

## SECTOR ASSESSMENT (SUMMARY): TRANSPORT<sup>1</sup>

### Sector Road Map

#### A. Sector Performance, Problems, and Opportunities

1. Transport has played an important role in enabling the People's Republic of China (PRC) to achieve impressive rates of economic growth and poverty reduction. Massive investment has led to a large increase in transport infrastructure.<sup>2</sup> However, this has also contributed to a series of new challenges, including air pollution, greenhouse gas emission, traffic congestion, unprecedented growth in motorization, and increases in traffic accidents. There is a need for transport to become more sustainable, with less energy use and lower carbon dioxide (CO<sub>2</sub>) and particulate emissions. The transport sector needs to develop new sources of financing, strengthen institutional arrangements to attract private financing, and develop models of comprehensive transport to realize its full potential.

2. **Rapid growth, motorization, and air pollution.** Transport is already an important contributor to total CO<sub>2</sub> emissions in the PRC and globally, and air pollution is one of the most serious challenges for the PRC's cities. According to the International Energy Agency, the share of transport in total PRC emissions of CO<sub>2</sub> reached 8% in 2012, most of it coming from road transport. This share is forecast to reach 13% by 2040, based on the International Energy Agency's 2014 New Policies Scenario. The use of high-emission vehicles for freight and passenger transport is a significant contributor to the problem. A critical factor is the rapid growth in the use of private vehicles for urban transport. With increased per capita incomes, the number of motor vehicles rose from about 1 million in the early 1990s to 127 million in 2013. There was a 17% increase in the number of motor vehicles from 2012 to 2013. This has led to massive increases in air pollution and traffic congestion.

3. **Sustainable low-carbon modes of transport.** Successful development of affordable, efficient, low-emission, and high-capacity public transport and nonmotorized transport systems is essential, along with adequate policies and institutional arrangements, to tackle the air pollution problem in the PRC's cities. Support for more energy-efficient modes of urban transport and long-distance freight, and the use of more efficient vehicles and alternative fuels, should be prioritized. Compared with road transport, railways and inland waterway transport (IWT) have significantly lower CO<sub>2</sub> emissions. However, railways are operating close to capacity on many key freight corridors, and there is also a need to develop intercity passenger rail services. The PRC has great potential for the development of IWT, which is clean, safe, and the most energy efficient of all the major modes of transport. The PRC has more than 5,600 navigable rivers and an inland waterway system of 125,900 kilometers (km) in total navigable length.<sup>3</sup> However, the development of IWT has lagged, and its share of investment financing (7%) is much smaller than its share of traffic. Its share in total freight traffic in the PRC, measured in tons, was 14% in 2014.

4. **Multimodal passenger transport.** As cities expand, average trip lengths increase and more trips require the use of multiple modes within the city transport networks. The change from one mode to another is often inconvenient and time consuming unless transfer between modes is prioritized in the design of stations and related facilities. Multimodal public transport hubs can

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<sup>1</sup> This summary draws on the discussions with the Ministry of Transport on the 13th Five-Year Plan.

<sup>2</sup> Transportation infrastructure has comprised roughly 25% of total infrastructure investment.

<sup>3</sup> National Bureau of Statistics. 2014. *People's Republic of China Statistical Yearbook*. Beijing.

be built at railways stations, rapid transit stations, bus stops, tram stops, and airports where two or more of these modes come together. A key challenge is to design and build facilities that bring all modes together effectively and efficiently.

5. **Effective freight logistics options.** The domestic logistics industry is underdeveloped in the PRC, and significant impediments limit the multimodal transport options that are available to shippers. Logistics costs are currently 17% of gross domestic product (GDP), about twice the GDP share of those in advanced countries. The main elements of logistics costs are transport (52%), inventory carrying cost (35%), and administration and management costs (13%). The major logistics constraints include high toll charges, underdeveloped trucking and logistics industry, and insufficient provision for multimodal forms of transport. Rural logistics in the PRC are impeded by high levels of fragmentation and intermediation, relatively low service quality, high costs, fragmented regulations and supervision, and inadequate interconnectivity between transport modes. Multiple measures are needed to develop the logistics industry, improve logistics service quality, improve logistics efficiency, and streamline and consolidate government supervision.

