SECTOR ASSESSMENT (SUMMARY): TRANSPORT (RAIL TRANSPORT [NONURBAN])

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. In the People’s Republic of China (PRC), railways remain the preferred mode of medium-to long-distance intercity transport. Combined with economic growth and technological improvements, rail transport is sure to play a continuing role in the future. The railways’ competitive advantage is in the transport of bulk and semi-bulk commodities over medium to long distances, long-distance passenger transport, and containerized freight.

2. From 1978, when economic reforms were first introduced, the PRC experienced sustained rapid economic growth. This resulted in a correspondingly rapid increase in demand for transportation. Despite government efforts to increase the country’s transport capacity, serious constraints and bottlenecks remain, especially in the railway industry. The government has been developing the rail network as a pillar for supporting sustainable economic development.

3. Sector reform. As a result of railway industry reform in March 2013, the Ministry of Railways was reorganized, and the governance function and enterprise roles were separated. The National Railway Administration and the China Railway Corporation (CRC) were created. The government’s planning, regulatory, and policy functions were moved to the Ministry of Transport. The National Railway Administration, as a subsidiary body under the Ministry of Transport, is responsible for the technical standards and the oversight of the transport service. The CRC, a state-owned enterprise under the Ministry of Finance, is now responsible for the operation, maintenance, construction, and safety of the national railway system. The Government of the PRC, through the CRC, administers the state-owned national railway. Under the CRC are 18 railway bureaus that are responsible for day-to-day operation and management of the railway lines and facilities in their respective geographic jurisdictions.

4. Network size. During 2003–2015, the rail network was expanded by 65%, from 73,000 kilometers (km) to 121,000 km in operating length. Of this, 19,000 km is high-speed rail and 64,000 km (or 52.9% of the network) is double-track rail. Out of the total operational length, 48,000 km are in western regions. The railway density is 126 km per 10,000 square kilometer. This is still far below that of developed countries like Germany, France, Japan, United Kingdom, and the United States.

5. Twelfth Five-Year Plan. During the Twelfth Five-Year Plan (2011–2015) implementation period, fixed-asset investment in railways amounted to CNY2.38 trillion—an 87.2% increase from the end of the Eleventh Five-Year Plan (2006–2010) period. During this time, 30,500 km of new railway lines were put into operation—more than double that of the previous 5 years. The PRC invested heavily in railway construction in 2015. A total of CNY823.8 billion was invested into the industry, and 9,531 km of new railway lines started carrying passengers and goods. Around 3,300 km of the new lines were for high-speed trains. The PRC boasts the world’s largest high-speed railway network, with an operating length of 19,000 km as at the end of 2015, accounting for 60% of the world’s total. About 2.53 billion passengers traveled by train in 2015, up 10% for the third year running, and container and general cargo transportation rose 20.2% year on year.

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This summary is based on the findings from the project preparatory technical assistance report.
6. **Capacity constraints and safety issues.** As traffic increased in parallel with economic growth, it was becoming more difficult to accommodate both freight and passenger traffic on saturated rail infrastructure. The traffic density on the PRC's railway network is about three times the density of traffic on Class 1 railroads in the United States, and seven times the traffic density on important European railways, such as the French and German railways. Some rail bureaus carry more traffic than the largest European railways. While the high density underscores a good record of performance and high asset utilization, it is indicative of the relative scarcity of railway infrastructure. Considering that the main traffic flows are directed north–south and east–west, it seems that the railway network is insufficiently developed in some areas. The railway network has been operating close to or at capacity for many years. Recently, with the development of the dedicated high-speed rail network, the diversion of passenger traffic resulted in opening additional capacity for freight transport on the conventional rail network, which mitigated some capacity constraints. The capacity constraints are most significant on the western PRC trunk routes, where the infrastructure is quite limited and unable to cope with the growth in traffic. Special attention needs to be paid to this region, which the Thirteenth Five-Year Plan (2016–2020) explicitly recognized as a priority.

7. Safety is an integral part of providing competitive, high-quality, and reliable transportation for people and goods. As the PRC railways are being modernized, new concepts and technologies introduced, and speeds increased, the safety needs are changing too. The Thirteenth Five-Year Plan recognizes this important aspect and seeks to promote integrated safety management, information network security, and an emergency management system consistent with the development needs of the PRC railways. It seeks to attract foreign technology and expertise to meet these needs.

8. **Opportunities.** The central government's policy on railway development focuses on (i) removing constraints and expanding the system, (ii) encouraging formation of joint-venture railways in partnership with provincial and local governments and other establishments (both public and private) to support development of local economies, (iii) improving efficiency by using new technology and modern management tools in planning and operation, (iv) reducing operating subsidies through appropriate pricing and commercialization of services, (v) implementing institutional and structural reforms to increase the autonomy and accountability of the railway bureaus of the CRC, and (vi) encouraging private sector investment in infrastructure and related services.

2. **Government’s Sector Strategy**

9. **Western Development Strategy.** This strategy aims to develop the railway network in the western PRC, a region with a relatively limited transport network and currently under-served by railways, which has constrained overall development. The railway network development strategy in western PRC will directly improve links with the Greater Mekong Subregion, specifically the Lao People’s Democratic Republic, Myanmar, and Viet Nam. In addition to direct links, the railway network development will increase access to eastern ports (and their connections to the Greater Mekong Subregion and the rest of the world), and provide opportunities that facilitate greater economic integration with the PRC’s dynamic eastern seaboard and the national economy.

