



# Technical Assistance Report

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Project Number: 49010-001  
Policy and Advisory Technical Assistance (PATA)  
October 2015

## People's Republic of China: Policy Study on the Development of Intercity Railway in the Beijing– Tianjin–Hebei Region

This document is being disclosed to the public in accordance with ADB's Public Communications Policy 2011.

Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 4 August 2015)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.161
\$1.00	=	CNY6.209

## ABBREVIATIONS

ADB	–	Asian Development Bank
BTH	–	Beijing–Tianjin–Hebei
JJJ	–	JingJinJi
MOT	–	Ministry of Transport
PRC	–	People’s Republic of China
TA	–	technical assistance

## NOTE

In this report, "\$" refers to US dollars.

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## POLICY AND ADVISORY TECHNICAL ASSISTANCE AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number: 49010-001</b>	
<b>Project Name</b>	Policy Study on the Development of Intercity Railway in the Beijing–Tianjin–Hebei Region	<b>Department /Division</b>	EARD/EATC
<b>Country</b>	China, People's Republic of	<b>Executing Agency</b>	Ministry of Transportation (formerly Min of Comm)
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ Transport	Rail transport (non-urban)		0.40
		<b>Total</b>	<b>0.40</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Low
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD)	Institutional development	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Knowledge sharing activities		
Private sector development (PSD)	Conducive policy and institutional environment		
<b>5. Poverty Targeting</b>		<b>Location Impact</b>	
Project directly targets poverty	No	Urban	High
<b>6. TA Category:</b>	B		
<b>7. Safeguard Categorization</b>	Not Applicable		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>0.40</b>	
Policy and advisory technical assistance: Technical Assistance Special Fund		0.40	
<b>Cofinancing</b>		<b>0.00</b>	
None		0.00	
<b>Counterpart</b>		<b>0.00</b>	
None		0.00	
<b>Total</b>		<b>0.40</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		No	
Use of country public financial management systems		Yes	



## I. INTRODUCTION

1. A series of loan and TA projects are being prepared to support coordinated development in the Beijing, Tianjin, and Hebei (BTH) region with a focus on sustainable and inclusive growth. Immediate support includes four TAs and one sovereign loan in the areas of air pollution, balanced economic and social development, and low carbon transport.<sup>1</sup>

2. This technical assistance (TA) has been developed upon request from the Ministry of Transport (MOT) of the People's Republic of China (PRC). Through this TA, the Asian Development Bank (ADB) will support MOT to develop and coordinate intercity railway services in the BTH region. In June 2015, ADB and MOT reached an understanding on the objectives, scope, implementation arrangements, costs, and terms of reference for the TA. The design and monitoring framework is in Appendix 1.<sup>2</sup>

## II. ISSUES

3. The PRC has a rapidly growing economy, with citizens enjoying higher living standards, accompanied by an increasingly fast urbanization process. In March 2014, the State Council unveiled the National Plan on New Urbanization, 2014–2020, which aims to promote the coordinated development of cities and small towns by agglomerating conurbations, or city groups.<sup>3</sup> The three metropolitan areas, Beijing–Tianjin–Hebei, the Yangtze River Delta, and the Zhujiang River Delta, currently account for 18% of the national population and 36% of gross domestic product.<sup>4</sup> The urbanization rate is expected to reach 60% in 2020 and 70% in 2030, with an increasing number of city groups and metropolitan areas expected to be the fulcrum of regional economic growth. The development of intercity rail services is seen as the critical enabler to service the transport demands from continuing urbanization.

4. The volume of passenger transportation in the PRC is expected to change rapidly in the next decade. With rising incomes and mobility, there will be a growing need for higher quality passenger travel. Urbanization and agglomeration of city groups, together with greater concentration of economic activity in urban areas, will generate more frequent and greater flows of passengers within and between these areas. Experience in Tokyo, London and Paris shows that intercity railway plays an essential enabling role in the development of city groups and metropolitan areas. The development of supporting policy, and a phased prioritized network development and operations plan, is essential to the establishment of sustainable intercity railway services.