6. **Road asset management.** Building and upgrading roads has been a mainstay of the PRC's transport development program.<sup>4</sup> With a large asset base now in place, the challenge of maintaining roads has grown in importance. While funding of maintenance for tolled expressways is generally adequate, funding for nontolled ordinary road maintenance remains inadequate, especially in the central and western regions.

7. **Road safety.** In the PRC, 58,316 people were reportedly killed in road crashes in 2013. The International Road Assessment Program estimates that road deaths and serious injuries cost the PRC \$300 billion (CNY1,880 billion) per year, equivalent to 5% of GDP.<sup>5</sup> Given the high road accident rates throughout the country, it is essential to devote more attention and more resources to road safety.

8. **Policy and institutional reforms.** To solve transport inefficiencies and meet changing needs for sustainable transport, further policy and institutional reforms across the transport sector are essential. Separation of operations from policy formulation can improve efficiency. For example, the China Rail Corporation has been created for managing rail operations, and the policy formulation responsibilities have been transferred to the Ministry of Transport. It is also essential to pursue a more comprehensive policy to increase synergies between modes, and to enable interconnectivity between modes. Special emphasis should be placed on integrating safety considerations and strengthening institutional capacity in all aspects of transport system development.

## **B. Government's Sector Strategy**

9. The transport sector policy of the Government of the PRC will be guided by the 13th Five-Year Plan which is likely to focus on three major initiatives of the national government: the Belt and Road, the Yangtze River Economic Belt, and the Beijing–Tianjin–Hebei region.

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<sup>4</sup> The road network has been expanded by an additional 3.4 million kilometers (km) over the past 34 years, from 0.9 million km in 1980 to 4.3 million km in 2013. At the core of the program is the National Expressway Trunk System.

<sup>5</sup> iRAP. 2014. A Business Case for Safer Roads. <http://www.irap.org/en/about-irap-2/a-business-case-for-safer-roads>.

10. **The Belt and Road.** This is a development strategy started by the Government of the PRC in 2013. It refers to the New Silk Road Economic Belt, which will link the PRC with Europe through Central and Western Asia; and the 21st Century Maritime Silk Road, which will connect the PRC with Southeast Asian countries, Africa, and Europe. There will be opportunities in road, rail, and maritime transport.

11. **Yangtze River Economic Belt.** State Council guidelines seek to increase the traffic capacity of the river and its tributaries. The government will boost the development of railways, highways, waterways, airways, and underground pipelines along the Yangtze River to build a multimodal transport corridor. The service industry, green energy, and modern agriculture feature prominently in plans for the belt, with coordinated urbanization along the river, including the Chengdu–Chongqing city cluster and Guizhou and Yunnan provinces.

12. **Beijing–Tianjin–Hebei region.** An Action Plan for Air Pollution Prevention and Control in the Beijing–Tianjin–Hebei region has been developed. The plan sets the agenda for air pollution and control and is a crucial step forward for air pollution prevention and control in the PRC. For transport, the measures include phasing out polluting vehicles, increasing vehicle emission standards, ensuring a clean fuel supply, and promoting high-quality public transport with travel demand management policies.

### C. ADB Sector Experience and Assistance Program

13. The Asian Development Bank (ADB) has been a key development partner in the PRC's transport sector since 1991. Through its Sustainable Transport Initiative (STI) approved in 2010, ADB has established new strategic directions for its transport operations up to 2020.<sup>6</sup> The STI action plan defines four focus areas to be scaled up in future ADB operations—urban transport, response to climate change, cross-border transport and logistics, and road safety and social sustainability. In line with the STI, ADB has phased out support for expressways and diversified its assistance into urban transport, inland waterways, and logistics. ADB also initiated assistance in the road subsector for better road asset management and road safety. In the railway subsector, ADB has been supporting the Ministry of Transport and China Rail Corporation in developing multimodal rail passenger hubs and integrated freight logistics centers.

