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Research on the spatial correlation and coordinated development of carbon emissions in logistics industry

Jingna Lu[1,a], Jiahao Zhu[1,b,*]

[1] Henan Polytechnic University, Henan, 454000, China
[a]yljn1028@163.com, [b]zhujh990123@163.com
**Corresponding author: zhujh990123@163.com*

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Abstract: Although the logistics industry shows a gradual and stable upward trend, but in the economic growth at the same time carbon emissions are also increasing year by year, this paper uses the energy coefficient method to estimate the carbon emissions of the logistics industry in 30 provinces and municipalities (autonomous regions) in China from 2015 to 2019, and combined with the gravitational model and social network analysis method, the spatial correlation network of the carbon emissions of the logistics industry is constructed, and the research shows: (1) Although the carbon emissions of the logistics industry have decreased, the overall emission reduction pressure still exists, and the carbon emissions of the logistics industry in Guangdong Province rank first. It is nearly twenty times more than Qinghai and Ningxia. (2) The spatial correlation of carbon emissions in the logistics industry in 30 provinces, municipalities and autonomous regions has become more and more close, but the progress has been slow during the observation period, and there is still much room for optimization. (3) The centrality of the network has evolved towards complexity and equalization, with Hubei, Guangdong, Shanxi and Henan occupying a dominant position in the network, while Qinghai, Hainan and Xinjiang are in a weak position.

1. Introduction

In human social and economic development, energy has always been one of the important supporting driving forces in the development process, and plays an important role in the economic development of all countries in the world. However, the overall development of China's logistics industry is still relatively low in technology and professional level, and energy waste is more common, and the resulting carbon emissions are also increasing. The logistics industry is one of the industries with the fastest growth rate of energy consumption among all industries in China. Therefore, the control of energy consumption and carbon emissions in China's logistics industry is of great significance to the sustainable development of the energy environment of the whole society. Over the past decade, China's logistics industry has been in a stage of rapid growth. In recent years, the trend of rapid growth of the logistics industry has eased, the extensive development mode of the past is no longer applicable in the context of the new normal, and energy conservation and emission reduction have become the theme of the entire social development. The logistics industry is a large carbon emitter, and low-carbon logistics will surely become the main development direction of the logistics industry in the future by relying on its sustainable development characteristics [1]. Therefore, how to seek sustainable development under the premise of energy conservation and emission reduction is an important issue facing China's logistics industry.

2. Literature review

As one of the industries with the largest energy consumption, the carbon emission problem of the logistics industry is also more serious, and there have been many research results on carbon emissions in the logistics industry in recent years. The following mainly analyzes the existing research literature from two aspects: the measurement method of carbon emissions in the logistics industry and the relationship between carbon emissions in the logistics industry. A method for measuring carbon emissions in the logistics industry. Among the methods used in the existing literature for the calculation of carbon emissions in the logistics industry, the direct carbon emission calculation method based on various energy carbon emission coefficients is the most common. Ma Yueyue and Wang Weiguo (2013) referred to the carbon emission calculation method in the "2006 Carbon Emission Calculation Guide" issued by the IPCC, listed the carbon emission coefficients of each energy source, and calculated the carbon emissions of various fuels [2]. Liu Longzheng and Liu Pei (2014) used the general direct carbon emission coefficient calculation method to calculate carbon emissions based on the energy consumption of the logistics industry in Fujian Province from 1997 to 2011[3]. Yang Jianhua and Gao Huijie (2016) use the direct carbon emission coefficient method to calculate the carbon emissions of Beijing's urban logistics industry based on the energy consumption in the logistics process [4]. Liu Xianli (2017) also used the direct carbon emission coefficient method to measure the carbon emissions of the logistics industry in Yunnan Province from 1987 to 2015 [5]. Regarding the relationship between regional logistics industry carbon emissions, Zhu Haiyan (2021) used the revised gravitational model and social network analysis method to analyze the spatial structure of carbon emissions in China's commercial and trade circulation industry [6]. Cui Tiening and Zhang Jimei (2020) used gravitational model and social network analysis method to study the spatial structure characteristics of China's green development [7]. Zhu Xiangmei and Zhang Jing (2021) used gravitational model and social network analysis method to make suggestions on the site selection and planning of tourism distribution centers in Shanxi Province [8].