5. In recent years, the PRC has focused on the rapid development of intercity railways, including development of the world's largest high-speed rail network (services with a maximum

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<sup>1</sup> The four TAs are: (i) *Study on the Coordinated Development of Beijing–Tianjin–Hebei*; (ii) *Study on Beijing–Tianjin–Hebei Air Pollution Control*; (iii) *Policy Study on the Development of Intercity Railway in the Beijing–Tianjin–Hebei Region*; and (iv) *Study on Handan Low Carbon Emission Transport Project*. The sovereign loan is the *Beijing–Tianjin–Hebei Air Quality Improvement Policy-Based Lending Project*.

<sup>2</sup> This TA first appeared in the business opportunities section of the ADB website on 5 September 2015.

<sup>3</sup> Government of the People's Republic of China, Central Committee of the Communist Party of China and the State Council. 2014. *National Plan on New Urbanization, 2014–2020*. Beijing. <http://dilemma-x.net/2014/03/17/china-national-new-type-urbanization-plan-2014-2020/>

<sup>4</sup> The three conurbations in the People's Republic of China are (i) JingJinJi, comprising Tianjin, Beijing, Tangshan, and Qinhuangdao; (ii) the Yangtze River Delta of Shanghai, Nanjing, Hangzhou, and Ningbo; and (iii) the Zhujiang River Delta, which includes Guangzhou, Shenzhen, Hong Kong, China, and Macau, China.

speed of at least 160 kilometers per hour) covering all main cities, and on the development of passenger lines between metropolitan areas and middle-size cities, and within city groups.<sup>5</sup>

6. Since March 2013, the MOT has comprehensive responsibilities for railway planning and is in the process to operationalize its new role. In 2013, the State Council provided new policy directions on railway reform and investment,<sup>6</sup> including that local governments should have the right to own and operate intercity railways, rural railways, and branch lines.<sup>7</sup>

7. The National Development and Reform Commission of the PRC is working with various authorities and regional governments on a development plan to boost economic integration of Beijing and its surrounding provincial areas, Tianjin municipality, and Hebei province. To promote economic integration, the BTH region, also referred to as the JingJinJi (JJJ) region, are starting to construct an intercity high-speed train network involving major investments. Focusing on integrated transportation in the area, Beijing is going to play the lead role in driving the transportation connections among the three places.

8. A coordinated program for intercity railway development in the BTH region is needed to promote sustainable, clean transportation, as the region suffers from poor air quality, and contribute to its economic development. Hebei is the least developed in the BTH region, with a gross domestic product per capita of 42% that of Beijing and 39% that of Tianjin in 2013. About 88% of the 3.1 million poor people in the BTH region live in Hebei.<sup>8</sup>

9. To implement this provincial railway plan a new company has been established, named JingJinJi Intercity Rapid Railway Investment Co., Ltd. It has a capital of CNY10 billion and is owned by Beijing, Tianjin, and Hebei (each 30%), and China Railway Corporation (10%). Construction of the first two lines is planned to start in 2016. Funding of the total investment plan (that identified construction of lines up to 2020 and thereafter) is not yet secured.

10. As part of the government's efforts to boost the slowing economy and deepen its financing and investment mechanism, the PRC is expected to open its railway sector to private investment. Private capital will be encouraged to participate in the construction and operation of railways through joint ventures and sole ownership, with a focus on intercity railways.

11. The proposed TA is intended to support MOT in its planning responsibility to develop and coordinate intercity services in the BTH region, providing expertise in (i) intercity network planning; (ii) multimodal hub and transit-oriented development; (iii) funding options, including public-private partnership for intercity rail construction and operations; and (iv) institutional development. MOT will involve JJJ Intercity Rapid Railway Investment Co., Ltd. as a TA counterpart where relevant. The experience gained through this TA will serve intercity development elsewhere in the PRC.

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<sup>5</sup> Government of the People's Republic of China, State Council. 2013. *Policies on Key Railway Technologies*. Beijing.

<sup>6</sup> Government of the People's Republic of China, State Council. 2013. *Opinions on Reforming Railway Investment, Financing System, and Accelerating Construction (Opinion)*. Beijing.

