# The Impact of Carbon Emission Trading on China's Low Carbon Economic Transformation

Yongzhi Yuan

School of Finance and Public Administration, Anhui University of Finance and Economics, Bengbu, 233000, China

#### Abstract

We should coordinate the relationship between low-carbon economic transformation, carbon emission trading market and high-quality development, and jointly build a new low-carbon economic development system. At the 19th National Congress, high-quality development was included in the national development goals for the first time. Under the current policy background, the in-depth interpretation of the relationship between low-carbon economic transformation strategy and high-quality industrial development is an inevitable requirement to promote the transformation of related industries in China and achieve the goal of high-quality development. Based on the research conclusion of the double difference method, this paper analyzes China's low-carbon economy transformation strategy and high-quality industrial development transformation. Centering on the connotation of innovation and high-quality industrial development, the composition of low-carbon economy transformation strategy, the carbon emission trading market and the path to achieve high-quality industrial development, this paper expounds the connotation of high-quality industrial development in low-carbon economy transformation, and summarizes the path to achieve low-carbon economy transformation and high-quality industrial development.

## **Keywords**

Carbon Emission Trading; Low Carbon Economy Transformation Strategy; High Quality Industrial Development; Industrial Integration.

## 1. Introduction

The transformation of low carbon economy should adhere to the principle of technological innovation and institutional innovation going hand in hand, strengthen the function of carbon emission trading market, and improve the overall efficiency of the national innovation system. At present, most of China's industries are still in the middle of the "smile curve" of the industrial chain, and the combination of industrial process, core technology and cutting-edge technology is relatively weak, mainly focusing on product assembly, OEM of low technology components and other low economic added value links. Constrained by factors such as raw material market price fluctuations, foreign patent barriers, high-tech blockade, the actual development status of the industry is difficult to meet China's current requirements for the development of highquality industries Realistic requirements for realizing the transformation and development of low-carbon economy, the self owned industry has few cutting-edge technologies, and the industrial development is faced with double pressures of "material clearance" and "technology clearance". The future development of the industry is not optimistic. Throughout the history of economic development and industrial development, there is a highly related two-way promotion relationship between high-quality industrial development and high-quality economic development. Technological progress and innovation is a strong driving force for industrial progress. Therefore, it follows the development strategy of low-carbon economic transformation, promotes low-carbon economic transformation and promotes high-quality

industrial development by integrating cutting-edge technological innovation. The realization of low-carbon economic transformation and high-quality industrial transformation and development is not limited to the impact of a single level, but the impact of scientific and technological innovation, system and mechanism innovation, government policy innovation, etc.

# 2. Current Situation of Industrial Development in China

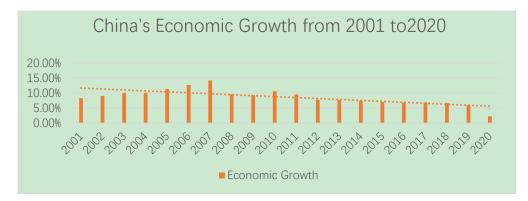


Figure 1. China's Economic Growth from 2001 to 2020

In 1978, China implemented the reform and opening up development strategy. Since then, over 40 years ago, China's industrial development has been at a stage where the main driving force is factor driven and investment driven. It has achieved a high development speed worldwide. The rapid development of the industry has achieved China's economic development by leaps and bounds, creating a "Chinese miracle" of economic development. Economic growth can reflect a country's industrial development from a lateral perspective.

