

# The Development Status of Logistics Enterprises Under The "Double Carbon" Target and Strategies to Cope with It

Yiyang Wang<sup>1</sup>, Xinyu Gao<sup>2</sup>, Kexin Chen<sup>1</sup>, Tingting Zhou<sup>2</sup>, Shuqi Wang<sup>2</sup>

<sup>1</sup>Nanjing University of Finance and Economics, Nanjing, Jiangsu, 210000, China

<sup>2</sup>Changzhou University Changzhou, Jiangsu, 213000, China

**Abstract:** In order to achieve the goal of "double carbon", logistics enterprises will develop in the direction of green logistics, emphasizing intensification, in order to achieve the goal of "double carbon" on the basis of enterprise performance can also be improved, this paper combines the current development problems faced by logistics enterprises, combined with new technologies such as digital technology, new energy and other emerging technologies, logistics enterprises put forward targeted recommendations to help logistics enterprises gradually change in the direction of green and sustainable development.

**Keywords:** Double carbon target, Logistics enterprises, Green development, Science and technology innovation.

## 1. Introduction

With the fast pace of contemporary life, the public began to actively pursue a high efficiency life. This means that the rapid development of logistics is inevitable. And logistics as

a tertiary industry which belongs to the service industry. However, logistics has the characteristics which traditional service industry does not have that it will bring a lot of energy losses in the process of goods transport.

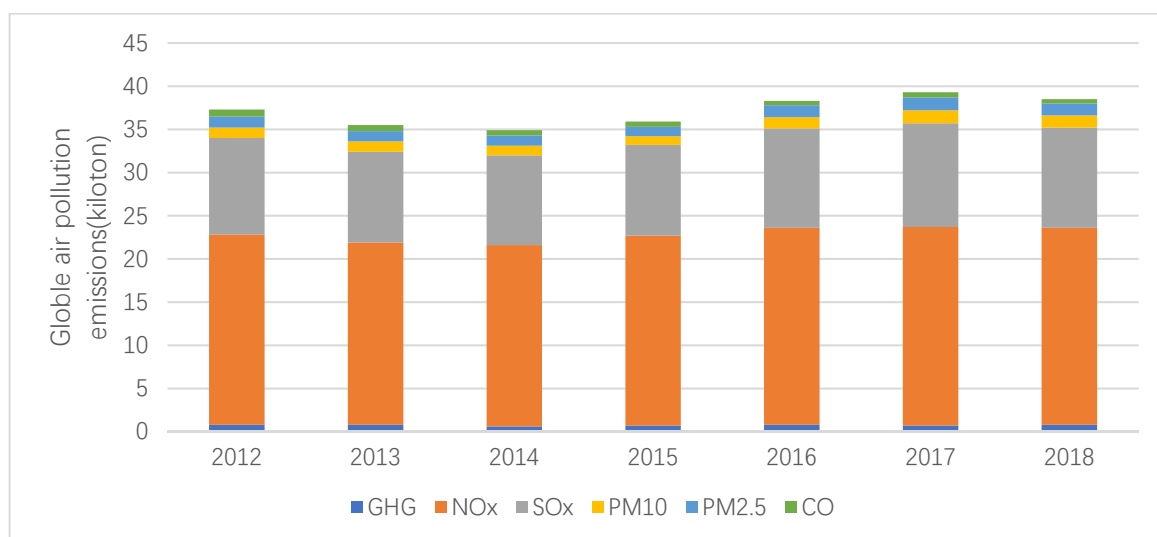


Figure 1. Global air pollution emissions of the Maritime transportation logistics from 2012 to 2018

Data sources: International Maritime Organization. Fourth IMO Greenhouse Gas Study

## 2. Analysis of The Current Situation of China's Logistics Enterprise Development and Related Issues Under the Background of "Double Carbon"

### 2.1. Low degree of intensification, low-carbon work is still lacking

The logistics industry is currently at an early stage of development which is without meticulous management, and without a set of proper internal control system. Moreover, it can not do intensive operation. But, many aspects are in need

of standardization. Such as in the process of goods transport due to the imperfect communication between the various means of transport caused by repeated transport. And, empty transport is not a little problem. There is still a certain amount of air pollution and the problem of improper waste disposal.

