

Research on Countermeasures for the High Quality Development of Green Logistics in China under the "Double Carbon" Target

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Abstract: Carbon emission reduction and green logistics have received widespread attention from all walks of life in recent years, and the introduction of the "double carbon" target has made it urgent and imperative to achieve high-quality development of green logistics. This paper, based on the existing research results and the current situation of green logistics development, takes the shortcomings of China's green logistics development under the "double carbon" target as the starting point, conducts an in-depth analysis from three levels: awareness, policies and regulations and professional talents, and puts forward feasible suggestions and improvement countermeasures to realize the high-quality development of China's green logistics, specifically These include: cultivating social consensus on the development of green logistics, improving the green logistics policy and regulation system, and strengthening theoretical research and talent training on green logistics. It is of great practical significance to effectively promote the green development and "double carbon" goal of the whole Chinese society.

Keywords: Green Logistics, "Double Carbon" Target, High Quality Development.

1. Introduction

In recent years, carbon emission reduction and green logistics have gained increasing attention from all walks of life, becoming a hot topic closely followed by the times. In September 2020, General Secretary Xi Jinping proposed at the United Nations General Assembly that "China will increase its independent national contribution, strive to peak CO₂ emissions by 2030, and work towards achieving carbon neutrality by 2060." This means that China is committed to reaching the "carbon neutrality" target in half the time of Western countries.

The logistics industry is a key area of fossil energy consumption and carbon emissions. According to statistics from the International Energy Agency, the transport industry alone, a representative industry in the logistics sector, contributes 26% of the world's major sources of carbon emissions. In recent years, the logistics industry has also become one of the fastest growing areas of carbon emissions in China. Along with the continuous growth of China's economy, the derived demand for logistics and transportation is also rising rapidly, and China currently has the world's largest logistics market, with total transactions in the logistics industry amounting to 335.2 trillion yuan in 2021. However, China's logistics industry is still dominated by fossil fuel consumption, with energy consumption in the logistics industry alone reaching 439 million tonnes of standard coal and CO₂ emissions of around 830 million tonnes in 2019. The difficulty of controlling total carbon emissions in the logistics industry will therefore increase further. Therefore, under the "double carbon" target, the logistics industry faces greater pressure to reduce emissions than other industries in order to achieve carbon emission intensity and total carbon value control.

Based on this, since 2021, a series of national policies and programs have been introduced to help the logistics industry achieve carbon emission reduction, for example, the "Green

Transportation 14th Five-Year Plan" proposed that by 2025, the initial formation of green and low-carbon production methods in the transport sector, the level of green development in general to meet the stage of the construction of a strong transport country requirements. The Notice of the State Council on the Issuance of the Action Plan to Achieve Carbon Peaks by 2030 requires "accelerating the formation of green and low-carbon modes of transport and ensuring that the growth of carbon emissions in the logistics and transport sector remains within a reasonable range." Therefore, promoting the high-quality development of green logistics in China has become an urgent task and an inevitable trend.

The development of green logistics is in line with national interests and the needs of national laws and regulations; it is in line with the interests of enterprises and the need to reduce costs and increase efficiency; and it is also in line with the interests of the people and the need for high-quality development. As the logistics industry enters a new stage of development, and in the face of the still difficult task of ecological and environmental protection, it is necessary to adhere to the new development concept, persistently promote the development of green logistics, and strive to achieve the goal of "double carbon".

Therefore, based on China's "double carbon" strategic goal, this paper firstly explores the shortcomings of the current level of green development in China's logistics industry, analyzing the lack of awareness and concepts, the lagging construction of policies and regulations and the shortage of logistics professionals at three levels. It also puts forward targeted and forward-looking policy recommendations on how to promote the high-quality development of green logistics, aiming to promote the synergy of pollution reduction and carbon reduction, and accelerate the formation of green and low-carbon transport modes.

