World Trade Organization Accession

Challenges and Opportunities for Railways in the People’s Republic of China

Asian Development Bank
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Manmohan Parkash

Asian Development Bank
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Abbreviations

GDP  gross domestic product
km  kilometer
MOR  Ministry of Railways
PRC  People's Republic of China
WTO  World Trade Organization

In this publication, $ refers to US dollars.

Currency Equivalents
(as of 8 June 2007)

<table>
<thead>
<tr>
<th>currency unit</th>
<th>yuan</th>
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<tr>
<td>1.00 yuan</td>
<td>$0.1307</td>
</tr>
<tr>
<td>$1.00</td>
<td>7.6487 yuan</td>
</tr>
<tr>
<td></td>
<td>CNY 7.7842</td>
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</tbody>
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The exchange rate of the yuan is determined under a floating exchange rate system.
In this report, the rate used is the rate prevailing at the above date.
Foreword

PRC’s accession to World Trade Organization committed PRC to open and liberate its economy to better integrate with the world economy and to offer a more predictable environment for trade and foreign investment. These commitments brought significant challenges and opportunities to the country’s transport sector, especially to PRC railways.

PRC railways have played a very important role in developing the national economy and in the country’s industrial revolution. However, with increasing market access under WTO, PRC railways face competitive challenges in open access, pricing, reliability, service quality, and have corresponding opportunities to develop cooperative relationships. The challenges come from other modes of transport and from within the rail sector offering lower total costs, greater reliability, and better service quality.

This report evaluates some of the major challenges and opportunities for PRC railways due to WTO accession, and suggests policy recommendations that can be considered by PRC railways to overcome these challenges.

We hope that this report will generate interest among numerous stakeholders and provide a better understanding of the key issues. We also hope that transport planners, transport operators, policy makers, development partners, the private sector, and decision makers will find it useful and relevant.

Halady Satish Rao
Director General
East Asia Department
Asian Development Bank
Acknowledgment

This report was prepared by Manmohan Parkash, Senior Transport Specialist, Asian Development Bank (ADB). Mr. Parkash has been closely associated with the railway development in the People’s Republic of China (PRC) and has led task teams to identify, prepare and appraise large and prestigious railway projects in the PRC. He has led numerous studies on policy reforms in the railway sector and is deeply involved with the reforms, restructuring and institutional development of the railways in the PRC.

This report draws upon the findings of a technical assistance support provided to Ministry of Railways for studying the World Trade Organization (WTO) impacts on PRC railways and numerous discussions on related policy and reform issues with stakeholders including government officials and other development partners.

The report has benefited from the useful guidance provided by Nigel C. Rayner, Director, Transport Division, East Asia Department; Liu Junfu, Managing Director General, Foreign Capital Technical Import Center (FCTIC), MOR; and Madam Liu Yiqing, Deputy Director, Policy and Regulation Department, MOR.

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Executive Summary

Accession to the World Trade Organization (WTO) required the People's Republic of China (PRC) to open and liberalize its economy and to offer a more predictable environment for trade and foreign investment. These commitments have brought significant challenges and opportunities to PRC Railways. Specifically, the PRC railways is committed to opening up its freight transport market to private operators by December 2007, and WTO accession has further increased PRC’s international trade resulting in more demands on a rail system that is currently operating at nearly full capacity. Foreign competition will require PRC Railways to function as a commercial enterprise operating under market principles, and increased trade requires urgent investment in capacity. The traditional railway organizational model must be transformed to satisfy the changing needs of customers and investors in a competitive market economy and should be configured as a joint enterprise of the Government and the private and public sectors to make it more efficient, productive, cost effective, financially self-supporting, and responsive to customer needs.

The PRC has the highest freight density in the world at 10.5 times the world average and is the largest railway under one management in the world. Because of underinvestment in the past, however, PRC Railways faces recurring capacity constraints on most parts of the national network linking major industrial and commercial areas with major cities and ports. The development of railway infrastructure has lagged behind the growth of the nation’s economy and the growth in total traffic, and this has adversely affected productivity and is becoming a constraint on further economic growth.

In the 11th Five-Year Plan (2006–2010), 300 billion yuan (CNY) are needed for railway investment every year to meet goals for expansion and improvement. Thus, the financial outlay for capital construction will increase fourfold compared with the average outlay of about CNY65 billion per year during the 10th Five-Year Plan (2001–2005). Clearly, this amount cannot be fully met from government and internal sources only. The Ministry of Railways (MOR) has been working over the past decade to attract foreign investment in the railway sector, but success has been very limited. Several possibilities for foreign investment are available, but low tariffs and low rates of return as well as other factors are impediments. As commercialization in operations, planning, and the selection of capital projects increases, commercial investors will be more and more attracted to railway projects. They would, however, demand a rate of return comparable with other opportunities in the market.

PRC Railways should commercialize its operations, and MOR should separate its regulatory functions from its enterprise functions. Commercialization is necessary for the railway company to adapt and prosper nationally and globally. Separating regulation is a means to harmonize regulatory structures with basic WTO legal principles.
PRC Railways has played a very important role in developing the national economy and in the country’s industrial revolution.
Introduction

The People’s Republic of China (PRC) is a vast territory with an unbalanced distribution of resources and industries and a huge population. PRC Railways is crucial to the passenger and freight transportation needs of the country. When the PRC acceded to the World Trade Organization (WTO) on 11 December 2001, it committed to open and liberalize its economy to better integrate it with the world economy and to offer a more predictable environment for trade and foreign investment. These commitments have brought significant challenges and opportunities to the country’s transport sector, especially to PRC Railways. Specifically, WTO accession (i) has introduced the possibility for competition in the rail sector from foreign companies that will in turn require PRC Railways to reform and restructure itself as a commercial organization operating under market principles and (ii) has further increased PRC’s international trade resulting in more demands on a rail system that is currently operating at nearly full capacity. Investment in capacity is, therefore, urgently needed.

PRC Railways has played a very important role in developing the national economy and in the country’s industrial revolution. One measure of the reliance of the economy on rail transport is expressing it in terms of traffic units per dollar of gross domestic product (GDP) (see Figure 1). PRC’s rate of 1.28 in 2003 is more than three times the world average—a strong indicator of the importance of the railways to its economy.