### 2.2. The concept of "green and low-carbon" is not popular, and it is difficult to implement carbon reduction measures in depth

As the concept of "green and low-carbon" is not popular, most logistics enterprises still have a superficial and one-sided understanding of the concept of "double carbon", green logistics, energy saving and carbon reduction, and sustainable development, etc. According to the analysis and research of the green logistics system in Danyang City, Jiangsu Province by scholars, some logistics enterprises feel that they are

moving towards a green logistics system. Some logistics enterprises feel that the transition to a green logistics enterprise will lead to a significant increase in their production costs, and that these logistics enterprises will turn the disposal costs of waste resources generated in their production activities into social costs. This 'lack of understanding' is further compounded by the fact that most consumers are unaware of what green logistics is or even of emerging terms such as green logistics and the 'double carbon' target.

### **2.3. Logistics companies are hit hard in the post-epidemic era**

In the face of external threats, logistics enterprises have encountered considerable resistance to the transformation towards green logistics. The cold chain logistics prolongs the survival time of the new crown virus, the external risk of logistics enterprises is elevated, at the same time, logistics enterprises for express disinfection, management difficulties increase, while some logistics enterprises show weakness in innovation and backward infrastructure are not ready to green transformation will be eliminated by the act of God brought by the general environment.

## **3. Related Suggestions**

### **3.1. Exclusive "Carbon ID card" for employees**

Set up an exclusive "carbon points ID card" for each employee to achieve the "double carbon" goal for each person to do a performance review, linking personal "carbon points" with personal performance, through the record of the employee's carbon reduction performance with the incentives to promote the optimization of the enterprise human resources allocation structure. By linking individual carbon points to individual performance, the carbon reduction performance of employees will be recorded in conjunction with incentives, thus optimising the allocation structure of corporate human resources and further promoting the early realisation of the 'double carbon' target.

Firstly, a carbon credit ID card is used to calculate the carbon emissions of each employee in the course of their work, with one card for each employee. The concept of carbon credits is introduced to assess the individual employee and the company as a whole, with high performance levels for those with high carbon credits, horizontal comparisons with companies in the same industry, and before and after comparisons with the company itself, so that the company's internal control programme can be adjusted in time. Secondly, all ID cards are connected to a total system through the Internet, and employees are required to swipe their cards to use any energy-consuming fixed assets such as office equipment and transportation, and the ID cards record the employees' usage in real time, i.e. their resource-saving/wasteful behaviour, which is then uploaded to the total system for later unified performance evaluation, and the system rewards or deducts carbon points. The system is used to reduce food waste and improve waste utilisation, and the food not consumed by employees can be used for animal husbandry and agriculture. In addition, the plate weighing equipment is used to weigh the plates after the employees have finished eating, and the system rewards and punishes the weight of the remaining food accordingly. For office premises, firstly, paper, water and electricity quotas are set for each

employee, and paper, water and computers are used by swiping cards, with the backstage record of usage directly linked to personal carbon credits. At the end of the year, the points are exchanged for physical rewards or cash rewards through the carbon points exchange rules set by the company, while for employees with negative points, the company will also impose penalties according to the specific circumstances. In addition, the company encourages staff to use canteen cutlery, encourages them to bring their own cutlery but to eliminate the use of disposable cutlery, and also tries its best to strictly control the use of water in the canteen.

