

# Study on the Establishment of Green Joint Logistics System in Hunan from the Perspective of Rural Revitalization\*

Shijun Yuan

Hunan Modern Logistics College  
Hunan, China 410131

Zhengxin Wu\*\*

Hunan Modern Logistics College  
Changsha, China  
\*\*Corresponding Author

**Abstract**—Green logistics and joint logistics have become the objective requirements for the sustainable development of Hunan rural economy to realize the integration of logistics resources and the inevitable choice of its logistics development. Based on the principle of symbiosis, the principle of supply chain coordination and the principle of collaborative evolution, this paper discusses the structure of Hunan rural green joint logistics system, the operation mode and strategy of the whole production chain integration joint logistics from three aspects, the green joint logistics infrastructure platform, the green joint logistics operation management system and the green joint logistics guarantee system.

**Keywords**—Hunan rural area; green; joint logistics; logistics system

## I. INTRODUCTION

The implementation of Hunan Rural Revitalization Strategy provides a good development environment for the development of rural logistics in Hunan, but also puts forward higher requirements for rural logistics.

Taking Hunan countryside as the core, relying on the Yangtze River and Dongting Lake, it is able to build Hunan Yangtze River economic belt and promote the economic development of the whole province. It is a major opportunity for Hunan to expand the opening up along the river and enhance the level of development, and also the only way to realize the economic revitalization and scientific development of Hunan. In recent years, the logistics industry in the area around Dongting Lake has developed rapidly, and the total amount and added value of social logistics continue to grow, which promotes the social and economic development of the region. However, at the same time, with the development of logistics, the unreasonable logistics service mode has a certain impact on the ecological environment of the region. Some data show the annual

\*Fund: 2018 Hunan philosophy and social science fund base project "Research on the Establishment of Rural Logistics System in Hunan Province Based on the Strategy of Rural Revitalization" (18JD43) and the phased research result of Hunan Social Science Achievement Review Committee "Research on the Countermeasure System of Rural Logistics Development Based on the Strategy of Rural Revitalization" (XSP19YBC277).

carbon emissions of logistics and transportation ranked the fifth place in the carbon emission of energy supply, which has become one of the factors leading to many problems, such as climate warming, frequent meteorological disasters, environmental pollution and ecological imbalance. Therefore, green logistics and the joint logistics to realize the integration of logistics resources have become the objective requirements for the regional economic sustainable development and inevitable choice of logistics development.

## II. BASIC PRINCIPLES FOR ESTABLISHING A GREEN JOINT LOGISTICS SYSTEM

In order to change the imbalance among regional economic development, environmental protection and resource utilization, the establishment of Hunan rural green joint logistics system should achieve the goals of the symbiosis of logistics activities and environment, the coordinated development of regional industrial chain and supply chain, the optimization of land, water, air and other logistics modes and infrastructure system.

### A. Symbiosis Principle

The symbiosis of Hunan rural economy development and its natural environment is a necessary condition to ensure the sustainable development of Hunan rural areas. Therefore, logistics operation shall also coexist with environment. All participants should form an organic whole with the natural environment to ensure balance in material, energy and information exchange between the logistics operation and the ecological environment. All participants involved in the operation of the joint logistics system should focus on the joint green logistics service objective, abide by the relevant environmental protection standards, and take into account the unity of corporate economic benefits, environmental benefits and social benefits, so as to deeply integrate the green joint logistics system into the whole rural ecosystem of Hunan Province which restricts and influences each other, and realize the goal of coexistence and joint prosperity with the natural and social environment in the rural areas of Hunan Province.

### *B. Supply Chain Coordination Principle*

From the perspective of supply chain, there are many participants in Hunan rural green joint logistics system. The upstream enterprises of supply chain in the region include production and manufacturing enterprises, commercial and trade circulation enterprises, agricultural product planting and processing circulation enterprises. The core of green joint logistics system operation is logistics enterprises. The downstream participants of supply chain include demanders of various production and living materials. In order to cope with the competitive pressure brought by other supply chains and current dynamic requiring dynamic strengthening, the participants of the supply chain must form a network type consortium through a certain way to achieve the coordination of the whole supply chain.