Even though poverty has been remarkably reduced overall, rapid economic growth has exacerbated inequalities in income distribution both between the rich and the poor and between urban and rural populations. Typically, the coastal areas are growing richer while the vast interior regions and rural areas remain relatively poor. Moving prosperity west is important both as a national goal and as a major component of the development of PRC Railways. According to the 11th Five-Year Plan (2006–2010), 300 billion yuan (CNY) are needed for railway investment every year to meet the following goals:

- building 17,000 kilometers (km) of new lines, including 7,000 km of dedicated passenger lines with total network length reaching over 90,000 km by 2010;
- double-tracking 8,000 km of single track lines;

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**Figure 1: Importance of Railways in the Economy**

<table>
<thead>
<tr>
<th>Country</th>
<th>Traffic Units/United States Dollar of Gross Domestic Product</th>
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<tbody>
<tr>
<td>Mongolia</td>
<td>0.50</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>0.42</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.32</td>
</tr>
<tr>
<td>Russia</td>
<td>0.30</td>
</tr>
<tr>
<td>China</td>
<td>0.19</td>
</tr>
<tr>
<td>India</td>
<td>0.17</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.07</td>
</tr>
<tr>
<td>WORLD AVG</td>
<td>0.07</td>
</tr>
<tr>
<td>Canada</td>
<td>0.06</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.05</td>
</tr>
<tr>
<td>United States</td>
<td>0.04</td>
</tr>
<tr>
<td>Iran</td>
<td>0.04</td>
</tr>
<tr>
<td>France</td>
<td>0.04</td>
</tr>
<tr>
<td>Australia</td>
<td>0.03</td>
</tr>
<tr>
<td>Japan</td>
<td>0.02</td>
</tr>
<tr>
<td>Germany</td>
<td>0.01</td>
</tr>
<tr>
<td>Italy</td>
<td>0.01</td>
</tr>
<tr>
<td>Spain</td>
<td>0.01</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.01</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>0.01</td>
</tr>
</tbody>
</table>

increasing operating speeds on 5,000 km of main line routes with the total length of higher speed network reaching 20,000 km;
- electrifying 15,000 km of existing lines;
- building international corridors at the borders in the southwest and northwest;
- developing a country-wide intermodal network consisting of 18 extra-large container terminals and 36 medium-sized container terminals.

The State Council also approved a railway development plan for 2004–2020 that includes expanding the railway network from 72,000 km to 100,000 km by 2020. Increasing train speed on the trunk network is also a major goal. Priority will be given to building railways in less developed regions that lack transport. Network length will increase by 16,000 km in the western region to 40,000 km by 2020. The estimated investments for the 2020 railway development plan are CNY2 trillion or $250 billion.

Current funding sources include the railway construction fund, profits from operations, national construction bonds for western development, local and provincial governments and their enterprises, national retirement funds, the private sector, loans from domestic and multilateral banks (Asian Development Bank, World Bank), and bilateral assistance. Additional possibilities, which need to be developed, for domestic and foreign private investment include the following:
- railway construction bonds,
- long-term commercial bank loans,
- public offerings of common and preferred stock, and
- joint ventures.

With increasing market access under WTO, PRC Railways will face competitive challenges in open access, pricing, reliability, and loss and damage and will have corresponding opportunities to develop cooperative relationships. The challenges will come from other modes of transport and from within the rail sector from competitors offering lower total costs, greater reliability, and/or less loss and damage. PRC Railways will need to recognize these challenges, rethink its ways of serving customers, and seek new answers.

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1 Generated by a surcharge on railway freight tariffs.
PRC Railways will face competition in the value-added segments that have increased profit margins and are also the areas where PRC Railways will explore future growth.
Railway transportation is one of the more tightly controlled sectors in the PRC. Since joining WTO, the PRC has gradually allowed foreign companies to enter into joint ventures in the domestic railway freight transport market. After 11 December 2007, there will be no restrictions on foreign firms, and all operators will compete in a fair and open market. (Passenger transportation is an excluded category and is not affected.) The traditional railway organizational model must be transformed to satisfy the changing needs of customers and investors in a competitive market economy and should be configured as a joint enterprise of the government and the private and public sectors to make it more efficient, productive, cost effective, financially self-supporting, and responsive to customer needs (see Box 1).

PRC commitments to WTO allow the road freight transport market to be opened faster than the railway sector, and the price for road transport is based on the market. Foreign road freight transporters will provide significant competition for operators with limited flexibility to establish market-based rates. This will particularly apply to PRC Railways, and the impact of full-scale foreign engagement in road transport should not be underestimated. Traditional railways in Europe and North America faced this situation, and operations were decimated as a result.
At present, the Government regulates the structure of railway tariffs and keeps these low—lower than the railway could reasonably expect to charge if tariffs were set by the market. This decreases earnings, which in turn reduces the capital available for expansion, while increasing demand for services at the same time. In fact, freight tariffs per ton-kilometer are the second lowest in the world (Egypt’s are lower) and are only 19% of the world average. If this average had been 33% from 1996 to 2005, an additional $90 billion could have been raised for investing in expanding the network.

Interprovincial trucking increasingly handles long-haul container traffic as customers are unable to get rail cars or are unsure of transit times and reliability or are unwilling to accept the level of loss and damage that rail service delivers. The traffic that has been lost is unlikely to return until rail service is significantly improved. This pattern of traffic shifting from rail to truck will likely happen in other commodity groups where short transit time, reliability, and/or minimizing loss and damage are important to shippers.

In December 2007 when the monopoly of PRC Railways ceases, theoretically multiple operators can collectively share the rail freight transportation market. PRC Railways will face competition in the value-added segments that have increased profit margins and are also the areas where PRC Railways will explore future growth. Foreign transportation enterprises will have an advantage in their access to improved and more efficient technology and equipment, modern management, and links with logistical supply chains and multinational customers who ship substantial volumes of cargo to and from the PRC. PRC Railways is lagging in these areas and unless measures are taken to upgrade, it will lose out to the competitors. A foreign enterprise would, however, expect a rate of return comparable with other opportunities in the market. Revenues, profits, and rates of return depend substantially on tariff rates and other charges and taxes. The PRC is committed to applying government-guided prices for liberalized services, but a foreign enterprise would first want to know what the government-guided pricing would be. Other considerations would include entry and exit conditions, property rights, regulatory oversight, and complaint and dispute resolution mechanisms.
Box 1: Traditional versus Commercial Railways

The purpose of traditional railway organizations is to run trains. The purpose of commercial railway organizations is to profit by satisfying the needs of their customers. Traditional railways are usually run by professionals who have production criteria foremost in their minds as they make decisions. In contrast, commercial railways are run by teams of marketing, operations, finance, legal, and other professionals who must work together to devise and deliver financially sustainable service packages that satisfy the needs of their customers.

