

# Research on the route of building agricultural and sideline products logistics hub in huai'an

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**Abstract:** As the center of the northern Yangtze River Delta, Huai'an City is in a critical period of transforming its development mode and growth momentum. Focusing on building a "hub new city" has become the basic support for the comprehensive construction of a modern central city in the northern Yangtze River Delta, while the agricultural and sideline products logistics hub is an important support for building a "hub new city". This study takes Huai'an City as an example, analyzes the current situation of agricultural and sideline products logistics development, and puts forward countermeasures and suggestions for the construction of agricultural and sideline products logistics hub, so as to promote the rapid development of agricultural and sideline products logistics hub in Huai'an City.

**Keywords:** agricultural and sideline products; Logistics hub; route

## introduction

Huai'an is located at the intersection of the Yangtze River Delta and the Huaihe River Ecological Economic Belt. It is a leading city of the Huaihe River Ecological Economic Belt. It ranks among the top 100 cities in China year by year, and is currently in a critical period of economic transformation. Huai'an is an important transportation hub in Jiangsu Province and a modern central city in the north of the Yangtze River Delta. Huai'an is also a rich land of fish and rice, with Hongze Lake in the west and Gaoyou Lake and Baima Lake in the east. It has formed five leading industries, including vegetables, livestock and poultry, pigs, aquatic products and trees. It is a nationally famous green agricultural and sideline products production, processing and marketing base.

After years of operation, Huai'an Agricultural and Sideline Products Logistics Center has gradually developed into a comprehensive logistics park integrating agricultural products processing, warehousing and transportation, trade circulation, information and financial services. However, the development of agricultural products logistics lags behind that of other developed regions, and it is difficult to buy and sell agricultural products from time to time. Therefore, it is necessary to conduct in-depth research on Huai'an agricultural product logistics, analyze its current situation, find out the key problems, and put forward countermeasures and suggestions to establish Huai'an agricultural by-product logistics hub, so as to promote the rapid development of Huai'an agricultural product logistics.

## 1. Research status

Cheng Shidong, Rongjian and Liu Xiaoming (2004) analyzed the functions and levels of logistics parks from the concept of urban logistics parks and the significance of research, and proposed the layout principles of logistics parks and the prediction methods of the scale of logistics parks. Xiong Wei (2009), taking Shenzhen International Agricultural Products Logistics Park as an example, introduced the similarities and differences between the design concept of "compound logistics park" and the design ideas of general logistics park. Through comprehensive utilization of space, he maximized the development of its land value, opening up a new idea for the design of logistics park. Ma Jiaoguo, Ma Yonghuan and Liu Qingchun (2016) systematically combed and deeply commented on the current research on logistics parks in China from four perspectives: the basic connotation, spatial layout, park construction and development model of logistics parks. Mao Guojun (2018) studied the problems and countermeasures of capital management of Urban Agricultural and By product Logistics Co., Ltd. To sum up, many scholars have made specific and in-depth studies on agricultural product logistics and logistics parks from different angles and directions. Among them, the research on the agricultural and sideline products logistics center mainly focuses on the macro aspects of location, system and mode, while the detailed research on a single regional agricultural and sideline products logistics center is relatively few, especially the research on the relationship between the agricultural and sideline products logistics center and the urban hub economy is still in its infancy. This paper aims to study the relationship between Huai'an agricultural and sideline products logistics and Huai'an hub new town, analyze the actual problems, focus on the model transformation research of Huai'an agricultural and sideline products logistics center, and put forward the countermeasures and suggestions for establishing Huai'an agricultural and sideline products logistics hub.

## 2. Research Methods

### 2.1 The method of combining literature retrieval with induction

Through literature retrieval, search domestic and foreign literature on logistics hubs, hub cities and other aspects to provide ideas for building a quantitative index system of agricultural and sideline products logistics hubs. Based on the summary and comparison of domestic and foreign literature, the paper proposes the mathematical model of logistics hub level, the integrated system of balanced logistics development and comprehensive transportation planning and its realization path.