3. Research methods and data sources

3.1 The spatial correlation relationship of carbon emissions in the logistics industry is determined

3.1.1 Data Sources

The distance between the provinces and cities is calculated by ArcGIS. However, the existing statistical yearbook does not directly display the data of the logistics industry, according to the definition in the "China Tertiary Industry Statistical Yearbook", the logistics industry includes transportation, warehousing logistics, postal industry material flow, circulation processing and packaging industry logistics [9]. Therefore, this article uses the transportation, warehousing and postal industries to represent the logistics industry. Each energy type adopts six types of raw coal, kerosene, gasoline, diesel, fuel oil and natural gas, the specific consumption is obtained from the "China Energy Statistical Yearbook", the accounting of carbon emissions uses the energy coefficient estimation method, and the specific conversion coefficients are shown in Tables 1 and 2.

Table 1: Reference coefficient converted into standard coal of different energy sources

Category	Raw coal	Kerosene	Gasoline	Diesel fuel	Fuel oil	Natural gas
Coefficient	0.7143	1.4714	1.4714	426.52	418.16	389.31

Table 2: Carbon emission coefficient of different energy sources

Category	Raw coal	Kerosene	Gasoline	Diesel fuel	Fuel oil	Natural gas
Coefficient	0.7559	0.5174	1.5921	0.6185	0.5857	0.4483

3.1.2 Calculation of carbon emissions in the logistics industry

Carbon emissions are converted to carbon emissions based on energy consumption in transportation, warehousing and postal services. Combined with the data of Table 1 and Table 2, the following calculation formula is obtained:

$$C = \sum_{i=1} C_i = \sum_{i=1} \delta_i \theta_i E_i$$

C is the carbon emission; i is the energy category; C_i is the carbon emission of the first energy; δ_i is the carbon emission coefficient of the first energy consumed by the logistics industry in the Yellow River Basin; θ_i is the standard coal conversion coefficient of the i-th energy; and E_i is the consumption of the first energy.

3.1.3 Gravitational Model

This paper constructs a spatial network based on the gravitational model, with each province (region) as the network node, and the carbon emission correlation relationship between the logistics industry between provinces and regions as the line in the network, and the gravitational model is as follows:

$$F_{ij} = F_{ji} = \frac{C_i \times C_j}{D_{ij}^2} \tag{1}$$

F represents the gravitational pull of carbon emissions between points in the domain; i and j represent the provinces and regions of the Yellow River Basin, respectively; D_{ij} represents the distance between i and j; C_i and C_j represent the carbon emissions of the logistics industry in i provinces and municipalities (autonomous regions) and j provinces and municipalities (autonomous regions).

3.2 Social Network Analysis

3.2.1 Network Density

Network Density (D) is used to reflect the density of the network and is formulated as follows:

$$D = \frac{L}{N \times (N-1)} \tag{2}$$

L is the actual number of connections to the network; N is the number of nodes.

3.2.2 Central analysis

(1) Whether the point degree centrality characterizes whether the node is in the center of the network, and the formula is as follows:

$$C_d = \frac{n}{N-1} \tag{3}$$

n is the number of nodes directly connected to the node; N is the number of nodes.

(2) Mediation centrality refers to the number of times a node serves as a bridge between the remaining nodes, and the formula is:

$$C_b = \frac{2\sum_{i<j}^{N}\frac{g_{ij}(i)}{g_{ij}}}{N^2-3N+2} \tag{4}$$

g_{ij} is the number of associated paths between the regions i and j; $g_{ij}(i)$ is the number of paths between i and j to pass through i.