### **3.2. "Carbon Center"**

Carbon Center Double C Carbon Reduction Awareness Centre embeds the overall layout and the central idea of sustainable development required for green logistics, and as a total system for green logistics enterprises, the Awareness Centre combines information services with internal control of logistics enterprises. etc. are intelligently adjusted and controlled. In this way, we can achieve the effect of saving various resources and contribute to the company's carbon neutrality. For example, employees use carbon credit ID cards to swipe their cards to drive, connect the ID cards to their work mobile phones, and then connect the mobile phones to the transport vehicles to calculate the carbon emissions based on the mileage and the carbon emissions per kilometre for the employees. Performance appraisals are carried out on the basis of carbon emissions per kilometre. The concept of "Green Power Systems" is introduced for ventilation equipment such as air conditioners and exhaust fans, in order to save energy and reduce emissions for the company. The awareness centre counts the number of employees by region and manages ventilation equipment intensively, taking into account the current difference between indoor and outdoor temperatures. For example, in summer, the system automatically increases the power of the air conditioning system in areas with a large number of employees and reduces the cooling power in areas with a small number of employees, taking into account the indoor and outdoor temperatures. The system also adjusts the power of the fresh air system to ensure that the number of employees in the area changes, saving power while meeting the air quality requirements of the office. For electrical equipment, the Awareness Centre takes into account the weather, the time of day, the number of employees in the office area and the corresponding employee workstations. The opening and closing of blinds and the switching on and off of lights in the corresponding areas are controlled. For areas that require sufficient brightness, the focus is on lighting, while non-essential areas are switched off and more natural light is used to meet the company's internal lighting needs. More intelligent and efficient conservation of power resources.

The awareness centre should collect, process and analyse data from the entire enterprise in real time and visualise the data dynamically, compare the similarities and differences of the data so as to continuously optimise the database, widen the width of data use and deepen the depth of use, so that one data can be used in multiple places, improve the efficiency of data use and promptly exclude the burden of memory accumulation caused by redundant data, in addition to cloud computing, artificial intelligence. In addition to cloud computing, artificial intelligence, the Internet of Things and other technologies embedded in the awareness centre, the digital twin technology can be implanted to help the

wonderful presentation of data visualisation, build a 3D carbon footprint tracking map based on data twin technology, and use the tracking map to better monitor, control and feedback on carbon emissions in a timely manner. The carbon footprint map is traceable and traceable throughout the entire process.

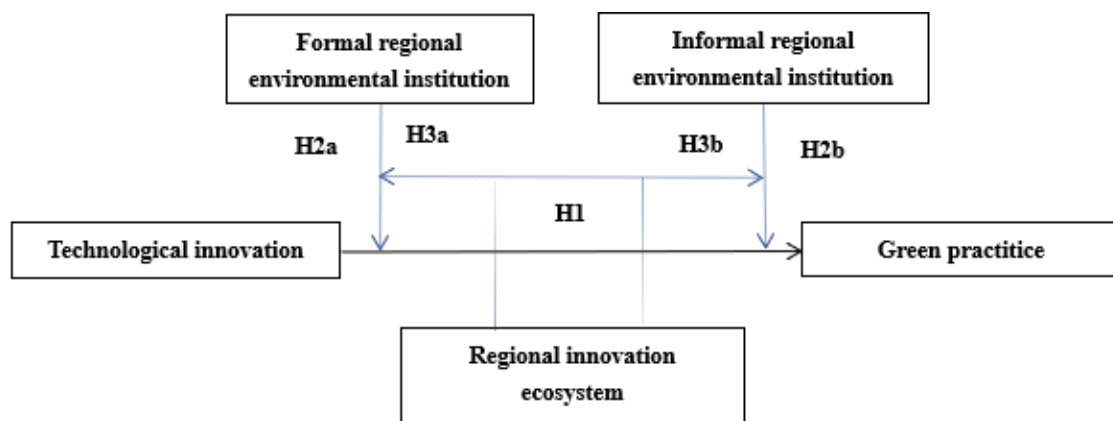
The system can also calculate the energy-intensive areas of the whole enterprise, summarise the laws and trends of carbon emissions, seasonally and geographically allocate resources to achieve energy saving in transportation.

Technological innovation could be a critical factor in improving green practices for Chinese Logistics service providers, we hypothesize that logistics firms with more Technological Innovation are likely to commit more to green practices. (H1)

Logistics firms' strategy eventually affect technological innovation and firms' environmental strategies and behaviors.

