

# *Research on Circulation Mode of Fresh Agricultural Products in Tianjin*

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**Abstract**— To improve the development of fresh agricultural products requires a fast and efficient circulation mode of fresh agricultural products. This paper takes literature research and comparative analysis as theoretical analysis tools to analyze the current circulation of fresh agricultural products in Tianjin, and make a comparative analysis with that of developed countries, and finally put forward countermeasures and suggestions to promote the development mode of fresh agricultural products in Tianjin. The results show that Tianjin has the market and resource base to further develop the circulation mode of fresh agricultural products. Each district and county should develop the circulation mode suitable for the local characteristics and future development. The government should support the new type of business entities through scientific planning, perfect the existing public service platform, and promote the development of Tianjin's modern urban agriculture.

**Keywords**—circulation mode; fresh agricultural products; urban agriculture; Tianjin

## I. INTRODUCTION

Central Document No.1 in 2018 pointed out that the circulation facilities and market construction of agricultural products should be strengthened. In response to this, last year Tianjin proposed to fully implement the Beijing-Tianjin-Hebei Coordinated Development Plan of Modern Agriculture (2016-2020), focusing on the construction of National modern urban agriculture demonstration zone, agricultural high-tech industrial park, agricultural product logistics center, national agricultural and rural reform experimental zone, agricultural information platform, agricultural foreign cooperation platform. Tianjin has achieved rapid development in the circulation of fresh agricultural products, and has made remarkable achievements in infrastructure construction, application of information technology in logistics system, and promotion of policy innovation. According to the 1-hour Circulation Area Plan for Fresh Agricultural Products Around Beijing, by 2020, the proportion of vegetables supplied by Tianjin and Hebei to Beijing will increase from 20 % in 2015 to 25%; the proportion of fresh agricultural products in transit logistics in Beijing agricultural products wholesale market dropped by more than 90%; the annual production of precooled and refrigerated fresh agricultural products in Tianjin and Hebei area surrounding Beijing exceeds 3 million tons. With the upgrading requirements of relevant policy, there are some problems. The scale and intensification of

agricultural product logistics Center Park lags behind, and the concentration of agricultural product wholesale market is low, making it difficult to form a system. There is no enough agricultural product quality supervision institutions. The design of supervision system is deficient and the industrial policies is fragment. Developing diversified new circulation modes, however, is not only conducive to overcoming the problems existing in the traditional circulation channels, but also to further driving the structural reform on the agricultural supply side in Tianjin, improving the development of modern urban agriculture, and promoting the coordinated development of agriculture in Beijing, Tianjin and Hebei to make new progress.

## II. STATUS QUO AND EXISTING PROBLEMS OF FRESH AGRICULTURAL PRODUCTS CIRCULATION MODE IN TIANJIN

### A. Circulation Mode of Fresh Agricultural Products in Tianjin

#### 1) Wholesale Market of Fresh Agricultural Products

Tianjin has a number of municipal and national key leading enterprises in agricultural industrialization, such as Jinzhong Agricultural Products Wholesale Market in Dongli District, Hongqi Agricultural Products Market in Xiqing District, etc. While strengthening the construction and development of facilities, it actively adapts to the market demand, continuously innovates market organization, attracts more dealers and brokers, realizes the organic connection between the wholesale market and the production base, and guides farmers to develop contract farming according to the market demand(Fig.1). First, it has a stable supply of vegetables, which has driven Tianjin and its surrounding areas to plant over 2.2 million mu of vegetables, bringing net income of more than 1 billion yuan per year to vegetable farmers[1]. In particular, the market has established and perfected a stable purchase and sale relationship and a reasonable interest connection mechanism with the base and farmers. 15,600 farmer shave involved in contract farming in Tianjin suburban counties, Hebei, Shandong, Hainan, Zhuhai and other surrounding areas with a stable base area of 120,000 mu, which can provide 550 million kilograms of pollution-free vegetables for the wholesale market every year, ensuring balanced market transactions throughout the year(Fig.2). Second, it conforms to the industrialization and scale of agriculture and gives full play to the advantages of hardware

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and network that the wholesale market now has. It combines market and base with the operation mode of “company + market + base + farmer” and the comprehensive wholesale and trading market enterprise of “transit + land sales” with complete supporting facilities. At present, the circulation of fresh agricultural products has covered more than 20 provinces, cities and autonomous regions nationwide, and a modern circulation system of fresh agricultural products has been established.