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10. **Medium and Long-Term Railway Network Plan (2016–2030).** In 2016, the government developed this railway network plan to reduce transport inefficiencies and eliminate bottlenecks that constrain efficient economic development. Under the plan, the railway network will have reached 150,000 km by 2020, including 30,000 km of high-speed railway linking 80% of the major cities. By 2025, the government aims to further expand the railway network to 175,000 km, including 38,000 km of high-speed railway with broader coverage and optimized network structure. By 2030, the government envisions a rail network reaching 200,000 km, of which 45,000 km is high-speed rail. The government’s vision is to develop a rail network that will have well-established internal and external connections, multi-routes for inter-regional connections, high-speed links between provincial capitals, express lines connecting prefectures and municipalities, and railway connectivity extending to county levels. The high-speed rail network will cover major cities with a population of over 500,000 nationwide.

11. The long-term railway development plan places great importance on energy efficiency and environmental sustainability, and these are also key priorities in the Thirteenth Five-Year Plan. It requires (i) strict compliance with energy-saving and environmental regulation and the achievement of preset goals; (ii) upgrade of technology and equipment for railway operation; (iii) more effective management of energy efficiency and emission reduction measures; (iv) improvement of staff’s professional knowledge and technical skills; and (v) encouragement to embrace new energy and renewable energy.

3. **ADB Sector Experience and Assistance Program**

12. **Assistance to the railway industry.** The Asian Development Bank (ADB) is the leading lender in the PRC, and has focused on improving infrastructure in less developed and poor regions to promote sustainable economic growth and reduce poverty. ADB has provided 22 loans totaling $4.49 billion for rail transport in the PRC, including five tranches under the Railway Energy Efficiency and Safety Enhancement Investment Program. These projects have introduced modern technology and improved the efficiency of railway operations through institutional and structural reforms. As of 2015, 14 projects had been completed (loans totaling $2.51 billion), and 8 were under implementation. ADB has also provided 19 advisory technical assistance projects totaling about $9.14 million to promote the commercial operation of railways, establish corporate governance, achieve cost recovery, improve competitiveness and operational efficiency, and enhance the railway industry’s energy efficiency.

13. **Evaluation of assistance.** The evaluation of ADB assistance to the transport sector in the PRC concluded that ADB’s program for railways has been successful. The evaluation noted that ADB’s strategic priorities were well aligned with the PRC’s needs in rail transport. ADB’s overall focus on building railways using modern technologies met the need to increase railway capacity and reduce the gap between supply and demand as quickly and efficiently as possible. The priority given by ADB to improving efficiency and commercial orientation, and its emphasis on restructuring and reforming policy, was well matched to the evolving institutional reforms in railways. The railway projects have contributed to a dramatic transformation of local economies. Per capita rural incomes in project areas have substantially increased, resulting in better living standards and lower poverty incidence.

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14. **Strategy and priorities.** ADB has three broad objectives for its assistance to the railway industry: (i) improve economic efficiency, (ii) promote growth in poor inland provinces to reduce poverty, and (iii) protect the environment and manage natural resources. In pursuit of these three objectives, the strategy supports the development of efficient and integrated transport networks to meet the needs of a growing market economy and to contribute to reducing poverty through investment targeting poorer areas, coupled with policy and institutional reforms. Because of the importance of railway transport for the development of the national economy, ADB’s strategy for the subsector is focused on (i) expanding the railway system by constructing new lines in unserved areas that are less developed and poor, (ii) modernizing and increasing safety and capacity to improve transport efficiency of the national railway system, (iii) promoting energy conservation and environmental sustainability, (iv) commercializing railway operations to sustain efficient operations, and (v) increasing railway competitiveness in the transport system through restructuring and reform.

15. **Poverty reduction.** To increase the poverty reduction impact of transport investments, ADB pays particular attention to four issues: (i) locating ADB-financed projects in less developed regions where new lines will stimulate economic development, (ii) encouraging the maximization of employment for poor people during project construction and operation, (iii) supplying local materials that meet the requirements of quality and economy from poor villages, and (iv) providing station access roads and link roads to widen the reach of project benefits to poor interior areas.

16. **Private sector development.** The PRC’s large infrastructure needs require local governments to shift from traditional financing modes to the capital markets. In the railway industry, a wider role for the private sector is envisaged. The CRC and local governments have taken steps to create the conditions necessary to attract investments in the project facilities and services from nongovernment sources, including by introducing public–private-partnership modalities. Possible fields for private sector involvement include local railway development, development of multimodal logistical hubs, construction of industrial sidings, and commercial operation of passenger and freight services, tourism, containerization, and parcel-related businesses.

17. **Regional cooperation.** The PRC is an active participant in three regional cooperation initiatives: (i) the Greater Mekong Subregion, through Yunnan and Guangxi provinces; (ii) the Central Asia Regional Economic Cooperation initiative, through Xinjiang Autonomous Region; and (iii) with Mongolia, through Inner Mongolia. The improvement of cross-border trade regimes is a common feature of these initiatives. Since these programs involve the poorer areas of the PRC, expanding regional markets and options could help reduce poverty. The Greater Mekong Subregion and Central Asia Regional Economic Cooperation programs are developing strategies for cooperation in transport, of which rail transport is an important subsector. Steps are being taken to develop an institutional framework to facilitate the implementation of regional transport projects, e.g., Uzbekistan–Kyrgyz Republic–PRC railway development and the Pan-Asian railway project (Singapore–Kunming railway link project).
Problem Tree for the Rail Transport Subsector: Rail Safety

Effects
- Disruption in train operations
- Delays and excessive time taken for travel
- Higher costs owing to safety incidents on the line
- Injuries and loss of life because of accidents

Core Problem
- Inadequate safety constrains the operating speed advantage and capacity

Causes
- Difficult terrain (e.g., mountainous region)
- Basic signaling system
- Single-line operation
- Seismically active areas
- Limited emergency rescue and restoration arrangements