Therefore, we hypothesize that Logistics firms with more Technological Innovation will commit more to green practices where formal environment regulations are well developed.(H2a)At the same time, we also hypothesize that Logistics firms with more TI will commit more to green practices when informal environment regulations are more robust.(H2b)

In hypothesizing a joint effect of Technological Innovation and sub-national institutional and innovation ecosystems, we hypothesize that the interactive effect of Formal Environmental Regulations and Technological Innovation on firms' green practices is stronger for logistics firms with a higher regional innovation ecosystem level.(H3a) At the same time, we also hypothesize that the interactive effect of Informal Environmental Regulations and Technological Innovation on firms' green practices is stronger for logistics firms with a higher regional innovation ecosystem level.(H3b)



### 3.3. Join hands with new energy sources to reduce carbon emissions

The use of new energy, that is, alternative fuels, is the most direct and effective way to achieve the goal of zero carbon emission in green logistics. At present, many countries and enterprises in the world are making predictions about the future use of new energy. Logistics enterprises should take advantage of the east wind of this technological development of new energy vehicles and try to introduce new energy vehicles for short-distance transportation within and across cities. After all, the charging piles of new energy vehicles are not well developed, but their energy-saving and emission reduction effects are remarkable, and there is reason to believe that in the near future, with the upgrading of supporting facilities concerning new energy vehicles, this new form of transportation will become more worthy of investment.

### 3.4. "Reuse plan, box with a long time", improve the reuse rate of express transport boxes

Although it is said that with the booming development of e-commerce platform has greatly promoted the development of logistics enterprises, creating considerable economic benefits, but this also creates a considerable resistance to the realization of the goal of "double carbon", according to reliable data, the carbon emissions generated by express packaging exceeds 20 million tons per year, equivalent to the need to plant about 16,410 square kilometres of green trees to absorb these carbon emissions. This is why the use of green

and sustainable materials for courier packaging materials and increasing the reuse rate of transport boxes are key ways to reduce carbon emissions.

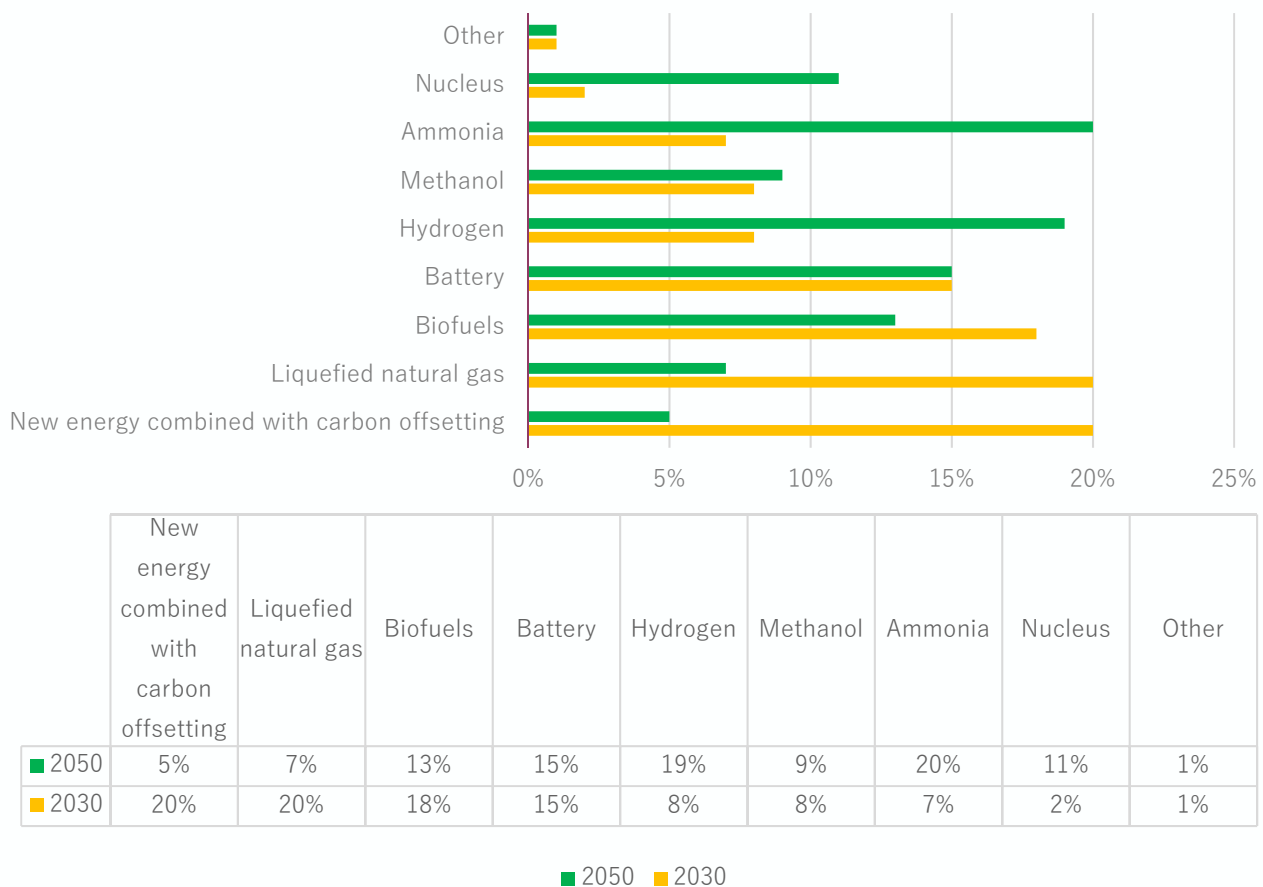
The traditional logistics packaging material is the original pulp carton, a large amount of pulp is lost, and at the same time, the proportion of cartons used as disposable packaging is very large, here we propose the use of corrosion-resistant, shock and pressure-resistant new materials to manufacture transport boxes, improve the reuse rate of transport boxes, and at the same time open the transport box rental plan, the popular spirit of sharing into the logistics and transport, encourage customers to rent new transport boxes, through the mobile phone app for rental and return, while each customer account will also be paid. Each customer's account will also have a carbon credit system linked to the awareness centre, which can be used to offset the rent, but also requires logistics companies to have robust cleaning and storage procedures for transport boxes, and some of the management costs can be covered by the rent. The extended life of a transport box is also a long-lasting transmission and continuation of energy saving and emission reduction awareness with the transport box rental scheme.