From 2001 to 2007, the average annual growth rate of China's economy was about 10.8%. Considering the overall volume and relative development speed of China, this growth rate is among the top in the world. However, from 2008 to 2014, China's economic growth rate showed a weak trend, falling to 8.8%. From 2015 to 2020, the average annual economic growth rate further fell to 5.97%. Statistical data in recent years show that the overall economic growth rate of China is decreasing year by year, which also reflects that China's current industrial development has entered a bottleneck period. Maintaining the original industrial development mode and sticking to the outdated development momentum has not met the requirements of high-quality industrial development. The factor driven and investment driven development drivers cannot meet China's current development needs and need to be transformed. From 2010 to 2020, the overall proportion of manufacturing industry in China's industry has shown a significant downward trend, shrinking from more than 40% at the beginning to less than 30%. While the proportion of the manufacturing industry has shrunk, the proportion of the service industry has further climbed to nearly 60% on the basis of the original high proportion of 40%; The tertiary industry chain dominated by service industry and other related industries will act as an important force in China's future industrial development process. The low-quality industry, which takes investment and export as the main demand and high pollution and high energy consumption as the cost, will develop rapidly for a period of time due to the demographic dividend and economies of scale effect at the initial stage of development. [1] However, with the continuous development of the industry, it is affected by objective and realistic factors such as rising labor costs, diminishing economies of scale effect, lack of resources, and environmental constraints, The development model of low technology industries and their corresponding traditional quantitative industries is faced with new development problems of industrial structure change and inefficient resource allocation, which

leads to the weakening of the driving role of initial industrial agglomeration and the entry of the bottleneck period of industrial development.

Today, the world is facing the reform wave of transforming the development impetus and realizing the transformation and development of low-carbon economy from factor input industry to low-carbon industry. China's industrial development needs to seize the opportunity to complete the transformation and upgrading. In the past, the development impetus mainly relying on the single increase of capital investment, low skilled labor and other factors has become inappropriate. The new mode of industrial development can only be realized by turning to the development impetus of low-carbon technology innovation. Under the new development pattern with the domestic big cycle as the main body, we should seize the opportunity of lowcarbon economic transformation, deeply tap the domestic demand market, meet the social requirements for the development of high-quality industries, transform the driving force of industrial development, improve the actual efficiency of industrial development, improve the quality of industrial development, and create a high-quality industrial system in China.

## 3. Background of Low Carbon Economy Transformation

At present, low carbon development has become the trend of world economic development. Low carbon economy is a sustainable way of economic development. The transformation of low carbon economy is the transformation of economic development from relying on high carbon emissions to low carbon emissions. Carbon emission trading is considered as an important means to reduce carbon dioxide emissions and mitigate climate warming. In 2011, China officially approved pilot carbon emissions trading in Beijing, Shanghai, Tianjin, Chongqing, Hubei, Guangdong, Shenzhen and other cities. In 2013, the trading volume of China's carbon emissions trading market was 445500 tons of carbon dioxide, with an annual turnover of 25 million yuan. However, in 2020, the trading volume reached 43.409 million tons of carbon dioxide, with an annual turnover of 2.15 billion yuan. The carbon trading volume increased by 97 times, and the annual turnover increased by 86 times. On October 24, 2021, the Central Committee of the Communist Party of China and the State Council issued the Opinions on Completely, Accurately and Comprehensively Implementing the New Development Concept and Doing a Good Job of Carbon Peak and Carbon Neutralization, which put forward higher requirements for the overall green transformation of China's economic and social development.

# 4. Carbon Emission Trading Policy and the Mechanism of Low Carbon **Economy Transformation**

In essence, carbon emission trading is to endow carbon emission rights with commodity attributes so that carbon emission rights can be traded in the market. If the actual carbon emissions of enterprises participating in carbon pilot projects are greater than the carbon emissions quota granted to the enterprises by the government, enterprises need to go to the carbon market to purchase allocation to make up the gap between the actual carbon emissions and carbon emissions. If the actual carbon emissions of enterprises are less than the carbon emissions quota granted to the enterprises by the government, Then the enterprise can sell the difference in the carbon market to obtain additional income.

Carbon emission trading, as a market-based environmental regulation means, originated from the emission trading proposed by American economist Dales in 1968 and aims to internalize the cost of carbon dioxide emissions. Carbon emission is a typical external problem. "Porter Hypothesis" believes that appropriate environmental regulation can promote enterprises to internalize external environmental costs, encourage enterprises to carry out technological innovation activities, improve production efficiency and output level, partially or completely offset environmental costs, and produce innovation compensation effect [3]. Pigo (1920)

formally defined the concept of externality in Welfare Economics, that is, the positive or negative impact of an economic entity's activities on the welfare of other economic entities, which is usually not reflected by market prices. In view of externalities, Pigou advocates to play the role of government intervention and levy taxes on economic entities that cause externalities, namely "Pigou tax", so as to internalize external costs. Different from Pigou's government intervention, Coase (1960) proposed to solve externalities by clarifying property rights and using market forces, which laid a theoretical foundation for the proposal of emissions trading. Dales (1968) further developed Coase's theory of property rights, introduced the concept of property rights to the study of environmental pollution control, and proposed emission trading, that is, the government can give pollution to emission enterprises as a property right, and allow enterprises to transfer this right, so that environmental resources can be reasonably allocated through market trading.