<sup>7</sup> According to the *Code for Design of Intercity Railway* (December 29, 2014, PRC National Railway Bureau), Intercity Railway is the fast, convenient, high-density passenger dedicated railway that provides services between adjacent cities or within a city cluster, and has a design speed of maximum 200 kilometers per hour.

<sup>8</sup> Based on Beijing, Tianjin, and Hebei National Economic and Social Development Statistical Communique in 2014.



### III. THE POLICY AND ADVISORY TECHNICAL ASSISTANCE

#### A. Impact and Outcome

12. The expected impact of the TA is the development of sustainable intercity railway services in the BTH region. The expected outcome is a coordinated policy framework to enable integrated intercity railway services in the BTH region.

#### B. Methodology and Key Activities

13. The main outputs of the TA are described in paras. 13-16:

14. **Intercity railway network planning for Beijing–Tianjin–Hebei region improved.** The TA will support MOT and the JJJ Intercity Rapid Railway Investment Co., Ltd. with intercity network planning and station location, developing the strategy, and preparing a phased, prioritized plan for construction and operation. Consultants will provide a strategy document on intercity railway development in the BTH region up to 2030 and this strategy document will be submitted to MOT by October 2016.

15. **Multimodal hub plan for intercity railway stations developed.** The TA will support planning for the development of integrated multimodal stations and transit-oriented development of station areas. Consultants will submit recommendations on mode integration, multimodal hub design, and transit-oriented development in the region will be submitted to MOT and JJJ Intercity Rapid Railway Investment Co., Ltd. by October 2016.

16. **Funding options for intercity railways formulated.** The TA will prepare policy proposals for MOT to support the implementation of intercity services, including the funding of infrastructure, intercity operations and stations, and real estate development. Guidelines for, and support to, the development to public–private partnerships will also be prepared. Funding guidelines on infrastructure construction (including stations and station area development) and operations will be submitted to MOT by October 2016.

17. **Regulatory framework for intercity railways developed.** The TA will strengthen MOT in the development of institutional arrangements for construction, financing, and operation of an intercity railway network in the BTH region. Guidelines on institutional arrangements in planning, financing, and implementing of the intercity network in the BTH region will be submitted by consultants by October 2016.

18. Possible risks include insufficient consensus on draft high-level policy proposals to support the intercity development plan, and insufficient involvement, cooperation, and ownership by MOT, the executing agency to implement the TA. Continuous policy dialogue with the executing agency and selection of high-quality international consultants with strong experience in passenger railway planning and related development projects in the PRC will mitigate these risks. Further, workshops may be held on specific topics to exchange knowledge and experience with the executing agency.

#### C. Cost and Financing

19. The TA is estimated to cost \$500,000, of which \$400,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources). The government will provide counterpart support in the form of counterpart staff, suitably furnished office space with

utilities and telecommunication access, information materials, data, maps and other documents, and other in-kind contributions.

#### **D. Implementation Arrangements**

20. Since the TA will provide direct support to MOT staff, MOT is the executing agency. The TA will be conducted in close cooperation with the JingJinJi Intercity Rapid Railway Investment Co., Ltd. The primary place of assignment will be Beijing. MOT will provide office space and other help for the consultants at the ministry.

21. The TA will be implemented over a 16-month period from 1 October 2015 to 31 January 2017 and will require a total of 9 person-months for three international consultants and 12 person-months for four national consultants. ADB will engage individual consultants in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). Proceeds of the TA will be disbursed in line with the *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

22. The international team will comprise (i) team leader and passenger railway planning specialist (5 person-months), (ii) passenger railway operations and multimodal station specialist (2 person-months), and (iii) railway sector funding specialist (2 person-months).

23. The team of national consultants will comprise (i) deputy team leader and railway planning specialist (4 person-months), (ii) railway operations and multimodal station specialist (3 person-months), (iii) railway technology specialist (3 person-months), and (iv) railway financial analyst (2 person-months).

