

# TRANSPORT EFFICIENCY THROUGH LOGISTICS DEVELOPMENT

POLICY STUDY



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# TRANSPORT EFFICIENCY THROUGH LOGISTICS DEVELOPMENT

## POLICY STUDY

Asian Development Bank

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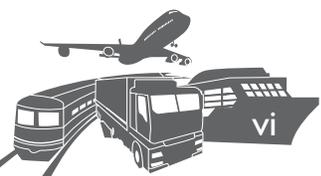
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# ABBREVIATIONS

3PL	third-party logistics
4PL	fourth-party logistics
ADB	Asian Development Bank
BNSF	Burlington Northern Santa Fe Railway
CAAC	Civil Aviation Administration of China
CIRC	China Insurance Regulatory Commission
GDP	gross domestic product
MOR	Ministry of Railways
MOT	Ministry of Transport
NDRC	National Development and Reform Commission
PRC	People's Republic of China
TPRI	Transport Planning and Research Institute
UP	Union Pacific
US	United States



# FOREWORD

**T**he People's Republic of China (PRC) has been transformed from an agricultural to an industrial economy, and is rapidly moving into high technology industrial manufacturing. As such, there is a strong need for a modern transport and logistics system that is efficient, safe, and sustainable, and that better serves clients' needs.

The technical assistance project for the Transport Efficiency through Logistics Development Policy Study was developed through close collaboration between the Asian Development Bank (ADB) and the Government of the PRC to assist the PRC in modernizing its transport and logistics policies. It was implemented through cooperation between the Transport Planning and Research Institute and international consultants, under the guidance of the Ministry of Transport and ADB. The team developed the recommendations based on literature review, interviews, field surveys, and case studies.

The report describes the current state of transport and logistics development in the PRC. Based on the results of the survey and analysis of best practices in different countries, the study makes various policy recommendations for strengthening the approach to the development of logistics in the PRC. Foremost among the recommendations are to

- develop effective institutional mechanisms for integrated infrastructure development;
- accelerate development of inland waterways, the rail container transport system, multimodal transport hubs, and logistics centers to achieve an interconnected network;
- improve the policy direction and regulatory framework, and strengthen government's strategic role in transport and logistics investment; and
- promote the use of information and communications technology in logistics.

These will allow the PRC to achieve dramatic improvements in its transport efficiency and create a modern logistics system that can keep pace with its continuing rapid development.



Robert Wihtol  
Director General  
East Asia Department



# PREFACE

Logistics is the integration of transport, warehousing, freight forwarding, and information services. By directly improving competitiveness of products and services, efficient, smooth, and low-cost logistics services make a significant contribution to the economy and to people's livelihoods and national prosperity.

Over the last 30 years, the Government of the People's Republic of China (PRC) has rapidly constructed transport and logistics infrastructure and promoted the development of the transport and logistics system, which has successfully contributed to the country's rapid economic growth.

To satisfy the demands of a more prosperous society, the PRC needs to further improve its logistics system. This is needed to enable the PRC's transformation from an investment-led to an innovation- and consumption-driven economy. Moreover, the approach to logistics needs to cater for the needs of the different industries in the PRC, and provide for active and orderly market competition through self-correcting institutional mechanisms.

The current logistics system still has significant shortcomings regarding its efficiency, safety, and sustainability. These are constraining the country's economic development and therefore need to be resolved.

The introduction of the Logistics Industry Restructuring and Revitalization Plan, together with the PRC's Twelfth Five-Year Plan for National Economic and Social Development, is an important step toward achieving the government's goals and the action plans to develop a modern logistics industry in the PRC. In addition, the State Council is preparing a policy proposal for strengthening the development of the logistics industry. This demonstrates the determination of the PRC government to accelerate the development of modern logistics.

With this background, in 2009, the Asian Development Bank (ADB) approved a technical assistance project for the Transport Efficiency through Logistics Development Policy Study, which carried out a comprehensive analysis of the PRC's transport and logistics system and institutions. Lessons were drawn from the successes and failures of different countries' logistics development; and field surveys were conducted of government agencies, logistics providers, and consumers in selected provinces. Policy recommendations and action plans suitable for application in the PRC were then proposed. Now, the Ministry of Transport has established internal coordination mechanisms and taken steps to improve transport logistics, promote the "drop and pull" transport model, and support the construction of a logistics public information platform.





This project is another achievement of the cooperation between ADB and the Ministry of Transport. It was greatly assisted by the National Development and Reform Commission, the Ministry of Finance, and the Society of Traffic and Transport; and is the product of the hard work and collective wisdom of the team of national and international experts. I am sure that publication of this book will deepen understanding and support improvement of the PRC's transport and logistics industry.

A handwritten signature in black ink, appearing to be 'Dai Dongchang'.

Dai Dongchang  
Chief Planner  
Ministry of Transport

# ACKNOWLEDGMENTS

This policy brief has been prepared through the ADB-financed technical assistance project, Transport Efficiency through Logistics Development Policy Study. Xiaohong Yang, lead transport specialist, led and managed the conduct of the technical assistance. Overall guidance and supervision was provided by Tyrrell Duncan, director, Transport and Communications Division, East Asia Department and concurrently practice leader (transport).

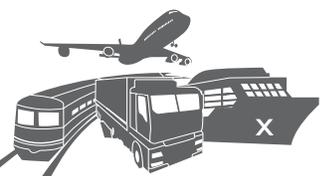
The team would like to acknowledge the timely support, help, and guidance of Cai Yuhe, deputy director general, Ministry of Transport (MOT), People's Republic of China (PRC); Dai Dongchang, chief planner, MOT; and Jiang Qian, former chief engineer, MOT. Wu Xiao, deputy director general, National Development and Reform Commission, provided useful insights, direction, and support on a large number of issues when needed.

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Special thanks also go to Abigail D. Armamento and Concepcion Jea Macrohon who provided administrative and editorial support during the finalization of the report.

The report was prepared by the Transport Planning and Research Institute (TPRI), in association with the China Communications and Transport Association (CCTA) and individual international consultants. The work by TPRI was led by Fang Ran, while Suo Husheng supervised for CCTA. The team consisted of Rong Chaohe, Xu Li, Yang Jianguo, Gao Meizhen, Yu Xingyuan, and Yao Xiaoxia. Individual international consultants' inputs from Andy Hok Fan Sze, Peter James Rimmer, Mark Goh, and Booi Kam are highly appreciated.

This report presents the findings of the literature review, desk study, and data collection and analysis. The study findings and recommendations were discussed with key government agencies drawing upon interviews and site visits conducted in Anhui, Hunan, Sichuan, and Zhejiang provinces.



# 1

# LOGISTICS CONCEPTS AND RESPONSIBILITIES

## A. Logistics and Transport

Transport is a central ingredient in the time and spatial economic utility of products and services. Multimodal transport, which combines the advantages of each mode, can be a particularly efficient and effective approach.

Logistics is a process of planning, implementing, and controlling the efficient flow of products, information, and funds to conform to the client's requirements. Transport is a core component of logistics, moving goods between different points in the supply chain. Logistics encompasses the storage of raw materials, work-in-process parts, and finished products, as well as a variety of value-added services.

Achieving logistics efficiency and effectiveness requires

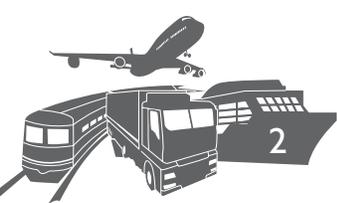
- improved efficiency of each mode of transport;
- coordination and seamless interchange of different transport modes;
- effective integration of all supply chain management functions (including demand management, supply management, manufacturing, storage, transport, distribution, and value-added services); and
- enhanced collaboration among supply chain partners (e.g., suppliers, manufacturers, distributors, and end users).

## B. Logistics Performance

Logistics performance should be assessed from the point of view of users and society. The micro view focuses on the level of satisfaction of individual users, including manufacturers, traders, and other commercial enterprises. The macro view focuses on the contribution to a country's economic and social development, and the satisfaction of public needs.

Individual logistics users are concerned about cost, efficiency, and service quality (including safety, transit time, and reliability), and demand that logistics enterprises reduce cost and improve speed and service quality. From the macroeconomic and social perspectives, however, logistics is concerned with more than just achieving economic efficiency. It should also reduce external costs (e.g., safety hazards and pollution), conserve energy, and optimally utilize the country's resources.





## C. Government and Market

Logistics development has always been driven by market demand, which leads logistics enterprises to continuously develop, upgrade, and transform their services to meet market needs. Government can play a proactive role in logistics market development, but government policies should concentrate on assisting logistics enterprises to improve their business competitiveness and vitality, and promote the development of a robust logistics market.

The government can serve three major logistics development functions:

- i. Establish, improve, and maintain progressive laws, regulations, and institutional frameworks to ensure effective operation of the logistics sector and to create a fair and equitable competitive environment.
- ii. Guide the logistics sector toward safe, energy-efficient, and environmentally friendly operations and reduce negative externalities.
- iii. Develop appropriate policies to address areas where market mechanisms may not work effectively, such as by improving national transport and logistics infrastructure, expanding the use of information technology, and developing technical standards.

In practice, different governments adopt different approaches to logistics development. The United States (US) relies on free market mechanisms to define the path of logistics development. The US government limits its role mostly to the first two functions listed above, with little market interference. The governments of Germany and Japan, on the other hand, play a much stronger role. In addition to tighter market regulation, they also shape logistics industry development through policies (such as Germany's Freight Transport and Logistics Planning policy and Japan's Quadrennial Policy Framework for Integrated Logistics). The US model can sometimes lead to shortsighted, exploitative behavior in markets, whereas the Germany/Japan model may not attract sufficient private sector usage of government logistics investments. The People's Republic of China (PRC) is in the midst of an economic and social transformation that will reshape government functions. The government needs to carefully consider its special situation when deciding on the proper model for logistics development.

It is important to recognize the role of industry associations in logistics development. Industry associations are effective intermediaries between the government and the associations' members. Given the high fragmentation and diversity of transport and logistics operators, logistics associations can facilitate communication between operators and government regulators. This promotes good relations between the government and logistics enterprises and enables private sector input to be incorporated into government decisions.

## D. Role of the Ministry of Transport

The logistics industry is multisectoral and requires the participation and collaboration of various government departments and agencies.<sup>1</sup> Based on the relationship between transport and

<sup>1</sup> Multimodal transportation as well as vertical and horizontal logistics collaboration cut across numerous sectoral boundaries and require the coordination of many government agencies. It is critical to have a lead agency to take charge of coordination and to drive logistics development initiatives.



logistics, and in accordance with the Reform Plan of Ministries in the PRC (approved by the Eleventh National People's Congress, March 2009), the role of the Ministry of Transport and its subordinate agencies is to "participate in preparation of logistics development strategies and plans" and "take charge of the supervision of the logistics market." Its focus should be to

- assist national, provincial, and municipal comprehensive transport departments in logistics development planning;
- support the construction of transport hubs, including the development of network linkages and hubs connecting different modes (e.g., seaports and river ports, airports, or transloading facilities), and enhance the capabilities of existing facilities;
- foster the growth of "modern logistics providers" that apply state-of-the-art logistics concepts and advanced transport management models;
- introduce proven operational models like "drop and pull"<sup>2</sup> and "cross docking";<sup>3</sup>
- support the development of both asset-based carriers such as "less-than-truckload terminal network carriers" and asset-light logistics intermediaries such as third-party logistics providers or "3PL" and fourth-party logistics providers or "4PL";<sup>4</sup>
- promote the creation of unified technical standards;
- construct an effective system to regulate the transport market and to strengthen the technical capacity of transport enterprises;
- craft policies to support the development of the transport industry; and
- encourage the formation of responsible trade associations in the transport industry.

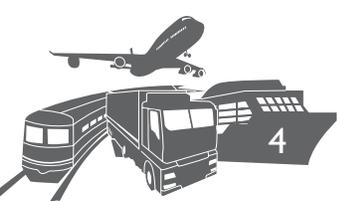
In view of the vertical division of responsibilities among government units, provincial and municipal transport departments should take charge of supervising local logistics markets. The national government should focus on formulating macro-strategies; harmonizing policies and regulations; establishing standards; and making critical investments to assist in the development of model logistics parks, conduct fundamental research, and formulate standards. The planning, funding, and supervision of logistics development should be handled by the provinces and municipalities. Local logistics development planning and supervision should be based on local logistics needs and guided by national strategies, plans, and policies.

\* \* \*

<sup>2</sup> "Drop and pull" means the carrier delivers a loaded or empty unit at the shipper or receiver and hooks up to another unit that was previously dropped. The process saves on waiting time and costs because it efficiently moves units as scheduled and the carrier will not return empty.

<sup>3</sup> "Cross docking" means products from a supplier or manufacturing plant are distributed directly to a customer or retail chain with marginal to no handling or storage. Cross docking takes place in a narrow terminal with minimal storage space. "Cross docking" describes the process of receiving products from an inbound vehicle and then transferring them across the terminal to the outbound vehicle.

<sup>4</sup> 3PL provides multiple logistics services bundled for the convenience of the customer. These services include transportation, warehousing, cross docking, inventory management, packaging, and freight forwarding. Wide acceptance of 3PL in logistically advanced countries has spawned 4PL that manages 3PL and other service providers along a business process.



**In conclusion**, transport is not only an integral part of the supply chain but also the most significant contributor to logistics costs. There is a need to improve the efficiency of the PRC's transport system through logistics policy development, with a special emphasis on promoting multimodal transport. The performance of the logistics industry is a function of both market conduct and market structure. The regulations governing the conduct of the logistics industry and its structure are interrelated and influence market performance, which is measured by logistics efficiency. At the same time, logistics performance influences public policies targeted at changing the conduct and structure of the logistics industry.