(3) Close to centrality

Proximity to centrality is usually measured using the shortest distance between one node city and another node city. The value of proximity to center is large, indicating that a node city is closely related to other node cities, and at the same time, the accessibility is better, and it is not controlled by other node cities [10]. Its expression is as follows:

$$C_{APi}^{-1} = \sum_{j=1}^{n} d_{ij} \tag{5}$$

d_{ij} is the shortcut distance between points i and j.

4. Analysis of the spatial correlation structure of carbon emissions in logistics industry

4.1 Carbon intensity characteristics of carbon emissions in the logistics industry

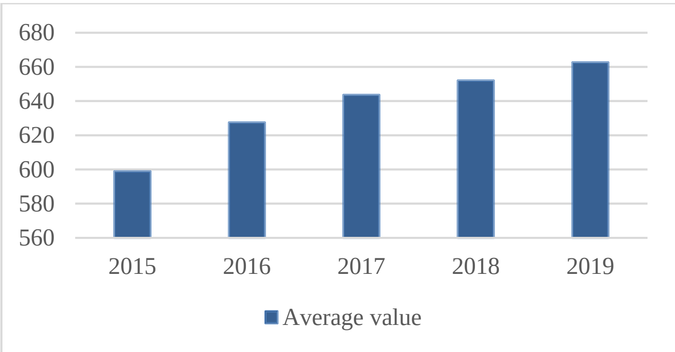

Figure 1: Change in mean carbon emissions in the logistics industry from 2015 to 2019

Carbon emission intensity refers to the amount of carbon emissions brought about by the growth of each unit of GDP, which reflects the dependence of economic growth on carbon emissions, and is a comprehensive indicator of the level of carbon emissions in a region. With economic growth, if carbon emissions per unit of GDP decline, the region achieves low-carbon development. According to Formula (1), the carbon emissions panel data of 30 provinces, municipalities and autonomous regions in China from 2015 to 2019 were calculated, as shown in Table 3, and the sequence characteristics of carbon emissions in time were studied. From the perspective of the average carbon emissions, as shown in Figure 1, the average remained above 6 million tons in 2016-2019, the lowest in 2015, is 5.9886 million tons, and the highest in 2019, reaching 6.6265 million tons. And in 2015-2019, carbon emissions showed a state of increasing year by year, indicating that the energy utilization rate of China's logistics industry is poor and energy waste is more serious. This may be an important reason for the current environmental problems in our country. From the perspective of the province, as shown in Figure 2, the province and city with the highest average carbon dioxide emissions in China's logistics industry from 2015 to 2019 were Guangdong, reaching 18.43012 million tons;

followed by Shanghai, Jiangsu and Shandong; the cities with lower carbon emissions were Qinghai and Ningxia, both less than 1 million tons. Guangdong's carbon emissions are almost 20 times that of Qinghai and Ningxia.

Table 3: Carbon emissions from the logistics industry in 2015-2019

Year	2015	2016	2017	2018	2019
Beijing	568.62	594.01	627.18	664.77	666.53
Tianjin	227.76	227.17	224.30	217.04	210.41
Hebei	450.00	531.66	469.79	481.50	485.92
Shanxi	491.52	503.54	521.67	484.95	470.01
Inner Mongolia	681.22	442.30	421.42	398.39	410.04
Liaoning	1026.59	1051.85	1056.74	1043.12	1036.24
Jilin	385.40	369.09	357.07	275.54	274.47
Heilongjiang	667.05	669.26	601.23	527.17	507.38
Shanghai	1106.86	1231.75	1343.45	1304.50	1354.36
Jiangsu	1076.13	1104.69	1154.31	1216.43	1248.87
Zhejiang	828.12	828.02	860.31	840.10	779.81
Anhui	556.66	563.09	601.53	617.41	590.14
Fujian	560.83	597.30	627.76	664.87	716.04
Jiangxi	405.59	411.02	420.91	485.44	525.76
Shandong	1054.76	1093.82	1217.06	1187.56	1204.01
Henan	715.34	697.52	704.94	851.07	843.83
Hubei	797.23	981.77	991.41	1017.94	1128.94
Hunan	759.11	792.87	835.68	895.86	928.19
Guangdong	1642.50	1842.75	1868.41	1928.00	1933.39
Guangxi	511.18	528.03	578.85	560.07	542.97
Hainan	154.17	146.21	154.90	148.91	151.73
Chongqing	471.48	507.72	534.69	469.85	480.50
Sichuan	492.56	725.63	751.60	783.62	819.79
Guizhou	415.68	458.41	393.50	418.29	445.14
Yunnan	587.22	615.00	626.77	705.47	768.77
Shaanxi	412.29	359.10	357.67	391.07	378.86
Gansu	267.69	258.96	262.24	239.46	238.39
Qinghai	77.80	89.94	100.94	112.30	114.27
Ningxia	90.44	93.75	98.30	80.48	84.92
Xinjiang	484.09	508.18	543.21	548.27	539.82
Average value	598.86	627.48	643.59	651.98	662.65