14. Under the country partnership strategy, 2016–2020, ADB will promote inclusive growth and environmental sustainability by helping to develop a more efficient, safe, green, and sustainable transport system. ADB will support (i) low-carbon transport modes such as IWT and railways; (ii) public transport and nonmotorized transport systems in urban areas; (iii) road safety; (iv) multimodal passenger transport hubs; (v) freight logistics facilities; (vi) energy-efficient technologies, emissions control, and monitoring; and (vii) climate change adaptation. ADB will continue to promote synergies with the government's strategic programs and integrate crosscutting initiatives, including knowledge solutions.

15. **Support for low-carbon transport systems such as inland waterway transport and railways.** ADB will support low-carbon transport by investing in inland waterways. ADB will improve navigation channels and the interface between IWT and other transport modes. ADB will also explore possible development of renewable energy resources and promote energy efficiency solutions in IWT, such as modernization of barges. Assistance will be extended to promote safer and more efficient navigation such as introducing a comprehensive river

<sup>6</sup> ADB. 2010. *Sustainable Transport Initiative Operational Plan*. Manila.

information system. ADB will also develop strategies for sustainable inland waterway funding sources and encourage the use of public–private partnerships (PPPs) for inland waterway services. ADB will continue to support railway development in the PRC by providing assistance on intercity rail network projects, developing intermodal links, and encouraging PPP schemes for railway financing.

16. **Develop a sustainable urban public transport system.** ADB will support efficient, high-capacity, and affordable public transport systems. ADB will help develop integrated and sustainable urban transport systems by supporting the development of public transport systems based on bus rapid transit, traffic management, and infrastructure to support nonmotorized transport modes such as walking and cycling. ADB will also assist the PRC to implement the use of intelligent transport system technologies.

17. **Road asset management and improvements in road safety.** ADB will assist in improving the sustainability of the road subsector, focusing on planning, financing, and implementing better maintenance and road asset management arrangements. In line with the PRC's commitment as a signatory of the United Nations Decade of Action for Road Safety 2011–2020 and ADB's road safety action plan, ADB will scale up road safety in its operations. This will include piloting new approaches to road safety that emphasize better engineering, enforcement, education, information sharing, evaluation, and emergency response in road safety. ADB will expand its road safety operations initially by including more road safety components within project loans, more technical assistance support, and regional cooperation in road safety. This may lead to stand-alone road safety lending.

18. **Support development of multimodal passenger hubs.** ADB will support the development of multimodal hubs to enable efficient integration of long-distance passenger transport modes such as railways with the urban transport systems.