The supply chain coordination of Hunan rural joint logistics system includes three aspects: establishing the core enterprise of joint logistics, defining the goal of green joint logistics, changing from "cooperation-gambling" to "cooperation-integration", realizing the coordination of joint logistics organization; closely focusing on the needs of customers, using the concept of green logistics and joint logistics technology to carry out optimization and reorganization of business process at the level of supply chain. Through the application of Internet and Internet of things and other technologies, the information sharing of upstream and downstream members of the supply chain can be realized to achieve the coordination of joint logistics information.

### *C. Principle of Co-evolution*

The development of logistics and economy complement each other, and the relationship between logistics enterprises and ecological environment is also of action and reaction. While Hunan rural logistics system (enterprise) has an impact on the ecological environment, the ecological environment of the region will also act on the logistics system (enterprise). If the logistics system (enterprise) wants to survive and develop in the environment, it must adapt to the changes of the environment and make corresponding changes. Therefore, in the establishment of Hunan rural green joint logistics system, it is necessary to not only consider whether the upstream and downstream enterprises of the supply chain can adapt to each other, learn from each other's strengths and weaknesses to maximize the supply chain force, but also pay more attention to the adaptability of each participant in the supply chain to the Hunan rural ecological environment and the adaptability of the whole supply chain to the regional ecological environment. With the competition among enterprises, supply chain and supply chain, induction and anti-induction of market choice and market demand, Hunan rural green joint logistics system gradually realizes co-evolution among members of supply chain, between members of supply chain and supply chain, between members of supply chain and regional ecological environment, between supply chain and regional ecological environment, and between supply chain and social economy.

## III. ESTABLISHMENT OF GREEN JOINT LOGISTICS SYSTEM

The establishment of green joint logistics system is multi-level and multi-dimensional. In this paper, Hunan rural green joint logistics system is divided into three levels: green joint logistics infrastructure platform, green joint logistics operation management system and green joint logistics security system. Among them, the establishment of Hunan rural green joint logistics infrastructure platform is to fully integrate the public rail land logistics infrastructure and air logistics infrastructure resources on the basis of giving full play to the obvious advantages of Hunan rural water transport logistics infrastructure, and create a green joint logistics park, logistics center, distribution center and other logistics nodes with water transport logistics as the core. The operation and management mode of Hunan rural green joint logistics is based on the green joint logistics development strategy of the coordinated development of Hunan rural ecological environment. It implements the integrated joint logistics operation mode of the whole industrial chain in Hunan rural areas and provides joint logistics services including joint procurement, joint transportation, joint storage, joint processing, and joint distribution. The guarantee system package of Hunan rural green joint logistics includes the establishment of cooperation mechanism of joint logistics service providers, benefit distribution mechanism of supply chain members, green logistics service standards, green logistics laws and regulations, green logistics supervision and restriction mechanism, and joint logistics information platform.

## IV. OPERATION MODE AND STRATEGY OF GREEN JOINT LOGISTICS

### *A. The Operation Mode of Hunan Rural Green Joint Logistics*

From the perspective of Hunan rural whole industrial chain, it is suggested to give full play to the role of joint logistics core enterprise (Logistics Center), use the concept of joint logistics operation management, adopt advanced green logistics technology at home and abroad in the whole process of joint logistics, such as joint procurement, joint transportation, joint storage, joint processing, and joint distribution, and recycle and reuse the surplus materials and eliminated materials and waste generated in the process of joint logistics operation, and introduce the government led laws and regulations, logistics standards, publicity and education as well as incentive measures, so as to reduce environmental pollution and high energy consumption and improve the utilization rate of resources.

### *B. The Operation Strategy of Hunan Rural Green Joint Logistics*

The following aspects must be achieved in the operation of the green joint logistics system in order to reduce pollution of logistics activities to the natural environment, impact on traffic environment and residential environment and realize the virtuous cycle of Hunan rural green joint logistics system.