## 2.2 Method of Combining Mathematical Modeling with Field Investigation

Based on hub economy, logistics theory, social and economic development status, traffic facilities status, information hardware and software and other data, a mathematical model of logistics hub energy level is built by using quantitative index system, and verified by combining field research to ensure the reliability of simulation results.

## 2.3 Combination of index construction and mathematical statistics

By using mathematical methods such as frequency analysis, Delphi, principal component analysis and analytic hierarchy process, the indicators are screened, analyzed and predicted, and the development potential of logistics hub is analyzed.

## 3. Basic connotation and index system of agricultural and sideline products logistics hub construction

### 3.1 Connotation of agricultural and sideline products logistics hub

Hub, that is, the important key of things and the central link between things. The new hub city takes the transport, logistics, digital and other hub platforms as the carrier, strengthens the regional central city with the function of gathering, radiating and diffusing economic activities, digital information and talent mobility, and seeks a new economic model of innovation and multi drive development. Characterized by strong land gathering and diffusion capabilities, and by means of optimizing the elements of space-time allocation, the Company coordinated the development of people, capital, business, materials and information. Hub New Town is an important communication node in regional development. Its typical characteristics are innovative, and it is a very efficient supply chain chain service system. The agricultural and sideline products logistics hub is a hub form with agricultural and sideline products as the main characteristics, and it is an important support for the hub new town.

The scope of agricultural and sideline products logistics hub can be divided into broad sense and narrow sense. Taking Huai'an City as an example, the broad scope of agricultural and sideline products logistics hub includes the whole area of Huai'an City and extends to neighboring cities (counties) closely connected with Huai'an, while the narrow scope mainly covers the urban area of high-speed railway, aviation, ports and main agricultural and sideline products logistics parks. The distribution of agricultural and sideline products logistics hub should be considered in the whole Yangtze River Delta, and the functional area should be divided into "one core and multiple belts", with the urban area as the functional core and the suburban (county) expansion belt as the functional support, so as to jointly form a functional radiation source serving the Huaihe River ecological economic belt and the integrated development of the Yangtze River Delta, and establish a development mechanism of agricultural and sideline products logistics hub by region, And we should consider the development of agricultural and sideline products logistics hub from the perspective of the integration of the Yangtze River Delta, and actively integrate into the important agricultural and sideline products logistics hub in the Yangtze River Delta.

### 3.2 Quantitative index of hub energy level

To facilitate the calculation of energy level function values of agricultural and sideline products logistics hubs, the hub energy level index values (LEI) are classified into tangible hubs (H1) and intangible hubs (H2). The tangible hubs include infrastructure, equipment engineering and other indicators, while the intangible hubs include service evaluation, ecological environment and other indicators (the indicators are adjusted according to different agricultural and sideline products logistics characteristics)

$$LEI(T)=f(H1(T),H2(T)) \quad LEI(T) = f(H_1(T), H_2(T))$$

$$\text{Constraints: } 0 \leq H_{1(T)} \leq 1 \quad 0 \leq H_{2(T)} \leq 1$$

Where: H1(T) is the tangible hinge degree; H2(T) is an intangible hinge degree.

## 4. Development status of Huai'an agricultural and sideline products logistics hub

### 4.1 Large output of agricultural products

Huai'an has a large output of major agricultural products. For example, in 2019, the total output of grain was 4.8925 million tons, the total output of oil was 57200 tons, the total output of cotton was 70 tons, the total output of meat was 220200 tons, the total output of pig, cattle and mutton was 112000 tons, and the total output of aquatic products was 286900 tons, of which the total output of grain accounted for 13.20% of the total output of the province.