2. Review of the Literature

In recent years, scholars at home and abroad have

conducted multi-dimensional and multi-faceted studies and researches on green logistics, and have achieved a lot of results. Haw-Jan Wu and Steven C. Dunn (1995)[1] argue that green logistics is the greening of forward logistics such as transportation and warehousing and the green management of reverse logistics such as waste reuse. Rodrigue et al. (2001)[2] believe that green logistics is an environmentally friendly, environmentally compatible and compatible, efficient logistics system. The Reverse Logistics Executive Council (RLEC) states that green logistics is a logistics activity that recognises the environmental impact caused by the logistics process and minimises this impact. Wang Changqiong (2004)[3] points out that green logistics is a logistics activity that maximises the use of logistics resources under the premise of effectively controlling the damage to the environment and waste of resources. The National Standard Logistics Terminology published by China 2021 points out that green logistics refers to the process of reducing the environmental impact of logistics activities by making full use of logistics resources, adopting advanced logistics technology, and reasonably planning and implementing logistics activities such as transportation, storage, loading and unloading, handling, packaging, circulation processing, distribution and information processing.

The second is an empirical study on the evaluation of green logistics performance. Yan Shuang (2010)[4] used grey system theory to construct a performance evaluation model to provide theoretical support for logistics enterprises planning to undergo green transformation. Zhou Maochun et al. (2015)[5] developed a green logistics performance evaluation model for coal enterprises by combining AHP and FCE methods, analyzed the application of the model to a specific company, and gave corresponding measures for the analysis results. Jiang Peng et al. (2018)[6] applied Decision Making Laboratory Analysis (DEMATEL) and Analytical Network Procedure (ANP) to evaluate the key factors of green logistics development, and combined the results of Importance-Performance Value Analysis (IPA) to explore the improvement measures of key performance. Wang Lei and Zhang Hongli (2014)[7] took Xinjiang agricultural products As a research object, firstly, the AHP method was used to screen the indicators, followed by the fuzzy integrated evaluation method to analyze the green logistics performance of Xinjiang agricultural products. Alinezhad A and Khalili J (2018)[8] Based on the input and output indicators of the BSC model, a data envelopment analysis based on the Malmquist Productivity Index (MPI) was applied to 15 Iranian auto parts manufacturers' green supply chain efficiency was evaluated. Wibowo S and Tom M (2014)[9] A fuzzy multi-criteria cluster decision model was developed to simulate the inherent subjectivity and inaccuracy of the rating process using intuitionistic fuzzy numbers and to evaluate the performance of green logistics enterprise project solutions.

Finally, there are studies on the factors influencing green logistics. Abareishi et al. (2013)[10] demonstrate through surveys and data analysis that increasing the adoption of theoretical knowledge on green logistics is important to improve green logistics performance, and that by improving logistics operations and applying new knowledge to green practices, CO₂ emissions, fuel consumption and the cost of environmental commitments can be reduced. Tamulis V et al. (2012)[11] analysed the factors affecting green logistics at the company level from a theoretical perspective, explored the extent to which corporate factors influence green logistics,

and made recommendations related to green logistics management by companies. Yu Chengxue (2009)[12] By constructing a logistic model of enterprise green logistics management and conducting stability analysis on the logistic model, the research results show that the network system integration of green logistics within the enterprise can solve the contradiction problem between logistics and ecological environment. Xiao Dingding et al. (2010)[13] By means of the decision experiment and evaluation laboratory method, the analysis found that the main factors restricting the development of green logistics in China, and on this basis concluded that the government plays a pivotal role in constraining and supporting the development of green logistics at the initial stage. In addition, Cheng Zaoping (2020)[14] using the SWOT-DEMATEL method, also obtained a similar conclusion: the government promotes the green logistics of agricultural logistics enterprises with the greatest degree of influence. Dai Dongfang et al. (2016)[15], on the other hand, conducts a detailed analysis from the government, enterprise and environmental levels.

By reorganising and systematically summarising the relevant research results, it can be found that: firstly, for the definition of green logistics, although scholars and official publications at home and abroad express different expressions, and there is not yet a unified expression, but all essentially agree that green logistics is the process of reducing the environmental impact of logistics activities, so this paper adopts the definition of green logistics in the National Standard Logistics Terminology published by China 2021.

