

Research Series on the Chinese Dream
and China's Development Path

Xiaoyan Lin
Xiuying Liu

The Development of China's Transportation Industry (1978–2018)



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Preface

This book is one in a series of reform and opening-up review publications, and focuses on the development trajectory and achievements of transportation sector since adoption of reform and opening-up policy in 1978 in China. As we celebrate four decades of reform and opening up, the Nineteenth CPC Party Congress in October 2017 heralded a new era in building a Socialist country with Chinese characteristics and a new journey in building a country with strong transportation. This book intends to summarize the past four decades.

Before commencement of reform and opening up in 1978, China's transportation sector was seriously under-developed: the infrastructure was inadequate in terms of both scale and access, transportation fleets were in shortage and technologically outdated, and the overall condition was rudimentary. Before the reform, the economy was anemic and financially weak, and all sectors needed investment and development. Moreover, transportation was labeled a non-production sector, and investment had yet to trickle in. By the end of the 1970s, it was common to see people carry cargo by their back or shoulders, or by animal-pulled carts. A large percentage of people did not travel far, or see a train, car or airplane. The Third Plenary Session of the Eleventh CPC Party Congress in December 1978 marked a turning point in China's economic and social development, and in transportation sector development as well. Reform and opening up policies liberated productivity, the economy grew rapidly, people's living standards improved significantly, investment and construction in the transportation sector increased, resulting in a whole new look: road network better meeting needs, transportation capacity enhanced, and technology and equipment reaching world class.

In the four decades since adoption of reform and opening up program, as the economic management system was reformed, the country opened wider, and government gave strong impetus, China's transportation sector experienced unprecedented achievements in transportation infrastructure construction, operation quality, and technology and equipment, as well as in development paradigm shift, transportation management system, and improving legislation and market-orientation. According

to Transportation Sector Development Statistics Bulletin of 2016 released by the Ministry of Transport, by the end of 2016, China had 5.056 million kilometers of transportation routes, including 124,000 km railway (22,000 km high-speed rail), 4.696 million km road (131,000 km highway), 127,000 km inland waterway, and 109,000 km oil and gas pipelines, and public transport routes extended 669,600 km. There were 218 civil aviation airports, and 30,388 for-profit berths (2,317 were inland waterway berths capable of anchoring 10,000-ton vessels). Hubs, routes and networks interconnect, arterial and collector lines and different transportation modes complement each other.

This book was conceptualized, coordinated and reviewed by Prof. Xiaoyan Lin, and Xiuying Liu participated in identifying the frame work of the book, and revision, editing and review of all twelve chapters. Chapter 1 “Introduction: Integrated Transport in China” was written by Meng Wang, which comprehensively reviews the development and achievements, theories and policies, experiences and lessons of China’s integrated transport system in the past 40 years, and puts forward countermeasures for future development. Chapter 2 “Rail Transport” was written by Yiming Jiang, focusing on the 40 years of development and service of China’s rail transport, such as the evolution of railway, locomotive and station; technological innovation, enterprise development and overseas achievements in rail transport. Chapter 3 “Roads and Highways” was written by Zilong Mu, presenting key achievements in roads and highways in the past 40 years, especially the construction of highways and rural roads and the development of roads and highways services. Chapter 4 “Civil Aviation” was written by Xiao Liang, discussing the infrastructure construction and service of China’s civil aviation. The development of air routes, airports, aircraft, civil aviation industry market and management system are introduced in detail. Chapter 5 “Maritime Transport” was written by Peiyao Chen, discussing the development and changes of China’s maritime transport in the past 40 years, and details the development of port terminal, shipbuilding, ship leasing market, maritime transport management regime, foreign cooperation and law and regulatory system. Chapter 6 “Inland Waterway Transport” was written by Aiping Zhang, presenting the development of inland waterways and ports, along with the evolution of inland ships and shipbuilding technology. The changes of the port management and inland waterway transport management system reform, inland waterways standard formulation and inland water transport policies are introduced. We also introduce the development status of inland waterway transport in the transportation industry and the development of water transport enterprises. Chapter 7 “Pipeline Transport” was written by Zhuoran Cui, highlighting the development of pipeline transport in China over four decades, focusing on the construction and achievements of crude oil, oil products and natural gas pipelines, and compared Chinese development with that of other countries in the world. Chapter 8 “High-Speed Rail” was written by Shen Luo, presenting the origin and development background of China’s high-speed rail, the technological innovation process, the scale of China’s high-speed railway construction and its impact on the economy and society, the advantages of China’s high-speed railway