24. In addition to the delivery of the main outputs, upon request, consultants will provide hands-on support to MOT for planning and coordination issues to respond to actual needs. To monitor progress in the TA activities and review the key deliverables, MOT will establish a TA steering committee chaired by MOT and including representatives of the National Railway Bureau, China Railway Corporation, JJJ Intercity Rapid Railway Investment Co., Ltd., provincial railway operators, and ADB.

25. The international team leader will administer the workshops and possibly other training sessions. International resource persons may be engaged to provide specific knowledge and recommendations at workshops or other information sessions. An international study tour to learn about passenger rail systems and multimodal station operations and utilization in large conurbations (e.g., Tokyo, or the Kyoto–Osaka–Kobe area in Japan), is included in the budget. ADB's approval of the tour requires a detailed proposal describing destination, objectives, program, and budget.

#### **IV. THE PRESIDENT'S DECISION**

26. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$400,000 on a grant basis to the Government of the People's Republic of China for the Policy Study on the Development of Intercity Railway in the Beijing–Tianjin–Hebei Region, and hereby reports this action to the Board.

## DESIGN AND MONITORING FRAMEWORK

<b>Impacts the Project is Aligned with</b>			
Sustainable intercity railway services in the BTH region developed (MOT circular on railway development and coordination)			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting</b>	<b>Risks</b>
<b>Outcome</b>			
Coordinated policies for integrated intercity railway services in the BTH region developed	MOT policies on intercity railway development in the BTH region, including directives on (i) integration of modes, (ii) financing and funding, and (iii) BTH intercity network planning and multimodal hubs formulated by 2017 (baseline = 0)	MOT railway policy annual report  MOT guiding opinions on railway development published in the annual state council gazette	Insufficient consensus on draft high-level policy proposals to support the intercity development plan
<b>Outputs</b>			
1. Intercity railway network planning for BTH region improved	1. Strategy document on intercity railway development in BTH region up to 2030 submitted to MOT by October 2016 (baseline = 0)	1. Consultants' reports, MOT policy documents and intercity network implementation plan	Lack of interest from private sector to participate in rail operations and/or multimodal hub development
2. Multimodal hub plan for intercity railway stations developed	2. Recommendations on mode integration, multimodal hub design and transit-oriented development in region submitted to MOT and JJJ Intercity Rapid Railway Investment Co., Ltd. by October 2016 (baseline = 0)	2. Consultants' reports, MOT policy documents and intercity network implementation plan	
3. Funding options for intercity railways formulated	3. Set of funding guidelines on infrastructure construction (including stations and station area development) and operations submitted to MOT by October 2016 (baseline = 0)	3. Consultants' reports and MOT policy documents; PRC regulation of infrastructure and public utility concessions	
4. Regulatory framework for intercity railways developed	4a. Guidelines for institutional arrangements in planning, financing and implementing of the intercity network in the BTH region developed by October 2016 (baseline = 0)	4. Consultants' reports; MOT policy documents	

**Key Activities with Milestones**

Inception mission in October 2015.

**Output 1: Intercity railway network planning for Beijing–Tianjin–Hebei region improved**

- 1.1 Support MOT and the JJJ Intercity Rapid Railway Investment Co., Ltd. in intercity network planning and station location, developing the strategy and phased, prioritized plan for construction and operation.
- 1.2 Review existing planning documents on BTH railways and regional development.
- 1.3 Submit strategy document on intercity railway development in BTH region up to 2030 to MOT.
- 1.4 Conduct a workshop about intercity railway planning and best practices in other countries (during review mission) in January 2016.

**Output 2: Multimodal hub plan for intercity railway stations developed**

- 2.1 Support MOT in integrated multimodal station development and transit-oriented development of station areas.
- 2.2 Report recommendations on mode integration, multimodal hub design, and transit-oriented development in the region to MOT and JJJ Intercity Rapid Railway Investment Co., Ltd. by October 2016.