Secondly, the existing studies focus on the evaluation of green logistics performance and the exploration of the influencing factors of specific industry enterprises, such as coal enterprises, agricultural products enterprises and automobile manufacturers, using methods such as AHP and fuzzy comprehensive evaluation to establish a performance evaluation index system to evaluate the green logistics performance of industry enterprises, and some scholars give key performance improvement measures on the basis of performance analysis and evaluation. However, all the above studies focus on the micro level and on enterprises in specific industries, and the influence of the government and the public on the development of green logistics has not been deeply explored. Some studies have suggested that the government plays a central role in the development of green logistics, but there is a lack of discussion on how the government influences the development of green logistics, what the shortcomings are and how to improve them. In order to enrich the existing research dimension, this paper explores the shortcomings of China's green logistics development from multiple subjects, including the government, enterprises and the public, and proposes targeted countermeasures and suggestions by subject.

3. Shortcomings of China's Green Logistics Development under the "Double Carbon" Target

3.1. Lack of Awareness and Blurred Perceptions

Green logistics to achieve high-quality development requires modern logistics awareness to follow up, the lack of awareness and vague concepts can become obstacles to the development of green logistics. Firstly, the government is not

sufficiently aware of green logistics, the concept has not yet been completely transformed, and the idea of green development has not yet been fully established. An orderly market environment to promote the high-quality development of green logistics has not yet been formed, resulting in a difficult transition and upgrading of the logistics industry to green. In addition, when formulating future development strategies for green logistics, government departments lack a holistic and long-term development awareness, and there are problems such as the lack of realistic guidance significance of strategies. Secondly, most logistics enterprises are still not aware of the key role of green development for their own sustainable development, and their willingness and enthusiasm to reduce carbon emissions and develop green logistics is low. Some logistics enterprises believe that green development will not only increase the cost burden, but also make it difficult to achieve improved economic benefits. Some enterprises also agree with the concept of green logistics, but think that it is a matter for the government and has nothing to do with enterprises. Finally, the public's awareness of green logistics is lacking. Most consumers leave the task of building an ecological civilisation to the government and enterprises, and there is a lack of "ownership" of environmental protection, making it difficult to form a social atmosphere in which all people can participate in green development.

3.2. Policy and Regulatory Development Lags Behind

Although China has been working on environmental protection and pollution prevention laws and regulations since the end of the last century, little mention has been made of the logistics industry. The logistics industry lacks professional and systematic laws, and the legal system is seriously inadequate. This has led to an imperfect mechanism for the logistics industry, a chaotic market, and a waste of resources and environmental pollution. The operational and guiding logistics policies are mostly in the form of plans, opinions and outlines, which have weak legal effect and are obviously insufficient to restrict the behaviour of logistics entities. In addition, most of the policy documents issued still point to the traditional logistics industry, while specific measures or implementation details concerning the development of green logistics are rare. As China's logistics industry involves many responsible departments, there is a lack of consistency and coordination among them in the process of policy implementation, resulting in the low effectiveness of the implementation of policies related to green logistics, the implementation is not in place, the implementation effect is not satisfactory, resulting in the slow progress of green transformation of logistics enterprises.

3.3. Logistics Professionals Are in Short Supply

Green logistics has a bright future, however, domestic logistics professionals have been listed as one of the 12 types of shortage of talent, especially the demand for senior management personnel with green development concepts and environmental awareness is a serious shortage. Although most universities have set up logistics majors, the training objectives and social orientation of students are not accurate, which leads to a serious disconnect between the trained logistics professionals and the actual demand, and hinders the green transformation of logistics enterprises and the high-

quality development of green logistics. The training and assessment of professional certification bodies such as logistics industry associations are out of touch with reality and lack physical guidance for trainees on green logistics, resulting in a major loss of talent quality. In addition, most logistics enterprises ignore the on-the-job education of their employees, and the logistics talents are more "used than trained", and the enthusiasm for the secondary development and on-the-job upgrading of professional talents is generally low. The lack of green logistics management personnel has become an important factor restricting the development of the logistics industry.

