



# Technical Assistance Report

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Project Number: 48021-001  
Policy and Advisory Technical Assistance (PATA)  
December 2014

## People's Republic of China: Developing Pathways to Low-Carbon Transport in Ningxia Hui Autonomous Region (Cofinanced by the Climate Change Fund)

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Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 19 September 2014)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1628
\$1.00	=	CNY6.14290

## ABBREVIATIONS

ADB	–	Asian Development Bank
ASI	–	avoid–shift–improve
CO <sub>2</sub>	–	carbon dioxide
NHAR	–	Ningxia Hui Autonomous Region
PRC	–	People’s Republic of China
TA	–	technical assistance
TEEMP	–	Transport Emissions Evaluation Model for Projects

## 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: 48021-001</b>	
<b>Project Name</b>	Developing Pathways to Low-Carbon Transport in Ningxia Hui Autonomous Region	<b>Department /Division</b>	EARD/EATC
<b>Country Borrower</b>	China, People's Republic of Ningxia Department of Finance	<b>Executing Agency</b>	Ningxia Department of Finance
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ Transport	Transport policies and institutional development		1.00
		<b>Total</b>	<b>1.00</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG) Environmentally sustainable growth (ESG)	Pillar 1: Economic opportunities, including jobs, created and expanded Urban environmental improvement	Climate Change impact on the Project	High
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD) Knowledge solutions (KNS)	Institutional development Knowledge sharing activities	Some gender elements (SGE)	✓
<b>5. Poverty Targeting</b>		<b>Location Impact</b>	
Project directly targets poverty	No	Rural Urban	Low 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>1.00</b>	
Sovereign Policy and advisory technical assistance: Climate Change Fund		0.50	
Sovereign Policy and advisory technical assistance: Technical Assistance Special Fund		0.50	
<b>Cofinancing</b>		<b>0.00</b>	
None		0.00	
<b>Counterpart</b>		<b>0.10</b>	
Government		0.10	
<b>Total</b>		<b>1.10</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		No	
Use of country public financial management systems		No	



## I. INTRODUCTION

1. During the annual country program dialogue in December 2013, the Government of the People's Republic of China (PRC) asked the Asian Development Bank (ADB) to provide a policy and advisory technical assistance (TA) for a study to develop a low-carbon transport policy for the Ningxia Hui Autonomous Region (NHAR). A fact-finding mission visited the NHAR in September 2014 and reached agreement with the executing agency on the impact, output, implementation arrangements, cost, financing arrangements, and terms of reference for consulting services. The TA is in ADB's TA program for the PRC for 2014. The design and monitoring framework is in Appendix 1.<sup>1</sup>

## II. ISSUES

2. As a result of rapid economic growth and urbanization, the PRC has made remarkable progress in improving the quality of life since 1980. The provision of infrastructure and services for passenger and freight transport and increased travel demand have played a key role in economic growth and urbanization. However, transport also has adverse effects on the environment, including through vehicle emissions. Globally, it is already a major contributor to carbon dioxide (CO<sub>2</sub>) emissions, accounting for 23% of energy-related CO<sub>2</sub> emissions. The PRC is now the world's largest source of CO<sub>2</sub> emissions, responsible for 25.4% of global CO<sub>2</sub> emissions.<sup>2</sup> The 2013 World Energy Outlook projects that emissions from the transport sector in the PRC will reach 13% of total PRC emissions in 2035, compared to 8% in 2011.<sup>3</sup> Despite the technology improvements in transport sector, the emissions from transport sector are expected to grow due to the increase of mobility needs and it calls for stronger low-carbon transport policy measures at the local level.

3. The government attaches great importance to the issue of climate change and has committed to a 40%–45% reduction in the carbon intensity of gross domestic product by 2020 relative to 2005. Since 2006, the authorities have become involved in sustainable urban development initiatives to make cities eco-friendly and low carbon. More than 120 such initiatives have been launched by several government departments and government-related entities, including the National Development and Reform Commission; Ministry of Transport; Ministry of Science and Technology; and Ministry of Housing, Urban and Rural Development.<sup>4</sup>

4. The PRC may set a cap on its total CO<sub>2</sub> emissions when the 13th Five-Year Plan<sup>5</sup> comes into force in 2016. However, this will be challenging to implement in the transport sector as the objective of reducing carbon emissions of transport has often been subordinated to the pursuit of economic growth and urbanization at the local level, and few initiatives targeting low-carbon transport are formally embedded within the policy, financing, implementation, and operational levels of the transport sector at provincial and local government level. The lack of locally adapted objectives and indicators, and weaknesses in the process for designing,

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<sup>1</sup> The TA first appeared in the business opportunities section of the ADB website on 2 October 2014.