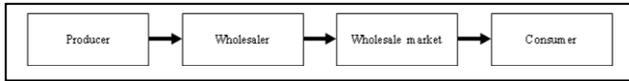


Fig.1. Wholesale Market of Fresh Agricultural Products

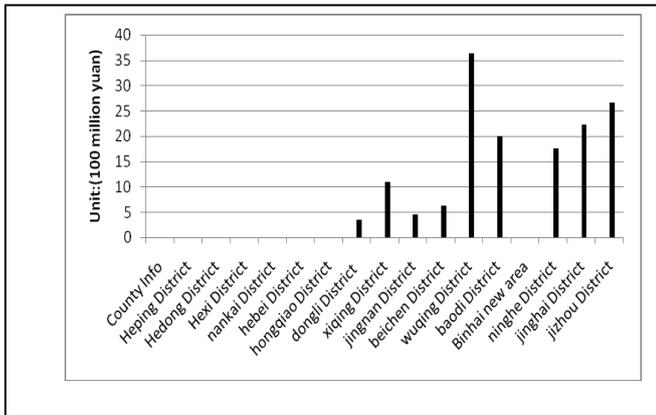


Fig.2. The total agricultural production of Tianjin in 2017

2) Logistics Park of Fresh Agricultural Products

Tianjin Fresh Agricultural Products Logistics Park aims to become a multi-functional fresh agricultural products logistics center integrating agricultural products wholesale trading, circulation and storage, display and direct selling, processing and distribution, and inspection and testing(Fig.3). It regards boosting the structural adjustment of agricultural industrialization, improving the agricultural industry chain, and increasing farmers’ income and wealth in Tianjin as the corporate social responsibility and mission, giving full play to Tianjin as a key node for the distribution and circulation of fresh agricultural products in Beijing, Tianjin and Hebei[2]. Tianjin has a number of national agricultural comprehensive development projects, designated markets by the Ministry of Agriculture and key leading agricultural industrialization enterprises. Logistics Park promotes the circulation of fresh agricultural products through the establishment of a fresh agricultural products purchase and sale platform. At the same time, it provides fresh agricultural products dealers with venue leasing and management services to promote the development of agricultural industrialization in Tianjin and its surrounding areas. It also provides quality management services by establishing a fresh agricultural products purchase and sale platform for agricultural product growers, farmers and dealers (Table I).

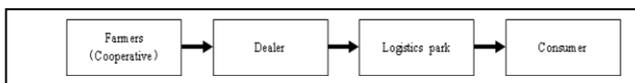


Fig.3. Logistics Park of Fresh Agricultural Products

TABLE I. 2014-2017 PRODUCTION OF FRESH AGRICULTURAL PRODUCTS IN TIANJIN (UNIT: 10,000 TONS)

Year	Category				
	Vegetables	Aquatic	Meat	Egg	Milk
2014	309.63	40.80	44.57	18.28	57.37
2015	282.72	40.12	43.51	18.87	50.03
2016	274.43	32.66	43.07	19.13	50.04
2017	269.61	32.33	36.14	18.99	52.05

Tianjin statistical yearbook 2017.

3) Regular Chain of Fresh Agricultural Products

Regular chain for fresh agricultural products in Tianjin has formed a full industrial chain circulation mode from vegetable planting base, production and supply base, agricultural products logistics distribution center and finally to the sales outlets(Fig.4). For example, Bincheng Tianlong Agricultural Technology Co., Ltd. has cooperated with scientific research institutes such as Nankai University, Tianjin Academy of Agricultural Sciences, Tianjin Agricultural University and other large and medium-sized colleges and universities to develop scientific and technological achievements demonstration and Internet of Things technology, preservation technology and logistics distribution mode. In addition, 3,000 mu of vegetable supply base and 6,000 square meters of agricultural product logistics and distribution center have been built[3]. At present, vegetable preservation warehouse, vegetable processing workshop, Internet of Things monitoring center and distribution room have been put into operation. Among them, thirty safe vegetable terminal sales outlets have been established to provide high-quality agricultural products such as grain, oil, vegetables and fruits to the surrounding residents. It has also built e-commerce platforms such as WeChat, APP, online shopping malls to make it easier for citizens to buy high-quality vegetables.

