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Exploration of China's Green Logistics Development

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Abstract
With rapid economic development, the environmental issue has become a political problem which influences mankind's survival and social development. As part of economic activities, logistics face the problem. Therefore, the logistics system should be improved from the environment perspective to create a green logistics management system, which is the new logistics management development trend of the 21st century. Green logistics are built on further development of modern logistics and refer to greening in both logistics operations and the whole management process. The goal of green logistics is not only to bring about profits to economic entities, satisfy customer demands and expand market occupancy but also to save resources and protect the environment.

Key words: Green logistics; Environmental protection; Economic interest

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1. THE CONCEPT OF GREEN LOGISTICS

1.1 Concept
Green logistics were proposed in 1990s for the first time and so far there's no unified definition of its connotations in the academic circle. Brewer and Barton maintained that green logistics, built on sustainable development, is an efficient logistics transportation and distribution system which coordinates with environmental development and emphasizes integrated goals of social property and economic property such as pursuit of resource saving and environmental protection in the whole logistics process. China's standard logistics terminology (GB/T18354-2001) regulates that green logistics are to purify logistics environment and allocate logistics resources in the fullest and most reasonable way while preventing logistics harm caused to the environment in the logistics process. It includes greening in logistics operation steps and logistics management. Thereinto, logistics operation environment greening highlights green transportation, green packaging and processing, etc.; logistics management greening starts from resource saving and environmental protection perspectives and covers greening of the forward logistics step and systematic greening in the supply chain. At the same time, green logistics regard ecological economics, sustainable development and ecological ethic as its theoretical basis and advocate the realization of social interest, economic interest and environmental interest under the prerequisites of ecological balance, reasonable economic development and advanced technology.

1.2 Influences of Logistics Activities Over Environment
At present, the logistics activities have many negative influences over the environment, which is manifested in the following aspects:

Firstly, unreasonable distribution processing methods to impose negative influences over the environment such as the dispersed distribution processing by consumers. The level of resource utilization is low and energy is wasted. Meanwhile, leftover materials in the process are hard to collect and neutralize efficiently, thus leading to waste pollution, etc..

Secondly, in the packaging process, luxury packaging is overly pursued for many commodities; the used materials and ways of packaging is not environment friendly and not scientific, which is not only a great waste of resources but also severely pollutes the environment.

Thirdly, in terms of transportation, on the one hand, the vehicles themselves bring about grave environmental pollution; besides, unreasonable freight spots and distribution center layout give rise to roundabout transportation, which increases fuel consumption and compounds exhaust emission and noise pollution; on the other hand, transported commodities may cause harm to the environment. For example, petroleum leakage in the sea transportation causes vast pollution which is usually fatal and recovery is not possible for a long time.

Fourthly, inappropriate operations in the carrying process can damage commodities and the abandoned waste may be a threat to the environment.

Fifthly, in the storage activities, some commodities need special protection and the chemical agent used may pollute the environment; if some inflammable and explosive items and dangerous chemicals are not well kept, their explosion or leakage may pollute and damage the surrounding environment. For instance, at wee hours on June 17, 2011, the silicon tetrachloride leaked from a vehicle in Puyang County of Henan. The vegetation withered and hundreds of livestock died in about hundreds of meters around.

1.3 Contents of Green Logistics

Firstly, green storage. Reasonable warehouse layout is made to save the transportation cost, strengthen storage control, improve the commodity turnover rate, and reduce defective goods, damaged goods and obsolete goods.

Secondly, green transportation. It covers two aspects: first, electric vehicles will be developed and used to cut down noise pollution and air pollution. Second, the transportation methods and routes will be reasonably planned so as to reduce the phenomena of empty and roundabout transportation, etc, enhance transportation efficiency and realize energy conservation and emission reduction.

Thirdly, green packaging. Concretely speaking, it refers to greening in packaging materials, packaging methods and packaging process. The green packaging is mainly realized through the following approaches: using green environmental protection materials, changing packaging scale and packaging methods, and increasing the loading capacity.