### 4.2 The output value of agricultural and sideline products continues to expand

The municipal party committee and government focus on the development orientation of "green highland, hub new city", clarify the development blueprint of the three leading industries of "green food, new generation information technology, and new equipment manufacturing", focus on cultivating and strengthening ten billion level enterprises, accelerate the construction of a hundred billion level

modern industrial system, and strive to create a new situation of high-quality leapfrog development. From Huai'an rice, Huaiyin black pork, Huai'an Pucui, Qingjiangpu District red pepper, Hongze Lake hairy crab, Jinhu lotus root, Xuyi crayfish... to well-known food enterprises across the country, Huai'an has insisted on expanding and strengthening the characteristic food industry in recent years, and explored to highlight the industrial advantages of Jianghuai Ecological Economic Zone with exhibition economy. As a nationally famous production and marketing base of green agricultural and sideline products and a major production and processing base of grain and oil, aquatic products and meat products in Jiangsu Province, Huai'an has gradually formed a whole industrial chain from "farmland" to "chopsticks" relying on the advantages of agricultural and sideline products resources. Since 2016, the annual output value of the food industry has exceeded 100 billion yuan, forming a large industrial scale.

### **4.3 Further improvement of agricultural and sideline products logistics infrastructure**

In recent years, many agricultural industrial parks have emerged in Huai'an, such as Xuyi County was approved to establish a national modern agricultural industrial park, Matou Town has become a provincial modern agricultural industry demonstration park, and Dingji Town has entered the ranks of national agricultural industry strong towns. At the same time, Huai'an already has many basic conditions for the construction and development of the new hub city, and has made good achievements in building a comprehensive transportation system and promoting the development of regional logistics hubs. In the aspect of high-speed railway, with the opening of Xuzhou Suhuai Salt Railway and Lianhuai Yangzhen Railway, Huai'an to Beijing, Shanghai, Nanjing and other cities are more convenient. At present, the construction of Nanjing Huaihua Railway is speeding up, building a railway transportation corridor connecting the north and south, connecting the east and west, and gradually forming a multi-directional radial railway network with Huai'an as the center; In terms of water transport, Huai'an is located at the junction of Huaihe River and the Grand Canal. With the opening of the waterway to Lianyungang Port in the north, Liuda Line in Yancheng City in the east, and Wushen Line in southern Jiangsu Province in the south, Huai'an's trunk network of "connecting the river to the sea" has become increasingly perfect. Inland river containers are growing rapidly. Among them, the container throughput of Huai'an Shiplock located in Huai'an has grown rapidly from 22000 TEUs in 2009 to 240000 TEUs in 2020. The two Huaihe River sections of the canal are still one of the busiest inland waterway in the world, forming a pattern of "connecting the river to the sea, and connecting the Yangtze and Huaihe River". Huai'an Port is a national Class II waterway open port, which has achieved the goal of a large port of 100 million tons and is conducive to promoting the development of low-carbon transport in an all-round way; In terms of aviation, the passenger throughput of Huai'an Lianshui Airport in 2019 exceeded 2.3 million person times, ranking 67th in the national airport and 7th in Jiangsu. At present, four all cargo flights have been opened; In terms of highways, the expansion and reconstruction project of Huai'an Jiangdu section of Beijing Shanghai Expressway will be constructed, and trunk highways will be planned and constructed to further expand external traffic and optimize the internal road network; In terms of urban transportation, the Inner Ring Elevated Line draws a "concentric circle" in the main urban area, the tram connects the main functional areas of the city, and the Binhe Avenue connects the "two Huaihe River" second fast lane, effectively driving the construction of parks and urban development along the line, and effectively easing traffic congestion.

## **5. Problems in Huai'an agricultural and sideline products logistics hub**

### **5.1 Logistics facilities, equipment and technology are relatively backward**

Compared with other economically developed regions in the province, the logistics facilities and technologies for agricultural and sideline products in Huai'an are relatively old. For example, the lack of transportation lines leads to traffic congestion, and there is a shortage of high-quality special warehouses. The level of intelligent logistics is relatively low.