The study provides policy recommendations to (i) address challenges posed by the lack of inter- and intragovernment coordination, and deficiencies in infrastructure; (ii) achieve logistics efficiency by effective integration of all supply chain management functions (including demand management, supply management, manufacturing, storage, transport, distribution, and value-added services); and (iii) enhance collaboration among supply chain partners (e.g., suppliers, manufacturers, distributors, and end users).

# 2

## DEMAND ANALYSIS

### A. The Maturing Industrial Structure

The PRC is at an advanced stage of industrialization. Equipment manufacturing has led to the rapid development of heavy industry, propelling growth in the iron and steel, nonferrous metals, energy, and natural resources sectors. The country has become the world's largest center for producing labor-intensive industrial products. Under the PRC's policy of growing new, strategic, high-technology industries (especially high-technology service industries), knowledge-based high-technology industries will become its new engines of economic growth. With rising incomes, citizens' consumption patterns have now adjusted from the earlier predominance of food and clothing to include increased housing- and transport-related consumption.

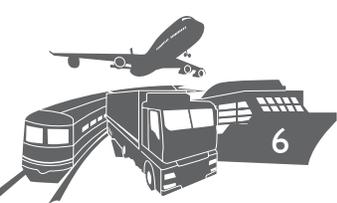
Although heavy industries will continue to play a prominent role in the next phase of the PRC's development, its wholesale and retail-oriented service industry will enjoy a higher rate of growth and will gradually steer the economy toward a service-driven "late industrialization" stage. Consequently, future logistics demand is expected to have the following characteristics:

- The PRC's equipment manufacturing plants and their upstream iron, steel, nonferrous metals, and electric power suppliers are still located in the eastern coastal area and the Yangtze River and Pearl River deltas, whereas the country's coal and mineral resources are located mostly in the northwest and southwest. Therefore, transport needs for moving bulk cargo, such as coal and mineral ore, will remain strong.
- The rapid development of light manufacturing and service industries will test the capabilities of traditional logistics services providers,<sup>5</sup> with basic transport, warehousing, and distribution as their main service offerings.
- Equipment and high-technology manufacturers' demand for modern logistics services will grow. But, to broaden its penetration, supply chain management professionalism must be developed – see Table 1 for survey findings on the share of current logistics service components that are outsourced in the PRC.<sup>6</sup>

<sup>5</sup> The PRC's traditional logistics service providers are second-party logistics firms that offer simple, basic transportation and warehousing for their customers. They are generally small and underfunded and lack the management capacity to provide modern value-added logistics services, such as kitting, in transit processing and reverse logistics.

<sup>6</sup> TPRI conducted field surveys, interviews and stakeholder workshops in four selected provinces. Questionnaires were distributed to logistics companies and their customers in each of the selected provinces. The questionnaire return rate was 80% (about 46 filled questionnaires per province).





**Table 1** Share of Logistics Components for Outsourcing

Areas	Rate (%)
Transport	83.3
Warehousing	27.8
Distribution	38.9
Processing	16.7
Supply chain management	11.1

Source: Transport Planning and Research Institute (TPRI) survey, July–October 2009.

## B. Changes in Economic Development Approach

Although the PRC has many relatively large, modern enterprises, the manufacturing of many products is still performed by countless small to medium-sized producers in highly fragmented industries.

Particularly since the PRC’s Tenth Five-Year Plan, the central government has been seeking to accelerate the transformation of economic development away from traditional manufacturing.<sup>7</sup> The PRC is also seeking to strengthen its economic development model by transforming its export-led economy into an economy driven by domestic consumption.

The current demand for transport and logistics is still fragmented and unsophisticated, focusing mostly on transport cost and neglecting the effect of poor logistics on total supply chain cost (Table 2).

**Table 2** Factors Considered by Users in Choosing Logistics Enterprise (Ranked by Importance)

Ranking	Factors	Points
1	Logistics enterprise reputation	116
2	Cargo loss and damage	92
3	Price	90
4	Speedy and timely delivery	84
5	Quality of customer service (personalized, fast response to customer complaints)	75
6	Geographic coverage	50
7	Level of information technology utilization	35
8	Knowledge of the industry served	34

Source: Transport Planning and Research Institute survey, July–October 2009.

<sup>7</sup> The 2007 global financial crisis prompted the European Union, the US, and other major importers of the PRC’s goods to reemphasize their own manufacturing economies and to speed up transformation of their industrial structures.



In future, as the pace of transformation in economic development advances and the strategy shifts from export-oriented to consumption-led growth, the demand for transport and logistics is expected to change in the following ways:

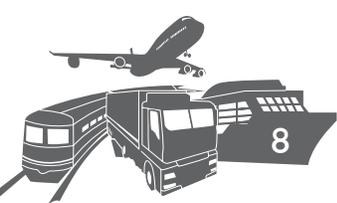
- rapid expansion of reliable, economical short-haul transport services conducive to the development of industrial clusters;
- increasing use of multimodal transport that facilitates the linkage of upstream and downstream partners in a supply chain;
- growth in demand for seamless transport and logistics services that transcend administrative and modal barriers;
- need for trade logistics services to facilitate rapid clearance of goods used in or produced by advanced supply chains;
- need for more environmentally friendly and energy-efficient forms of transport; and
- strong demand for convenient, reliable transport and logistics services to support advanced, high-technology manufacturing industries.

### **C. Migration up the Value Chain and Development of the Interior Provinces**

The PRC's industries have distinct regional characteristics. The eastern coastal region, with its rapidly developing high-technology industries, specializes in manufacturing; while the central and western regions are known for mineral extraction and processing, natural resource-based industries, chemical and equipment manufacturing, and farming, as well as tourism and culture-based industries. Looking ahead, as the costs of inputs such as land and labor continue to rise, industries in the eastern coastal region will accelerate their migration up the value chain. Land- and labor-intensive industries (such as dyeing and bleaching industries in Guangdong that also test the limits of environmental capacity) will gradually shift to the central and western regions.

Industrial transformation will see a gradual transition from light manufacturing to heavy industries such as automotive and equipment manufacturing, and to high-technology or knowledge-based industries such as information technology and trade services. Eventually, the eastern coastal region, propelled by its high-technology industries, will be transformed into a hub for advanced manufacturing. Regional differences in economic development and industrial specialization will lead to special regional characteristics in transport and logistics needs:

- The processing and manufacturing industries of the eastern coastal region will exhibit strong demand for high-end transport and logistics services.
- Industries in the midwestern region, currently using only basic transport services, will shift to higher-value-added manufacturing, with new logistics needs emerging.
- There will be high growth in demand in the major existing logistics regions (Beijing–Tianjin–Hebei, the Pearl River Delta, and the Yangtze River Delta) and in the emerging



regions: northeastern region, Shandong Peninsula, southeast coast, central region, northwestern region, and southwestern region.

- Following the construction of container logistics centers and dedicated multimodal transport lines, and the expansion of multimodal container routes spanning the east and the west, growing numbers of interior locations will be able to use multimodal transport.
- Multimodal transport connecting the coastal region with inland areas (sea to rail or sea to river) will play an important part in the overall logistics system.

At present, the PRC's urbanization rate lags behind that of many countries. Whereas the PRC's 2009 urbanization rate was 46.6% (with the midwestern region less than 40%), most postindustrial countries are generally in the 50%–60% range and still increasing. According to the Twelfth Five-Year Plan, the PRC's urbanization rate will exceed 50% by 2015; and by 2030, the urban population will be 1 billion, with an urbanization rate of 65%.

\* \* \*

**In conclusion**, the PRC is in the midst of rapid economic transformation. Its logistics system must be able to support the shift of manufacturing to interior provinces, the migration of its production up the value chain, and it must sustain the shift to a consumer demand-driven economy. In the future, the geographic distribution of the PRC's industries will be more even. Accelerating urbanization will create mega-urban regions. These major changes will create new and greater requirements for transport and logistics suppliers.

# 3

## SUPPLY ANALYSIS

### A. Supply Hierarchies

Most industries in the PRC are comprised of large numbers of small to medium sized producers.<sup>8</sup> This limits logistics demand to mostly crude, basic logistics services, with price being the key determinant in supplier selection (not quality or capability). Although the country's logistics industry is presently capable of providing a full range of logistics services (low-end, midrange, and high-end), the low-end and mid range services provided by small and medium-sized logistics operators remain the most commonly used.

Low-end logistics providers offer basic services, mainly for point-to-point movements of bulk materials, agricultural products, and other primary goods. Mid range logistics providers supply traditional storage, transport, and distribution services to light manufacturing companies such as those that produce pharmaceuticals and consumer goods, as well as door-to-door small package and parcel delivery services. Finally, high-end logistics providers manage the whole supply chain on behalf of capital- and technology-intensive industries such as appliance, automobile, machinery, and chemical manufacturing.

Overall, low-end logistics services still dominate the PRC's logistics market. High-end logistics services are growing but occupy a small segment of the market. This is reflected in the answers to the Transport Planning and Research Institute (TPRI) survey sent out to enterprises in four provinces. Among logistics companies surveyed, 97.2% provide transport services, 77.8% provide warehousing services, and 72.2% provide distribution services (Table 3).

**Table 3** Services Offered by Logistics Enterprises

Service	Proportion (%)
Transport	97.2
Warehousing	77.8
Distribution	72.2
Total supply chain solution	36.1
Insurance	38.9
Customs clearance	25.0
Information support	47.2
Inventory management	41.7
Distribution, processing, and packing	30.6
Others	8.3

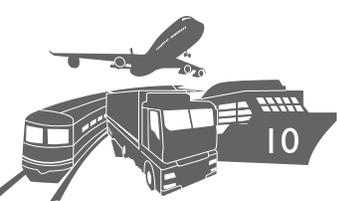
Source: Transport Planning and Research Institute survey, July–October 2009.

Enterprises that provide low-end to mid range logistics services have the following features:

- They generally started as transport enterprises, gradually expanding their services into warehousing and distribution, but their overall service capability is low.

<sup>8</sup> Except for industries with high economies of scale such as steel making or strategic industries such as aeronautics, most industries in the PRC—such as shoes, clothing, toys, and food—are populated by small to midsize entrepreneurial companies.





- Some of these enterprises have realized the importance of adding urban distribution, regional express, and value-added services to their menu of offerings. They are developing cargo networks, using a hub-and-spoke model to run efficient network operations.

Surveyed companies capable of providing high-end total supply chain solutions (36.1%) also have particular characteristics:

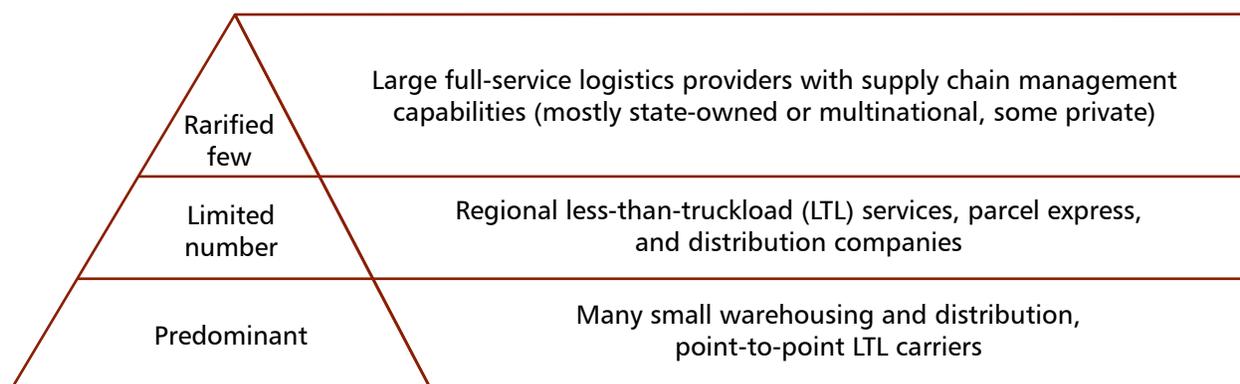
- They started out as second-party logistics companies serving parent companies in high value-added industries and gradually grew their logistics capabilities (such as managing automotive manufacturing supply chains) as their parent companies grew.
- A small number of successful logistics companies can manage the entire supply chain, from raw materials procurement to finished product distribution, covering transport, warehousing, distribution, and value-added processing. Their integrated logistics services handle not only the flow of goods but also the flow of information and financials, and their current focus is on supply chain optimization—achieving effective system integration and supply chain visibility.

## B. Structural Features

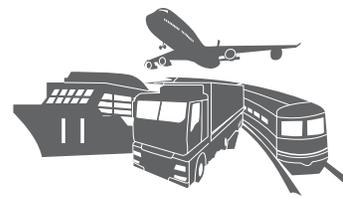
The pyramid structure shown in Figure 1 depicts the relative size of logistics enterprises in the PRC. Among them, large, full-service logistics enterprises have the following characteristics:

- Only a small number of large, full-service logistics companies operate in the PRC. They are mostly state-owned enterprises or multinational companies, together with a few privately owned companies.
- Existing services provided by high-end logistics enterprises comprise simple transport services as well as complex logistics management services. Their market share is too small to drive the market.
- Major state-owned logistics enterprises, such as China Railway Express, China Ocean Shipping Company and Sinotrans, are well capitalized, well staffed, and possess

Figure 1 Structure of the Logistics Market in the People's Republic of China



Source: Asian Development Bank consultants.

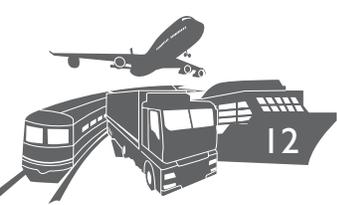


large transport and storage networks. They also have good relations with all levels of government.