1) *Green joint transportation and distribution*: The specific implementation of green joint transportation and distribution strategy is based on the full integration of customer resources and goods sources, the reasonable layout planning of transportation and distribution infrastructure, the use of logistics technologies related to distribution and transportation, the implementation of joint distribution in the field of distribution, and the adoption of composite consistent transportation mode in the field of transportation. The mode of joint distribution is not only the traditional mode of road and automobile distribution, but also the advantage of water transportation in Hunan rural areas. The joint distribution of water transportation should be carried out by using the appropriate ship type to fully achieve the goal of environmental protection and energy saving. In the aspect of green joint transportation, the advantage of regional water transportation should also be given full play, and land and air transportation resources should be integrated for organic combination. Joint transportation services have multiple links, segments and means of transportation. The transportation mode can not only realize the maximum utilization of transportation resources because of the joint transportation, but also through the organic integration of various transportation modes, achieve the function of composite direct transportation, and realize the goal of resource saving and environment protection.

2) *Green joint circulation processing and storage*: Circulation processing is an increasingly valued logistics service content. In order to realize the goal of resource saving and environment protection, it is suggested to stand on the height of systematic analysis in the green joint logistics system around Dongting Lake. According to the needs of customers, it is necessary to concentrate processing and manufacturing work dispersing in each member of supply chain and even of different supply chain and standardize them in order to reduce emission of wastes and exploit scale effect. In addition, it can improve the utilization rate of resources through the leftover materials generated in the process of centralized processing.

The green joint storage should make the network structure of logistics nodes with storage function such as logistics park, logistics center and distribution center in Hunan rural joint logistics system reasonable, the planning, design and layout of single storage node scientific, the establishment of storage node and the selection of facilities and equipment green, and widely use the storage technology and storage operation specifications to meet the needs of various storage materials to provide green storage service, under the premise of ensuring the goods in the warehouse are in good condition, and realize the harmonious coexistence with the surrounding environment of the warehouse.

3) *Joint reverse logistics*: Hunan rural green joint logistics system attaches importance to the green and joint forward logistics, such as purchase, transportation, storage, distribution, circulation and processing, while its reverse logistics operation cannot be ignored. In the production

process of each production enterprise in the region, in the circulation process of each trade circulation enterprise to the commodity, and in the consumption process of each consumer, there will be a large number of wastes. Although many enterprises have taken various measures to deal with them, on the whole, the emergence of a large number of wastes will have a negative impact on the society. Hunan rural areas should break the operation mode of single enterprise only dealing with the internal waste of their own business, establish the reverse joint logistics system that radiates the region and responds to the positive joint logistics, and collect, classify, process, pack, transport and store the goods that have lost their original use value produced in the economic activities of the joint reverse logistics operation subject region according to the actual needs, and distribute them to special treatment places in the joint reverse logistics system. Not only from the point of environmental protection, they are transported to specific places for stacking and burying, or incineration and chemical treatment, but also more importantly to achieve the goal of resource reuse (reuse after recycling treatment) and recycling (conversion into new raw material for use after treatment).

## V. CONCLUSION

Green joint logistics is an important way to realize the sustainable development of society. Therefore, the basic principles of green and joint logistics operation shall be applied to the modern logistics activities in Hunan rural areas from the perspective of protecting the natural environment. All efforts shall be exerted to strive to build a green joint logistics system, and constantly carry out logistics technology innovation, so as to realize the ecological and economic development and sustainable development of green joint logistics in Hunan rural areas.

## REFERENCES

- [1] He Chaohong. Obstacles and Countermeasures of Green Logistics Development in Guangxi. *Science and Technology of Small and Medium Enterprises*, 2006 (10): 44-45. (in Chinese)
- [2] Li Lixiao. Establishment of Green Logistics System. *Henan Business College*, 2006 (1): 35-37. (in Chinese)
- [3] Gan Hongyun. Establishment of Green Logistics System in Hangzhou. *Modernization of Shopping Malls*, October 2009 (late issue of a month) 591: 22-23. (in Chinese)
- [4] Tang Weidong. Study on Operation Mechanism of Eco-economic Zone — Taking Poyang Lake Eco-economic Zone as an example. Doctoral Dissertation of Wuhan University of Technology, 2012. (in Chinese)
- [5] Zhang Chengkai, Nie Maolin. Research on Ecological Logistics System Model Based on Circular Economy. *Science and Technology Progress and Countermeasures*, 2009 (11): 14-17. (in Chinese)
- [6] Liu Nan. Research on Establishment of Green Logistics System in Liaoning Province. Master's Thesis of Shenyang University of Technology, 2011. (in Chinese)