### **5.2 Lack of professionals in agricultural and sideline products logistics**

Huai'an is a big agricultural city, but its logistics experience is relatively insufficient compared with other developed regions, especially the logistics talents of agricultural and sideline products. Influenced by the traditional planting industry, it is generally believed that only the quantity and quality of planting can be improved, ignoring the impact of logistics sales.

### **5.3 Lack of quantitative indicators for logistics hub development**

As an important support for the development of Huai'an Hub New City, the evaluation of agricultural and sideline products logistics hub is still in the initial stage, and there are few quantitative indicators in the rating indicators. It is urgent to establish a quantitative indicator system suitable for the development of agricultural and sideline products logistics, which plays a very important role in determining the energy level of urban agricultural and sideline products logistics hub and improving the scientific decision-making of hub energy level.

## **6. Countermeasures to promote the construction of agricultural and sideline products logistics hub**

### **6.1 Promote the construction of agricultural and sideline products logistics infrastructure**

It is suggested to establish municipal, district (county), town (township) three level modern logistics parks for agricultural and

sideline products, wholesale markets for agricultural products, storage bases and other infrastructure. At the same time, further strengthen the transportation infrastructure, especially the road construction of agricultural products origin, to form a transportation infrastructure supporting the integration of agricultural products production and marketing. According to product characteristics and weather factors, new or renovate refrigeration equipment, actively develop cold chain logistics of agricultural and sideline products, improve the processing and distribution system of different varieties of agricultural and sideline products, connect with community logistics, and constantly standardize the construction of agricultural and sideline products logistics system.

## **6.2 Strengthen the introduction and training of agricultural and sideline products logistics professionals**

Talents are the first resource and innovation is the first power. Strengthening the training of agricultural and sideline product logistics professionals plays an important supporting role in promoting the development of agricultural and sideline product logistics. As the logistics development of agricultural and sideline products is at the initial stage, we should actively introduce professional logistics talents to improve the level of logistics development. At the same time, according to the current situation of personnel, we can invite professional teachers in colleges and universities or industry experts to conduct regular training, establish a system for personnel to work with certificates, so as to improve the professional quality of agricultural and sideline products practitioners, and also provide necessary intellectual guarantee for the high-quality development of agricultural and sideline products.

## **6.3 Establish the index system of agricultural and sideline products logistics hub**

The establishment of agricultural and sideline products logistics hub is an important support for the construction of Huai'an Hub New City. In order to effectively develop the logistics hub, it is advisable to establish a quantitative assessment and evaluation index system. First, it is necessary to clarify the principles of index construction, such as scientific principles. The index system should scientifically reflect the competitiveness of agricultural and sideline products logistics parks in the logistics system. Systematically, agricultural and sideline products logistics is a complex system including the source and transportation process. It is advisable to establish a multi-layer system for indicators to timely reflect the comprehensive situation. Secondly, indicators should cover qualitative indicators and quantitative indicators. The weight of quantitative indicators can be appropriately increased. Through objective analysis, research on trend changes can be conducted to provide strong support for scientific decision-making. Finally, it is suggested to establish a mathematical model of agricultural and sideline products logistics level, compare it with the surrounding developed regions, find out the differences, and provide ideas for the comprehensive development of agricultural and sideline products logistics hubs in this region.

## **7. Conclusion**

As the center of the northern Yangtze River Delta, Huai'an City is in a critical period of transforming its development mode and growth momentum. Relying on rich natural resources and agricultural product resources, Huai'an's food industry has become the dominant characteristic industry that the city focuses on building. Its industrial scale ranks first in Jiangsu Province, with industrial output reaching 100 billion and tax revenue reaching 10 billion, maintaining double-digit growth for many consecutive years. The development of agricultural and sideline products logistics hub is of great significance to reduce transport costs, increase farmers' income and food safety.

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