- Major state-owned logistics enterprises began as pure transport or warehousing companies, and they continue to provide mainly transport and warehousing services and do not focus on high-end value-added logistics services. It is important for these enterprises to embrace the concept of modern logistics management and provide more supply chain management services.
- Large private logistics companies have succeeded in providing efficient services with minimal assets. Some have created a nationwide service network for less-than-truckload transport and parcel express services to become dominant players in these markets (e.g., express parcel services). Jiaji Express, PG Logistics, and ZJS Express are representative of such private enterprises.
- State-owned enterprises and homegrown private enterprises are engaged in fierce market competition with multinational logistics companies. They are facing financial difficulties and management challenges such as brain drain, and some private enterprises already have been acquired by foreign companies. For example, DTW Express was acquired by Federal Express Corporation (FedEx).
- By following their multinational customers to the PRC (e.g., Schneider serving Wal-Mart and Maersk serving IKEA), large foreign logistics enterprises have quickly established a substantial and rapidly growing position in the domestic market.
- Through acquisition of domestic transport and logistics companies, multinational logistics enterprises (e.g., FedEx or TNT) have accelerated their network expansion in the PRC.
- Foreign logistics companies (e.g., APL, DHL, Maersk) possess advanced logistics knowledge, strong operating capabilities, and leading information technology to provide customers with a one-stop service.
- The advantages of foreign logistics enterprises include strong brand equity, a healthy balance sheet, and a merit-based pay system; however, their cost structure is relatively high and they have not created a strong, wide sales network. They often overcome these shortcomings by relying on acquisitions and joint ventures with domestic logistics enterprises.

Small and medium-sized logistics enterprises, mainly privately owned, dominate the PRC's logistics market. The following are their special characteristics:

- The market has an abundance of domestic freight forwarders and truck brokers providing regional warehousing, distribution, less-than-truckload transport, and express parcel services;
- The many small and medium-sized logistics enterprises handle most of the logistics volume in the PRC. They provide low-cost services to countless small and medium-sized manufacturers.
- Small and medium-sized logistics enterprises tend to be undercapitalized, with inadequate risk management capability and a lack of modern technology and information technology



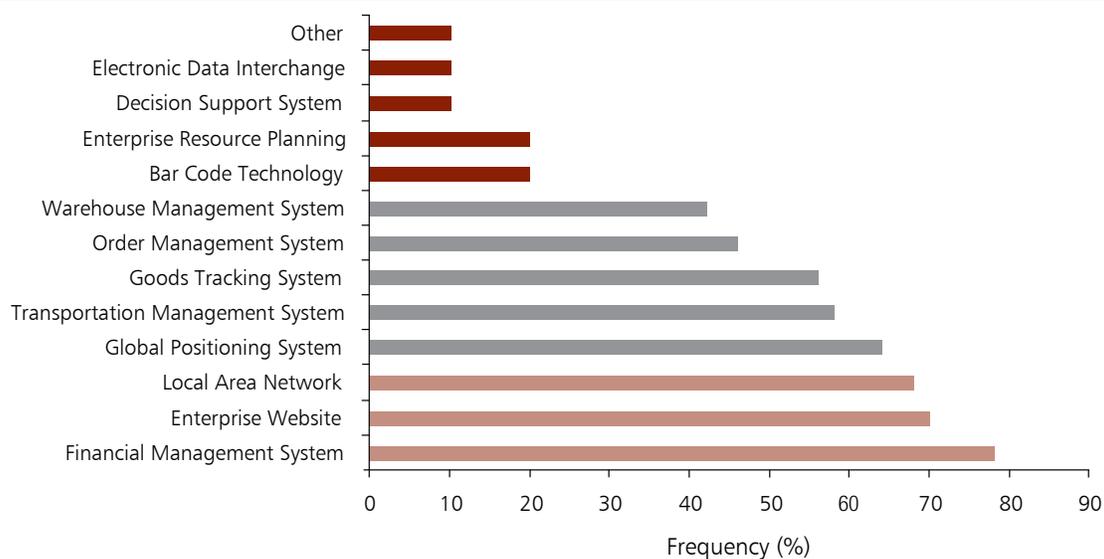
support. Their service quality is low, and they are experiencing difficulty coping with the intense competition.

- Owner operators providing low value-added point-to-point transport services are also key players in the PRC’s logistics market. Their business model is “my truck is my business,” and their service features may be described as poorly organized, inefficient, and unreliable, but inexpensive.

According to the TPRI survey data, information technology is still most frequently used for creating web presence, office administration, and financial management (Figure 2). Field visits revealed that small and medium-sized logistics enterprises lack information technology capability and still rely on basic methods, such as telephone, fax, and load boards, to propagate information. The situation is as follows:

- Information technology is fairly widely used in website construction (69%), internal administration (66%), and financial management (77%).
- Enterprises are gradually embracing the use of information technology to manage their transport. According to the survey, a portion of companies are investing in transport management systems (57%), cargo track and trace systems (56%), and global positioning systems (64%). However, only a few have invested in sophisticated logistics information technology.
- About 17% of the companies surveyed have installed an enterprise resource management system, bar coding technology, and other tools needed to provide supply chain management services. The adoption rates of decision support systems and electronic data interchange technology are both less than 10%.

**Figure 2** Survey of Information Technology Application by Transport and Logistics Enterprises



Source: Transport Planning and Research Institute survey, July–October 2009.



In addition, surveys of logistics service users and analysis of their responses provide insights into what improvements are needed in the supply of logistics services (Table 4). Users need logistics enterprises to

- Provide good capability to track the movement of goods and timely reporting of such data to enable better execution of their production and sales plans.
- Use modern means of business communication and establish a trustworthy relationship, thereby lowering transaction risk.
- Improve their safety records and decrease loss and damage to cargo and transit documents.

Users now rank the cost of transport lower than various other measures of service quality improvement. This shows that the attitude of users is changing. Having the lowest price can no longer satisfy the requirements of a growing number of logistics users.

Ranking	User Suggestion
1	Improve information service and provide goods tracking inquiry service
2	Strengthen communication and build up trusting relationships
3	Ensure safety of goods
4	Provide integrated and professional service
5	Ensure time and speed
6	Improve service attitude
7	Lower price

Source: Transport Planning and Research Institute survey, July–October 2009.

\* \* \*

**In conclusion**, the analysis shows that most industries in the PRC are populated by small to medium-sized entrepreneurial firms. Due to their size and management capability, these firms do not have sophisticated logistics needs and carrier selection is mostly driven by price. In such an environment, logistics providers focus on cost cutting (so they can lower the price to win another load) and not on service enhancement (e.g., quality improvement and additional bundled services). Therefore, modern logistics management technology with long payback or uncertain payback is scarcely adopted. Finding an effective way to stimulate demand for more advanced logistics services is a challenge for policy makers.

# 4

## PERFORMANCE METRICS

### A. Logistics Performance Indicators

Based on the needs of logistics users and society, and incorporating lessons learned from international experience, logistics performance metrics should cover three areas: efficiency, safety, and environmental impact (Table 5).

Viewpoint		Micro Performance Indicators		Macro Performance Indicators	Major Factors
Users of Transportation and Logistics Services	Service and Efficiency	Service	Average transit time Cargo visibility	—	<ul style="list-style-type: none"> <li>Logistics infrastructure</li> <li>Track and trace capability</li> <li>Modal interconnection</li> <li>Multimodal usage</li> <li>Information technology penetration</li> <li>Load factor</li> <li>Equipment utilization efficiency</li> <li>Customs process efficiency</li> </ul>
			Percentage of on-time deliveries		
		Cost	Transport cost as a percentage of total product cost	Logistics cost as percentage of gross domestic product	
General Public	Safety		Loss and damage rate	Accident rate	<ul style="list-style-type: none"> <li>Percentage of overloaded trucks</li> <li>Percentage of drivers with excessive on-duty hours</li> </ul>
			Citizen complaint rate		
			Emergency services response time		
	Environmental and Health Impact		Reduction in emission and noise test violation of trucks	Fuel economy Reduction of pollutant emission	<ul style="list-style-type: none"> <li>Percentage of power units failing to meet fuel economy targets</li> <li>Percentage of empty movements</li> <li>Reduction in noxious gas emission</li> <li>Reduction in greenhouse gas emission</li> </ul>

Source: Asian Development Bank consultants.

The comprehensive list of logistics system performance indicators in Table 5 distinguishes between those important to users of transportation and logistics services (service quality and





cost indicators) and those important to the general public (safety, environmental impact). Some indicators may in practice have relevance for both users and the general public.

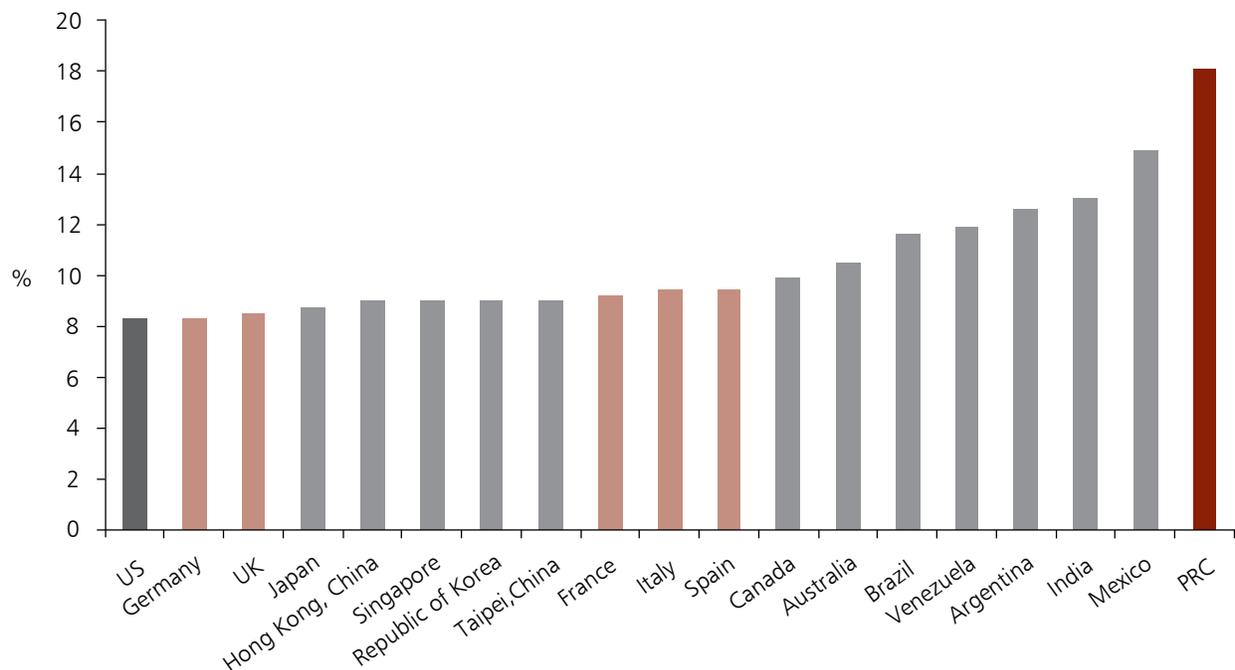
## B. Logistics Cost–Gross Domestic Product Ratio

A country's logistics cost–gross domestic product (GDP) ratio is a commonly used indicator that, to some extent, reflects the country's logistics efficiency. However, it must be carefully applied when making comparisons among countries. Even time series comparisons of a country's logistics cost–GDP ratio must take into account factors that influence logistics cost but have nothing to do with logistics efficiency, such as interest rates and GDP composition.

Comparing logistics cost as a percentage of GDP across countries requires knowing how each country classifies and calculates logistics costs. The differences in data included in the estimation of logistics costs, as well as differences in methodology in different countries, can significantly change the results of comparisons among countries.

The PRC's 2010 logistics cost–GDP ratio is almost twice that of countries in Europe or the US (Figure 3).<sup>9</sup> This provides a general indication that the PRC must strive to improve its logistics efficiency, but there are also extenuating factors:

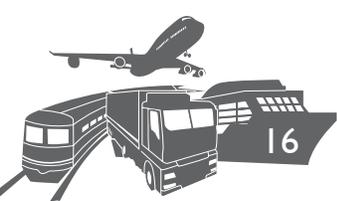
**Figure 3** Logistics Cost–Gross Domestic Product Ratio, 2010



PRC = People's Republic of China, UK = United Kingdom, US = United States.

Source: Adapted from Morgan Stanley Blue Report on [People's Republic of] China Logistics.

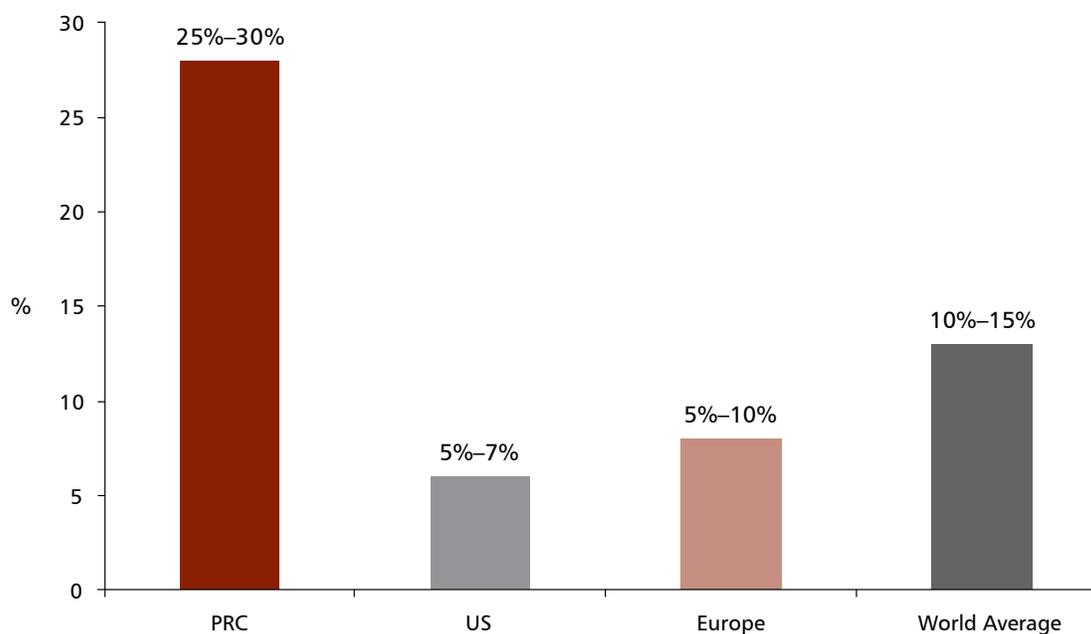
<sup>9</sup> The logistics cost–GDP ratio of the US dropped to 7.7% in 2009 and 8.3% in 2010, while that of the PRC remained at 18%.