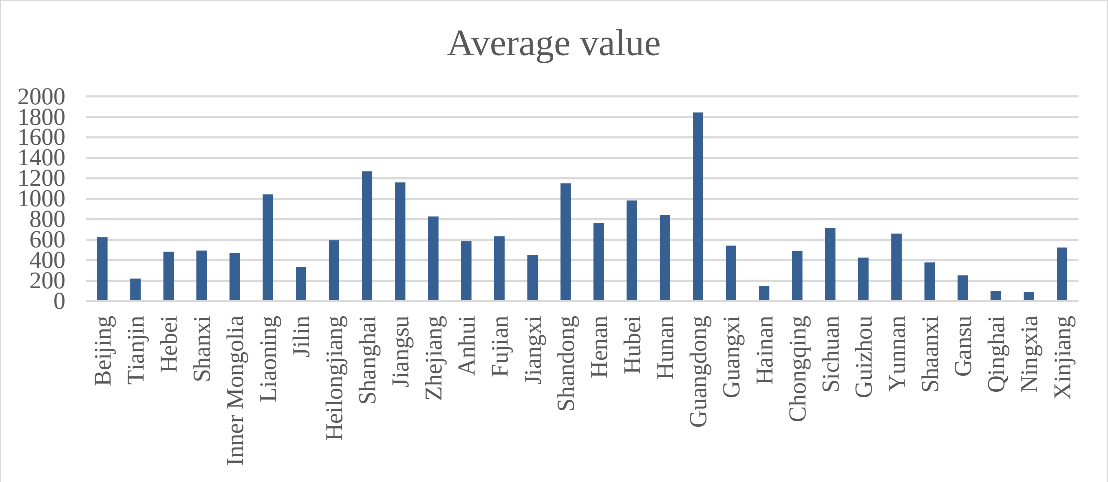

Figure 2: Differences in carbon emissions of logistics industries in 30 provinces, municipalities and autonomous regions from 2015 to 2019

4.2 Characteristics of the overall network of carbon emissions in the logistics industry

4.2.1 Spatial association matrix

According to the gravitational model, the spatial correlation matrix of 30 provinces, municipalities and autonomous regions was calculated in 2015 and 2019, as shown in Figures 3 and 4, 2015 is less spatially related than in 2019, and in 2015, the spatial correlations of Qinghai and Xinjiang are 1, Qinghai only establishes a spatial correlation relationship with Gansu and Xinjiang, and Qinghai increases the correlation relationship with Sichuan in 2019; Xinjiang increases The three places of Hubei, Sichuan and Shandong, mainly due to the sharp increase in Sichuan's carbon emissions, Hubei, Carbon emissions in Sichuan and Shandong have also increased, resulting in an increase in the gravitational pull of these places. Jiangsu, Zhejiang and Gansu have always been in a central position and have always had strong ties with various regions.