<sup>2</sup> International Energy Agency. 2013. *CO<sub>2</sub> Emissions from Fuel Combustion*. Paris.

<sup>3</sup> International Energy Agency. 2013. *World Energy Outlook*. Paris. The projection takes into account of changes in future policy assumptions for policies, population growth, energy pricing, fossil-fuel subsidies, CO<sub>2</sub> pricing and technology.

<sup>4</sup> In January 2013, the Ministry of Housing, Urban and Rural Development selected a first batch of 90 pilot smart cities, comprising 37 prefecture cities, 50 districts and counties, and three townships. Traffic management is a key aspect of most of these projects.

<sup>5</sup> ADB. 2014. *Technical Assistance to the People's Republic of China for Support for the Thirteenth Five-Year Plan*. Manila.

monitoring, and evaluating low-carbon transport, need to be addressed at provincial, local, and municipal government levels.

5. The NHAR is located in northwestern PRC, and had a population of 6.5 million people in 2012. It has five prefecture cities, 22 counties, and 192 townships.<sup>6</sup> The autonomous region is experiencing rapid urbanization, with the urban population reaching 3.28 million in 2012. It has not so far developed a specific policy on low-carbon transport at the provincial and city government levels. Parts of the NHAR with relatively lower rates of motorization<sup>7</sup> and urbanization<sup>8</sup> currently have good potential for developing a low-carbon transport system based on public transport, nonmotorized transport<sup>9</sup> improvements, parking policy, and transit-oriented development.<sup>10</sup> Such approaches could avoid the need for having to resort to restrictive policy measures such as vehicle licensing quotas, as seen in some mega cities in the PRC.

6. The proposed TA will assist the government of the NHAR and five prefecture city governments in formulating strategies and policies for low-carbon transport. The TA is consistent with ADB's country partnership strategy for the PRC for 2011–2015,<sup>11</sup> which supports the government's efforts to foster a cleaner and more sustainable growth process (pillar 2) by supporting the development of low-carbon transport systems, particularly in public transport.<sup>12</sup> It is included in the PRC country operations business plan, 2014–2016.<sup>13</sup>

7. Formulation of the TA draws upon the findings and recommendations of ADB's evaluation knowledge brief on Reducing Carbon Emissions from Transport Projects.<sup>14</sup> The brief found that low-carbon transport strategies based on the avoid–shift–improve (ASI) paradigm can be the least costly ways to reduce CO<sub>2</sub> emissions, and that such strategies can produce significant social and economic benefits for low-income people, who are more dependent on public transport and nonmotorized transport.<sup>15</sup> The brief recommended estimation and monitoring of carbon emissions, and adaptation of carbon emission reduction approaches in project design and appraisal.

### III. THE POLICY AND ADVISORY TECHNICAL ASSISTANCE

#### A. Impact and Outcome

8. The expected impact of the TA is reduced carbon emissions from the transport sector in the NHAR by 25% in 2030 compared to a business-as-usual baseline projection for the same year. The outcome of the TA is an adopted low-carbon transport policy with supporting

<sup>6</sup> These are Guyuan, Shizuishan, Wuzhong, Yinchuan (the capital), and Zhongwei.

<sup>7</sup> In 2011, the NHAR had 46 motor vehicles per 1,000 people, which is well below the national average of 68.

<sup>8</sup> The urbanization rate of the NHAR in 2011 was 52.0%, which is lower than the national average of 53.7%.

<sup>9</sup> Nonmotorized transport includes pedestrian, bicycle and wheelchair transport.

<sup>10</sup> A transit-oriented development is an urban planning and development approach in which public transport and nonmotorized transport play major roles in providing mobility and accessibility to bring housing, transport, and jobs together to achieve a sustainable urban pattern. A transit-oriented development neighborhood typically has a center with a transit station or stop, which is surrounded by relatively high-density development with progressively lower-density development spreading outward from the center.

<sup>11</sup> ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011–2015*. Manila.

<sup>12</sup> ADB's country partnership strategy for the PRC for 2011–2015 has three pillars: inclusive growth, environmentally sustainable growth, and regional cooperation and integration.

<sup>13</sup> ADB. 2014. *Country Operations Business Plan: People's Republic of China, 2014–2016*. Manila.

<sup>14</sup> ADB. 2010. *Reducing Carbon Emissions from Transport Projects*. Manila.

<sup>15</sup> The strategies are designed to avoid or reduce the need for travel, shift trips to low-carbon modes, and improve energy efficiency using more efficient transport technology and systems.



government reform and private sector participation, as reflected in ASI strategies incorporated in transport investment plans and the province's development targets.