- The PRC's resources are unevenly distributed and often are located far from coastal production centers, requiring long-distance transport of raw materials to production locations.
- In the present stage of industrial development, goods in the PRC have a higher weight-value ratio, which results in a higher transport cost relative to total product cost compared to other countries (Figure 4).
- Compared with other countries, the PRC has a much larger rural population, which is geographically dispersed and substantially more expensive to serve. Transport demand is fragmented, and the efficiencies of many transport providers are low.

But these extenuating factors cannot conceal the low efficiency of the PRC's logistics system. Comparing the logistics cost components of the PRC with those of the US quickly reveals that low transport cost and high management cost are special features of the PRC (Figure 5). Transport cost represents 52.6% of the PRC's logistics cost; this is substantially less than that of the US, where it represents 65.0% of the logistics cost. However, the PRC's management cost is triple that of the US. This means that the PRC's lower transport costs are outweighed by high management costs, resulting in overall higher logistics costs. This explains the paradox in the PRC's logistics market: the PRC's logistics cost is high despite its low transport rate environment.

Figure 4 International Comparison of Logistics Cost–Total Product Cost Ratio, 2010

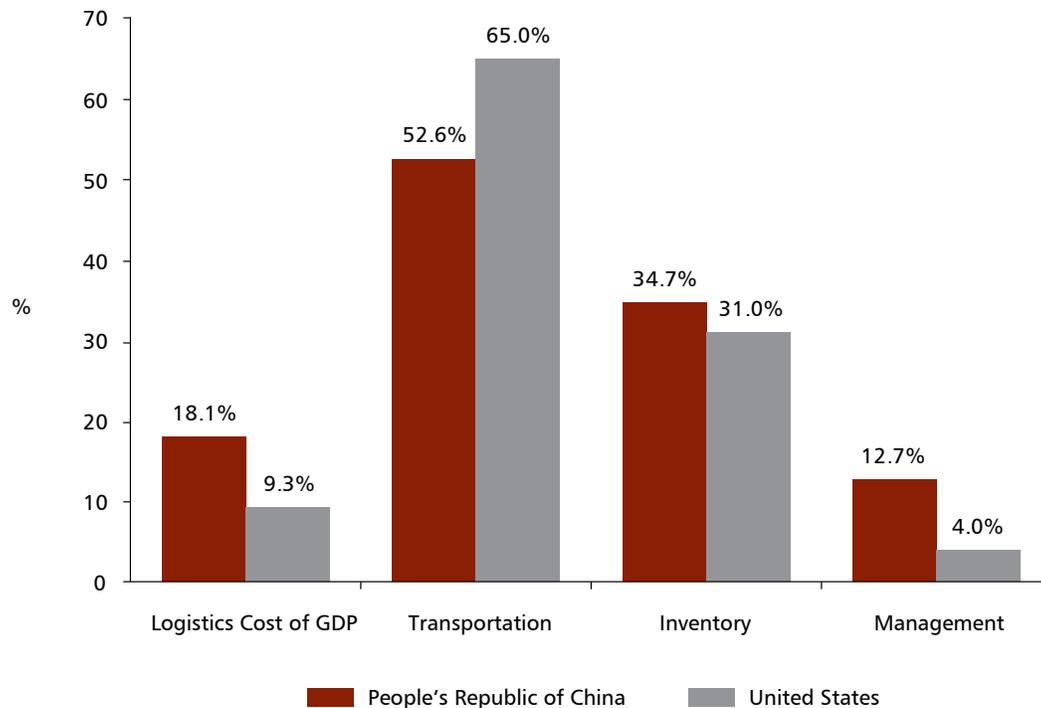


PRC = People's Republic of China, US = United States.

Source: Asian Development Bank consultants.



**Figure 5** Comparison of Logistics Cost Components in the People's Republic of China and the United States, 2008

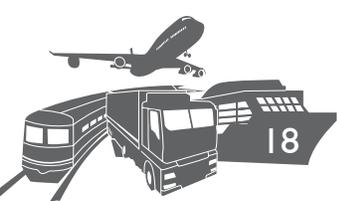


Source: Asian Development Bank consultants.

### C. Transport Cost Component of Logistics Costs

Transport cost is the largest component of logistics cost. At 52.6%, the PRC's transport cost component is lower than that of many countries. For example, in the US, the transport cost was 63% of logistics cost in 2009; in 2008, it was 65%. The PRC is able to provide low-cost transport services mainly because of these factors:

- The PRC's road transport market is the most extensively used among the different modes of transport, with price being the most critical competitive differentiator.
- Due to limitations in government supervision, the PRC's road carriers resort to excessive driving hours, extreme overloading, and illegal equipment modifications to improve their operating efficiency. They pass on their internal costs to society in the form of external costs such as excessively high accident rates, destruction of road services, and high levels of pollution.
- The PRC's road transport market is populated by many small carriers (with average fleet size of less than 1.5 trucks). Excessive competition in the marketplace has kept road transport charges very low.



**Table 6** Cost of Getting a Backhaul

Average Waiting Time (days)	Major Waiting Cost Components (CNY/day)		Average Waiting Cost (CNY)
	Parking	Meals/Lodging	
7–10	40	60	700–1,000

Source: Transport Planning and Research Institute survey, July–October 2009.

Although transport rates are low, the highly fragmented supply and demand for road transport services means that short-haul truckers frequently return home empty and long-haul truckers have to wait an excessive amount of time to get loads, seriously affecting their operating efficiency. As Table 6 shows, the cost of waiting to secure a backhaul (parking, meals, and lodging) can be as much as CNY700 to CNY1,000.<sup>10</sup> If payments to truck brokers are included, the cost of getting a backhaul load will be even higher. The high cost of finding backhaul cargo makes the profit margin of running a truck extremely thin after paying for fixed vehicle costs (e.g., acquisition cost of a truck, license fees); and fuel, repair, and maintenance costs.

The existing low rate charged for motor transport is a product of excessive competition and the shifting of a substantial amount of cost to society. However, the creation of large, negative externalities is not sustainable. Efficiency gains must come from improved operations efficiency (including eliminating empty backhauls through carrier and shipper collaboration, and reducing the search cost of backhauls) as well as promoting the use of multimodal transport for long hauls.

#### D. Management Cost Component of Logistics Costs

In the 2010 *World Bank Logistics Performance Index Report* the PRC ranked 27th of 155 countries (Table 7).<sup>11</sup> Among the six subscores that determine logistics performance, the PRC ranked well for both infrastructure and international traffic, but less well for customs, cargo tracking and tracing, timeliness, and logistics competence. This reflects the need to improve its management systems, information technology, and logistics competency.

<sup>10</sup> The exchange rate used in the report is CNY6.35 = \$1.00 (as of 17 November 2011).

<sup>11</sup> The *World Bank Logistics Performance Index Report* ranks the logistics performance of 155 countries with participation from members of International Federation of Freight Forwarders Associations and the Global Express Association. The composite country ranking is based on six subscores: customs, infrastructure, international shipments, logistics competence, tracking and tracing, and timeliness. Visit <http://go.worldbank.org/88X6PU5GV0> for more details.



**Table 7** 2010 World Bank Logistics Performance Index of the People's Republic of China

	Score	Rank
Overall Logistics Performance Index	3.49	27
Customs	3.16	32
Infrastructure	3.54	27
International Shipments	3.31	27
Logistics Competence	3.49	29
Tracking and Tracing	3.55	30
Timeliness	3.91	36

Source: 2010 World Bank Logistics Performance Index Report. <http://go.worldbank.org/88X6PU5GV0>

\* \* \*

**In conclusion**, the analysis of the PRC's logistics performance indicates that it is characterized by low transport cost, high inventory cost, and high management cost. The PRC's total cost of logistics was 18.1% of GDP in 2010, higher than that of many countries the PRC competes with (e.g., Brazil's total cost of logistics was 11.6%, India's 13.0%, and Mexico's 14.9%). Likewise, the logistics cost component of total product cost is higher than the world average and almost five times higher than developed countries like the US. The PRC's high logistics cost can be attributed to its exceptionally high management cost component—12.7% of the total logistics cost versus 4.0% for the US. This is likely caused by using a large number of transport and logistics providers (a result of price-driven procurement strategy), insufficient investment in logistics management technology (e.g., supply chain execution software), and failure to adopt modern supply chain management concepts (e.g., supply chain collaboration). In addition, its high inventory cost (34.7% of logistics cost versus 31.0% for the US) may be a result of long transit time (especially for rail transport), unreliable logistics service quality, supply chain complexity, and insufficient supply chain visibility. These deficiencies must be tackled by policy makers in order for the PRC to successfully migrate its industries up the value chain. Otherwise, as it shifts its manufacturing to the interior and western regions (and further away from its seaports), its already high logistics cost will increase further, putting the PRC at a competitive disadvantage.

# 5

# ANALYSIS OF CHALLENGES FOR THE TRANSPORT AND LOGISTICS INDUSTRY

## A. Principal Issues

Based on the TPRI survey, the five greatest challenges that logistics enterprises in the PRC face are (i) inadequate logistics infrastructure, (ii) unhealthy market conditions, (iii) unreasonable tax policy, (iv) inappropriate transport regulations, and (v) lack of uniform standards. These problems are difficult for logistics enterprises to resolve on their own, and require government intervention. The major challenges currently faced by logistics enterprises are shown in Table 8.

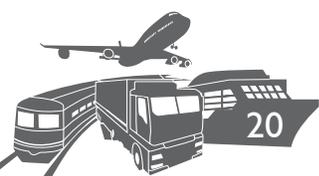
Ranking	Major Challenges	Score
1	Unhealthy competitive environment	138
2	Logistics infrastructure does not meet user needs	118
3	Difficulty in getting growth capital	113
4	Unreasonable tax regime (sales and income tax, tax invoice)	97
5	Poor standardization (waybill, equipment)	95
6	Protection of local enterprises increases difficulty in creating national network	90
7	Government fees (tolls)	83
8	Restricted access to urban areas	82
9	Poor interconnection between modes	76
10	Insurance	72
11	Labor (new labor law)	71

Source: Transport Planning and Research Institute survey, July–October 2009.

These challenges affect the PRC's transport and logistics efficiency. An understanding of their root causes is needed in order to formulate effective solutions.

## B. Infrastructure

The PRC has made tremendous advances in transport infrastructure development. These have played an important role in supporting its rapid progress in transport and logistics. However, there remain a number of infrastructure shortcomings that must be resolved in order to raise the PRC's logistics efficiency and provide high standard logistics services in the future.





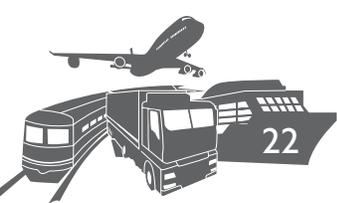
**First, the PRC's inland waterways lag far behind the development of other modes of transport, making it difficult to exploit their inherent advantages.** Despite its extensive resources for inland waterway transport, the PRC has not yet been able to create a network of rivers and canals for water transport. It has historically been an agriculture-oriented country that is resource poor on a per capita basis. In developing its rivers, the government gave preference to hydroelectric power generation, irrigation, and flood control rather than to transport. For example, bridges and dams built during the past few decades have created navigation obstacles. The Three Gorges Dam, the Yangtze River Bridge at Nanjing, and the Pearl River hydropower stations are examples of such human-made obstacles. The weak linkages of different tributaries in the river system and uneven channel depths also weaken their effectiveness as a transport network.

Moreover, the interconnection between the inland waterway network and the road and rail networks remains poor, resulting in an isolated and underutilized inland waterway system. Although the PRC now recognizes the important potential of inland waterway transport for building an efficient and environmentally friendly transport system, many institutional obstacles remain to be resolved.

**Second, rail capacity remains inadequate, and new track construction lags far behind rapidly growing rail transport needs.** Until recently, rail capacity expansion has been limited by funding and institutional constraints. Capacity shortages are particularly acute on busy trunk lines. Carrying large numbers of freight trains and passenger trains on the same track also constrains operational efficiency and safety. Since 2008, the rapid growth of dedicated passenger rail lines has permitted the separation of freight trains and passenger trains on some routes. Despite the capacity increase resulting from moving passenger trains to dedicated lines, however, China Railways is still unable to satisfy freight transport demand. The shortage of rail services serving the PRC's container ports means that for most import/export containers, reliable rail transport is still difficult to find. Thus, despite the high cost of road transport, road transport has remained shippers' first choice, and rail container traffic accounts for only 1.1% of port container traffic. Due to rail reliability issues, this clean, efficient, and low-cost mode of transport is not yet fulfilling its potential.