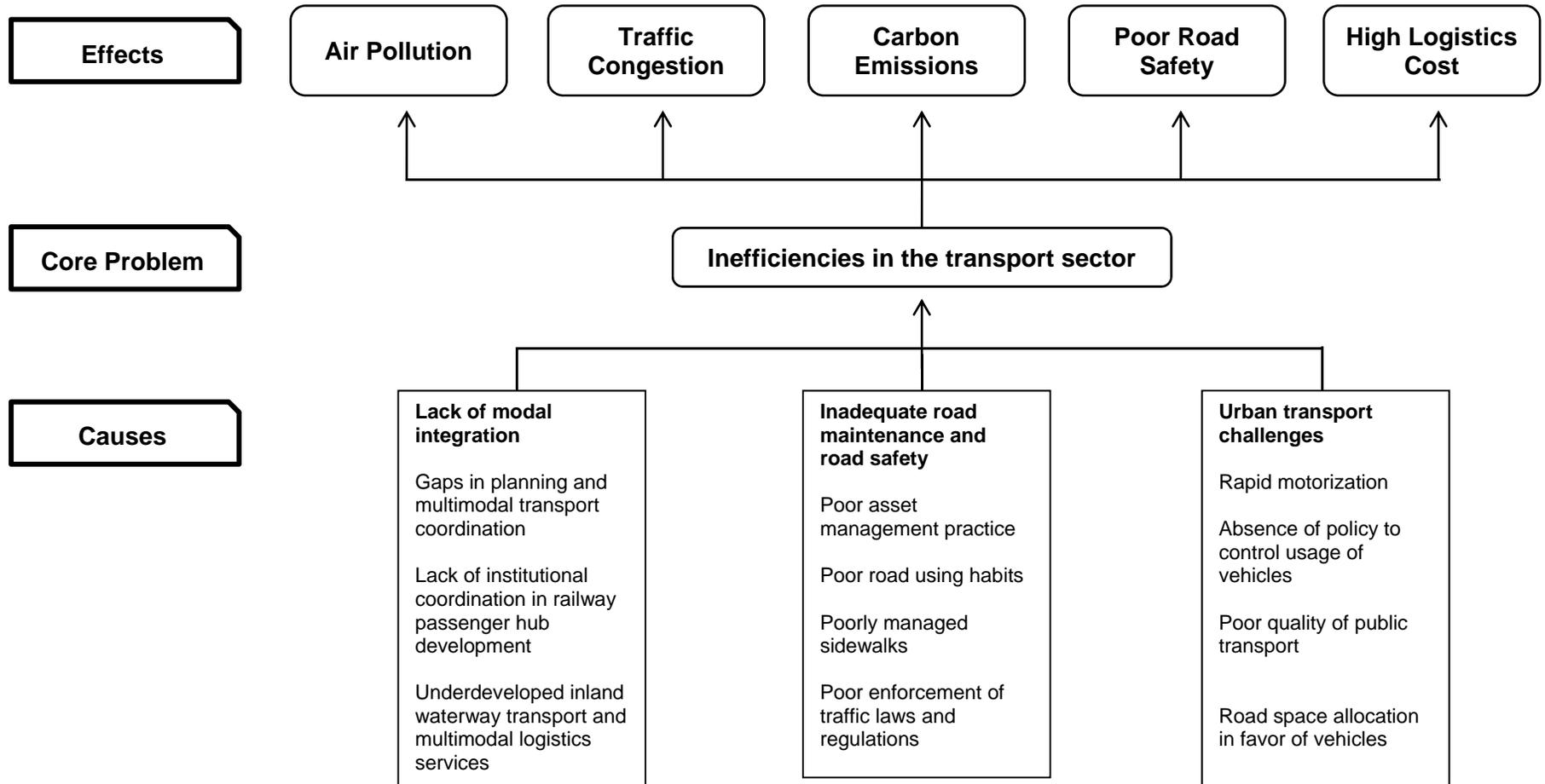
19. **Support freight logistics and development of logistics information systems.** To support an efficient logistics industry, ADB will finance improvement in freight logistics operations and development of logistics information systems in the country. ADB will also support the development of infrastructure for improving rural logistics operations.

20. **Assist in implementing efficient technologies and emission control.** ADB will assist in identifying appropriate low-emission technologies such as electric vehicles, as well as work with the Government of the PRC to institutionalize effective emission control policies and monitoring system.

21. **Integrate climate change adaptation strategies on transport investments.** ADB will assist the PRC in assessing climate risk and vulnerability of transport projects, and develop designs that are resilient to the effects of climate change.

22. **Value addition.** ADB will focus its transport support on aspects where it can add value to transport development in the PRC by financing innovative projects, piloting and expanding successful projects, promoting technology and knowledge transfer, building capacity, and encouraging PPPs. Support for knowledge products and services will be closely integrated with lending and technical assistance. Through its projects, ADB will assist the government in applying new technologies and designs to make better use of existing transport infrastructure and reduce emissions. ADB will also help search for solutions to improve air quality and reduce greenhouse gas emissions, where possible, utilizing resources from the Climate Change Fund, Global Environment Facility, and other trust funds.

## Problem Tree for Transport Sector



Source: Asian Development Bank.