4. Countermeasures for the High Quality Development of Green Logistics in China under the "Double Carbon" Target

4.1. Fostering a Social Consensus for the Development of Green Logistics

In the context of ecological civilisation, the government should deepen its understanding and awareness of green logistics as soon as possible, change the concept of logistics and transform logistics thinking. It should promote the concept of green logistics throughout the society, so that green logistics will be deeply rooted in people's hearts. Improve the current logistics system, construct a framework and policy system for the development of green logistics, actively promote the formation of an orderly market environment for green logistics, and create a positive external environment for the green development of the logistics industry. It has become imperative for logistics enterprises to focus on developing green logistics. Enterprises should take the initiative to break the traditional concept of "environmental protection is not economic", actively carry out green transformation, develop green logistics, and make pollution reduction and carbon reduction a strategic goal of enterprises. Finally, consumers are actively choosing green consumption methods, forcing enterprises to develop green logistics. We should actively participate in the construction of ecological civilisation, supervise and motivate all sectors of society to develop green logistics, and strive to create a social atmosphere in which all people participate in green development.

4.2. Improve the Green Logistics Policy and Regulation System

The development of green logistics cannot be achieved without a sound legal system and a good policy environment. Faced with the reality that some of the current laws, regulations and policy systems on the development of green logistics are seriously lagging behind, the primary responsibility of the government is to keep abreast of the times, promptly introduce and improve relevant laws and regulations, and strive to improve the legal system of green logistics. At the same time, the government should actively promote the reform of China's logistics management system, actively promote the coordination of relevant departments, follow the "big circulation, green" for green logistics planning in general, combine the current domestic and international situation changes, combine the law of development, introduce supporting policies, improve the macro environment for high-quality development of green logistics. Through the implementation of the emission permit system, the "green

subsidy" policy and the green environmental protection tax policy, we encourage and guide the green transformation of logistics enterprises to "escort" the high-quality development of green logistics. In addition, the long-term development of green logistics is inseparable from a series of perfect standards. The government should formulate relevant standards and guide enterprises to carry out green logistics activities in accordance with the relevant standards, so as to form a model and way to develop green logistics, help enterprises to achieve energy saving and emission reduction, and form a green development model. Finally, the government should also further build and improve green logistics infrastructure and continuously improve the level of green logistics information technology.

4.3. Strengthen Theoretical Research and Personnel Training on Green Logistics

Green logistics as a new development, the realization of high-quality development can not be separated from the depth of integration of industry, academia and research, requiring the full cooperation of enterprises, universities and research institutes. First of all, enterprises take the initiative to update the management concept, pay attention to the on-the-job education and training of logistics personnel. Actively adopt advanced forms such as "inviting experts and scholars into the enterprise to train employees" and "employees participating in external institutions of the enterprise to study", and cooperate with universities and high-level research institutes to cultivate a number of green logistics talents that enterprises really need, and To further improve the overall quality of in-service staff. Secondly, institutions of higher education should actively carry out multi-level academic education to cultivate much-needed management and professional talents for green logistics. At the same time, the training objectives and social orientation of logistics students should be clarified to help them deeply understand the necessity and urgency of developing green logistics and the social value of green logistics. Combined with the current development status of the logistics industry, the full use of enterprise case teaching, so that students not only understand the green logistics process, but also good at practical operation, so as to improve the comprehensive quality of green logistics professionals. Finally, logistics as a theoretical and applied science, research institutes should carry out in-depth research on the theoretical basis of green logistics such as the theory of sustainable development, ecological economics theory, circular economy theory and green development concept, and the knowledge system of green logistics is closely integrated with the actual situation, so as to lay a solid theoretical foundation for the flourishing development of green logistics.

5. Conclusion

"During the 14th Five-Year Plan period, the logistics industry has entered a critical period in which carbon reduction is the key strategic direction to promote the green transformation of the whole industry and realize the high-quality development of green logistics. In view of the severe situation of the national "double carbon" target and carbon

emission reduction battle, and under the requirements of carbon emission intensity and total carbon value control, this paper explores the shortcomings of the current development level of China's green logistics, and proposes targeted and forward-looking countermeasures to provide decision support for national and regional improvement of policies and measures related to green logistics development.

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