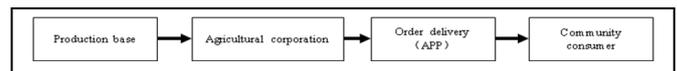


Fig.4. Regular Chain of Fresh Agricultural Products

B. Shortcomings of Tianjin Fresh Agricultural Products Circulation Mode

1) Logistics infrastructure construction needs to be improved

The overall level of Tianjin’s logistics infrastructure is not high, which will delay the efficient development of fresh agricultural products circulation [4]. Infrastructure includes three aspects: road facilities, storage facilities and transportation facilities. Road facilities mainly refer to the construction of highways and expressways. To a certain extent, Tianjin’s logistics transportation is mainly based on road transportation. The concept of “building roads first if you want to be rich” is deeply rooted in the hearts of the people. However, some of the transportation infrastructure in Tianjin’s agriculture-related areas and major fresh agricultural production areas are still mainly based on dirt roads. As the roadbed is not solid and the road surface span is not large, it is difficult for some professional transportation vehicles to enter, resulting in the overall backwardness of rural development. The actual situation in the storage facilities of wholesale

markets is that the layout of storage depots is unscientific and unreasonable.

2) *Logistics park and distribution center system is not perfect*

The system construction of Tianjin logistics park and distribution center lacks flexibility, and the procedure is irregular and disorderly. The characteristics of fresh agricultural products logistics parks and distribution centers determine the number of departments involved and the complexity of personnel, including planning, transportation, shipping, receiving departments and some leading local production enterprises. Due to these characteristics and the particularity of fresh agricultural products, we must make preparations in advance to deal with emergencies and temporary uncontrollable phenomena. Various logistics parks and centers must coordinate flexibly to ensure that fresh agricultural products can meet the needs of all aspects. Under the condition of market economy, the agricultural economy is gradually enlivening and the management of fresh agricultural products presents a diversified competitive pattern.

3) *Lack of Information Technology*

In recent years, rapid development has been made in Tianjin's information network, especially in the field of fresh e-commerce, but it is still poor compared with the overall base and cannot meet the growing needs of the people. Moreover, the regional restriction phenomenon now is very serious, which is because that Tianjin's agricultural areas and major fresh agricultural products production areas cannot be effectively integrated and connected with the network, resulting in excessive consumption and buying afar, thus occurring the so-called phenomenon "dark under the light". Therefore, it is a strong demand for the development of agricultural trade in the new era to further enhance the information and professional construction of fresh agricultural products circulation.

4) *Relevant policies and regulatory measures are relatively lagging behind*

First, the lack of a regulatory system to regulate the quality of wholesale markets and the cumbersome approval process have led to an increase in institutional transaction costs, which is not conducive to improving the circulation efficiency of fresh agricultural products. Second, regional fresh agricultural products circulation enterprises have no policy support, and it is difficult to form a guarantee mechanism for them. Third, the supporting guarantee service of the financial mechanism in the fresh agricultural products market is not perfect, limiting the large-scale and intensive development of the circulation mode of fresh agricultural products. Fourth, agricultural associations and chambers of commerce have not fully played their role in the circulation of fresh agricultural products, which is not conducive to information exchange with the market and reduces the development prospects of the industry.

III. ANALYSIS OF FOREIGN CIRCULATION MODE OF FRESH AGRICULTURAL PRODUCTS

The circulation of fresh agricultural products has developed at a high speed and has attracted attention from all sides around the world, which is especially obvious in western developed countries. It has become a new type of industry

with development potential. The circulation of fresh agricultural products, an important link between agricultural production and consumption, is the main driving force to actively speed up the adjustment of industrial structure and promote the growth of the tertiary industry. At the same time, it is also an important symbol to measure the comprehensive competitiveness and development level of a country or region. Based on this, this paper analyzes the circulation patterns of developed countries and the current development of Tianjin, and obtains enlightenment by analyzing the experience advantages of various countries.