**Output 3: Funding options for intercity railways formulated**

- 3.1 Submit policy proposals for MOT to support the implementation of intercity services, including the funding of infrastructure, intercity operations and stations, and real estate development.
- 3.2 Formulate guidelines for, and support to, the development of public–private partnerships.
- 3.3 Submit set of funding guidelines on infrastructure construction (including stations and station area development) and operations to MOT by October 2016.
- 3.4 Conduct training on public–private partnerships and financing options (during review mission) in June 2016.

**Output 4: Regulatory framework for intercity railways developed**

- 4.1 Strengthen institutional arrangements for construction and operation of intercity railway development.
- 4.2 Develop guidelines on institutional arrangements in planning, financing, and implementing of the intercity network in the BTH region by October 2016.

**Inputs**

ADB: \$400,000

Note: The government will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, secretarial assistance, domestic transportation, and other in-kind contributions.

**Assumptions for Partner Financing**

Not applicable.

ADB = Asian Development Bank; BTH = Beijing–Tianjin–Hebei; MOT = Ministry of Transport, TA = technical assistance.

Source: Asian Development Bank.

**COST ESTIMATES AND FINANCING PLAN**

(\$'000)

<b>Item</b>	<b>Amount</b>
<b>Asian Development Bank<sup>a</sup></b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants (9 person-months)	198.0
ii. National consultants (12 person-months)	72.0
iii. International resource persons <sup>b</sup>	15.0
b. International travel	25.0
c. National travel	5.0
d. Reports, translation, and communications	15.0
2. Workshops, training sessions	10.0
3. Study tour (overseas) <sup>c</sup>	30.0
4. Contingencies <sup>d</sup>	30.0
<b>Total</b>	<b>400.0</b>

Note: The technical assistance (TA) is estimated to cost \$500,000, of which contributions from the Asian Development Bank (ADB) are presented in the table above. The government will provide counterpart support in the form of counterpart staff, office accommodation, office supplies, secretarial assistance, domestic transportation, and other in-kind contributions. The value of government contribution is estimated to account for 20% of the total TA cost.

<sup>a</sup> Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-other sources).

<sup>b</sup> The budget includes honoraria for and travel costs of resource persons and facilitators, and logistical costs.

<sup>c</sup> The study tour will be conducted within ADB member countries.

<sup>d</sup> To cover miscellaneous costs and other unforeseen expenditures.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### A. Objective

1. The objective of the assignment is to assist the Ministry of Transport (MOT) and other authorities in the formulation of guiding policies for planning, financing, and implementation of the intercity train infrastructure network and service development in the Beijing–Tianjin–Hebei (BTH) region.

### B. Scope

2. **Output 1: Intercity railway network development strategy and planning for Beijing–Tianjin–Hebei region.** Support to MOT and the JingJinJi Rapid Railway Investment Co., Ltd. in intercity network planning and station location, developing the strategy and phased, prioritized plan for construction and operation.

3. **Output 2: Multimodal hub development plan for intercity railway stations.** Support to integrated multimodal station development and transit-oriented development of station areas.

4. **Output 3: Development of funding options intercity railways.** Policy proposals for MOT to support the implementation of intercity services, including the funding of infrastructure, intercity operations and stations, and real estate development. Guidelines for, and support to, the development of public–private partnerships.

5. **Output 4: Development of a regulatory framework for intercity railways.** Strengthening MOT's capacity in the development of institutional arrangements for construction, financing and operation of intercity railways in the BTH region.

### C. Reporting requirements

6. The consultants' team will work on an intermittent basis from 1 October 2015 to November 2016 and produce the following reports:

- (i) Inception report by 30 November 2015
- (ii) Progress report 1 by 31 January 2016
- (iii) Progress report 2 by 30 June 2016
- (iv) Draft final report by 30 September 2016
- (v) Final report by 31 October 2016

### D. Staffing requirements

7. The technical assistance (TA) will be implemented over a 13-month period from 1 October 2015 to 31 October 2016 and will require a total of 9 person-months of three international consultants, and 12 person-months from four national consultants. Asian Development Bank (ADB) will engage individual consultants in accordance with its Guidelines on the Use of Consultants (2013, as amended from time to time). Disbursements will follow the *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

8. The international team will comprise (i) team leader and railway planning specialist (5 person-months), (ii) railway passenger operations specialist (2 person-months), and (iii) railway sector funding specialist (2 person-months).