Fourthly, green distribution processing. Distribution processing is of strong production nature and an area where the distribution department can really achieve something in environmental protection. The implementation of green distribution processing is mainly conducted from two perspectives: changing dispersed processing for professional concentrated processing, enhancing efficiency and reducing pollution through scaled operations; developing green distribution processing technologies and reducing the production of wastes and scraps.

Fifthly, green loading and unloading. Proper loading and unloading should be carried out in the process so as not to damage any commodity and cause resource waste and environmental pollution. In addition, it requires them to remove invalid carrying, improve its flexibility, reasonably use modern machinery and maintain balanced and smooth logistics.

Sixthly, green information gathering and management. Logistics is not only about space transfer of goods but also for information searching, integration, storage and utilization. Green logistics also involve timely and efficient collection and treatment of related information in the green logistics system as well as timely application in the logistics management, thus further promoting logistics of greening. Moreover, the searching, integrating and storing process of logistics information should be green as well.

Seventhly, establishment of returned logistics. The generation of plenty of wastes severely threatens the environment in which mankind lives so returned logistics must be effectively organized to enable wastes to reenter the production and life cycles or be well treated. It can be noted that the goals of green logistics are different from those of ordinary logistics activities which are mainly conducted to materialize the profit of logistics enterprises, satisfy customer demands and expand market occupancy, etc.. However, in addition to economic interest, green logistics pursues the long-term goal of resource saving and environment protection which covers both economic interest and environmental benefits.

Green logistics are of great importance to sustainable social and economic development and corporate reduction of operation cost, etc., and has attracted more and more attention. However, at present, in China, green logistics development still proceeds slowly due to the limitation of such factors as policy, standard, cognition level and economic strength.

2. DEVELOPMENT STATUS OF CHINA'S GREEN LOGISTICS AND ITS NECESSITY

At present, the concept of green logistics in China is not popularized; no related legal systems are in place to guarantee the green logistics development; the development of the logistics industry is backward and no scale is formed; management staff falls short in the industry. These are the main barriers against China's logistics development. In order to promote the development of China's green logistics, a logistics development planning should be formulated from the national perspective to gradually develop large

logistics centers and cooperate with regional distribution centers based on current logistics enterprises, thus building a distribution system with multiple functions, informationization and quality services; infrastructure construction should be strengthened; logistics enterprises should come up with operation management strategies from the perspective of environmental protection; greater efforts should be made in legislation to set up a legal system for green logistics; talent training should be enforced; division of labor should be further implemented in the logistics industry to realize professionalized operation similar to product distribution. Standardization and informationization construction should be paid more attention to in the logistics industry. Hence, in terms of China's development conditions, it's considerably necessary to advocate the development of green logistics.

Firstly, sustainable development of social economy expedites the birth of green logistics. Currently, the entire world is talking about energy saving and environmental protection. Green logistics, green manufacturing and green consumption happen to jointly constitute a green economic cycle system. The three of them provide support for the system in such three aspects as distribution, production and consumption with mutual penetration and interaction.

Secondly, development of green logistics is an inevitable way to reduce operation cost. With intense competition in the market, available channels for reducing cost are getting fewer and fewer. According to experts' analysis, almost 90% of the product time is spent on such processes as storage and transportation, loading and unloading, split charging, secondary processing and information processing. Accordingly, professional logistics undoubtedly lay a foundation for cost reduction. What green logistics emphasise is the way of low investment and large logistics. It more stresses greening and accompanied energy saving, efficiency and less pollution.

Thirdly, development of green logistics is required by the global economic integration. With the development of global economic integration, some traditional tariff and non-tariff barriers are being weakened and the environment barrier is rising. As a result, ISO14000 becomes a pass for numerous enterprises to enter the international market. Two basic ideas of ISO14000 are to prevent pollution and keep improving. It requires enterprises to establish an environmental management system and minimize the negative influences of each step in their operational activities, products and services over the environment. Foreign logistics enterprises have an early start and their logistics operation and management are quite improved, which is required to bring immense impact to domestic logistics enterprises. After China's entry into WTO, its logistics enterprises must rationally choose to develop green logistics so as to secure a place on the international market.