The pilot policy for low carbon pilot cities in China was first implemented by the National Development and Reform Commission in 2010, and the first batch includes 8 cities. The second and third batches of low-carbon pilot cities were determined in 2012 and 2017 respectively. Up to now, there are 81 low-carbon pilot cities in China, as shown in the following table.

Time	region
2010	Tianjin, Hangzhou, Shenzhen, Xiamen, Baoding, Nanchang, Chongqing, Guiyang
2012	Beijing, Shanghai, Shijiazhuang, Qinhuangdao, Suzhou, Huai'an, Zhenjiang, Ningbo, Wenzhou, Nanping, Qingdao, Jiyuan, Guangzhou, Jincheng, Jilin, Daxing'anling, Chizhou, Jingdezhen, Ganzhou, Wuhan, Hulunbeier, Guilin, Guangyuan, Zunyi, Kunming, Yan'an, Jinchang, Urumqi
2017	Nanjing, Changzhou, Jiaxing, Jinhua, Chuzhou, Sanming, Jinan, Yantai, Weifang, Zhongshan, Shenyang, Dalian, Chaoyang, Xunke, Sanya, Qiongzhong, Hefei, Huaibei, Huangshan, Liu'an, Xuancheng, Gongqingcheng, Ji'an, Fuzhou, Changyang, Changsha, Zhuzhou, Xiangtan, Chenzhou, Wuhai, Liuzhou, Chengdu, Yuxi, Pu'er, Lhasa, Ankang, Lanzhou, Dunhuang, Xining, Yinchuan Wu Zhong, Changji, Yining, Hotan, Xinjiang Corps

#### Table 1. Summary of Low Carbon Pilot Cities in China

According to the analysis results of the double difference method, the carbon emission trading policy can act on the low-carbon economic transformation and achieve high-quality industrial development through the following two possible paths:

(1) The perspective of "innovation driven" is to promote enterprises to carry out low-carbon technological innovation to achieve low-carbon economic transformation and high-quality industrial development by acting on the enterprise level.

At present, the concept of "innovation driven" is recognized by the academic community as being first proposed by Michael Porter. Porter believes that countries entering the stage of low carbon economic transformation and development should have five characteristics: 1. Enterprises have the ability of independent innovation; 2. Enterprises realize the verticality and scale of industrial clusters; 3. Consumers have higher service demand; 4. Enterprises have higher demand for professional services; 5. The government indirectly promotes industrial transformation, upgrading and innovative development by improving the top-level system design and guiding new business models and formats. [4]

(2) By acting on the industry level, we can achieve the goal of high-quality industrial development and low-carbon economic transformation and development by improving the degree of sophistication and rationalization of the entire industry structure.

# 5. High Quality Development and Connotation of Industry

# 5.1. Background of High-Quality Industrial Development

The main social contradiction in China today is transformed into "the contradiction between the people's growing needs for a better life and unbalanced and inadequate development". The change of diversified needs requires China's economy to achieve high-quality reform, not just limited to the simple pursuit of "quantity" in the past. Improving the quality and efficiency of industrial development is an inevitable requirement to support high-quality and sustainable economic growth. At present, China's industry as a whole is still in the middle and low part of the "smile curve", and has a low grip on key technologies. The technological gap that cannot be ignored directly causes the realistic problem of low competitiveness of related industries.