Traditional railway organizations originated with the first railways, and these railways monopolized land transport faster than 5 kilometers per hour that lasted over 100 years. Commercial railway organizations began to evolve in response to the development of competitive transport as governments invested in highway, waterway, and air infrastructure, and railways lost both freight and passenger business. Private railways began to meet the challenges by gradually transforming themselves into commercial organizations. Some state railways became more commercial, but others continued to operate as traditional railways and sought government subsidies. By the late 1980s and through 1990s, some governments (e.g., Argentina, Brazil, Chile, Japan, Mexico, Peru, and United Kingdom) began to respond to requests for increased subsidies by privatizing the state railway and limiting future subsidies to those uneconomic services necessary for the public good.

Many railways in the world are facing a serious crisis largely because of their continuation of the traditional, monopoly mindset in the face of globalization, commercialization, and rapid change. This mindset results in a failure to adapt to radically changed economic conditions by identifying and exploiting the relative strengths of railways in the evolving, complex transport market. Closely related is a failure to understand customer needs and adopt proven technologies that would substantially increase reliability and efficiency (potentially keeping prices competitive) and reduce loss and damage to goods.

Again much of this failure is a consequence of a traditional mentality. Traditional railways look at new technology as involving only purely technical choices. Cost is considered only after the decision is made on purely technical grounds, if these are considered at all. Commercially oriented railways look at the new technology’s potential benefits to customers (and to the railway’s ability to satisfy customer needs), and weigh those benefits against the cost. They particularly seek to understand if the technology will pay for itself within a commercial framework by directly benefiting customers and the railway economically.

As Chinese railway customers gain international commercial experience through their business dealings abroad, they will become more and more like international customers in their expectations for the quality and reliability of railway service and will demand what all railways customers want: reliability, the best total price, and no loss of or damage to their goods.

Fully exploiting the possibilities of WTO membership will require PRC Railways—from senior management down to the lowest level—to develop a commercial mentality with customer service at its core.

With the entry of foreign transportation enterprises, market demand for qualified and experienced railway staff will increase. Historically, employee compensation in public railways is much below market levels. Foreign enterprises will compete with PRC Railways for qualified technical and management staff; thus, the railway company may face an exodus of experienced and skilled personnel. This issue should be addressed early on as developing human resources for railway operations is a time-consuming and expensive process.

Fully exploiting the possibilities of WTO membership will require PRC Railways—from senior management down to the lowest level—to develop a commercial mentality with customer service at its core, act strongly and consistently to put that mentality into daily practice, and communicate its commercial strategy to current and potential investors and customers. Currently, much remains to be done including (i) separating government functions from enterprise management, (ii) attracting investment financing, (iii) giving the railways freedom and flexibility to set tariffs and enter into confidential contracts with shippers, (iv) addressing public service obligations and their financing, (v) creating specialized profit centers and modifying revenue redistribution, (vi) creating competition, and (vii) improving distribution and logistics.
A. Separating Government Functions from Enterprise Management

This is a goal of virtually all railways that are focused on commercial operations. Both functions can remain under the purview of the Ministry of Railways (MOR) but should be clearly separated with an “arm’s-length” relationship. Railway safety and regulatory oversight of PRC Railways’ monopolistic power should be separated under a railway safety and regulatory agency reporting to the MOR. Concurrent with the establishment of the railway safety and regulatory agency, PRC Railways should be organized as a commercial enterprise directly reporting to the minister and operating under market principles.

A major problem with the current MOR structure is organizational. More than 50 years of research into organizational structure has shown that senior executives function best and their organizations perform better when the span of control is limited and well defined. In the current structure, 15 departments, 18 regional administrations, and 11 companies of PRC Railways report directly to the top management (minister and vice ministers) for a total of 44 direct subordinates. No leadership style can overcome a wide span of control.

For PRC Railways to have the focus to reform and restructure itself as a commercial organization, it needs a railway chief executive responsible to the top management for the entire enterprise and with the authority to impose organizational and commercial discipline throughout. Similarly, MOR’s regulatory and policy functions could be headed by senior executives who report directly to the top management. The number of senior managers reporting directly to the top management would then be reduced to a more manageable level. A model could be the centralized commercial railway organizational structure commonly used in North America (see Box 2).

The following benefits are envisioned with separation:

- ensured safety by creating an independent safety regulator;
- improved management and focus of the enterprise;
- meeting customer needs, improving customer service, and further improving the competitiveness of Chinese goods in world markets;
- preventing loss of traffic to highways and waterways as they continue to develop;

Box 2: Organizational Structure of a Commercial Railway

The traditional organizational structure of railways was decentralized with significant control of operations at the divisional level. This structure was developed before modern communication technology was invented and widely used. Before this technology, railway operations could not be centrally controlled, but with it, decentralization no longer makes sense. Centrally controlled railways can be operated much more flexibly, efficiently, and reliably.

A unified and centralized operating department brings together train operations; civil engineering; maintenance of equipment, signals, and communications; and railway police. Geographic regions, divisions, and districts are subordinate to the various central operating units. Regional civil engineering organizations report to the central civil engineering unit, not to a regional administrator with authority over multiple technical specialties. Finance, Administration, and Strategic Planning are the other three departments (in addition to operations and marketing) whose heads report directly to the chief executive officer of the centralized railway enterprise (who in turn reports to the Minister of Railways). None of the other four principal departments (marketing, finance, etc.) have their own operations at the regional level.

Two features of this organizational structure were most important for developing successful commercial railways in North America. First was the emergence of marketing at the highest level of the railway organization. The second was the integration of technical specialties into a unified operating department with one head responsible for moving customers and their goods, i.e., delivering the services sold by marketing to the customer.
prices that reflect market conditions;
- a regulatory body for establishing rules and procedures to protect shippers from monopoly pricing and other monopolistic practices;
- improving the rate of return from operations;
- more efficient use of operating expenditures;
- undertaking capital projects more economically and efficiently;
- using internally generated funds for viable development projects;
- attracting private investment from domestic and foreign sources;
- adopting economically justified modern technology; and
- increasing total capital investment to meet the nation’s needs for transport.