A. *Circulation Mode of Fresh Agricultural Products in the United States*

There are a lot of advantages of the circulation service and integrated management of fresh agricultural products in the United States. It is dominated by large supermarket chains and retailers and supplemented by the wholesale market (Fig.5) [5]. There is a higher concentration in the retail sector. For example, large retail groups such as Wal-Mart have their own distribution centers to control costs and expenses and track product quality, which reduces unnecessary consumption and improves the circulation efficiency of fresh agricultural product [6]. It has a full range of logistics and transport services supporting multimodal transportation, including road, air, sea modes of transport. It has improved the transportation network to provide "point-to-point" and "door-to-door" logistics services. The efficient combination of logistics information and network technology brings about automatic operation in an all-round way[7].

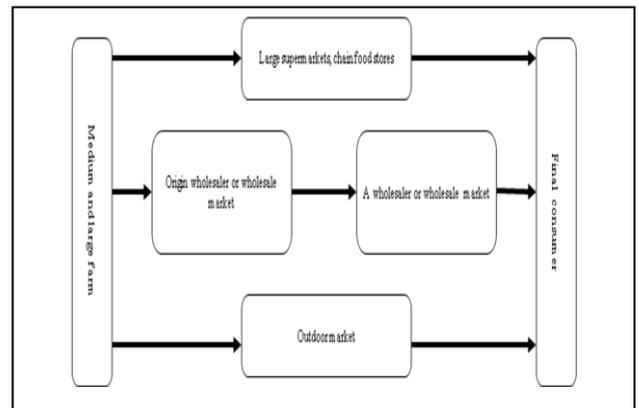


Fig.5. Circulation Mode of Fresh Agricultural Products in the United States

B. *Circulation Mode of Fresh Agricultural Products in Japan*

Japan uses the wholesale market to connect producers and consumers based on the purchase and circulation of agricultural products organized by the grass-roots agricultural association, namely the circulation mode of fresh agricultural products dominated by the wholesale market (Fig.6). In terms of infrastructure, the cold storage is characterized by high layout density, strong specialization and energy-saving [8]. On the other hand, unnecessary return transportation is reduced, the loading efficiency of vehicles is improved through scientific stacking methods, repeated product packaging is abandoned while simplified packaging is promoted, and common distribution among enterprises is implemented.

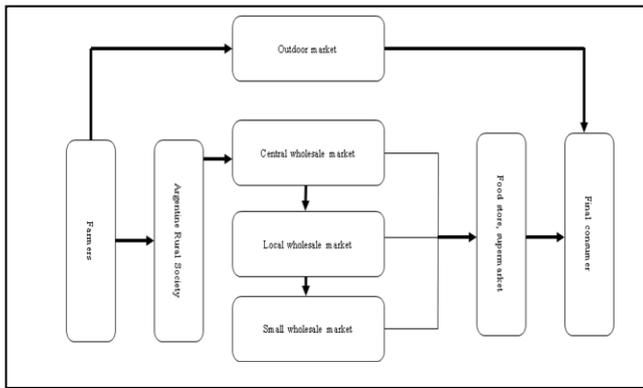


Fig.6.Circulation Mode of Fresh Agricultural Products in Japan

C. Circulation Mode of Fresh Agricultural Products in Netherlands

In Netherland, the circulation mode is farmers-agricultural cooperative organizations-welfare wholesale markets-wholesalers(Fig.7). At present, it is the largest exporter and producer of fresh agricultural products after the United States. Geographically, the Netherlands, as an important transportation hub in Europe, has the world’s first-class ports of Rotterdam and Amsterdam and has established a circulation hub for fresh agricultural products [9]. By creating a new mode of auction circulation and building an information platform, Netherlandhas automated and informationized its circulation of fresh agricultural products.