## 5.2. Composition of High-Quality Industrial Development

High quality industrial development mainly includes three aspects: first, the formulation of industrial development strategic planning. Only by formulating the planning objectives with correct direction and in line with the actual situation of China's industrial development, can the overall direction of high quality industrial development be clear. The second is to strictly control the industrial development process. As a key part of high-quality industrial development, the quality of the industrial development process will directly affect the industrial development results. The third is the final result of industrial development. As the final product of the industrial development strategy and the industrial development process, the industrial development result reflects the correctness of the industrial development strategy formulation and the actual implementation of the industrial development process. At the same time, it interprets the industrial development result, dynamically adjusts the industrial development strategy objectives according to the feedback adjustment mechanism of industrial development, and revises the industrial development process. The industrial development strategy is the guide, leading the high-quality development process of the industry; [2] The process of industrial development is the key. According to the results of industrial development, we can effectively identify the problems in the process of industrial development, and dynamically adjust the industrial development strategy and its corresponding process. The links of industrial development are not a process of disconnection, but rather interact and work together on the overall high-quality development of the industry.

## 5.3. Requirements for High-Quality Industrial Development

## 5.3.1. Stabilize Advantages and Complement Weaknesses

Globalization is still the general trend of world development. The process of globalization is often accompanied by the globalization of industrial distribution. With the further deepening of globalization, China's industries will face more intense global competition. High quality development is not to abandon the advantages of China's industries in the past to develop new industries, but first of all, to further consolidate China's advantageous industrial chain, and on this basis, to focus on developing the short board industrial chain; Focus on the global industrial development layout, ensure the safety of key raw material supply, try to realize the localization of raw material supply, and ensure the safety of the industries and short board industries, enhance the ability to resist risks, and ensure the overall safety of the industry.

## 5.3.2. Focus on the Key Points and Fight for the Future

Another major requirement for high-quality industrial development is to seize the development opportunities and clarify the industrial development priorities. The development priorities of China's high-quality industries can be summarized as follows: First, increase investment in the development of emerging industries, enter the future industrial system in advance, and deploy

the future industrial pattern in an overall way. Second, focus on the development of industries that are related to national security and have strategic significance, ensure that such key industries achieve "nationalization of key technologies", "localization of core components", and "security of supply chains", break through the blockade of existing technologies, break down the bottleneck of the development of key industries, and ensure the overall security of the country with high-quality industrial development related to national security and strategic direction, and take the initiative in future industrial development.

#### 5.3.3. Promote Integration and Development

The real economy is the basis for the existence of a country. With the advent of the digital economy era, high-quality industrial development should promote the organic integration of the real economy industry, the financial industry and the digital industry. High quality industrial development requires that all industries should strengthen linkage, and eliminate closed door and isolated development. The organic integration and linkage development between industries will help to achieve the integration and cooperation between traditional industries and emerging industries. Emerging industries can inject new blood into the development of traditional industries and provide new development ideas and directions; In contrast, emerging industries can rely on the traditional industrial development basis for secondary development. With the traditional industrial development basis as the cornerstone, the development of emerging industries will not be a "castle in the air" type of development.

#### 5.3.4. Focus on Innovation and Enjoy Win-Win Results

The world industrial development process has proved that the low-carbon economy transformation strategy has a significant role in promoting the high-quality development of the industry. Under the new development pattern, China's industry as a whole should achieve the goal of high-quality development, instead of sticking to the original development concept and continuing to follow the development path of "quantity first". In the new era, industrial development needs to change the driving force of development, and innovation is the core driving force of high-quality development. At this stage, China's industrial development should adhere to the low-carbon economy transformation strategy, and promote development through innovation. The transformation strategy of low-carbon economy can be implemented in the process of high-quality industrial development mainly from the following aspects:

First, we should strengthen technological innovation, adhere to the development strategy of low-carbon economy transformation, accelerate the transformation of cutting-edge technologies in scientific and technological research into industrial development, and further build an overall high-quality industrial system.

Second, optimize industrial service innovation, strengthen the integration of other industries with the service industry, continuously increase the proportion of service industry in the industrial structure, and high-quality development should follow the trend. In the past, only providing specific products or services has been transformed into an industrial chain that can provide "product manufacturing+service support+technology update+customization solutions" and other products and services to meet the constantly upgrading needs of consumers, focusing on consumer needs and providing products and services that meet the diversified needs of consumers. Technological innovation will lead to upgrading of product quality. While carrying out technological innovation, attention should be paid to maintaining optimization and innovation of industrial service related work. High quality industrial development does not just emphasize the improvement of the development quality of the industrial chain itself, but also puts forward higher requirements on whether China's industries can better meet the diversified needs of consumers. The optimization and innovation of industrial services will directly enhance consumers' experience of connectivity and interaction with various industries, and further improve the optimization and innovation of related industrial services based on consumer feedback, so as to achieve high-quality industrial development.