9. The team of national consultants will comprise (i) deputy team leader and railway planning specialist (4 person-months), (ii) railway operations specialist (3 person-months), (iii) railway technology specialist (3 person-months), and (iv) railway financial specialist (2 person-months).

10. **International team leader and passenger railway planning specialist** (5 person-months, intermittent). The team leader will be a railway policy and rail sector development expert with strong background in railway sector analysis, planning, and financing, including high-speed railways and transit-oriented development. The specialist must possess a graduate degree in relevant fields and at least 10 years of work experience in similar policy studies in developing countries. Work experience with ADB and prior experience of working in the transport sector of the People's Republic of China (PRC) will be an advantage. The team leader will

- (i) manage and coordinate all TA activities, defining the TA methodology and work plan;
- (ii) be the focal point for ADB and the executing agency in the execution of the TA;
- (iii) define the outline of inception and progress reports, and assign work to team members;
- (iv) prepare and submit timely project reports and exert budget control;
- (v) guide surveys and workshops, and identify suitable resource persons;
- (vi) perform a comprehensive analysis of BTH intercity railway plan (alignment, transport demand, integration with other modes, location and type of stations, multimodal hub development, operational service levels, financing construction, etc.), and formulate recommendations for improvement;
- (vii) formulate a set of recommendations in rail infrastructure, passenger rail operations, and a multimodal hub development plan in cooperation with team members;
- (viii) formulate the regulatory framework and institutional arrangements for construction, financing, and operation of the BTH intercity rail network;
- (ix) organize and develop program for overseas study tour to appropriate destination to learn international best practices in the development of intercity railways in large conurbations; and
- (x) provide hands-on support to MOT in actual planning and coordination issues.

11. The team leader will be given adequate support from the executing agency and national consultants in the execution of these tasks.

12. **Passenger railway operations and multimodal station specialist** (2 person-months, international, intermittent). The specialist will have at least 10 years of similar experience and a proven understanding of urban, regional, and high-speed passenger rail transport in the PRC and multimodal hub design. The specialist will be responsible for defining an assessment methodology that (i) indicates the main parameters for the demand-driven operation of the intercity railway network, and (ii) helps to define options for future development of passenger rail transport that includes all present and future stakeholders. The specialist will

- (i) assist MOT in the development of a demand-based operational service plan, 2020–2030;
- (ii) define preliminary passenger operational service plan (type of service, speed, frequency, rolling stock, etc.), taking into account the development of freight traffic on the network;
- (iii) recommend multimodal hub location, mode integration, and basic station design;
- (iv) recommend possible allocation of rail services performed by separate operators;

- (v) recommend policy that defines MOT's planning and coordination responsibilities;
- (vi) coordinate with authorities on the integration with other modes of transport (metro, bus, high-speed rail, road); and
- (vii) support the development of a working structure to ensure communication and harmonization with all stakeholders (public transport authorities, technical committees, etc.) on BTH railway planning.

13. **Railway sector funding specialist** (2 person-months, international, intermittent). The expert shall possess work experience of at least 10 years in railway funding, including financing arrangements, grants, and revenue schemes, comprising construction and operations of conventional and high-speed railway. The specialist shall demonstrate good understanding of the financial and organizational aspects of the various rail systems in the PRC. This specialist will provide policy recommendations concerning the preferred financing options for railway construction and operations, and pay due attention to the involvement of private interests as sole investors or as public-private partnership participants. The specialist will

- (i) provide training to MOT and other staff on the main funding mechanisms and investment options in the rail sector (infrastructure, passenger operations, station development and exploitation);
- (ii) advise on funding structures and cost and revenue streams for investments with multiple stakeholders (e.g., investment in multimodal hubs);
- (iii) assess the options for private sector investment in the BTH intercity railway plan and possible public-private partnership construction;
- (iv) define guidelines for MOT on funding mechanisms that include national, provincial, and private investments, and possible subsidization of investment and operations; and
- (v) define options for ADB cofinancing in the BTH intercity railway development plan.