The enterprise function should include operation and maintenance of PRC Railways infrastructure as it will remain the dominant carrier of both freight and passengers even with aggressive competition from private operators. PRC Railways’ long-term economic health requires that it control its infrastructure costs and the rate of technological change. Especially under current conditions of capacity constraints, separating operations from infrastructure will be detrimental for the efficient and centralized control of access to track.

B. Attracting Investment

Financing

Over the past 20 years the economy has grown at 9% per year whereas railway route length has grown by 1.5% per year. In 2005, PRC Railways’ net profit was CNY6.1 billion and the rate of return was 2.4%. This low rate of return makes it difficult to attract private sector investment. The MOR issued provisional regulations in August 2000 that set out the procedures and qualifications for investment in and operation of companies with minority foreign ownership. These provisional regulations were superseded in 2004, but implementation regulations for the new provisions have not been issued. On 22 July 2005, the MOR announced the opening of four areas for domestic private investment: (i) constructing new railway lines, (ii) railway operations, (iii) manufacturing equipment, and (iv) diversifying the railway economy. Since mid-2005, investor interest in new line
Construction and specialized facilities such as intermodal container terminals has increased. Six foreign investors are participating with the MOR in a joint venture company for constructing 18 inland container depots that will connect railways with ports and highways. It is, however, too early to make a general observation on the success or failure of these initiatives.

Private sector participation in railway development will not only help increase investments but will also help improve the quality of services and the delivery system. More reforms are needed to rationalize user charges and to strengthen the institutional, legal, and regulatory frameworks to ensure fair competition among private and public operations and to protect consumers' interests.

C. Setting Tariffs

Tariffs should be based on the demand–supply relationship established in the competitive transport market and should be different for monopoly and competitive services and for commercial services and public obligations. The last should be strictly controlled. Tariffs should be effectively governed and should create favorable conditions for future railway institutional reform.

Government-controlled tariffs cannot address all customer needs and ever-changing market conditions in a timely and responsive manner. The principal precondition for deregulating railway tariffs is the presence of competition from other modes of transport that have the freedom to establish rates on market conditions. This precondition is already present in the PRC. The waterway and road transport services are already competing with PRC Railways and, in the case of some large commodity shippers, traffic is moved by their own equipment.

D. Public Service Obligations

PRC Railways has been fulfilling public service obligations in the broader social and national interest as mandated by the government. These include providing affordable transport to students, military personnel, and railway staff and transporting agricultural and disaster relief goods at rates that are below their marginal costs. PRC Railways is also operating a large number of branch lines that do not cover their costs and which it would not like to operate under a commercial mandate. In addition, PRC Railways is operating new lines that have been constructed at the Government's behest for developing remote regions in the western provinces.

The principal precondition for deregulating railway tariffs is the presence of competition from other modes of transport that have the freedom to establish rates on market conditions.
Many of these lines do not cover their costs of operation and will not do so for many years. With the proliferation of such lines, losses to PRC Railways are likely to increase every year. Based on a study carried out in 2003, the total financial burden of public service obligations is estimated at CNY20 billion annually.

The agenda for railway development in recent years has been guided by (i) the Government’s plan to alleviate poverty by opening routes inland and in more economically disadvantaged areas or minority regions, (ii) construction of new railway lines as part of the “Go West” policy, and (iii) the wider objective to service the needs of industry and the public in a cost-effective manner that minimizes inflation. While PRC Railways has added new tracks on heavily trafficked routes, it is criticized that this agenda is not market driven. However, as a national carrier, PRC Railways has socioeconomic responsibilities that go beyond the ethics of a for-profit business. Considering the dependence of the PRC economy and social structure on PRC Railways, its integrity as a national carrier must be preserved and its unified, vertically integrated control must be continued. As a commercial entity, it should remain efficient and financially self-sufficient in a competitive market environment. It should therefore be operated as one system with two characteristics: commercial operations and public service obligations that may not satisfy commercial criteria with compensation from the Government to cover losses.

Since PRC Railways does not receive any compensation for its public service obligations, the costs are covered by other passenger and freight rates. If PRC Railways were to successfully operate in a competitive market environment, the Government must allow it to reorient itself on commercial lines. PRC Railways should identify specific public services and estimate the losses incurred in providing them. It should then enter into contracts with the Government or relevant agencies indicating the amount of compensation as well as the type, intensity, and quality of services to be provided. The services

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3 An example of this is the December 1997 completion of the 898 km Nankun line from Guangxi’s Nanning to Yunnan’s Kunming. Dubbed as “PRC’s largest poverty relief project of the 1990s,” the Nankun line links two of PRC’s poor provinces.

4 In the 11th Five-Year Plan, the Government seeks to construct about 10,000 km of railways in the western region. Although economic growth in inland provinces has improved in recent years, high logistical costs and uncertainties in the supply chain have somewhat discouraged investors.
contracted should be reviewed regularly (at least annually) to reaffirm their need and to see if more economical modes of transport can provide such services (see Box 3).

Investors and operators who agree to provide rail transportation services in a liberalized environment will not be prepared to cover public service obligations without adequate compensation, and expecting them to do so is not reasonable. Developing a compensation regime applicable to all operators including PRC Railways is absolutely necessary, but it should not be open-ended to prevent inefficient and uneconomic outcomes. The arrangement should include appropriate responsibilities for limiting (if not eliminating) operating losses.

E. Creating Specialized Profit Centers and Modifying Revenue Distribution

PRC Railways should consider creating specialized departments—i.e., freight, passengers, high-speed, long-distance, regional passengers, and maintenance as profit-centers—each responsible for its commercial activities but sharing common costs with the other departments based on analytical accounting of realistic costs. The accounting for these departments should be separated. The current practice of system-wide revenue redistribution should also be modified in favor of more direct control of revenue and cash flow by the profit/cost centers based on negotiated agreements between companies.