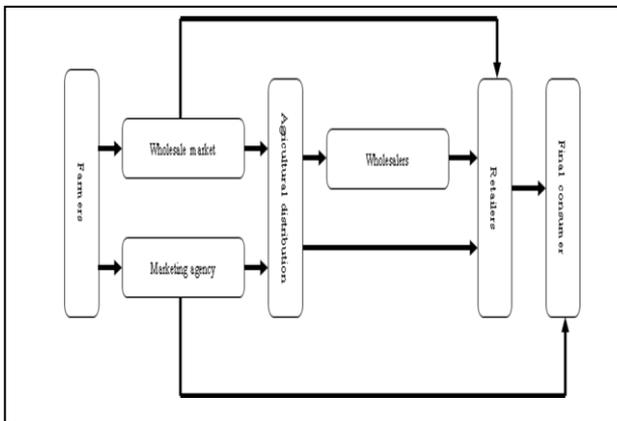


Fig.7.Circulation Mode of Fresh Agricultural Products in Netherland

D. Reference of Foreign Fresh Agricultural Products Circulation Mode to Tianjin

According to the comparative analysis of the development experience of various countries, it can be seen that in order to achieve development in the circulation of fresh agricultural products, Tianjin needs to vigorously promote the circulation of agricultural products to become market-oriented, gradually form the multiple subjects of product circulation, turn to modern logistics, strengthen independent construction of enterprises, so as to become a modern circulation system of fresh agricultural products in China that can connect with the international agricultural products market. At the same time, it is necessary to start integration with multiple industries or cross industries, and gradually promote the modernization of

fresh agricultural products logistics. However, attention should be paid to:

- improve the infrastructure construction of fresh agricultural products logistics
- develop the main scale of fresh agricultural products logistics
- promote the information technology in the circulation of fresh agricultural products
- support the regulatory measures on the development and establishment of agricultural technology

IV. SUGGESTIONS ON OPTIMIZING CIRCULATION MODE OF FRESH AGRICULTURAL PRODUCTS IN TIANJIN

We still have a long way to go to improve the circulation mode of fresh agricultural products in Tianjin. What we can do is to analyze the deficiencies in the circulation of fresh agricultural products and the current problems and reasons restricting the efficiency of logistics, instead of copying the experience of developed countries and discussing how to improve the circulation mode of fresh agricultural products and reduce the waste and consumption in the process.

A. Establish quality management system on wholesale market and implement market access

Large wholesale markets should be equipped with pesticide residue detection, electronic settlement, information release, electronic monitoring, garbage disposal and other systems for fresh agricultural products to lay a solid foundation for the rapid entry and circulation of agricultural products. At the same time, the wholesale market should make great efforts to ensure the safety of agricultural products, establishing various rules and regulations in combination with the actual situation and building a rapid testing laboratory for agricultural products. Markets shall ask traders for certificate and invoice, so that the source of agricultural products can be identified, the destination can be traced, and the responsibility can be investigated. It should establish a market information circulation center, improve the information service system, and realize the full coverage of the monitoring system in the field. In addition, it can rely on the electronic charging system and the website built by the wholesale market to release agricultural product information, which, therefore, can be accessible to everyone.

B. Improve the infrastructure construction of fresh agricultural products logistics center or park

The investment in the circulation of agricultural products is insufficient in Tianjin. Therefore, local leading agricultural enterprises should establish a standard industry system to drive other capital to enter reasonably, so as to improve the shortage of logistics park infrastructure. First of all, solve the docking problem between the production site and the logistics park. Second, improve the construction of storage facilities in logistics centers or parks, and create a storage environment tailored to the characteristics of fresh agricultural products. Third, improve the comprehensive service level of logistics

centers. For example, standard quality and safety traceability system should be established to create various special services for the needs of operators so as to lay a solid foundation for the circulation of fresh agricultural products and provide convenience for agricultural development. In addition, in order to develop the trading system of fresh agricultural products, it is necessary to connect the information platform of the logistics park with the surrounding districts and counties, combing on-line and off-line so as to achieve two-way circulation of agricultural products, and work with small and micro logistics enterprises to set up warehouses and distribution centers at urban and rural nodes. Logistics park or center must pay attention to the logistics of fresh agricultural products before, during and after production, and try best to form a new service mode across districts and counties, strengthen the integration of horizontal and vertical enterprises, and create a new situation for the circulation of fresh agricultural products.