3. MAJOR BARRIERS AGAINST THE DEVELOPMENT OF CHINA'S MODERN GREEN LOGISTICS INDUSTRY

According to statistics, there are five major barriers against the development of China's modern green logistics industry.

Firstly, the basic concept of intensive economic development based on sustainable economic, social and environmental development has been universally acknowledged but the concept is not completely established in detailed logistics activities. The government, enterprises and consumers still have no clear idea about green logistics. Much as the government has realized the importance of sustainable economic development and conducted a macroscopic planning to some extent, it hasn't worked out pertinent instruction initiatives and is indifferent to the concept of green logistics development. Enterprises regards maximized profit as their goal. For lack of external constraints and development inertia, they are not greatly motivated to abandon the old way of increasing profit by putting more investment and develop green logistics on their own. Besides, the development of green logistics entails optimization and rebuilding of corporate operation philosophy, product design, manufacturing, packaging and distributing links. For consumers, price is the most important measurement standard for buying a product and consumers still have weak awareness of including green logistics in their decision-making.

Secondly, due to the traditional segmented management system and multiple management mechanism of China's logistics industry, logistics departments fall short of effective coordination and internal connection in the logistics system is artificially separated, which severely restrains the overall planning of the logistics system, affects coordinated development of varied logistics services, hinders the logistics socialization and intensification process, and causes big waste of logistics resources.

Thirdly, in recent years, although China's logistics infrastructure has been greatly enhanced, there's still a great gap compared with the requirements of China's economic and logistics industry development and developed countries. It affects the enhancement of China's logistics efficiency to a great extent and is unhelpful to rapid and healthy development of green logistics.

Fourthly, the improvement of logistics operation efficiency and service quality is restrained due to backwardness in China's logistics information management level, technical means and development & application of advanced logistics information technologies, lack of necessary public logistics information platform, weak functions such as order management, cargo tracking and inventory inquiry, etc.. The standards for technology,

equipment and information are not consistent between different logistics departments and non-standard behaviors are common. In particular, unified standards are missing in such distributing links as packaging, transportation, loading and unloading, thus causing rising logistics cost, waste of resources and being harmful to participation in international competition.

Fifthly, the prosperous development of China's modern logistics industry gives rise to great demands for related talents. Severe shortage in logistics of talents has become a bottleneck against the development of China's modern green logistics industry and logistics talents are listed as one of the twelve shortage talents in China. So far, the overall quality of logistics staff in China is still quite low and high quality compound talents who understand both management and technology fall short; the progress in logistics education and training certification is slow; the logistics faculty is weak and education means lag behind, which seriously restricts the swift development of green logistics.

4. DEVELOPMENT CHANNELS AND SUGGESTIONS ON CHINA'S GREEN LOGISTICS

Firstly, establishing the brand new operation philosophy of green logistics. The development of green logistics is inseparable from powerful policy guarantee. Hence, the government must set up a set of improved laws, regulations and policies to effectively regulate, supervise and motivate behaviors of logistics enterprises; constrain and intervene external economy of logistics activities by environmental legislation, collection discharge license, permit system and green logistics standards; stimulate and instruct logistics subjects' behaviors by formulating incentive policies such as green subsidy, tax support and favorable loans, thus boosting healthy development of green logistics.

Secondly, accelerating the public infrastructure planning and construction in green logistics. To speed up the public infrastructure planning and construction, first, the government should attach great importance to utilization and modification of current logistics infrastructure whose scale, layout and functions should be integrated in a scientific way, thus enhancing the utilization efficiency of current facilities and giving full scope to their comprehensive functions. In addition, macro-coordination and function integration should be strengthened in newly built logistics infrastructure. The government should coordinate logistics planning from the overall strategy height, sort out different relations and organically coordinate logistics planning, site construction planning of different transportation methods and storage facility planning in the industry and commerce circulation industry, thus avoiding repeated construction and waste of land resources. Moreover, it should continue to expand investment in transportation infrastructure and make greater efforts in the construction of such facilities as highway, railway, water transport, aviation, pipeline and urban distribution, etc. The government should put more investment in basic and public welfare facilities, extend financing and investment channels for operative facilities according to the rules of market economy, and encourage corporate operation. In the end, it should strengthen the cohesion between different transportation methods, accelerate the improvement of comprehensive transportation network and go all out to develop multimodal transport.