Third, government policy innovation helps the high-quality development of the industry, and the government plays an extremely important role in the process of high-quality development of the industry. First of all, for some industrial development related to national security and of great strategic significance, it is necessary to rely on government policy support to complete the work of industrial development layout, development fund raising, development path selection, etc. The formulation and implementation of government policies are of great significance for such industries to achieve high-quality development goals. In the early stage of development, such industries are often difficult to achieve self financing in a short period of time, with a long development cycle and uncertain development results; In addition, the importance of such industries for the overall national security makes it difficult to raise development funds from social capital for the development of such special industries. How to innovate and formulate the allocation method of government financial funds and performance evaluation means has become the key to help the development of such special industries. Secondly, focusing on the overall high-quality development of China's industry, government policy innovation is of great significance in regulating the relationship between supply and demand in the supply chain, and in designing, R&D, mass production and other links in the process of collaborative innovation.

## 6. Implementation Path of High-Quality Development of Low-Carbon Economy Transformation Industry

There is a positive correlation between high-quality industrial development and high-quality economic development. As an important influencing factor to promote technological progress and achieve high-quality industrial development, low-carbon economic transformation also indirectly affects high-quality economic development. The implementation path of low-carbon economic transformation and high-quality industrial development is discussed as follows:

#### 6.1. Differentiated Development of Homogeneous Industries

The first problem to be solved for high-quality industrial development is the improvement of supply quality. At present, products and services among enterprises in the same type of industries are highly homogeneous. Industries relatively ignore the diversified needs of consumer groups in the development process, often resulting in repeated development of low-quality industries. [5] The lack of high-quality industries that can accurately grasp the needs of consumer groups will lead to overcapacity and waste of resources in the long run; It may also lead to problems such as solidification of industrial development mode and shrinking profit space, which is not conducive to the long-term stability and high-quality development of the industry. Therefore, the high-quality development of the industry puts forward higher requirements for enterprises to provide differentiated products and services. All industries should start from consumer demand, take consumer actual demand as the direction of industrial quality change, [6] achieve differentiated development:

(1) Adhere to consumer demand as the orientation of industrial development, and industrial development cannot be separated from consumer demands. Grasp the basic development principle of "grasping demand", supplement and improve the deficiencies of industrial development, accelerate the process of industrial structure and demand system adaptation, and achieve high-quality industrial supply. [7]

(2) To achieve "refined" development, the market has been continuously subdivided with the advancement of the industrial development process. Compared with the rough development stage in the early stage of industrial development, many emerging market segments have

emerged. After meeting the "quantity" supply, consumer groups have generated more refined demand. In the face of this development background, [8] industries should seize the opportunity to stimulate more demand of consumers and release their development potential by providing accurate products and services.

#### 6.2. Improve the Collaborative Innovation Model of Industrial Development

The most direct and fundamental driving force for the development of low-carbon economy transformation industry is to drive industrial technology upgrading and iteration through scientific and technological innovation, improve green total factor productivity, and then achieve the goal of high-quality industrial development. With the advancement of industrial development process and the evolution of innovation patterns, industrial technological innovation development is no longer an isolated process conducted by a single enterprise. China's high-quality industrial development should be based on China's actual national conditions, that is, the government, users (consumers), industries, universities and scientific research institutions should cooperate with each other and work cooperatively in policy formulation, demand reflection, production, education, scientific research and other areas of advantage, The government plays an irreplaceable role in the formulation of innovative development policies and the construction of high-quality industrial development chains. The feedback information from consumer groups has become more important in the process of industrial development and innovation. Under the knowledge society environment, powerful innovation subjects dominated by universities and scientific research institutions have become the hothouses for the breeding of industrial high-tech. Under the "government industry university research" model, industrial subjects are the demanders in the cooperation with universities and scientific research institutions, According to the actual demand of industrial innovation and development, universities and scientific research institutions put forward the demand for technology upgrading to the main body of universities and scientific research institutions. The main body of universities and scientific research institutions, as the innovative technology supply policy, conducts technological innovation research on the actual demand for industrial development, which accelerates the effective combination of scientific research and innovation achievements and production factors, and promotes the process of high-quality industrial development. Relying on the above "government use, industry, university and research" collaborative development model, the whole process of policy formulation, demand tracking, talent training, technological innovation and manufacturing production will be highly coupled in the upstream, middle and downstream of technological innovation, so as to achieve effective docking at all stages of industrial development.