F. Creating Competition

The principal reason for introducing railway competition is to accelerate commercial development to increase efficiency, reward the adoption of modern technology, reward the development of modern operating and business practices, and increase the profitability of railways and their ability to invest in their future and to the nation’s benefit. It is not to end monopolies on railway freight transport. Damage to customers from monopolies is best controlled by independent government regulatory bodies.

Introducing railway competition takes thorough planning. Two forms are possible:

- open access similar to PRC’s WTO commitments, and
- breaking up the single government carrier following the example of the airlines and creating competing railway freight carriers from the assets of PRC Railways.

Box 3: Financing Public Service Obligations

In developed countries, railways generally offer two kinds of services: those on commercial terms and those less commercially viable services that government requires and are necessary for the public good. Less commercially viable services are offered under special agreements with service levels reflecting the levels of public subsidies. Commercial railways argue that other railway customers should not subsidize loss-making public services as it could lead to higher, uncompetitive tariffs. Many traditionally oriented state railways, however, are either required to cross-subsidize loss-making operations through revenues from profitable operations or receive government subsidies as compensation. As globalization progresses and economic efficiency increases, the cost of maintaining traditional railway practices will require ever-larger government subsidies.

This is equally true for financing capital investments. Projects that cannot be commercially justified and financed may be desirable for other than purely economic reasons, but burdening railway customers with uneconomic public service capital projects may well damage the competitiveness of the railway in a freight or passenger market. If a project promotes a public good, government should finance the investment whether on a project basis or from an ongoing fund.
For either to work fully, significant reform to tariff regulation will be necessary. Railways will need to be able to compete with each other and with trucks and waterways for traffic. Customers will need protection against monopoly pricing when they are wholly or very largely dependent on one carrier. Carriers will need protection from undercharging to force out competition.

Theoretically, one way to create competition in PRC Railways would be to follow the Canadian model by splitting PRC Railways’ freight service into two or more competing, vertically integrated freight carriers providing competition in selected commercial corridors and commodities. All the freight carriers would compete against each other for business at first largely in terms of reliability, delivery time, and loss and damage. If tariff regulations were relaxed, they might also compete on price. The carriers would not only be competing against each other but also against truck and waterway operators. If one carrier had advantages in one major market, it would have offsetting disadvantages in other markets resulting in all the carriers having equal opportunities nationally. There would also need to be regulations to protect customers against monopoly pricing and to resolve disputes.

The most likely sources of freight competition outside of PRC Railways but operating on its tracks will be major railway customers operating their own locomotives and freight cars to move their own goods between, for example, coal mines and steel mills, coal mines and power plants, or coal mines and river or coastal ports. Other possibilities are automobile manufacturers moving auto parts and finished autos from factories to ports, and freight forwarders moving containers between inland points and ports. The motivation of these customers would be to guarantee freight car supply for loading, to control the reliability and predictability of service, and to employ more specialized equipment that can be loaded and unloaded more efficiently than the generic, multipurpose equipment that PRC Railways provided. Customer-created freight railway operations can obtain railway operating expertise by structuring themselves as joint ventures with foreign railway operating companies. Alternatively, customers could contract with foreign
operating companies or could create their own freight operating companies by employing experienced former PRC Railways staff. However, foreign freight operators will highly unlikely attempt to launch commercial operations on PRC Railways tracks without the support of one or more large current or potential railway customers, given current capacity constraints and low tariff levels.

**G. Improving Distribution and Logistics**

Under the WTO accession agreement, the PRC is committed to opening the distribution and logistics sectors to foreign participation by December 2007. Logistics in PRC’s industrial production account for almost 90% of production cycle time and 40% of general production costs. Significant, rapid improvements are needed in supply chain efficiency and in reducing wastage.

PRC Railways will need to effectively participate in the logistics sector interfacing with other modes of transport and in supply chain services. Market competition is expected to be intensified by the increased participation of foreign enterprises. In this context, PRC Railways will need to look for foreign partners with experience and market share that can provide the necessary impetus for joint ventures. PRC Railways has already taken some initiatives in this regard.

Beijing China Railway United Logistics Co. Ltd., a leading logistics company and a division of China Railway United Logistics, has joined up with the Descartes Systems Group Inc. (NASDAQ: DSGX), a trusted provider of supply chain services, to build and operate a comprehensive, real-time logistics information platform that will leverage the nation’s extensive railway network and offer integrated logistics services for sea, air, and land transportation. The platform will help the company achieve its strategic objective of becoming a prominent third-party and fourth-party logistics provider nationally. This is a positive development that will encourage similar associations of rail logistics companies with reputable foreign logistics providers.
World Trade Organization Accession: Challenges and Opportunities for Railways in the People’s Republic of China
PRC Railways faces recurring capacity constraints on most parts of the national network linking major industrial and commercial areas with major cities and ports.
The railway sector is particularly important because it is the main form of transport for goods and passengers at reasonable prices. In fact, the PRC has the highest freight density in the world at 10.5 times the world average (see Figure 2). The operational performance of PRC Railways, which is the largest railway under one management in the world, has been a significant achievement. Because of underinvestment in the past, however, there are capacity constraints and bottlenecks that must be addressed. PRC Railways faces recurring capacity constraints on most parts of the national network linking major industrial and commercial areas with major cities and ports. The development of railway infrastructure has lagged behind the growth of the nation’s economy and the growth in total traffic, and this has adversely affected productivity and is becoming a constraint on further economic growth. The high traffic density of PRC Railways underscores its good record of performance and asset use but also indicates relative scarcity of railway infrastructure.

Recent reforms have improved productivity indices, and revenues from transportation operations have greatly increased. In 2005, PRC Railways moved 6.4% more freight than in 2004 with a transportation volume that was 7.3% greater. Also in 2005, 3.1% more passengers were transported with a volume increase of 5.8% over 2004, and total revenue was 12.4% more than 2004. Nevertheless, PRC Railways faces challenges in increasing capacity and developing rail operations in additional corridors.

The Government recognizes that transportation and logistics have the potential to become bottlenecks for future economic growth and made substantial commitments to modernize and expand transportation infrastructure in the current Five-Year Plan (2006–2010). The plan identifies three goals: (i) develop the infrastructure for rail and other modes of transport, (ii) standardize regulatory requirements, and (iii) increase foreign participation in logistics and distribution. Infrastructure improvements in the railway sector are estimated to cost CNY1.5 trillion. This amount includes an additional 17,000 km of railways by 2010. Thus, the financial outlay for capital construction will increase fourfold compared with the average outlay of about CNY65 billion per year during the 10th Five-Year Plan (2001–2005). Clearly, this amount cannot be fully met from government and internal sources only.