### 3.5. Industry-education integration, in-depth development of "logistics double carbon" composite new talent

When the quality of the above hardware facilities has been improved, the talents to operate and maintain these equipment and systems will become the immediate needs of low-carbon enterprises, and schools and enterprises should work together at this time to cultivate "dual carbon" talents and carry out in-

depth and detailed exploration of industry-education integration projects. However, the cooperation between schools and enterprises still lacks timeliness and relevance, as the "double carbon logistics" composite talents need knowledge of logistics management as well as computer language, Internet of Things, environmental science, environmental business and other professional knowledge. Schools are responsible for setting up the relevant courses and delivering talents, while enterprises provide the corresponding hands-on training. The government's involvement in injecting a policy context for the green and sustainable transformation of logistics enterprises will enable a more rapid and effective green transformation of logistics enterprises. This is a kind of market-based environmental regulation, which provides space for the green transformation of logistics enterprises to survive and develop, and brings

positive indirect effects, which can greatly play the role of macroeconomic policies. The government provides subsidies, reduces taxes and sets up special funds for logistics companies that are actively transforming towards green sustainability, encouraging the steady implementation of energy saving and emission reduction in green logistics companies, while the funds and tax breaks obtained by the companies from the government can be invested in the integration of industry and education projects for green composite talents. The cohort and follower effects of innovation incentives brought about by the application of market-based environmental regulation tools will lead to changes in the market structure of logistics enterprises, and the success of one enterprise will lead to the transformation of an industry.



**Figure 2.** Fuel share projections from 2030 to 2050

#### 4. Conclusions and Recommendations

The tripartite cooperation between schools, enterprises and the government will be more effective and conducive to achieving the common interests of the three parties, and with the support of the aforementioned emerging technologies, the incubation of complex talent projects can also be completed more quickly. Although the difficulty of training is higher than the general embedded training, such talents are needed by enterprises in the long term, and to a certain extent can enhance the cohesiveness of enterprise staff, reduce the increase in costs caused by staff turnover, and help shape the green culture of enterprises and create a green and sustainable brand of enterprises.

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