**Third, the lack of comprehensive planning of logistics park development has led to poor site selection and inadequate connection with transport networks.** Officials at all levels of the PRC government still tend to focus on logistics park construction as the key aspect of logistics development. However, the responsibility for logistics park planning, design, and development is distributed among numerous local, provincial, and national government agencies charged with comprehensive planning, transport, trade and commerce, and land and resources management. The scope of their responsibilities and authority in planning, design, funding, and construction is often unclear. There are often problems of inadequate coordination among these agencies. In addition, the private sector is not well engaged in the design and development of logistics parks, resulting in gaps between what the government creates and what the logistics sector needs. For example, many logistics parks are not linked to transport hubs, which reduces their usefulness.

In a substantial number of locations, transport hub and logistics park planning have been undertaken independently, reducing the effectiveness of both and missing the opportunity to



create regional logistics hubs. The absence of integrated planning of both types of infrastructure has led to low efficiency, and poor land usage. In contrast, logistics park and transport hub planning in Germany, Japan, and the US are highly integrated. Well coordinated design and development promotes the creation of regional logistics hubs with multimodal transport capabilities that perform a multitude of functions, including customs clearance, warehousing, distribution, cross docking, and various value-added services.

## Case of Port of Illinois Dry Port

The Port of Illinois is the largest inland dry port in the world. Its creation from a heavily polluted brownfield site showcases the success of good government policy and well-crafted public–private partnership in logistics infrastructure development.

Logistics infrastructure investments are characterized by large capital outlay, a long payback period, high risk, and moderate returns. Their success is highly influenced by government actions, which impact trade flows, transport network development, investment incentives, land-use entitlement, and the designation of special regulatory status (e.g., free-trade zone) to the development. Strong protection of property rights; free flow of capital and information; and stable, consistent, business-friendly government policy are key ingredients of a favorable climate for logistics investment.

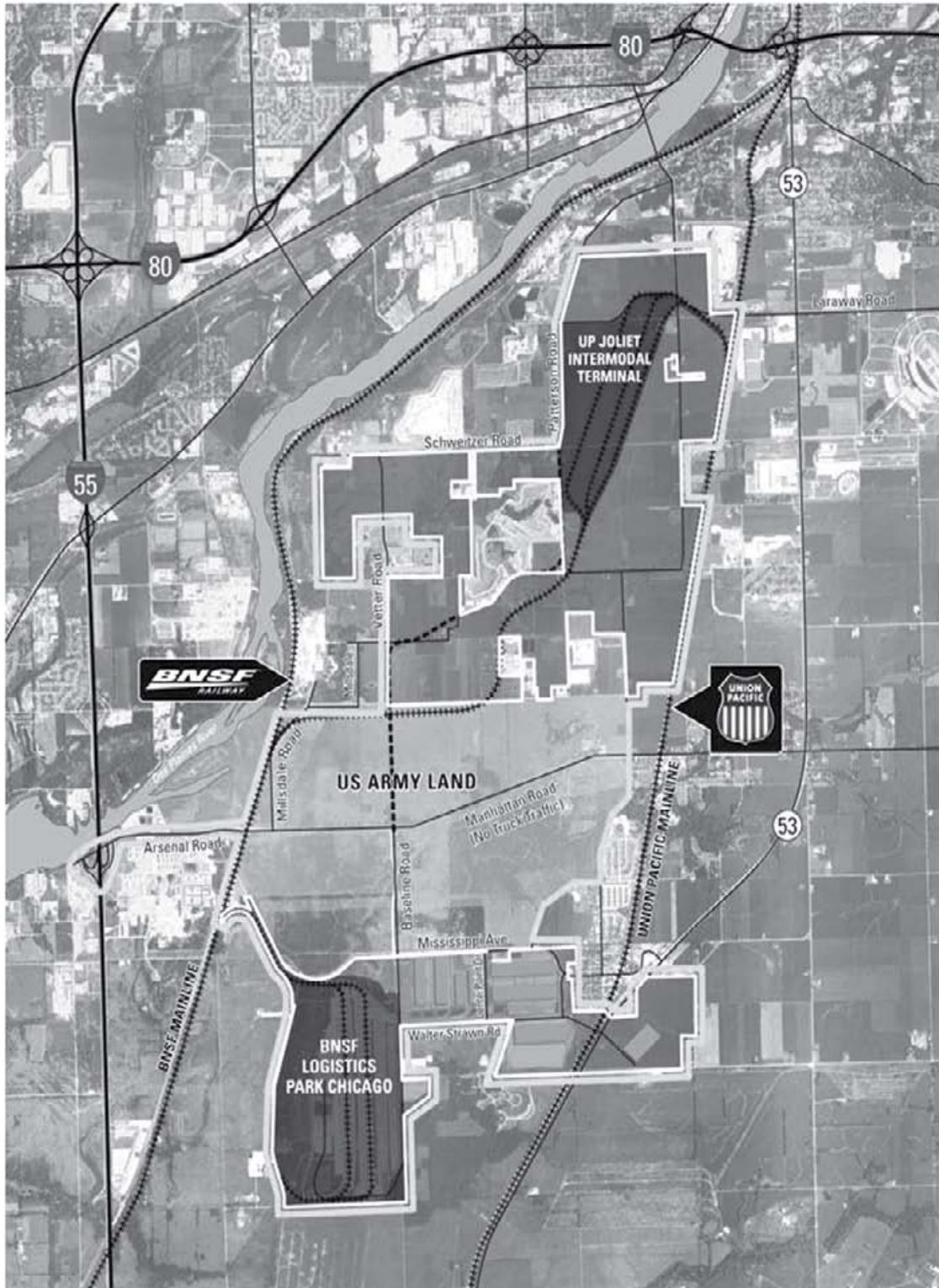
The Port of Illinois dry port is a huge \$3 billion project developed by CenterPoint<sup>12</sup> in the landlocked State of Illinois located about 60 kilometers (km) from Chicago, the third-largest city in the US (Figure 6). It is a public–private partnership development covering 90 square km of the former Joliet Arsenal, which was closed at the end of the Cold War. Due to heavy soil pollution (from chemicals associated with making explosives), this land cannot be used for residential or commercial development, such as housing or retail, but is suitable for logistics applications. Land parcels of such a large size are difficult to find, especially one located near the intersection of two major interstate highways (I-80 and I-55) and the main lines of two major railroads (Burlington Northern Santa Fe [BNSF] Railway and Union Pacific [UP] Railroad) with good access to an inland waterway that connects to the Mississippi River.

The following summarizes the development steps of this huge facility:

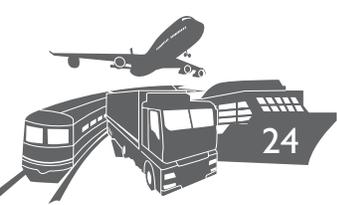
- i. Illinois State government got the heavily polluted brownfield property transferred from the US Army and zoned it for industrial use.
- ii. State and local governments constructed water and sewerage system and built access roads.
- iii. Improved land sold at an attractive price to CenterPoint as inducement for private investment.
- iv. CenterPoint signed BNSF Railway as anchor tenant.
- v. BNSF Logistics Park Chicago completed in 2002.

<sup>12</sup> CenterPoint was a publicly listed industrial real estate developer when the Port of Illinois project was initiated. CenterPoint's success led to its acquisition by California Public Employees' Retirement System—one of the largest pension funds in the world.

Figure 6 Aerial Map of Port of Illinois



The Port is very near the waterway, rail main lines, and major interstate highways.  
Source: CenterPoint.



### BNSF Logistics Park in Chicago



Source: Andy Sze.

### Union Pacific Railroad's Joliet Intermodal Terminal



Source: Andy Sze.



- vi. Available land attracted additional private investment from Wal-Mart, DSC Logistics, and other users.
- vii. Success of BNSF Logistics Park Chicago induced UP Railroad to build a huge multimodal hub just to its north.
- viii. Logistics centers surrounding the UP Railroad multimodal hub are under development.

Recognizing the rapid growth of container traffic from US–Asia trade and the increase in congestion around Chicago, CenterPoint worked with the governor and senators of Illinois to have the property transferred from the US Army for logistics development.

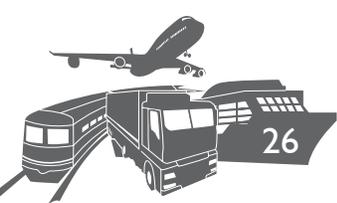
The Port of Illinois development is the largest of its kind in the world, with up to 6 million twenty-foot equivalent units annual capacity and connection to five of the six Class 1 railroads that serve Chicago. In terms of throughput capacity, it ranks just behind the Port of New York and New Jersey, the third-largest port in the US. In the years to come, Canadian National Railway, Norfolk Southern Railway, and CSX Transportation will likely connect with BNSF and UP Railroad at the Port of Illinois to avoid the heavy congestion of the existing Chicago connection.

The public sector invested \$35 million for water and sewers and \$125 million for building access roads, and granted the property free-trade zone status. This modest investment attracted more than \$1 billion from CenterPoint in the development of the BNSF Integrated Logistics Park

**Figure 7** Aerial Photo of BNSF Integrated Logistics Park Development



Source: CenterPoint.



(Figure 7), with another \$500 million from BNSF Railway. The tremendous success of BNSF's multimodal logistics operation there led to the development of the UP Integrated Logistics Park where CenterPoint invested a further \$2 billion. The total private investments by CenterPoint; BNSF Railway; UP Railroad; and logistics center operators such as Wal-Mart, Maersk, DSC Logistics, and Georgia Pacific exceeded \$4 billion—leveraging a \$160 million public investment to a 25-fold increase in private investment. This demonstrates the huge success of public-private partnerships when the right business conditions are created.

### C. Market Conditions

Adverse market conditions represent the most pressing concern for most transport and logistics enterprises. Ineffective government policy and inadequate government supervision foster inappropriate behavior on the part of market players. Existing market problems in the PRC are concentrated in seven main areas.

**First, current government policy favors large enterprises over small and medium-sized enterprises.** The PRC's transport and logistics industry is served by a large number of small and medium-sized logistics providers that cater for the needs of large numbers of small and medium-sized manufacturers of low-tech, labor-intensive products. The growth of these small and medium-sized logistics providers is important not just for the development of the logistics industry but also for the diversity and vibrancy of the PRC's economy. However, current government policy favors a small number of large, state-owned logistics enterprises, providing them with tax incentives, fixed assets such as storage facilities or information technology, and investment subsidies, while neglecting small and medium-sized logistics providers—especially their funding needs. Such a policy orientation neglects the needs of the market, making it difficult to achieve overall improvement in the PRC's logistics industry.

**Second, the market has not established a proper system to ensure trust among the participants and integrity in transactions.** Compared to conditions in Germany, Japan, the Republic of Korea, and the US, the degree of trust and standard of integrity in the PRC's transport and logistics markets are very low. This is manifested in carriers refusing to pay cargo loss and damage claims, carriers disappearing with an owner's goods, freight intermediaries failing to pay carriers for services rendered, carriers seizing goods in order to force payment, and various other types of unethical and unfair business practices. Therefore, it is common to require performance deposits and to take payment deductions. Such practices demonstrate the overall lack of faith among the PRC's logistics players. This drastically increases the frictional cost of transactions and retards the development of the PRC's logistics enterprises.

**Third, the body of laws and regulations governing logistics is inadequate.** Logistics is an emerging industry and a key part of the modern service industry, yet different government bodies continue to regulate various aspects of logistics operations in a disjointed manner, based on transport mode. It still is not clear which government agency is charged with promoting logistics development. Because the scope of responsibility is not clear among agencies, communication and coordination problems are common. For example, the planning of the 18 major China Railways container logistics centers is not synchronized with the planning of the road network, most seaports do not have portside rail services, and the planning and construction of rail



freight stations and logistics parks are done separately. In addition, the government has not yet incorporated its energy conservation, pollution reduction, and environmental protection policies in the transport regulations.

**Fourth, policy inflexibility creates freight movement impediments.** Due to rapid urbanization and the growth of e-commerce, there is an urgent need for more efficient goods distribution in urban areas. Unfortunately, the urban traffic management system has not adapted quickly to this change, creating an invisible barrier to the entry of delivery vehicles into cities. Public security bureaus have addressed the urban congestion problem by using permits to restrict the number of vehicles allowed, limiting the hours of truck operation, and closing off access to certain roads. These restrictions were generally imposed without consulting stakeholders, and they generally do not accommodate the needs of transport and logistics operators (Box 1).

### Box 1 Lessons from Developed Countries on Addressing Urban Delivery Challenges

**Germany.** The government has restricted urban access to a limited number of authorized carriers. Goods from other carriers are delivered through these authorized carriers. This reduces the number of delivery vehicles using city streets and increases the load factor of urban delivery trucks.

**Japan.** The government fosters the development of urban logistics centers on the outer beltway of major urban areas. Carriers and logistics operators are encouraged to use these facilities to consolidate their cargo into shared vehicles for making delivery in the inner urban areas. This reduces the number of delivery vehicles using city streets and increases operating efficiency through fuller trucks.

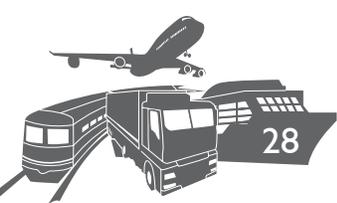
**United States.** The government has a fairly liberal policy permitting the entry of trucks into urban areas. Most cities have clearly marked truck corridors and parking areas.

Source: Asian Development Bank consultants.

The Ministry of Transport and the Ministry of Public Security—the two main agencies responsible for regulating road transport—have not arrived at a single, unified set of vehicle standards and regulations. For example, vehicle dimensions that comply with Ministry of Transport standards often fail to meet Ministry of Public Security standards. The conflict of standards made it difficult for carriers to comply, which led to general disregard of government standards and regulations. For example, many urban express delivery vehicles are converted passenger vehicles to circumvent restrictive urban delivery regulations. Regulatory and standard uncertainty has led to inefficiency and higher transport costs.