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**Figure 2: Railway Freight Traffic Density in 2003**

<table>
<thead>
<tr>
<th>Country</th>
<th>Thousand Ton Kilometers/Route Kilometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>27,257</td>
</tr>
<tr>
<td>Russia</td>
<td>19,456</td>
</tr>
<tr>
<td>United States</td>
<td>11,509</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>10,724</td>
</tr>
<tr>
<td>Ukraine</td>
<td>8,748</td>
</tr>
<tr>
<td>Brazil</td>
<td>6,374</td>
</tr>
<tr>
<td>India</td>
<td>5,986</td>
</tr>
<tr>
<td>South Africa</td>
<td>5,275</td>
</tr>
<tr>
<td>Canada</td>
<td>5,155</td>
</tr>
<tr>
<td>Australia</td>
<td>3,361</td>
</tr>
<tr>
<td>Iran</td>
<td>2,934</td>
</tr>
<tr>
<td>WORLD</td>
<td>2,585</td>
</tr>
<tr>
<td>Germany</td>
<td>2,052</td>
</tr>
<tr>
<td>France</td>
<td>1,600</td>
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<tr>
<td>Italy</td>
<td>1,408</td>
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<tr>
<td>United</td>
<td>1,163</td>
</tr>
<tr>
<td>Japan</td>
<td>1,126</td>
</tr>
<tr>
<td>Spain</td>
<td>994</td>
</tr>
<tr>
<td>Nigeria</td>
<td>11</td>
</tr>
</tbody>
</table>

A. Foreign Investment

Over the past decade, the MOR has been trying to attract foreign investment in the railway sector, but the number of successes in raising financing from capital markets is still in single digits. Considering the excellent response of foreign investors in most other sectors, the performance of the railway sector has been far from satisfactory. Investors seem to perceive that railway investments entail lower returns and higher risks compared with other alternatives. More reforms are needed to broaden financing channels for constructing and developing railway infrastructure to meet the demand for rail transportation in the country. Investors will demand that projects pass both commercial and financial tests, and engineering and design tests. A thorough, objective, detailed financial analysis of projects will be necessary to convince potential lenders and investors that a project has an acceptable level of risk and return.

The MOR needs to (i) establish new mechanisms to attract investments and financing that clearly define the role of investors; (ii) clarify the scope and method for investment and the obligations and benefits for all parties; and (iii) improve investment management by establishing separate management systems for each railway project, effective risk control mechanisms, and effective decision-making systems. Given PRC Railways’ dual role of meeting public service obligations and making profits, a system to classify projects is needed to help investors decide which ones are suitable.

On 16 July 2004, the State Council issued Decision 20 on Reforming the Investment System (SC-20) and the National Development and Reform Commission issued Order 22 on Interim Measures for the Administration of Examining and Approving Foreign Investment Projects (NDRC-22). The reforms aim to accomplish the following:

- fully engage the market in resource allocation, separate government and enterprise functions, and reduce administrative intervention;
- establish the position of enterprises as investors whereby enterprises can make their own decisions on investment and be responsible for their own profits and losses while banks can make their own decisions on loan approvals and bear the risks;
- rationally define the functions of government investment and guide social investment by formulating...
development plans and industrial policies and using economic and legal means;
- improve decision-making rules and procedures for government-funded projects, make investment decisions more scientific and democratic, and establish a strict system of accountability for them.

The possibilities for foreign investment are several and include the following:

- PRC Railways itself (debt and/or equity, tied to specific projects and assets);
- joint ventures for specific lines or specific business segments between PRC Railways and foreign operators, forwarders, financial institutions, provinces, and local government units;
- non-PRC Railways freight services whether operating on owned, dedicated rail lines on PRC Railways, or on both types of lines;
- joint ventures between PRC Railways customers, perhaps also including foreign operators and foreign investors;
- joint ventures between customers who are themselves joint ventures with significant foreign investors; and
- purely foreign investments.

The following are the major obstacles to foreign private investment in railway enterprises and projects in the PRC:

- Artificially low freight tariffs limit capital accumulation including the ability to compensate commercial investors at competitive rates.
- PRC Railways’ financial reporting is perceived to lack transparency as commercial investors expect to see detailed financial statements with operating income and expenses shown separately from those of nonoperating units.
- PRC Railways subsidizes government public service obligations, which dilutes returns.
- New railway assets are operated by regional administration(s) that will likely make decisions based on what is good for the administration rather than on what is good for the enterprise, and the enterprise has little or no actual control over the use and productivity of the assets created by the investment.
- Internal revenue distribution rules used in MOR’s accounting practices do not represent a realistic cost and revenue structure under market conditions.  

For example, freight and slow (100 km/hour and less) passenger trains are charged the full cost of capital and maintenance of higher-speed tracks on which they operate at slower speeds. Track maintenance costs increase exponentially with speed increases. If passenger speed is 200 km/hr and freight is 80 km/hr, under the current system of cost allocation, freight customers subsidize the extra 120 km/hr of track speed capability which freight trains do not use and from which freight customers receive no benefit.
The technology that PRC Railways needs to modernize and commercialize most of its operations is available to it. The obstacles to adoption are largely because of PRC Railways' structure and institutional culture. Foreign investment by manufacturers in joint ventures or Chinese subsidiaries and loans by foreign banks could speed widespread adoption of well-established technologies, but they are not a necessary precondition for the MOR and PRC Railways to explore, study, and adopt appropriate commercial management concepts and institutional systems.

B. Commercial Investments

Commercial investments are generally made in two ways:

- funding specific projects – often large-scale construction, and
- funding enterprises as a whole.

Generally, specific projects are funded with debt such as loans or bonds. The lender has recourse but may also require that the recipient guarantee repayment of the debt by putting up some or all of its other assets as collateral. Enterprises can also be funded with stock and debt that are obligations of the enterprise as a whole.

Long-established, successful railways will be attractive to long-term investors, commercial banks, major railway customers, and speculators (if their stock is publicly listed). Newly established railways will be attractive to commercial banks, venture capitalists, and major railway customers. The most desirable investors from the point of view of railways themselves are those investors with a long-term commitment to the railway business and to the development of the particular enterprise, i.e., long-term investors, commercial banks, and major railway customers.