going global and the achievements in “going out”, and putting forward suggestions for the future development of China’s high-speed rail. Chapter 9 “Subway” was written by Zehua Zhang, featuring overview the development of China’s subway in construction scale and passenger flow, as well as its ups and downs development process. Taking Beijing subway as typical urban metro case introduces its great development of 60 years, which improving people’s quality of Life. In addition, the evolution of the public-private partnership models in subway construction is discussed. Chapter 10 “Logistics” was written by Yihang Li, introducing the general development of China’s logistics in the past 40 years, which include the scale of the logistics industry, demand structure, industrial chain, logistics costs. The situation of logistics transport networks, logistics equipment, logistics parks, logistics information technology are presented. It also discusses the development of Chinese third-party logistics companies and the evolution of logistics policies. Chapter 11 “Tourism Transport” was written by Zili Wang. This chapter explains the relationship between transport and tourism and analyzes the concept and classification of tourism transport. The historical stages of the development of China’s tourism transport are discussed, and the development trend and typical cases of railway tourism, road and highway tourism, waterway tourism, aviation tourism and regional tourism are introduced respectively. It puts forward suggestions on the comprehensive coordination mechanism for Chinese tourism transport. Chapter 12 “Coal Transport” was written by Xiuying Liu, introducing China’s energy situation and the distribution and transportation of coal, and detailing the development of coal transport infrastructures, including special railway lines, specialized coal terminals, coal transport vehicles, coal transport special channel—UHV transmission lines. It also presents the development of innovative coal storage and transportation models, such as large-scale coal storage and distribution bases, coal logistics parks, “rail-waterway” joint coal transport.

This book received funding from Beijing Transport Development Research Base, one of Beijing Municipal Philosophy and Social Sciences Key Research Bases, and is a work in progress for the national social sciences key project “Chinese high-speed rail economics: theoretical interpretation framework and evolution paths” (17ZDA084). The book can be added to undergraduate reading list, and can serve as a reference book for transportation sector workers, policy researchers and other interested readers. Omissions and errors are the authors’ and we welcome your comments.

Beijing, China
February 2018

Xiaoyan Lin

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About the Author

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Lin has taken part in the technologic-economic review of many key railway projects, such as Beijing-Shanghai high-speed rail, Beijing-Kowloon Railway, Lanzhou-Urumqi high-speed rail, Qinghai-Tibet Railway and Shanghai high-speed maglev Pudong airport line. Award winner in or from university research, Beijing municipal philosophy and social sciences, China Railway Society, and Chinese Society of Technology Economics for outstanding outcomes. Chaired national social sciences key project on “Chinese high-speed rail economics: theoretical interpretation framework and evolution paths”. Author of *High-Speed Rails and New Structure of Socio-economic Development*; *New Balance of Public Welfare and Business for Rail Transit*; *High-Speed Rail: Service Quality and Market Competition*; and *Railway Privatization Reform and Market Fundraising*.

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Chapter 1

Introduction: Integrated Transportation in China



1.1 Four Decades of Development and Achievements

The convention of the Nineteenth CPC Party Congress in October 2017 ushered in a new era in building a Socialist country with Chinese characteristics. Building upon previous achievements, China aimed for continued successes in the new era. The Report to the Nineteenth CPC Party Congress commended on the progress made in transportation over the preceding five years, as “construction of infrastructure such as high-speed rails, highways, bridges, ports and airports accelerated”. It envisioned a nation supported by strong transport infrastructure, and marked the start of a new journey to that goal.

In the first few years of reform and opening up program, motorcycles facilitated the way people traveled. Forty years later, high-speed rails and highways have weaved into a network (Figs. 1.1 and 1.2). China has made astounding strides towards that goal. A comprehensive transportation network that links regions, cities, urban and rural areas as well as within cities quickly took form across China, providing strong support for economic and social development. China has pursued traffic infrastructure development as a priority to boost economic development, and the transportation system became more diversified, integrated and intelligent.

Note: Motorcycles became popular from 1980, greatly facilitating people’s travel. Years later, private cars would repeat the same story.

Note: This panoramic photo of Shanghai Hongqiao railway station was taken by Weidong Zhang, and received first-class award in documentary photo show in 2012. Shanghai Hongqiao railway station is an important component of Hongqiao comprehensive transportation hub, linking Beijing-Shanghai and Shanghai-Kunming high-speed rails.

The transportation infrastructure has undergone huge changes since 1978, as a comprehensive transportation network took form, network layout and structure improved, technical sophistication advanced, and overall transport capacity grew.



Fig. 1.1 A motorcycle factory receiving inspection in 1980s



Fig. 1.2 Like a hub

By the end of 2016, China had 5.056 million km of transportation routes,¹ including 124,000 km of railway (22,000 km high-speed rail. *Translator: the numbers reported in this book are generally rounded to thousands or hundreds*), 4.696 million km of road, 127,000 km of inland waterway, and 109,000 km of oil and gas pipelines. In

¹ Total mileage of comprehensive transportation network includes roads, railways, inland waterways, civil aviation airports, major coastal ports, and oil and gas pipelines, and excludes civil aviation air routes, ocean routes, city roads and village roads.