**Fifth, a number of government policies and regulations limit the development of advanced transport systems.** The reform of some government controls, especially those related to taxation, regulatory framework, and customs, has been slow. These controls have become obstacles to the development of modern transport systems. Important operating methods and effective business models, such as hub-and-spoke transport network, drop-and-pull operations, and the use of transport intermediaries, have not evolved to their full potential in the PRC.

- **Hub-and-spoke transport network.** Local government policy requires the PRC's network carriers to set up local subsidiaries instead of branches to increase the collection



of local tax. Such a taxation policy requires the creation of hundreds of separately incorporated business entities in cities served by the network carrier, each filing separate local tax returns (instead of a consolidated return) with local tax authorities. This is administratively very inefficient and constitutes a major obstacle to the formation of national network carriers. Network carriers such as Con-way Freight and ABF Freight System are very effective in serving a large number of scattered small and medium-sized enterprises as they own large fleets and many terminals across the US.

- **Drop-and-pull operations.** This method of operation is commonly used in developed countries such as Australia and the US, as well as countries in Europe. Under the right conditions, the method can significantly increase operating efficiency and reduce costs. In the PRC, it is particularly useful in promoting sea-to-rail and road-to-rail multimodal transport. Unfortunately, public security bureaus regulate trailers in the same way as they regulate tractors, leading to much higher insurance premiums for trailers compared with in developed countries. Such a rule retards the development of drop-and-pull operations in the PRC.
- **Transport intermediaries.** Freight forwarders and truck brokers play an important role in managing transport and logistics resources efficiently and effectively. Transport intermediaries are key players in developing multimodal transport in many countries. They not only improve operational efficiency but they also provide a higher level of service for most shippers that prefer dealing with a single party to get products moved door to door. However, existing domestic transport regulations are oriented toward asset-owning carriers rather than non-asset-owning intermediaries. There is no provision governing transport intermediaries in existing transport regulations and tax laws in the PRC. The current regulation requires that a road freight forwarder must have its own fleet to be able to register and operate in the PRC (Box 2). This makes it difficult for non-asset-owning transport intermediaries to obtain proper legal standing and tax treatment. To begin to address this problem, Shanghai has experimented with a new tax regime for domestic transport intermediaries. The result has been sufficiently positive that the Shanghai approach should be considered for other parts of the PRC.

### **Box 2** Obstacles Encountered by C.H. Robinson in Entering the Market in the People's Republic of China

C.H. Robinson, with \$8.49 billion in annual revenue and 105 years of history, is one of the largest freight brokers in the world. Its operating philosophy is to devote corporate resources to creating advanced information technology systems and global service networks instead of owning transport equipment and assets.

C.H. Robinson's non-asset-owning business model ran into difficulty after it entered the People's Republic of China (PRC) market. Because transport regulation in the PRC focuses on asset-owning carriers, the company was unable to qualify for proper legal status within the PRC's regulatory regime and failed to obtain approval to issue tax invoices to shippers. It is unfortunate that a large, successful global logistics enterprise falls within this regulatory "blind spot" of the PRC.

Source: Asian Development Bank consultants.



**Sixth, communication mechanisms between small and medium-sized operators and government policy makers are not well developed.** Due to the high fragmentation of the PRC's transport and logistics industry, it is often difficult for the voice of small and medium-sized operators to be heard by policy makers and for operators to be briefed on government policy and regulation changes. Small and medium-sized operators, therefore cannot keep abreast of national policy changes. Likewise, policy makers find it difficult to understand operators' needs. As a result, government policies may be impractical, and enterprises face undue policy risks.

In addition, existing trade associations generally serve the interests of large logistics companies, despite the important role of small and medium-sized transport and logistics market operators. The latter, therefore, lack effective channels to express their views or influence government decisions. This is not the case in countries with associations that champion the cause of small and medium-sized operators. For example, the Independent Truckers' Association in the US pushes for the rights and interests of small and medium-sized trucking firms (Box 3).

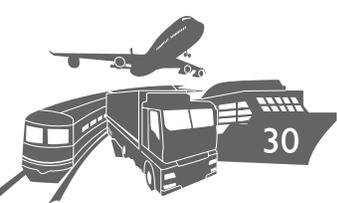
**Seventh, the marketization of rail transport has been slow.** The cornerstone of logistics is fast response to market needs, drawing upon a variety of transport and logistics resources to deliver products to the right customers at the right time and place and in the right condition and quantity. Due to a severe shortage of capacity, rail transport is still, largely, allocated by planning rather than by market mechanisms. This has been an obstacle to the development of multimodal transport in the PRC.

### Box 3 Regulation of United States Freight Forwarders and Truck Brokers

Freight forwarders and truck brokers have a long operating history in the United States, with forwarders contributing greatly to the development of multimodal transport, especially in the door-to-door movement of less-than-truckload shipments through their terminal network. Before the transport deregulation that began in 1980, freight forwarders were heavily regulated under Part IV of the Interstate Commerce Act and truck brokers were regulated under Part Two II (along with motor carriers) of the Act. Today, both types of transport intermediaries are only lightly regulated, with focus on both intermediaries meeting their responsibility to shippers (cargo loss and damage claims) and to underlying carriers that perform the physical transportation (unpaid freight charges):

- Intermediaries are required to be licensed by the Federal Motor Carrier Safety Administration to ensure high standards of integrity.
- Truck brokers must post a \$10,000 surety bond to ensure payment to carriers after satisfactory completion of transportation services.
- Freight forwarders must provide cargo insurance in accordance with Federal Motor Carrier Safety Administration requirements.

Source: Federal Motor Carrier Safety Administration. <http://www.fmcsa.dot.gov>



#### **Box 4 Shenzhen Container Transport Association: Speaking for Shenzhen's Small and Medium-Sized Logistics Enterprises**

The Shenzhen Container Transport Association (SCTA) was organized in 2000 by 438 small and medium-sized haulers that operate 80% of container trucks in Shenzhen. This trade association is a strong advocate for small and medium-sized enterprises and an effective bridge to government policy makers. In its 10-year history, it has assisted in the creation of good government policies that support industry development. Its achievements include

- actively calling upon Shenzhen Customs, the Shenzhen Transport Bureau, and the Shenzhen Public Security Traffic Bureau to resolve licensing, inspection, toll, and insurance problems related to drop-and-pull transport. The SCTA's actions have led to Shenzhen becoming an important pilot area for drop-and-pull transport; and
- organizing the Joint Meeting of National Container Transport Associations and similar associations from eight important port cities as an effective bridge between industry and government. On a scheduled basis, this provides valuable inputs on policy implementation issues raised by the National Development and Reform Commission, the Insurance Regulatory Commission, and the General Administration of Customs.

Source: Shenzhen Container Transport Association.

## **D. Standardization Policies**

Standards are essential for the effective and efficient functioning of a complex system. In a sense, they serve as a universal language among various parties in a logistics system. In the course of moving goods, various transport means are used, different instructions are received, and diverse regulations are enforced. For the process to function well, technical standards must be in place.

A good logistics standard should possess the following attributes:

- It is an effective solution to a significant problem.
- It is widely adopted by users.
- It promotes good practices (such as supporting safety, security, energy efficiency, environmental protection).
- It enhances quality and efficiency and reduces cost.
- It facilitates cargo, information, fund, and equipment interchange.
- It is simple and easy to use.

When standards do not meet those conditions, supply chain transaction costs and transaction times increase. At present, the relevant standards for the PRC's logistics market still leave much room for improvement.

**First, there are widespread standardization problems for road vehicles and ships.** The PRC's existing vehicle standards are very complex and are developed without a clear



understanding of the operating requirements of stakeholders such as shippers, carriers, and drivers. A large variety of vehicles with different dimensions, designs, and construction run on the PRC's highways, making vehicle interchange (necessary for drop-and-pull operations) difficult. Nonstandard vehicles also bring challenges to multimodal transport. The lack of standardization of inland waterway vessels affects port handling efficiency and the throughput of locks. Old, low-performance, and low-safety vessels also slow down the development of inland waterway transport.

**Second, an excessive number of documents are required to move cargo.** As many as 100 documents are required to meet port, rail, highway, customs, quarantine, and insurance requirements while moving international containerized cargo. These documents are designed by different authorities, often asking for the same set of data, with little regard for the burden they place on trade. The lack of data and document harmonization, as well as complex multimodal transport paperwork requirements, causes long container dwell time in ports.

**Third, there is a lack of container handling agreements between rail and ocean carriers.** China Railways has not reached effective arrangements with domestically owned shipping lines to cover the movement of empty containers. It also has not signed agreements with international ocean carriers to cover the repair of their containers while the containers are in China Railways' possession. Therefore, most international containers cannot be moved inland by rail in the PRC. Also, many inland ports do not have adequate capability to handle container traffic. Therefore, more than 80% of imported goods moving in container trains must be unloaded from inbound international shipping containers and then transferred to railway containers. In addition, unsatisfactory data transmission and pallet standards contribute to a poor interface between various parts of the logistics system, significantly increasing logistics operations costs.

\* \* \*

**In conclusion,** modern logistics development can be summarized as "one network, one contract, and one set of standards." "One network" stresses the importance of an integrated transport infrastructure network conducive to convenient, reliable, low-cost logistics services. Currently, due to lagging railway and waterway development, this network is incomplete. "One contract" is the result of an open, collaborative, and orderly freight market. At present, the PRC's freight market is chaotic, and different government agencies remain divided in their approaches. "One standard" can be seen as part of a soft infrastructure for the development of logistics. Currently, the lack of modern unified specifications and standards has led to high management costs, holding back the PRC's logistics development. These are key issues in the development of the PRC's logistics and should be the main focus of future policy reforms.

# 6

## POLICY PROPOSALS

The PRC's logistics industry needs the government to address the identified deficiencies in market integrity, tax policy, and logistics park development, and to eliminate administrative barriers and create regional policies that favor local logistics enterprises (Table 9). The challenges can be divided into infrastructure, market regulation, transport and logistics practices, and policy framework. This chapter provides a series of policy proposals to improve logistics performance in the PRC. Potential investments for financing are included in the appendices.

Ranking	Government Action Needed	Points
1	Enhance honest and fair dealings in the freight markets	213
2	Adjust tax policy to fit industry needs	189
3	Optimize logistics park and logistics center location and design	153
4	Eliminate regional administrative barriers	147
5	Create public logistics information platforms	146
6	Construct an integrated transportation hub	145
7	Eliminate policy discrimination (state owned/privately owned, domestically owned/foreign owned, etc.)	118
8	Encourage enterprise information system development	115
9	Promote multimodal transport development	84
10	Establish proper standards (vehicle size, design)	82
11	Urban distribution system	72

Source: Transport Planning and Research Institute survey, July–October 2009.

### A. Infrastructure

#### 1. Accelerate the development of inland waterway transport

Inland waterway transport is a low-cost, energy-efficient, environmentally friendly mode of transport. Because both the Yangtze and Pearl rivers run west to east, they constitute excellent natural corridors linking the PRC's eastern, central, and western regions. Construction of a smooth, efficient, safe, and environmentally friendly inland waterway system is an important requirement for the development of modern logistics. The PRC's inland waterway transport should be enhanced in the following ways:

- MOT's Five-Year Transport Development Plan should contain specific measures for inland waterway development, with adequate funding for infrastructure investment;





- the Yangtze Golden Waterway and other high-level waterways should be strengthened, and the Yangtze River Delta and Pearl River waterway networks should be constructed;
- the capacity and connection of major tributaries to trunk river routes should be enhanced;
- the “Two Horizontals, One Vertical and Two Networks, Eighteen Channels”<sup>13</sup> high-grade inland waterway network should be improved;
- construction of Xijiang Waterway should be accelerated and its capacity increased to address the development needs of the central and western regions of the PRC;
- navigational obstacles caused by locks and dams should be reduced;
- Wuhan and Chongqing should be promoted as regional waterway hubs for the middle and upper sections of the Yangtze River; and
- the enactment of the Waterway Law to promote and protect the use of inland waterways should be accelerated.

## 2. Emphasize comprehensive planning in logistics park construction

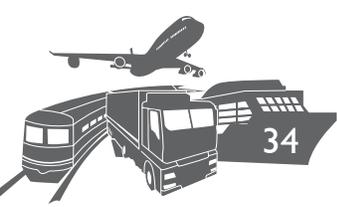
There is a general lack of comprehensive planning in designing the PRC’s logistics network. As a result, logistics centers generally are not connected to multimodal transport hubs. Their service functions are also limited. Most logistics hubs are connected to only one network (e.g., most seaports in the PRC are only connected to road networks, but not to rail). Logistics center planning is not integrated with urban planning, and numerous logistics centers are underutilized or used for purposes not related to logistics (e.g., wholesale showrooms).

The lack of cooperation and coordination between the Ministry of Transport (MOT) and the Ministry of Railways (MOR) is a key impediment for comprehensive planning. In 2009, the State Council assigned to the MOT the responsibility for creating strategies and plans for logistics industry development, with a specific mandate to improve the interconnection between logistics parks and intermodal hubs. The National Development and Reform Commission (NDRC) is leading the preparation of the plans, in close coordination with the Ministry of Land and Resources Management, the Standardization Administration of the PRC, and the Ministry of Commerce, the MOT, and the MOR.

Comprehensive planning of logistics park development should be promoted by

- conducting research into the procedures, methods, and roles and responsibilities of the government and private enterprises for integrated logistics park planning;
- defining government responsibilities, the nature and principles of capital investment, and the legal status and relationship between logistics park planning and other infrastructure planning;
- clarifying land-use policy, zoning approval, and logistics park planning procedures;

<sup>13</sup> The “Two Horizontals” are the Yangtze River and the western branch of the Pearl River. The “One Vertical” refers to the Beijing–Hangzhou Canal; the “Two Networks” refers to the high-grade navigational channels of the Yangtze River Delta and the Pearl River Delta. The “Eighteen Channels” are the 18 inland trunk waterways.