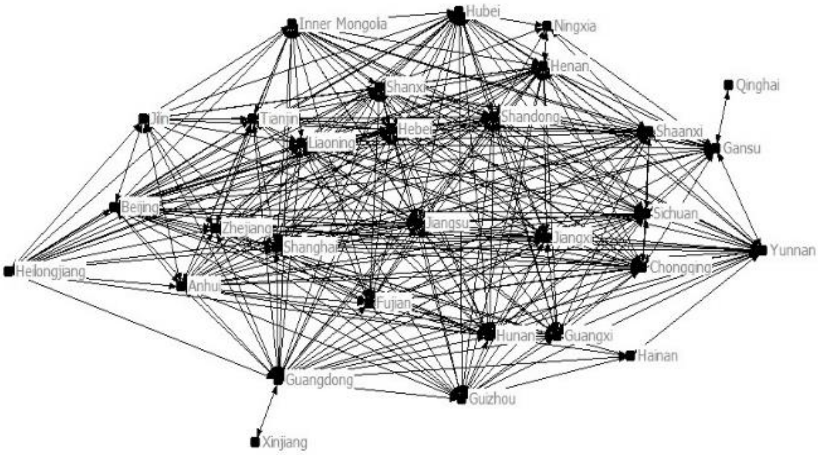

Figure 3: Spatial network structure of carbon emissions in the logistics industry in 2015

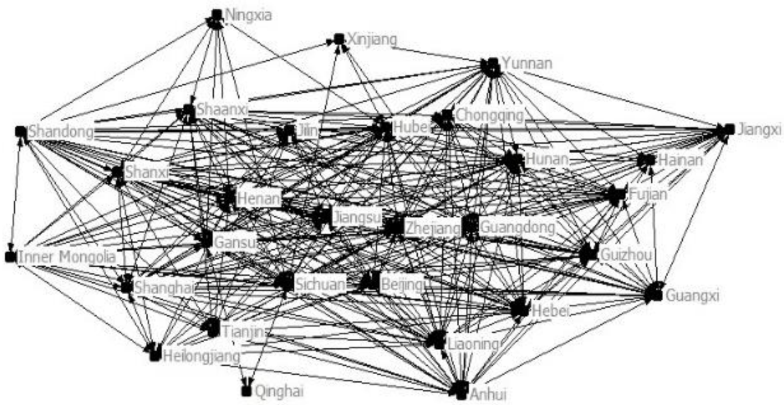

Figure 4: Spatial network structure of carbon emissions in the logistics industry in 2019

4.2.2 Network Density

Network density can reflect the degree of close connection between the research units in the express logistics network, it is equal to the ratio of the total number of connections that actually exist between the various regions in the network and the total number of theoretical maximum relationships that may exist, the more the number of relationships associated, the greater the network density, indicating that the denser the network, the stronger the overall logistics network and the express logistics function that can be completed in the region. Table 4 is the carbon emission density of the logistics industry from 2015 to 2019, which can be seen that the network density has increased in 2016 and 2017, which shows that the logistics space connection between the 30 provinces, municipalities and autonomous regions in the past two years has become more and more close, and the spatial correlation has become more and more close, and it has declined in 2018 and 2019, the network density has decreased slightly, and the logistics space connection has decreased slightly. The overall trend of first rising and then increasing is inverted U-shaped.

Table 4: Carbon emission network density of logistics industry in 2015-2019

Year	2015	2016	2017	2018	2019
Density	0.6851	0.7011	0.7080	0.6966	0.6966

4.3 Central analysis

The centrality index is one of the quantitative indicators of centrality, and the analysis of the index can be analyzed from the following three angles: degree centrality, Intermediary centrality, and intermediate centrality. This article calculates the specific data of these three indicators, as shown in Tables 5, 6 and 7.