1) The main body of the government plays a vital role in the "government use, production, learning and research" collaborative development model. Starting from the overall development layout, the government can accelerate the collaborative innovation of interdisciplinary, cross sectoral and cross industry organizations by issuing relevant policies, and promote the technology diffusion of each link of the innovation chain. From the aspect of specific behavior, the government controls the overall direction of high-quality industrial development to ensure the correct direction of industrial development; Further improve the construction of public infrastructure and scientific and technological innovation platform to lay a solid foundation for high-quality industrial development; We will strengthen fiscal and tax policy support, give financial incentives or tax incentives to model enterprises that efficiently lead the high-quality development of industries, and further stimulate the enthusiasm of all industrial entities for innovation and development.

2) The feedback information of consumers makes them play an indispensable role in promoting the high-quality development of the industry under the low-carbon economy transformation strategy. Improve the consumer feedback information collection mechanism, adjust the

industrial development according to the actual feedback, and give full play to the power of the vast consumer groups under the collaborative development model. Under the current industrial development pattern, the past model of producers as the main body of innovation no longer meets the needs of high-quality industrial development. [9] The innovation model based on consumer feedback information is emerging, and the industrial main body should make full use of feedback information for innovative development.

3) The industrial main body should put the innovation development strategy at the core of the industrial development process, actively implement the low-carbon economy transformation strategy, take innovation as the main driving force of today's industrial development, further deepen the mutually beneficial cooperation with universities and scientific research institutions, and accelerate the combination of scientific and technological innovation achievements and production factors to become the new development driving force.

4) Universities and scientific research institutions should cultivate more talents with professional counterparts according to the actual needs of high-quality development of China's industries. The essence of high-quality development of low-carbon economy transformation industries is talent driven. With universities and scientific research institutions as the main body, supplemented by other industrial development bodies, we will establish and improve a talent selection, training, incentive and evaluation mechanism that integrates interdisciplinary, multisectoral and social coordination. In the training process, incentive measures can be taken for scarce talents according to the needs of industrial development, so as to enhance the innovation enthusiasm of all kinds of talents and give full play to their innovation potential. On the one hand, the organic combination with industrial demand can solve the problem of insufficient impetus for industrial innovation and development; on the other hand, it can help achieve innovation diffusion and enhance the positive external effect of industrial development.

#### **Promoting the Integrated Development of Industries and Service 6.3**. **Industries**

The overall development of China's inter industry quantity and structure system is in line with the trend of upgrading the world's industrial structure. The proportion of the tertiary industry is rising. In order to achieve the goal of high-quality industrial development in the context of low-carbon economic transformation strategy, in addition to putting forward requirements for industrial technology innovation, innovation and transformation of industrial development and operation mode is also an inevitable requirement for achieving high-quality industrial development. The development of all industries should follow the trend of industrial structure upgrading, accelerate the process of integration with the service industry, and [10] create a new industrial development and operation mode of "product manufacturing+service support+ technology update+customization scheme" with the trend of integration of all industries and the service industry; On the basis of product manufacturing and combined with follow-up service support, the original "single" and "flat" industrial development model was abandoned to build a multi-dimensional and three-dimensional industrial development pattern. Organic integration of various industries and service industries:

1. Comply with the development trend of the industrial structure, help to effectively improve the supply quality and the long-term healthy and stable development of the industry, and meet the demand for high-quality development.

2. A single industrial development structure often means that the anti risk ability is weak. The formation of an industrial structure with interactive development with the service industry can significantly improve the anti risk ability of the industrial chain.