- standardizing the approval procedure for logistics parks;
- seeking the views of logistics operators and shippers at different stages of the approval process;
- enhancing logistics parks' connection with road, rail, water, air, and multimodal transport hubs through unified planning and construction of new transport hubs and logistics parks;
- improving the connection between existing logistics parks and transport hubs to increase their capabilities and to avoid constructing new facilities; and
- strengthening the collection and distribution capabilities of logistics parks located along inland waterways through proper planning and design.

Appendix 3 presents ideas on logistics center development.

### 3. Accelerate the development of a national rail container transport network

Rail container transport development is critical to the creation of an efficient multimodal transport system; optimization of the PRC's industrial structure; and promotion of the coordinated development of the PRC's eastern, central, and western regions. Development of the rail container transport network should be supported by the following actions:

- link logistics park development to the restructuring of industries as the PRC migrates up the value chain;
- optimize the layout of rail container terminals to meet logistics needs;
- accelerate the construction of rail container centers and stations (especially rail stations capable of handling containers);
- improve the connection of the rail container network with other modes of transport;
- increase the coverage, frequency, throughput, speed, and reliability of the national rail container transport network; and
- improve the customs clearance capabilities of inland rail container stations (especially rail container centers) to facilitate trade from interior regions and promote rail container transport.

### 4. Establish mechanisms to coordinate infrastructure development

Effective mechanisms should be created to coordinate central and provincial government planning and construction of transport infrastructure. The central government should lead the development of national inland waterway infrastructure and rail infrastructure development that requires participation from provincial and city governments. The provincial government should establish coordination mechanisms for integrated logistics park planning and construction. Coordinated infrastructure development should be promoted by



- establishing a central government mechanism, formed with staff from relevant agencies (including the Ministry of Water Resources, the Ministry of Agriculture, and the MOT), to promote consensus in dam construction and waterway management and control for the benefit of all stakeholders, rather than just for power generation and irrigation; and
- the combined support of NDRC, MOT, and MOR, with provincial and municipality governments, relevant transport authorities at the provincial and municipal and/or county levels, urban planning authorities, and the public when deciding on the use of river resources and the construction of rail container centers.

## B. Market Regulation

### 1. Improve the regulation of domestic freight forwarders and truck brokers

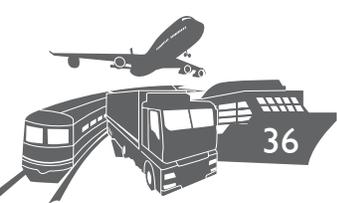
The focus of the existing regulatory system must be extended from road carriers and vessel operators to cover transport intermediaries and logistics operators. The government should

- modify road transport rules and freight station regulations to include domestic freight forwarders, truck brokers, shippers' agents, and other transport intermediaries;
- specify entry and exit requirements, service and integrity standards, legal liability limits, and insurance requirements for each type of transport intermediary, depending on the role they play in the transport and logistics system;
- set higher capital and insurance requirements for domestic freight forwarders because they issue common carrier bills of lading and are responsible for the door-to-door movement of goods using different types of surface transport (including multimodal transport);
- develop new government regulations that specify the responsibilities of truck brokers and shippers' agents in accordance with their scope of operation; and
- set a transition period for existing freight intermediaries to meet new legal requirements; and shut down market, domestic freight forwarders, truck brokers, and shippers' agents who fail to meet the new rules and regulations to impose order on the freight market.

### 2. Introduce mechanisms to enhance honesty and trust in freight markets

To raise the level of trust among market participants, the government should help create a system in which honest players are rewarded and dishonest players are penalized. Transport intermediaries should be rated and their performance publicized. The government should

- establish data sharing and information exchange mechanisms among the MOT, the Ministry of Public Security, the Ministry of Industry and Information Technology, the State Administration of Industry and Commerce, the State Administration of Taxation, and the China Insurance Regulatory Commission (CIRC);
- make available to the general public information on the performance, integrity, and violation data for drivers, transport and logistics companies, vehicle manufacturers, and vehicle retrofitters;



- modify road transport rules and licensing of transport operators to force out unethical or irresponsible operators (i.e., carriers that engage in persistent overloading, fail to observe hours of service rules, engage in unsafe operating practices, or refuse to pay cargo claims or pay carriers that provide the underlying physical transportation);
- ensure that the CIRC helps to establish an integrity assessment mechanism for transport operators, and that operator ratings are available to insurance companies when setting premiums; and
- promote the application of modern technology in road transport, such as the use of tracking and remote sensing devices, to improve vehicle safety and emissions control.

### 3. Create a sound logistics and transport insurance regime

The government should

- modify road and water transport rules to clearly specify the insurance requirements for carriers and transport intermediaries, with a view to general cargo and liability insurance replacing the bonds and deposits used in existing freight markets;
- ensure that the CIRC and the MOT jointly develop transport insurance regulations that clearly define coverage, premiums, and the division of assumed risks; and
- modify liability insurance provisions to resolve transport operators' reluctance to purchase insurance coverage due to high premiums, narrow scope of coverage, or low payment limits.

### 4. Improve the system of import/export control

The government should

- accelerate the establishment of a single-stop, single-window, electronic port goods declaration and customs inspection mechanism for quick entry and exit of international cargo;
- establish a convenient procedure for the processing of import/export containers;
- reduce duplicate customs inspection and clearance to expedite cargo movements and reduce trade cost; and
- strengthen oversight of importers and exporters and promote trade process efficiency.<sup>14</sup>

### 5. Adjust the supervision regime for logistics operators

The government should

- amend the Regulations Governing the Registration of Enterprise Legal Persons to reduce registration requirements for nonoperational branches of network-based logistics companies (e.g., sales offices);

<sup>14</sup> Importers and exporters that follow trade regulation and implement customs-recommended procedures will become trusted partners that receive expedited customs clearance and minimal inspection. Importers and exporters that engage in illegal activities will have their license revoked.



- allow transport and logistics enterprises to set up branch offices instead of separate local subsidiaries, simplifying management and accounting, and permit branch offices to own or lease vehicles;
- amend the Interim Measures for Trans-provincial Corporate Income Tax Allocation and Budget Management (Fiscal Budget [2008] 10) to remove the existing policy requiring trans provincial companies to pay tax to local authorities;
- conduct a study to determine the most effective and efficient way to tax network logistics enterprises; and
- modify the Pilot Scheme for Cargo Transport Sales Tax Collection and Management (National Tax Announcement [2003] No. 121) to eliminate the requirement that transport and logistics enterprises must own trucks to qualify for tax invoice issuance.

## 6. Improve urban distribution regulation

The government should ensure that

- industries and enterprises work together to merge distribution and collection of their products to reduce urban traffic; and
- the Ministry of Public Security, the MOT, the NDRC, and relevant local authorities should jointly promote urban logistics distribution practices drawing on good pilot program experiences in Beijing, Shanghai, and other large cities. Instead of using a one-size-fits-all approach, special urban distribution requirements, vehicle standards, and information technology needs of logistics operators should be consolidated and incorporated into the amendment of relevant urban distribution rules, regulations, and standards.

## 7. Build a sound system to collect basic transport and logistics statistics

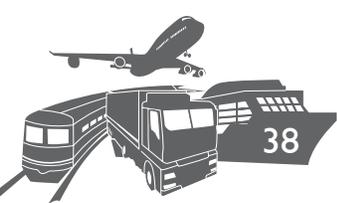
The government should

- create a process to disseminate useful transport and logistics data in a timely and efficient manner; and
- establish a mechanism to monitor the volume and direction of key cargo flows. Such data should be shared between government agencies and industry operators.

## 8. Strengthen safety and environmental protection

The government should

- improve monitoring of transport and logistics operators to ensure they meet safety and environmental regulations;
- apply global positioning systems to monitor vehicle speed and hours of operation;
- use global positioning systems to track the movement of vehicles carrying heavy or dangerous goods;
- study the effectiveness of current methods for controlling overweight and oversized vehicles;



- assess current administrative costs and results, and propose new measures to improve effectiveness and reduce administrative costs;
- improve enforcement to prevent illegal activities that dry up inland waterway channels;
- accelerate the rollout of new vessel standards in key inland waterways and speed up the elimination of energy-inefficient, heavily polluting, and old vessels; and
- avoid duplicative penalties through frequent reviews of regulation and enforcement.

## C. Effective Transport and Logistics Practices

### 1. Promote drop-and-pull transport

On 15 January 2010, the MOT, the NDRC, the Ministry of Public Security, the General Administration of Customs, and the CIRC jointly issued a circular about the promotion of drop-and-pull transport. In addition, to promote drop-and-pull transport, the government should

- amend the Safety Requirements for the Operation of Motor Vehicles (GB7258-2004) to include provisions for trailers, including trailer definitions and conditions for safe trailer operation;
- amend the Compulsory Automobile Liability Insurance Act to exempt trailers from the need for self-propelled motor vehicle liability insurance and/or to reduce insurance premiums for trailers;
- amend the Road Traffic Safety Law and Road Traffic Safety Implementation Regulations to prevent trailers from being placed in the same category as self-propelled motor vehicles, to add a category covering semitrailers and full trailers, and to remove restrictions on expressway use by tractor-trailers (both singles and doubles);
- add new provisions to the motor vehicle registration regulations to facilitate registration and licensing of trailers; and
- provide incentives to encourage transport and logistics enterprises to pilot test drop-and-pull in the Bohai Sea region and the Pearl and Yangtze river deltas, which have good potential for using this approach, then assess the results of the pilot study, and roll out drop-and-pull operations across the PRC, offering initial subsidies to operators that adopt drop-and-pull operations.

### 2. Promote multimodal transport development

The government should:

- **Reduce control over rail container transport.** This can be accomplished by
  - ✓ breaking up the rail container transport monopoly to promote increased container usage and competition;
  - ✓ gradually relaxing government control and instituting structural reforms to allow rail container transport rates to be set by the market, beginning by simplifying



- the rate approval process, shortening processing time, and giving multimodal transporters more latitude to vary rates in response to market conditions;
- ✓ offering key rail transport routes to qualified multimodal train operators (e.g., APL or Maersk) to increase competition, improve service quality, introduce innovative operational and marketing methods, and introduce modern technology;
  - ✓ improving cooperation between China Railway Container Transport and its internal and external stakeholders;
  - ✓ aligning the interests of regional rail administrations with those of the China Railway Container Transport to drive support for multimodal transport across China Railways; and
  - ✓ separating China Railways and all affiliated enterprises from the MOR to improve their efficiency and responsiveness to market needs.
- **Accelerate the development of inland waterway container transport.** The PRC's inland waterways are more than just corridors for the transport of bulk cargo such as coal, mineral ore, and building materials. Waterways also are effective in moving containers between the eastern, central, and western regions of the country. The government should actively encourage inland provinces along the Yangtze River to use river transport as a link to ports on the eastern coast. The development of road-to-river, rail-to-river, and road-rail-river multimodal centers will lower the logistics cost of serving the PRC's hinterlands and will speed up their development. Because current inland waterways, river ports, and multimodal center construction still need much improvement, the government should
    - ✓ speed up the construction of new inland container terminals to increase inland port throughput capacity and to improve the variety of services offered;
    - ✓ prioritize the construction of main inland waterway ports connected to major coastal ports (e.g., Wuhan–Yangshan), offering particular support for container port construction and the deepening of tributary channels important to cargo collection and distribution;
    - ✓ offer a variety of financial incentives (e.g., subsidies, tax relief, or low-interest loans) to ports and container transporters to promote the development of inland waterway container transport; and
    - ✓ accelerate the standardization of documents across different modes to simplify and streamline inland waterway container transport.
  - **Create the right environment for multimodal transport to succeed.** Currently, the PRC only has a small number of large third-party logistics companies and freight forwarders capable of providing single-party, one-waybill, door-to-door service. The majority of moves are still done by weaving together the services of different operators and dealing with many parties, leading to communication and payment complexity as well as difficulty in getting carriers to honor cargo claims. The government should
    - ✓ regulate domestic freight intermediaries (e.g., freight forwarders or truck brokers) to raise the quality of the industry, eventually creating more intermediaries capable of offering single-party, one-waybill, door-to-door service;



- ✓ encourage shipping lines, railway container transporters, ports, road carriers, shippers, and trading companies to form partnerships for the promotion of multimodal transport;
- ✓ ensure that government agencies responsible for highway, waterway, and railway transport, as well as ports, customs, inspection, and quarantine authorities contribute to the development of the intermodal transport management information system;
- ✓ direct the creation of a port and rail information platform for collection and distribution of important data;
- ✓ ensure that the rail Transport Management Information System and Dispatching Management Information System is linked to port electronic data interchange systems;
- ✓ mandate that agencies responsible for maritime and road transport, customs, and banks should exchange and share data to enable automated document submission;
- ✓ assist the private sector in constructing enterprise information platforms and offer free training; and
- ✓ simplify rules and regulations and streamline the regulatory process.

## **D. Improve the Policy Framework**

### **1. Improve the policy direction for logistics development**

The government should

- evaluate the Logistics Industry Restructuring and Revitalization Plan, make proper adjustments based on actual results, and refine policy for inclusion in the Twelfth Five-Year Plan;
- introduce guidelines to promote the development of small and medium-sized logistics enterprises and support development of logistics enterprises of all sizes so that they can be on an equal footing with large, state-owned logistics companies;
- clarify the position and role of various transport and logistics associations, to help become effective advocates of the industry they represent and to bring industry views into government decision making;
- encourage transport and logistics industry associations to work with the financial sector and finance departments at different levels of government to help with the financing of small and medium-sized enterprises; and
- carefully monitor the acquisitions of important domestic logistics enterprises by foreign companies and take the steps necessary to ensure the development of a strong domestic logistics industry.