4.3.1 Degree centrality

Degree centrality is an index that can intuitively reflect the centrality of the node, it is determined according to the number of node connections in the regional contact network, if the regional point is directly connected to many other regional points, you can determine that the regional point has a higher degree. The focal-centricity intensity of the carbon emission spatial network of logistics industry in 30 provinces, municipalities and autonomous regions in China showed a dynamic evolution trend, and the overall correlation capacity was gradually enhanced. The point degree center of carbon emissions in the logistics industry from 2015 to 2019 is shown in Table 5, of which Hubei has the highest point degree of centrality and is in the position of network center, indicating that the carbon emission of Hubei logistics industry has always far exceeded that of other provinces and regions, and almost all provinces and regions have established relationships; the top indicator values are also Shandong, Shanxi, Guangdong and Henan, and there is little change during the observation period; Xinjiang and Qinghai have a low level of indicators and are at the edge of the network, especially in Qinghai, where the index value is always 1 or 2, at the bottom of the network, and is the weakest node in the network. The point degree center of each province, municipality and autonomous region is constantly increasing, and the overall structure is more stable. Shandong's economic volume and logistics industry development level is always high, although it is located downstream, but its logistics industry carbon emission intensity is large, weakening the disadvantage of location; Shanxi and Henan location advantages are obvious, convenient transportation between provinces and regions, the influence on the network gradually increases; Ningxia carbon emissions rank last among 30 provinces, municipalities and autonomous regions, but its geographical location is superior, located at the junction of central and western regions, so its point centrality is not at the bottom; Heilongjiang and Inner Mongolia's carbon emissions are not low, but because of their location disadvantages are too large It is difficult to establish relations with distant provinces, resulting in weak indicators; Qinghai's centrality has always been far below the average level of each stage, its transportation conditions and economic foundation are weak, the energy consumption of the logistics industry is low, the carbon emission intensity is low, and it is in a weak position at the edge of the network, which also reflects the uneven development of the logistics industry in the Yellow River Basin in China.

Table 5: Carbon emissions in the logistics industry in 2015-2019

Year	2015	2016	2017	2018	2019
Beijing	24	25	26	25	25
Tianjin	17	17	17	17	16
Hebei	21	25	23	24	24
Shanxi	26	26	26	26	26
Inner Mongolia	23	20	20	18	19
Liaoning	25	25	25	25	25
Jilin	15	15	15	15	14
Heilongjiang	16	16	16	15	14
Shanghai	25	25	25	25	25
Jiangsu	25	25	25	25	25
Zhejiang	24	24	24	24	24
Anhui	24	24	24	24	23
Fujian	21	20	21	21	21
Jiangxi	21	20	20	20	20
Shandong	26	26	27	27	27
Henan	26	26	26	26	26
Hubei	26	28	28	28	28
Hunan	25	25	2	24	24
Guangdong	27	27	27	27	27
Guangxi	20	21	21	21	21
Hainan	5	6	7	7	7
Chongqing	22	22	23	21	22
Sichuan	22	25	25	25	25
Guizhou	20	21	20	21	21
Yunnan	21	22	21	22	23
Shaanxi	24	24	24	24	24
Gansu	17	18	19	16	16
Qinghai	1	2	2	2	2
Ningxia	6	7	9	7	7
Xinjiang	1	3	5	4	5

4.3.2 Intermediary centrality

The intermediary centrality can reflect the ability of a regional point to control resources, and if a regional point is on the shortest path of many other point pairs, it can be considered that the resource control ability of the point is high. As can be seen from Table 6, the intermediary centrality of Sichuan, Guangdong and Gansu is higher, and it plays the role of intermediary and bridge in the network, but the intermediary center degree in Gansu and Guangdong has dropped sharply after 2016. With the development of other provinces and regions in the basin, Sichuan's intermediary role has increased sharply, because according to the "Sichuan Logistics Industry Development Medium and Long-term Plan (2015-2020)", Sichuan should be built into the largest international railway logistics hub and road logistics hub in the western region, and become an important gateway for logistics in the western region, so its intermediary role was gradually enhanced in 2016, so the intermediary role of Gansu and Guangdong gradually weakened. The intermediary center of Jilin, Hainan, Qinghai, Ningxia and Xinjiang is always low, especially in Ningxia and Qinghai, and the index value is always 0, indicating that it has no intermediary role in the network, but relies on other nodes to establish relations with distant provinces, which are geographically restricted and difficult to serve as hubs in the network.