14. **Deputy team leader and railway planning specialist** (4 person-months, national, intermittent). The expert shall possess extensive practical and research experience in the following areas: (i) passenger rail transportation development, (ii) role and responsibilities of government agencies in intercity rail development, and (iii) management of railway infrastructure and operations in the PRC. The specialist must demonstrate familiarity with (i) general status of intercity railway development and its main supporting policies in the PRC; (ii) the role of intercity and urban transit in fostering economic development; and (iii) the existing policy, legal, and regulatory framework of railway development. The deputy team leader will

- (i) assist the team leader in the coordination of domestic and international teams, and actively liaise with MOT, other government and transport agencies involved, and ADB;
- (ii) contribute to the analysis of BTH intercity railway plan (alignment, transport demand, integration with other modes, location and type of stations, multimodal hub development, operational service levels, financing construction, etc.) and formulate recommendations for improvement;
- (iii) in cooperation with team members, formulate recommendations for rail infrastructure planning, passenger rail operations, and multimodal hub development;
- (iv) formulate policies and institutional arrangements for construction, financing, and operation of the BTH intercity rail network; and
- (v) assure the quality of Chinese versions of TA communications and reports.

15. **Railway operations and multimodal station specialist** (3 person-months, national, intermittent). The specialist shall demonstrate good understanding of the current provision of



passenger rail transport services throughout the PRC, including urban regional and high-speed services. The expert has up-to-date knowledge of relevant developments in the passenger rail sector and has the ability to translate operational planning options into policy and strategy recommendations. The expert will

- (i) cooperate with the international expert collecting relevant information on BTH intercity railway services;
- (ii) assist MOT in the development of a demand-based operational service plan, 2020–2030;
- (iii) recommend on multimodal hub location, mode integration, and basic station design;
- (iv) recommend on policy and assist MOT in its planning and coordination responsibility;
- (v) coordinate with authorities on the integration with other modes of transport (metro, bus, high-speed rail, road); and
- (vi) support the development of a working structure to ensure communication and harmonization with stakeholders (public transport authorities, technical committees, etc.).

16. **Railway technology specialist** (3 person-months, national, intermittent). The railway technology specialist shall demonstrate good understanding of railway technologies applied in the PRC as regards rolling stock, infrastructure, signaling, and telecommunications, and is able to analyze interoperability issues and recommend preferred technology options for integration of existing systems (high-speed, conventional, rapid transit, urban rail), as well as for future construction and operations of intercity railway systems. The specialist will

- (i) assist MOT and the operations and planning specialists in all technology-related issues;
- (ii) analyze the BTH program and all TA recommendations on technical feasibility and identify potential bottlenecks;
- (iii) formulate recommendations and guidelines for MOT on the technical aspects of mode integration at stations;
- (iv) formulate recommendations and guidelines for MOT on technologies to be applied in infrastructure and operations;
- (v) define basic operational and technical standards for the BTH network to be met by operators; and
- (vi) define and set up a working structure to settle interoperability issues.

17. **Railway financial analyst** (2 person-months, national, intermittent). The expert will possess at least 8 years' working experience in railway sector economic analysis and development of passenger railway transport and urban transit systems. Major tasks are to assess present financing and funding schemes in passenger railways in the PRC, and to recommend on future financing and funding arrangements between national and regional authorities, China Railways Corporation, and intercity passenger service operators. The expert shall be familiar with the current status, trends, and problems in intercity railway development in various regions of the PRC, and have a good and up-to-date understanding of regulations on rail sector investment financing, including private sector participation. The consultant will

- (i) assist MOT and the international financing specialist in all issues related to the financing of investments in infrastructure, operations, and station development, and advise on relevant national and provincial regulations in place;
- (ii) define guidelines for MOT on financing mechanisms that include national, provincial, and private investments, and possible subsidization of investment and operations;

- (iii) actively search for options to involve the private sector to invest in the BTH intercity railway program and advise MOT to perform its role in planning and coordination of the network; and
- (iv) define options for ADB cofinancing in the BTH intercity railway program.