## 2. Improve the regulatory framework

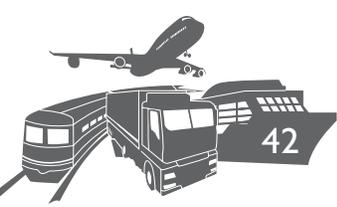
To support development of the logistics industry, the government should clarify regulatory functions and responsibilities among different agencies, streamline interactions, and integrate processes as quickly as possible. In order to accomplish this, the government should

- clearly delineate the role of government, enterprises, and industry associations;
- encourage private sector contributions to promoting logistics development while focusing government effort on promulgating proper policies and creating a nurturing environment;
- strengthen the role of industry associations as the advocates for their members in influencing regulatory decisions;
- clarify the relationship between the MOT and other government agencies, enabling the ministry to lead the logistics development effort (because transport plays the most critical role in logistics), and making it the driving force in formulating new policy, introducing transport and logistics innovations, and enhancing the overall efficiency of the logistics system;
- clarify central and local government roles in logistics development, delegating more power to local government in promoting logistics, especially the development of logistics infrastructure and the regulation of transport and logistics markets, while the central government focuses on national logistics development strategy and planning;
- establish an integrated, comprehensive transport regulatory system that includes all modes of transport, paying special attention to improving modal interfaces and speeding up growth of rail and water transport capacity; and
- reform the management of locks, dams, and navigation facilities and unify the management of important waterways under the MOT to improve safety and efficiency.

## 3. Promote unified technical standards

The development of vehicle, vessel, service, and information technology technical standards should be expedited as follows:

- when setting vehicle standards, take into account safety, productivity, versatility, manufacturing costs, lifetime operating cost, energy efficiency, road wear, and compatibility with international standards;
- conduct a comprehensive study on trucks, trailers, pallets, containers, and flat wagons to determine optimal size and weight standards for effective modal interfaces;
- accelerate the setting of vehicle standards, especially for trailers to facilitate drop-and-pull operations. Introduce general tractor technical standards and amend the general semitrailer technical standards to improve efficiency of drop-and-pull operations (e.g., through the interchangeability of equipment). Also issue guidelines for drop-and-pull transport standards, and technical requirements, and van trailer technical requirements, and speed up the issuing of basic requirement recommendations for tractor-trailer combination models; and



- speed up the standardization of vessels operating along the Xijiang and Yangtze rivers, focusing on the development of tugs, container ships, and bulk barges.

#### 4. Strengthen government's strategic role in transport and logistics investment

The logistics industry is critical to the country's economic structure transformation and its migration up the value chain. While the PRC is still in the early stages of this growth, the government should consider using financial incentives to promote logistics development. The government's leadership in the sector should be strengthened as follows:

- central and local governments should provide subsidies for critical logistics infrastructure development. These subsidies should not come with conditions that interfere with business operations. Investment in logistics parks should come from the private sector, and foreign investments should be encouraged;
- central and local governments should set up special funds for inland waterway transport infrastructure development. Bonds, fees, and special central government allocations all are possible sources of funding;
- central government should increase the budget earmarked for the improvement of the Yangtze River waterway. Subsidy policy, including how funds are to be used, disbursement procedures, and project supervision, should be studied;
- government subsidies should be used to improve energy efficiency and reduce greenhouse gas emissions of road and waterway transport by replacing obsolete vehicles and vessels;
- all levels of government should focus on creating carrier management networks and vehicle control systems, gradually establishing emergency command systems and systems to monitor the safety and integrity of carriers; and
- since logistics enterprises should be the main driver of logistics industry development, local governments should create incentives, such as tax relief and funding assistance, to support the logistics industry, based on actual needs.

### A. Integrated Inland Waterway Development Pilot Project Study

As the industry of the People's Republic of China (PRC) migrates further into the interior, corridors linking the central and western regions with the eastern coastal region are becoming ever more critical to the country's logistics system, and multimodal transport is playing a central role. The transport potential of the PRC's inland waterways is underutilized. Modern inland waterway ports can be developed in several industrial and commercial centers along the Yangtze River or Pearl River. For example, Chongqing is not just an important industrial center but also an important regional logistics hub in the southwest, especially after the completion of the Three Gorges Project, which greatly improved shipping conditions on the upper reaches of the Yangtze River. Likewise, modern river ports can be built in a number of cities within the Wangjiang Demonstration Zone that lies along the Yangtze River (e.g., Anqing) to efficiently link the PRC's interior to eastern seaports such as Shanghai and Ningbo. This technical assistance (TA) project will focus on using inland waterway ports as a multimodal hub for linking PRC's interior and southwest region with the eastern coast and will initiate pilot projects on effective rail–waterway–sea transport and road–waterway–sea transport.

### B. Study of the Prospects of Regulatory Reform to Reduce Logistics Costs

Complex, fragmented, uneven, and opaque regulation add a layer of invisible, uncontrollable, and high management cost to the PRC's transport and logistics industry. Elements of the high management cost include

- a lack of trust among market players, leading to high transaction costs;
- overly complex customs clearance procedures and documentation requirements, which increase import and export costs;
- a complicated tax system and unfair tax burden on logistics operators; and
- heavy fines levied by public security bureaus and local traffic management authorities.

Current government thinking focuses on increasing subsidies or strengthening regulations, but has given less attention to regulatory reform and management cost. Yet reduced management cost could significantly reduce overall logistics costs. The proposed TA project will identify and quantify the main elements of this management cost, bring this information to the attention of the relevant levels of government, and propose changes to streamline regulation and reduce management cost.



### **C. Urban Distribution Improvement Study**

With increased urbanization and the explosive growth of e-commerce, large and medium-sized cities will face distribution challenges in urban areas. The few trucks that municipal authorities allow to access city centers are usually not fully loaded, wasting precious capacity. The TA project will carefully study the distribution needs of selected cities and will conduct pilot testing of options for improved distribution methods and urban transport regulations.

### **D. Study to Improve the Insurance System and Tax Policy for the Logistics Industry**

The PRC's current insurance system restricts the development of advanced transport and logistics, and its current tax policy affects the formation of logistics networks. For example, it is compulsory to insure tractors and trailers separately, and the owner of the trailer would pay for the costs of a traffic accident even when the trailer and/or container is in the carrier's possession. Further, logistic operators are subjected to duplicative taxation (e.g., value-added tax) and demands from local authorities to pay local taxes based on local income that cannot be offset by losses from other locations. The PRC can draw on rich experiences from abroad to formulate concrete improvement plans.

### **E. Study on Integrated Logistics Park Planning Methods**

The Government of the PRC attaches great importance to the construction of logistics parks. However, it lacks an effective coordination mechanism for their planning and implementation. This has resulted in

- the poor design, planning, and construction of logistics centers;
- the poor connection of logistics centers to transport networks;
- inadequate integration with transport hubs (especially multimodal transport hubs) and other entities in the value chain to form a highly effective logistics ecosystem;
- logistics centers that do not meet user needs (e.g., they are located too far from the market or feature designs not conducive to operating requirements); and
- high rates of logistics park vacancy.

Since the design, implementation, and operation of logistics parks require extensive collaboration and coordination among many different agencies and the private sector, there is a need to study the approach to integrated logistics park planning to identify the most effective options. Some of the questions that need to be answered include:

- what role should each party play? Which should be the lead agency for logistics development?
- what are the proper roles for different units within a given agency?



- what are the roles of the national, provincial, and local governments?
- how should conflicts and differences be resolved?

This TA project is proposed to help the government improve its logistics park planning and coordination mechanism and to develop a proper logistics planning model drawing upon international best practices.

## APPENDIX 2

# SLOW SPEED OF RAIL TRANSPORT IN THE PEOPLE'S REPUBLIC OF CHINA

Table A2 presents empirical data collected by ADB's CAREC (Central Asia Regional Economic Cooperation) Corridor Performance Measurement and Monitoring Program. It depicts the slow speed of the PRC's rail transport, even when the (frequently long) waiting time for wagon allocation is excluded. At an average speed of about 15 kilometers (km)/hour, the PRC's rail cargo travels at the speed of a bicycle or about one-fifth the speeds of trains in the European Union and the United States. The variability is also high—the origin-to-destination speed ranges from 11.13 km/hour to 18.70 km/hour in a sample of just five shipments (Table A2). The slow speed and unreliable service are major factors for the PRC's high logistics cost.

File ID	1	2	3	4	5
Route	Shanghai-Almaty	Shanghai-Almaty	Shanghai-Almaty	Shanghai-Almaty	Shanghai-Almaty
Commodity	Hand Tools				
Commodity Classification	CC16	CC16	CC16	CC16	CC16
Perishable	No	No	No	No	No
Cargo Weight (tons)	24.860	22.050	19.590	18.500	19.225
Container	40'	40'	40'	40'	40'
Transport Internationaux Routiers (TIR) Agreement	No	No	No	No	No
Date of Questionnaire Completion	07 Apr 2011	13 Apr 2011	15 Apr 2011	15 Apr 2011	15 Apr 2011
Distance (km)	5,274.00	5,274.00	5,274.00	5,274.00	5,274.00
Transit Time (hrs)	474.00	282.00	366.00	342.00	306.00
Activities Time (hrs)	126.00	164.00	73.50	122.00	110.00
Total Time (hrs)	600.00	446.00	439.50	464.00	416.00
Vehicle Operating Cost (\$)	\$3,807.26	\$3,807.26	\$3,807.26	\$3,807.26	\$3,807.26
Activities Cost (\$)	\$196.22	\$196.22	\$226.71	\$196.22	\$196.22
Total Trip Cost (\$)	\$4,003.48	\$4,003.48	\$4,033.97	\$4,003.48	\$4,003.48

*continued on next page*





Table A2 continued

File ID	1	2	3	4	5
Speed without Delay (km/h)	11.13	18.70	14.41	15.42	17.24
Speed with Delay (km/h)	8.79	11.83	12.00	11.37	12.68
Vehicle Operating Cost (\$/500km)	\$360.95	\$360.95	\$360.95	\$360.95	\$360.95
Activities Cost (\$/500km)	\$18.60	\$18.60	\$21.49	\$18.60	\$18.60
Total Trip Cost (\$/500km)	\$379.55	\$379.55	\$382.44	\$379.55	\$379.55

' = foot, hrs = hours, km = kilometer, km/h = kilometer per hour, CAREC = Central Asia Regional Economic Cooperation.

Source: Asian Development Bank consultants.

## APPENDIX 3

# DEVELOPMENT OF LOGISTICS CENTER AT TRANSPORT NETWORK NODES

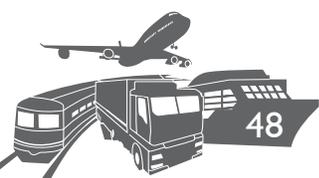
Network nodes have special spatial advantages, especially nodes with a high number of connections. They are particularly suitable for logistics developments that will be critical for subsequent economic cluster development.

Clusters are geographic concentrations of interconnected enterprises. Clusters encompass an array of linked industries important for competition. They include suppliers of specialized inputs and services, and providers of specialized infrastructure. Clusters extend vertically to encompass supply chain partners and customers and horizontally to include manufacturers of complementary products or using common skills, technologies, and inputs. Michael Porter (1998) explains how clusters affect competition in three broad ways: first, by increasing the productivity of companies based in the area; second, by driving the direction and pace of innovation; and third, by stimulating the formation of new businesses within the cluster. Nodes that are situated at the crossroads of different modal arteries are particularly attractive for transport and logistics development.

First, multimodal hubs should be adjacent to road, rail, air, and water network nodes and near large industrial and trade centers, or large population centers with sufficient space and proper terrain for safe, efficient operations. Logistics parks should be built near multimodal hubs, or at a minimum, near road network nodes with good rail access.

Learning from the German model, a logistics park should also be a well-balanced “ecosystem”, with logistics centers, carrier terminals, light processing facilities, information technology service companies, inspection agencies and leasing companies working together for optimal logistics effectiveness. Due to the high cost of developing multimodal hubs and logistics parks and the small number of ideal sites, the Government of the People’s Republic of China (PRC) should devote time and effort to the planning and design of these facilities.

The development of corridor nodes requires careful planning that should be aligned with long-range economic plans, as well as regional and urban development plans. Piecemeal, disjointed, uncoordinated logistics developments must be avoided. Whenever possible, the PRC government should also create the proper investment climate to attract private sector investment. In addition to contributing essential logistics center operating skills, private sector logistics developers also provide the financial discipline that prevents poorly planned logistics projects from moving forward.



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## **Transport Efficiency through Logistics Development Policy Study**

Logistics includes material flow, information flow, and financial flow between the point of supply and the point of consumption, with transport serving as its core. With the rapidly evolving economy of the People's Republic of China, there is a need for a modern transport and logistics system that is efficient, safe, sustainable, and meets customers' requirements. This policy brief describes the current state of transport and logistics development in the PRC. It provides policy recommendations that are suitable for application in the PRC, based on the results of the study and analysis of best practices in different countries.

Foremost among the recommendations are (a) upgrade existing infrastructure to achieve an interconnected network with properly planned and designed interchange facilities, multimodal transport hubs, and logistics centers; (b) speed up modernization of transport and logistics systems and equipment; and (c) formulate new logistics policies that improve the transport regulatory framework.

### **About the Asian Development Bank**

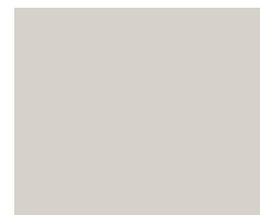
ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

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