Thirdly, building green supply chains system. American and European countries pay great attention to the building of green supply chain system and have successively announced a series of measures to guarantee the implementation of the system. The green supply chain emphasizes optimized environmental benefits in the whole process of product design, manufacturing, selling and recovering through vertical cooperation with upstream and downstream enterprises and horizontal cooperation between enterprises, and at the same time, ensures the optimal combination of enterprises' environmental and economic performance, thus realizing sustainable development of enterprises' supply chains. China must deem the environmental issue as an important decision-making variable of enterprises in order to develop green logistics. It needs to modify the entire supply chain, minimize the pollution influences of all steps including production, packaging, transportation, distribution and use, construct a green supply chain system and guarantee sustainable development of logistics economy.

Fourthly, developing green logistics technology and formulating green logistics standards. Advanced green logistics technology is an important technological support and guarantee for the development of green logistics. America and European countries attach great importance to studies on green logistics and its application and adopt many advanced technologies in logistics activities of transportation, distribution and packaging such as JIT, ERP and green packaging, which provides technological guarantee for logistics activities greening. At present, China's logistics technology level is still quite low and a big gap exists compared with green logistics. China has referred to the advanced green logistics technologies of America and European countries, provided subsidies for innovation based on its own national conditions and boosted the application and innovation in such sophisticated technologies as bar code, electronic data interchange and global positioning system. With the advent of globalization trend and gradually emergence of green barrier, the environmental management series standard ISO14000 has turned into a pass for enterprises to launch on the international market. At present, some

large transnational logistics companies in America and Europe have been stationed in China to seize China's logistics market and green logistics have become an inevitable choice for corporate internalization. Hence, China's logistics enterprises should fully realize the importance and urgency of the logistics technology revolution, draw upon green logistics standards of developed countries, formulate green logistics standard system that conforms to the international level, proactively study, develop and adopt green logistics technologies, strengthen the competitiveness of Chinese enterprises on the international stage, and embrace the challenges of green logistics.

Fifthly, paying attention to the training of logistics talents. Colleges and universities are the main bases for advanced logistics talents training. In order to train qualified talents as required by the era, colleges and universities should further optimize their training models according to their own features and the market requirements for logistics talents, and demonstrate their characteristics in such aspects as design of talent training goals, building of the course system and training approaches.

Logistics management talents should be compound, that is, to understand both logistics technologies and logistics economy; to be familiar with logistics management technology and grasp the supply chain process; to be conversant with software programming and e-commerce technology in information technology system. All these require them to have a wide knowledge such as transnational trade and customs clearance, storage and transportation, financial cost management, security management and laws. In the meantime, they should be able to accept modern logistics philosophy, analyze and solve problems in a systematic way, have strong desire for management and consummate management skills as well as basic qualities such as the challenge spirit.

Logistics operation talents should possess common logistics knowledge and technology, command basic knowledge and technological methods of economy and trade, information science and industrial engineering. In terms of skills, they should grasp basic ones such as transportation, storage, packaging, loading and unloading, distribution processing and information services. Meanwhile, they should be equipped with fundamental qualities including hard-working, integrity and effective communication.

CONCLUSION

To sum up, it's not only necessary but also urgent to build modern green logistics and advocate energy efficiency and green environmental protection in China. The development prospect of China's modern green logistics is promising. With the development of economic globalization, gradual dilution of some traditional tariff and non-tariff barriers as well as emergence of green barriers, the market becomes more internalized especially after China's entry into WTO. After the reasonable transition period, China's logistics industry will cancel most of foreign stock right limitations and foreign logistics enterprises will enter the Chinese market, which is bound to deal with an immense blow to domestic logistics enterprises. It means that intense competition will be witnessed in the future logistics industry. China's intensified efforts to develop green logistics are important opportunities for dealing with future challenges and seizing advantages amid competition.

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