Reform and restructuring focused on commercialization are necessary if PRC Railways is to be attractive as an investment hub. Currently, financing for the sector is primarily from MOR’s internal sources, comprising proceeds from operations and surcharges on freight moved by rail. In addition, the MOR capital construction program is supported by loans from domestic financing institutions and loans from multinational development banks that the Government borrowed and re-lent to the MOR.
As commercialization in operations, planning, and the selection of capital projects increases, commercial investors will be more and more attracted to railway projects. They would, however, demand a rate of return comparable with other opportunities in the market. The railway industry requires a large amount of investment and a long period for cost recovery. This leads to uneasiness on the part of investors and commercial lenders because of concerns that change in priorities could interfere with project agreements concluded in the past. Unless investors see some specific advantages by way of higher rates of return on investment compared with other sectors, they may not come to railways; however, investment packages need not necessarily rely on the rate of return. Incentives would need to be built in to make the project attractive for the private sector and could include income tax exemptions, soft loans from government sources for supplementing investment from private sources, or preferential policies for construction.

A deeper understanding of the benefits and risks of railway infrastructure investment is necessary. The Government will need to consider ways to promote and appropriately reward private investment and to increase the awareness of the private and public sectors of the benefits and risks associated with railway investments and how they compete with other opportunities.
Separation of regulation is a means to harmonize regulatory structures with basic WTO legal principles
Key Policy Recommendations

Key policy recommendations may be categorized into two broad categories:
- commercialize operations, and
- separate regulation from the enterprise functions of the MOR.

At its core, WTO is a commercial agreement designed to spread the free-market system throughout the world. Commercializing is necessary for PRC Railways to adapt and prosper nationally and globally. WTO is also a legal structure based on the principles of transparency, nondiscrimination, market access, fairness, and judicial review. Separation of regulation is a means to harmonize regulatory structures with basic WTO legal principles. WTO accession has thus provided the MOR the opportunity to implement these policy recommendations to help it meet the economy’s ever-growing demand for transport and the challenges of competing in an open market.

A. Commercialize the Enterprise

The recommendations that follow are an overview of what needs to be done and not prescriptions for how to do it. The MOR should consider taking a hard, thorough look at the structure and functioning of large successful, commercial railways such as in North America and should then adapt
appropriately to the unique conditions of PRC Railways.

To commercialize the enterprise and develop PRC Railways to its full potential, the MOR and PRC Railways should do the following.

- **Adopt a commercial attitude throughout the enterprise.**
- **Make customer service and customer satisfaction central to all enterprise functions.**
- **Give marketing a central position in the organization, and hire experienced marketing professionals from outside to lead it.**
- **Encourage cooperation, alliances, and partnerships with other carriers and with domestic and foreign logistics service providers to improve both customer service and PRC Railways’ ability to compete in important, fast-growing market sectors such as containerized transport of manufactured goods.**
- **Maintain vertically integrated operations.**
- **Transform the organizational structure of the railway operating enterprise so that it is centralized and commercially focused.**
- **Install and thoroughly exploit the power of the latest railway communications and information technologies**\(^6\) **to effectively control railway operations in all regions.**\(^7\)
- **Ensure that all investments are made based on financially sustainable operations that guarantee a reasonable rate of return.**
- **Attract government (national, provincial, and/or local) subsidies to cover losses on public service traffic and operations to maintain or improve existing levels of service.**\(^9\)
- **Achieve freedom to price freight (and passenger) services subject to market forces with effective control of monopoly practices through a regulatory framework that both protects customers and preserves competition.**

\(^6\) Use existing systems. Attempts to have a new system with the features of existing foreign systems or to extensively modify an existing system could take years. PRC Railways needs modern systems now, not 5 years from now.

\(^7\) This transformation would involve merging the current 14 separate, train and track operating regional administrations (and the three specialized operators, i.e., containers, postal and parcel, and special freight) into a single, unified, centrally controlled enterprise. Joint venture lines and local lines would continue as separate organizational structures.

\(^9\) Typically, commercial railways act to reduce, as greatly as possible, the costs of providing loss-making services.
 Become attractive to commercial financing from both domestic and foreign sources by transforming into a modern commercial organization.

B. Separate Regulation from Enterprise Functions

In the PRC, two—safety and access—of the three typical forms of railway regulation are located within the MOR. The third form, tariff regulation, is controlled by the National Development and Reform Commission and the State Council.

Enterprise and government functions need to be separated but should remain within the structure of the MOR. Regulatory functions should be applied impartially and transparently to all track and train operators including PRC Railways, joint venture, and local railways. In the MOR, regulating safety should be separated from regulating access and licensing operators. They are two quite different functions, though agreeing to and meeting safety standards must be part of licensing and must be mandatory for all train operators.

As most MOR employees will be enterprise employees and most MOR spending will be enterprise spending, PRC Railways’ financial functions will need to be separated from MOR’s government financial functions and must be a part of PRC Railways’ organizational structure. The enterprise organization and the government organization will each need their own finance and administrative units.

1. Regulating Safety

Typically, traditional monopoly state railways establish their own safety rules and procedures and enforce these on themselves. As railways become more commercially oriented, the danger arises that cost cutting driven by a desire for greater profits could compromise safety. Additionally, commercialization of railways and of the national economy generally increases the number of railway operating companies. With multiple operators, basic fairness demands that the safety regulator not be one of the players in the game.

Independently and impartially establishing and enforcing safety standards by an adequate number of field inspectors is a government function that is necessary and important to protect people and property. The MOR needs to create an Office of Safety Regulation independent of commercial and political influences to establish and enforce regulations for railway safety including track standards necessary for operation at various speeds; minimum standards for rolling stock, signals, and grade (level) crossings; and minimum qualifications for employees including train crews and dispatchers. The Office of Safety Regulation should cover compliance with safety requirements focusing on the following:

- operating practices,
- hazardous materials,
- signals and train control,
- locomotive power and equipment,
- track.

Trained and experienced inspectors, who are specialists in these fields, should be stationed in regional field offices to cover the railway network throughout the PRC. Inspectors should have the authority to order the immediate cessation of service and immediate reductions in speed when warranted. They should also be able to issue citations carrying substantial penalties for violations. Fair, transparent processes should be established for orders and citations to be appealed with recourse to legal measures for redress.