Table 6: Intermediary centrality of carbon emissions in the logistics industry in 2015-2019

Year	2015	2016	2017	2018	2019
Beijing	3.306	2.977	5.342	3.49	3.598
Tianjin	0.205	0.205	0.202	0.286	0.225
Hebei	1.065	2.977	2.325	2.464	2.557
Shanxi	7.778	6.105	5.342	6.666	6.775
Inner Mongolia	2.649	1.243	1.243	0.636	1.036
Liaoning	3.666	2.977	3.136	3.49	3.598
Jilin	0	0	0	0	0.071
Heilongjiang	0.067	0.067	0.067	0	0.071
Shanghai	3.666	2.977	3.316	3.49	3.598
Jiangsu	3.666	2.977	3.136	3.49	3.598
Zhejiang	2.156	2.218	2.373	2.464	2.577
Anhui	2.156	2.218	2.373	2.464	1.683
Fujian	0.338	0	2.256	2.091	2.091
Jiangxi	0.338	0	0.108	0	0
Shandong	7.778	6.105	10.492	12.75	11.758
Henan	7.778	6.105	5.342	6.666	6.775
Hubei	7.778	20.722	15.981	18.348	17.19
Hunan	8.512	6.044	5.727	4.745	4.646
Guangdong	38.341	16.093	12.525	13.838	12.68
Guangxi	3.279	2.6	2.256	2.091	2.091
Hainan	0	0	0	0	0
Chongqing	1.299	0.7	2.46	0.5	0.889
Sichuan	1.299	27.512	23.362	26.938	25.725
Guizhou	3.279	2.6	1.948	2.091	2.091
Yunnan	4.944	3.342	2.685	2.932	6.665
Shaanxi	5.575	3.968	3.277	4.323	4.224
Gansu	29.99	11.272	13.902	9.748	9.767
Qinghai	0	0	0	0	0
Ningxia	0	0	0	0	0
Xinjiang	0	0	0	0	0

4.3.3 Closeness centrality

Closeness centrality is based on the distance between the regional point and other regional points to judge, the measure can reflect the degree of contact between the regional point and other regional points, if the distance between a regional point and more points in the contact network is short, the regional point can be considered to have a higher degree of proximity to the center. From 2015 to 2019, the closeness centrality of 30 provinces, municipalities and autonomous regions is shown in Table 7, and the degree of proximity to the center of each region has not changed much, and the overall trend of increasing first and then decreasing is shown. The area with the highest closeness centrality is Hubei, which reached 96.667 after 2016, and other higher provinces and cities include Shanxi, Shaanxi, Zhejiang and Hunan. It is proved that these provinces have a strong overall connectivity in the network and can establish connections with other cities; the lowest area is Qinghai Province, Qinghai is remote, the economy is relatively poor, and the transportation base is relatively incomplete, which leads to poor connectivity with other cities.

Table 7: Carbon emissions from the logistics industry are close to the center in 2015-2019