### *C. Establishing Agricultural Information Marketing Service Platform*

Nowadays we are facing a new round of scientific and technological revolution centered on information technology. Recognizing the added value of information technology in the circulation of fresh agricultural products is important to accelerate and upgrade Tianjin's fresh agricultural products circulation mode. Tianjin should speed up the formulation and implementation of "Triple Play", "Brand Building of Agricultural Products" and "Full Coverage of Online Sales" to promote the rapid development of agricultural informatization. It should actively respond to the implementation of the "Internet of Things + Agriculture" information project, promote deep cooperation among big data, the Internet of Things and the circulation mode of fresh agricultural products, establish an information platform, and form a fast and real-time modern urban agricultural system, which will make information technology better serve the circulation and development of fresh agricultural products [10]. In addition, it should focus on guiding social capital into the application field of fresh agricultural products circulation information technology. Through the establishment of the Internet of Things application information platform, the Internet of Things experimental base and the encouragement of related agricultural invention patents, Tianjin would realize the full coverage and real-time control of the Internet of Things information platform technology in all agricultural areas in Tianjin. The application of the fresh agricultural products safety traceability service system and the remote diagnosis system for serious diseases and insect pests should also be accelerated.

### *D. Relying on E-commerce and Opening New Circulation Channels*

Tianjin's agriculture-related districts and major fresh agricultural production areas should focus on the construction and improvement of a number of regional e-commerce platforms, high-quality brand base e-commerce platforms and agricultural fresh e-commerce enterprise platforms through the holding of a series of large-scale activities on different themes of connecting agricultural producer and e-commerce

platform. At the same time, it should demonstrate and publicize the high-quality and characteristic brand agricultural products of the three places Beijing, Tianjin and Hebei, give the same incentive policies to the agricultural products sold on the platform from the three places to promote the development of e-commerce industry for agricultural products in Beijing, Tianjin and Hebei. In addition, it should strive to promote the circulation structure of fresh agricultural products in Tianjin and create an effective supply capacity of fresh agricultural products to deepen the concept of green development in rural areas and achieve the integration of primary, secondary and tertiary industries. At present, Tianjin has 1,000 online marketing enterprises and over 2,000 kinds of agricultural products, with annual sales of agricultural products reaching 1 billion yuan. Next, it should sign strategic cooperation framework agreements with JD.com and Alibaba, and open online stores and flagship stores relying on large e-commerce platforms such as Taobao and JD.com to help more than 450 agricultural enterprises and cooperatives sign online sales agreements [11]. What's more, it is suggested to use the concept of e-commerce to manage agriculture, adjust the production structure, innovate the sales methods, build e-commerce channels when conditions permit, and take the way of combining online and offline and direct selling.

### *E. Policy Support to Optimize Industry Development Environment*

Strengthening policy innovation is the key factor to promote the healthy development of fresh agricultural products circulation. The decisive role of the market in the allocation of resources is a prerequisite for the healthy development of Tianjin's fresh agricultural products circulation mode. The government should strengthen innovation on the relevant policies so as to enable the government to play a positive guiding role. It should take fresh agricultural products such as vegetables, fish, flowers and fruits as its development direction, highlight the advantages of Tianjin's modern urban agriculture in terms of facility and intensive scale system, and pay close attention to the establishment of a batch of green, high-grade and fine fresh agricultural products production bases. It should regulate relevant policies and the wholesale market supervision system to reduce the transaction cost of fresh agricultural products entering the market. The first is to implement the policy of streamlining administration and delegating power, pay close attention to optimizing service reform, establish the quality list of wholesale market access, and simplify the admission approval process for fresh agricultural products so as to lay a foundation for improving the circulation efficiency of fresh agricultural products. The second is to improve the standardization of technology to ensure the marketing power, competitiveness and risk resistance of large fresh agricultural products circulation enterprises. The third is to innovate the matching service between rural finance and market. The fourth is to give full play to the guiding role of agricultural associations and chambers of commerce, and actively connect with market information to open up a good circulation environment.

## V. CONCLUSION

This paper puts forward some countermeasures and suggestions to promote the circulation mode of fresh agricultural products in Tianjin based on its current situation. First, it needs to speed up the establishment of a quality management model for fresh agricultural products and promote the rapid circulation of fresh agricultural products with fast and efficient detection methods. Second, it needs to improve the logistics center and park mode of fresh agricultural products and further improve the supporting infrastructure construction of the existing logistics park. Third, it should establish agricultural information service platforms, combing the release of agricultural products information with production and sales of fresh agricultural products, and at the same time guide social capital into the application of information technology in the fresh agricultural products logistics industry. If Tianjin wants to become an important circulation center of fresh agricultural products that serves North China and Tianjin and Hebei, it will give full play to the dual advantages of leading enterprises and policies, bringing new experience and models for the construction of modern urban agriculture in China.

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