3. Effectively expand the profit space of enterprises, and bring the service industry into the overall layout of industrial development, which enriches the connotation of industrial development and broadens the industrial profit channels. The steady increase of profitability

will have a positive feedback effect on industrial technological innovation, and further achieve the goal of high-quality industrial development under the two-way effect. [11]

To sum up, innovation and transformation of industrial development and operation mode and service innovation are also important realization paths of low-carbon economy transformation and development strategy, which will become an important means to enhance industrial competitiveness, risk resistance and profitability.

## 7. Conclusion and Prospects

Low carbon economic transformation and high-quality industrial development are issues of general concern. How to achieve high-quality industrial development in the context of low carbon economy, the first problem to be solved is to improve the quality of supply and meet diversified needs. From the perspective of low carbon economic transformation, to achieve high-quality industrial development, it should first be clear that low carbon technological innovation has a significant positive role in promoting high-quality industrial development, which has become the fundamental basis for the development strategy of low carbon economic transformation industry. Secondly, to achieve high-quality development of low-carbon economy transformation industries, the following aspects should be focused:

1. Individual enterprises and the industry as a whole in the context of low-carbon economic transformation

2. The integration and development process of the service industry and other industries will significantly affect the high-quality development level of the industry. Promoting the mutually beneficial integration of industrial development and service industry will help improve the quality of product and service supply and achieve the high-quality development goal.

3. The serious homogenization of products of the same type of enterprises will inevitably lead to the lack of vitality of industrial development. Accurately positioning consumer demand in the process of industrial development, and demand oriented differentiated upgrading of products and services will help enrich the industrial development model, improve the industrial profit space, and help the industry maintain a long-term healthy and stable development.

4. Deepen the cooperation among government, users (consumer entities), industry, universities and scientific research institutions, work together in policy formulation, demand reflection, production, education, scientific research and other areas of advantage, conduct mutually beneficial cooperation guided by innovation, stimulate the innovation ability of all entities, and promote the high-quality development of industry with joint efforts of innovation.

## Acknowledgments

Anhui University of Finance and Economics Graduate Research Innovation Fund Project: The impact of carbon emission trading on China's low-carbon economic transformation - an empirical study based on the double difference method (ACYC2021019).

# References

- [1] Guo Chaoxian Industrial integration and innovation and high-quality development of manufacturing industry [J] Journal of Beijing University of Technology: Social Science Edition, 2019 (4).
- [2] Wei Jigang The Strategy and Path of High Quality Development of China's Industry under the Great Change [J] Enterprise observer (10): 2.
- [3] Porter M E, Linde V D.Toward a New Conception of the Environment-Competitiveness Relationship [J]. Journal of Economic Perspectives, 1995, 9(4): 97-118.

- [4] Lin Hongsheng, Wang Futao. Research on Innovation Driving from the Perspective of High Quality Development [J]. Science and Technology Think Tank, 2021 (09): 42-50.
- [5] The CPC Central Committee and the State Council issued the Outline of National Innovation Driven Development Strategy [EB/OL]. (2016-05-19) [2012-03-12] http://www.gov.cn/xinwen/2016-05/ 19/content\_5074812.htm.
- [6] Zhang Boxu, Zhao Jianbo, Li Hui. Model Innovation of Service based Manufacturing [J] Enterprise Management, 2016 (11): 12-15.
- [7] Guo Chaoxian Industrial integration and innovation and high-quality development of manufacturing industry [J] Journal of Beijing University of Technology: Social Science Edition, 2019 (4).
- [8] Wu Handong. Innovation, Driving and Development of Intellectual Property under the New Normal of Economy [J] Law, 2016 (07): 31-35.
- [9] Feng Jinhua Correctly Handling the Relationship between Real and False to Promote High Quality Economic Development [J]. Academic Research, 2019421 (12).
- [10] Li Zhen, Shen Kunrong. Research on the policy orientation of reducing the comprehensive cost of China's manufacturing enterprises -- based on the perspective of supply side structural reform [J] Modern Management Science, 2017 (08): 12-14.
- [11] Zhang Laiwu. On Innovation Driven Development [J] China Soft Science, 2013 (01): 1-5.