Year	2015	2016	2017	2018	2019
Beijing	85.294	87.879	90.625	87.879	87.879
Tianjin	69.048	69.048	69.048	69.048	67.442
Hebei	76.316	87.879	82.857	85.294	85.294
Shanxi	90.625	90.625	90.625	90.625	90.625
Inner Mongolia	82.857	76.316	76.316	72.5	74.359
Liaoning	87.879	87.879	87.879	87.879	87.879
Jilin	65.909	65.909	65.909	65.909	64.444
Heilongjiang	67.442	67.442	67.442	65.909	64.444
Shanghai	87.879	87.879	87.879	87.879	87.879
Jiangsu	87.879	87.879	87.879	87.879	87.879
Zhejiang	90.625	85.294	85.294	85.294	85.294
Anhui	82.857	85.294	85.294	85.294	82.857
Fujian	76.316	76.316	78.378	78.378	78.378
Jiangxi	76.316	76.316	76.316	85.294	76.316
Shandong	87.879	90.625	93.548	93.548	93.548
Henan	90.625	90.625	90.625	90.625	90.625
Hubei	90.625	96.667	96.667	96.667	96.667
Hunan	87.879	87.879	87.879	85.294	85.294
Guangdong	93.548	93.548	93.548	93.548	93.548
Guangxi	74.359	78.378	78.378	78.378	78.378
Hainan	52.727	54.717	55.769	55.769	55.769
Chongqing	80.556	80.556	82.857	78.378	80.556
Sichuan	80.556	87.879	87.879	87.879	87.879
Guizhou	74.359	78.378	76.316	78.378	78.378
Yunnan	78.378	80.556	78.378	80.556	82.857
Shaanxi	90.625	85.294	85.294	85.294	85.294
Gansu	70.732	72.5	74.359	69.048	69.048
Qinghai	42.029	48.333	48.333	48.333	48.333
Ningxia	53.704	56.863	59.184	56.863	56.863
Xinjiang	49.153	52.727	54.717	53.704	54.717

5. Research conclusions and countermeasures

5.1 Conclusions of the study

In this paper, the structural characteristics of the carbon emission space network of the logistics industry in 30 provinces, municipalities and autonomous regions in China are analyzed by gravitational model and social network analysis method, and the following conclusions are drawn:

(1) From the perspective of space-time characteristics, the average carbon emissions of China's 30 provinces, municipalities and autonomous regions are as low as 5.9886 million tons in 2015, and they are all greater than 6 million tons after 2016, which shows that the carbon emission pressure of China's logistics industry still exists, and the carbon emissions of the logistics industry in Guangdong Province rank first, more than 18 million tons, which is nearly twenty times that of Qinghai and Ningxia.

(2) From the perspective of the overall network, the spatial correlation of carbon emissions in the logistics industry in 30 provinces, municipalities and autonomous regions has become more and more close, but the progress during the observation period has been slow, and there is still much room for

optimization. In the space network, except for Qinghai and Xinjiang, which have less contact with other regions, most of the other regions are in a central position. The overall network density has not changed much, showing an inverted U-shaped trend of increasing first and then decreasing.

(3) From the perspective of individual networks, network centrality has evolved to complexity and equilibrium, Hubei, Guangdong, Shanxi and Henan are in a dominant position in the network, Qinghai, Hainan and Xinjiang are in a weak position, and the carbon emissions of the logistics industry in the central area are still in a high position.

5.2 Countermeasures

(1) Improve energy utilization and optimize energy structure

Technological progress and scientific and technological innovation are the most fundamental ways to improve energy efficiency, fundamentally reduce the use cost of energy, and continuously improve the level of environmental protection. We should strengthen technological innovation, formulate relevant emission reduction policies, and improve the energy efficiency of the logistics industry; The middle and lower reaches should continuously improve their ability to transform technology, capital and information, so as to provide reference and help for the less developed areas in the upper reaches and realize the coordinated development of river basins.

(2) Improve the efficiency of logistics operations

Whether the energy consumption mode and energy consumption concept of logistics enterprises can shift from extensive to intensive is related to whether energy efficiency can be improved. A complete logistics information platform can provide effective support for the distribution of logistics enterprises, so enterprises should improve logistics efficiency, improve energy utilization efficiency, the use of information means is a very effective measure, information technology for the development of low-carbon logistics to provide technical support. In the process of transmitting information, the logistics supply chain is mainly realized by using the information platform of logistics.

(3) Adjust the industrial structure

To achieve economic development and the improvement of economic quality, it is necessary to establish a more coordinated and reasonable industrial structure, the main purpose of which is to achieve the role of promoting social economy and further improve the quality of life of local residents. Improving the rational industrial structure requires the rational use of resources, ensuring that different industrial sectors can coordinate with each other during operation, and ensuring social employment and the supply of products.

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