economy, so as to promote the high-quality implementation of low-carbon economy. On December 10, 2021, the Sanmenxia High-tech Industrial Development Zone in Henan Province was selected as China's National Green Industrial Park, which is a typical example of China's acceleration of the construction of a green manufacturing system. In recent years, the demonstration zone (high-tech zone) has made continuous efforts in energy conservation, emission reduction, clean production, etc., accelerated the establishment of a green circular industrial chain and a remanufacturing industrial chain, and supplemented and strengthened the chain through investment promotion through the industrial chain. Continuously introduce related projects, continuously improve non-ferrous metals and deep processing, advanced equipment manufacturing, new materials, new energy, green food and other industries, and promote the development of industrial clusters.

In the future, China's low-carbon urban industry will continue to adhere to green, low-carbon and high-quality development, empower a better life with green and healthy concepts, and promote the construction of low-carbon cities. The low-carbon urban industry in various countries should learn from global experience, draw valuable lessons from the practical solutions of various countries in the world, gather the common wisdom of mankind, and explore a green and low-carbon city construction path that suits the national conditions. Continue to explore the development direction of the global low-carbon economy and jointly promote the sustainable development of ecology.

Literature

1. Hsiu-wu Pan, Da Xu, Hao Zhang, Wang Zhou, Lin-hui Wang and Xin-gang Tsui. Stavins. Identifying the potential mechanism of acute kidney injury during the COVID-19 outbreak: a study based on single-cell transcriptome analysis, 2020, vol. 46, No. 1, pp. 1114-1116.

2. Guan Chen, 1 Di Wu, 1 Qin Ning. Clinical and immunological features of severe and moderate coronavirus disease. 130, No. 5, pp. 2620–2629.

3. Zhixiang Xin, MD a 1, Yong Zhang, MD, Insulin-associated protein 1 - a new sensitive and specific marker for small cell prostate cancer, 2018, vol. 79, no. 4, pp. 151-159.

4. Song W. China Council for International Cooperation on Environment and Development (CCICED)[J]. Biodiversity, 1996, vol. 4, p. 76.

5. Huang Liming, Financing Rural Renewable Energy: A Comparison between China and India, 2009, Volume 13, Issue 5, Pages 1096–1103.

6. Song-Ling Xue. Assessing the Effectiveness of Community Promoted Environmental Policies Using Fuzzy Delphi Method: A Case Study on Solar Energy and Lowland Afforestation in Taiwan, 2015, Volume 49, Pages 1286-1295,

7.Christopher R.K., Konstantinos M., Andre T. Environmental implications of market structure: Shale gas and electricity markets, 2019, volume 63, pages 511-550.

8. Richard G. Newell, Robert N. Stavins. Climate Change and Forest Flows: Factors Affecting the Costs of Carbon Sequestration, 2000, Volume 40, Issue 3, Pages 211-235.

9. Gilbert E. Metcalf. Designing a Carbon Tax to Reduce Greenhouse Gas Emissions in the United States, 2009, Volume 3, Number 1, pp. 1-3.

10. Lisha Yang a, Boqiang Lin. Carbon dioxide emissions from China's energy industry: evidence and policy implications. 2016, volume 60, pages 258-267.

11.Yu Li, K.N. Hewitt. The impact of trade between China and the UK on national and global carbon dioxide emissions. 2008, Volume 36, Issue 6, Pages 1907-1914. Liu Xizi, Chen Jin, Wang Yanbo. Research on Internet Finance Ecosystem Building - Based on a Business Ecosystem Perspective[J]. Modern Economic Research, 2017, volume 04, pp. 53-57.

12. Shen Jianguo, Shen Jiakun. Study of the development process of Internet finance - using the example of Alibaba [J]. China Market, 2018 volume 22, pp. 188-189.

13. Ding Ning, Song Yinyan, Ma Baojun. Innovation path and business model performance evaluation of online and offline integration of physical retail [J]. Business Economics Research, 2020 vol.21, pp.21-23.

14. Zhu Lixia, Zheng Zeyue. Thoughts on countermeasures to the development of the "home economy" in the post-epidemic era [J]. Journal of Hubei University of Economics (Humanities and Social Sciences Publication), 2021, Volume 18 Number 02: , pp.28-30.

15.Markova V.D., Kuznetsova S.A. "Ecosystems as network forms of business organization," XIV International Scientific and Technical Conference on Current Issues in Electronic Instrument Engineering (APEIE), 2018, Novosibirsk, Russia, 2018, pp. 418-421, doi: 10.1109/APEIE.2018.8545805.

16.Liu Zongyuan, Luo Wenping. Platform Enterprises and Partners: Evolution from Traditional Cooperation to Green Cooperation: The Case of Cainiao Networks and Express Enterprises [J/OL]. Journal of Dalian University of Technology (Social Science Edition): 1-11 [2021-03-26]. https://doi.org/10.19525/j.issn1008-407x.2021.02.004.