PRC Railways will need its own safety department for training and internal monitoring of its operations and of those on the infrastructure it manages and dispatches. Such safety department is necessary in addition to external safety regulations by the MOR and should have the authority to take unsafe track and rolling stock out of service, regardless of the operator involved.

In the MOR, regulating safety should be separated from regulating access and licensing operators.
PRC Railways as the operator of the infrastructure is responsible for safely operating its track. The MOR, as the external regulator, must also have this authority.

2. Regulating Access

Government Order No.4 and MOR draft regulations indicate that a market system will be built in railway freight transportation with access available to non-PRC Railways operators. Regulation is necessary to insure that access decisions are transparent and fair and that dispute resolution and judicial review are available.

The principal tasks of regulating access are the following:

- licensing operators,
- allocating capacity, and
- ensuring the fairness of access charges.\(^\text{10}\)

All new and existing freight train operators should be licensed to the same standards. Licensing operators involves establishing qualifications (including financial qualifications, possession of required government registration and approvals, the railway experience of senior managers of train operations, and safety certificates) and then issuing licenses to those applicants that meet the qualifications. The qualifications must be neutral, and the issuance of licenses must be fair and unbiased.

To insure fairness, the regulator (which is MOR, not the dominant operator (PRC Railways), should allocate capacity in a transparent manner, applying principles that it established. For example, if a shipper’s coal is currently moved over line A by PRC Railways, it is fundamentally unfair (and thus a violation of WTO principles) for the regulator to tell the shipper that there is no capacity to move that coal in his own trains but there is capacity if he continues to move it in PRC Railways trains.

To insure fairness in access charges, they must be tightly supervised by the regulator and derived from actual PRC Railways costs. Access charges have two components: per gross ton/km hauled for use of the track structure and per train for each line or dispatching district used. The gross ton/km charge should be based on the actual costs of maintenance for a line and the actual rate of depreciation taken for the line in PRC Railways’ financial reporting. Per gross ton/km charges should be based on actual tons moved. Per train charges should be based on capacity allocated and charged whether or not a train is actually operated in the slot allocated. The regulator must be able to audit the financial records of the infrastructure operator to insure the accuracy of the costs used and the fairness of the calculations of charges.

The regulator is primarily responsible for setting detailed specifications for calculating charges. Calculating the individual charges per train and per ton/km for every railway line could be done either by the regulator or by the infrastructure operator under the regulator’s supervision.

A strong argument can be made that access charges should be based on the type of track used by the operator paying the charges. According to this argument, freight operators should be charged for the expense and investment necessary to build and maintain the track for speeds actually available to freight operators. The substantial additional incremental cost of track maintenance for higher speed passenger trains benefits only some of them. Those trains should bear all the additional costs for speeds that only they use. As passenger trains are much lighter than freight trains, they pay a smaller proportion of the cost of maintaining the basic infrastructure (speeds) used by all operators.

Disputes will arise in all three tasks. The Office of Access Regulation then needs to establish a dispute resolution and an initial appeal process for each. Further appeals to the courts should be available to ensure that the processes established are fair and nondiscriminatory.

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\(^{10}\) Also called infrastructure fees and trackage rights charges.
Enforcement of licensing falls largely on the office responsible for allocating capacity as trains cannot operate without an allocation, and the necessary allocation will not be made to a party lacking proper license.

The regulator should impartially enforce both allocating capacity and charging for access, with field inspectors monitoring the whole system. The regulator should establish substantial penalties for denying capacity to operators who have been allocated it, for train control and dispatching that favor the infrastructure operator’s own trains, and for overcharging for access. Failure to pay access charges on time should also result in penalties. Repeated, consistent failure to pay or to pay on time could result in loss of access.

3. Regulating Tariffs

This is done to define government interference in market pricing by establishing boundaries that protect customers. Tariff regulations can prevent the abuse of monopolies and can protect competition by preventing would-be monopolists from charging prices below their costs to drive financially weaker competitors out of the market. In the PRC, however, government regulation has resulted in rail freight tariffs that are unresponsive to market conditions while truck and waterway rates are virtually unregulated. Regulation has also resulted in allocating limited freight car and rail line capacity based on the tariff structure rather than on the needs of the most profitable lines or on management’s strategic goals for developing the railway. Middlemen often charge for reserving space on scarce rolling stock, but these extra payments do not benefit PRC Railways. This market failure must be effectively addressed particularly when the investment needs of the sector are substantially increasing.

Currently, tariff policy is used for social ends to transport some passengers and goods for low or no tariffs, i.e., public service obligations. This in effect constitutes a tax on full tariff customers as they are subsidizing these obligations. Structuring and financing public service obligations are not functions of tariff regulation in the commercial world. In fact, such tightly regulated tariffs may be seen as violating the WTO principles of transparency, fairness, and nondiscrimination. Entirely defensible public service functions should be supported with direct, transparent agreements so that the freight and passenger transport market can function according to market principles.

Regulating railway freight tariffs could be added to the regulatory responsibilities of the MOR as long as independence from noneconomic considerations is maintained. Such independence allows the regulator to be an unbiased referee protecting both competition and customers from the abuses of monopoly power.

References


About the Book

Asian Development Bank (ADB) is assisting the development of railway sector in the People’s Republic of China since 1989, by providing lending and non-lending support. Considerable progress has been achieved since then. However, many challenges still remain. This report evaluates some of the major challenges and opportunities for PRC railways due to World Trade Organization accession, and suggests key policy recommendations that can be considered by PRC railways to overcome these challenges.

About the Asian Development Bank

ADB aims to improve the welfare of the people in the Asia and Pacific region, particularly the nearly 1.9 billion who live on less than $2 a day. Despite many success stories, the region remains home to two thirds of the world’s poor. ADB is a multilateral development finance institution owned by 67 members, 48 from the region and 19 from other parts of the globe. ADB’s vision is a region free of poverty. Its mission is to help its developing member countries reduce poverty and improve their quality of life.

ADB’s main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance. ADB’s annual lending volume is typically about $6 billion, with technical assistance usually totaling about $180 million a year.

ADB’s headquarters is in Manila. It has 26 offices around the world and more than 2,000 employees from over 50 countries.