## B. Methodology and Key Activities

9. The TA will adopt the ASI paradigm for developing a low-carbon transport strategy for each of the NHAR's five prefecture cities, and a bottom-up approach for developing a consolidated low-carbon transport strategy for the provincial government, building from the strategies generated from each city. Future travel demand will be estimated using a simplified travel demand forecast model. Low-carbon transport strategies will be selected after prefeasibility analysis and carbon emissions estimation using emission estimation tools. The selected strategies will be aligned to provide a phased implementation plan for each city, and the plans for each city will then be consolidated into a provincial government implementation plan.

10. The TA will introduce an emissions estimation method for the NHAR, drawing upon existing tools such as the Transport Emissions Evaluation Model for Projects (TEEMP)<sup>16</sup> and the For Future Inland Transport Systems<sup>17</sup> model, or by using the method based on the travel demand forecast model.<sup>18</sup> The results from different tools will be reviewed and a preferred approach will be selected for evaluating the emissions reduction impact of various low-carbon transport strategies for the project cities.

11. The five outputs of the TA will address the existing technical and institutional gaps in developing a low-carbon transport policy and strategies for the NHAR:

- (i) **Output 1: City-level avoid-shift-improve strategies and phased implementation plans.** The output will include (a) assessments of the transport sector and urban development of each city, (b) identification and assessment of applicable ASI strategies for each city, and (c) preparation of phased implementation and investment plans.
- (ii) **Output 2: Carbon emissions estimation and monitoring framework.** The output will include (a) a carbon emissions estimation and monitoring framework for each city, (b) carbon emissions estimation results for selected ASI strategies, and (c) capacity development support for city officers to use the framework and preparation of user guidelines.
- (iii) **Output 3: Provincial low-carbon transport implementation plan.** The output will include (a) ASI strategy prioritization and selection criteria for implementation, (b) consolidated and phased ASI strategy implementation plans for the five cities for the provincial government, and (c) an investment and financing plan for phased implementation.

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<sup>16</sup> TEEMP has been developed as a Microsoft Excel-based, free-of-charge spreadsheet model by Clean Asia Initiative, together with the Institute for Transportation and Development Policy, ADB, Cambridge Systematics, the United Nations Environment Programme, and the Global Environment Facility. TEEMP tools were initially developed for evaluating the emissions impacts of ADB transport projects and have been modified and extended for use on projects funded by the Global Environment Facility. TEEMP primarily evaluates the impacts of transport projects on CO<sub>2</sub> emissions and, to some extent, air pollutant emissions using data gathered during the project feasibility study and operations.

<sup>17</sup> For Future Inland Transport Systems was developed by the United Nations Economic Commission for Europe through a project funded by the United Nations Development Account. The model is freely available and allows the estimation of emissions from transport. It uses information on transport activities to derive fuel consumption and CO<sub>2</sub> emissions, considering the influence of socioeconomic parameters and policies.

<sup>18</sup> Emissions estimation is widely available as a built-in module of travel demand forecast models.

- (iv) **Output 4: Institutional reform and capacity development to support avoid-shift-improve strategy implementation.** The output will include (a) proposals for city-level institutional reform of the government and transport operators to support implementation of ASI strategies, (b) provincial government institutional arrangements for supervising and monitoring city governments' ASI strategy implementation, and (c) capacity building for officers and transport operators on ASI strategy implementation.
- (v) **Output 5: Knowledge products.** Knowledge products will be produced on a low-carbon transport policy and strategies for small cities and provinces in the PRC. This will address both the technical and institutional aspects of implementing a low-carbon transport policy and strategies.

12. The TA requires that the local governments in the NHAR are committed to implementing a low-carbon transport policy and that the central and NHAR governments intensify policy interventions and provide necessary incentives for promoting the policy. The local governments have assured ADB of their commitment. A key risk concerns whether consistent low-carbon policies will be maintained by the different levels of government. The TA will reduce this risk by closely involving the NHAR and local governments in TA implementation and producing recommendations to assist them with organizational and financial reform for supporting a low-carbon transport policy.

### C. Cost and Financing

13. The TA is estimated to cost \$1,100,000, of which (i) \$500,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources), and (ii) \$500,000 will be financed on a grant basis by the Climate Change Fund.<sup>19</sup> 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 as needed; and other in-kind contributions.

### D. Implementation Arrangements

14. The executing agency is the Ningxia Department of Finance, which will coordinate with and supervise the Ningxia Department of Transport, Ningxia Planning Bureau, Department of Environment Protection, five city governments, and transport operators during TA implementation. The consulting team will administer workshops, seminars, study tours, and surveys. An international study and visit to countries that can provide examples of low carbon transport strategies and best practices that are relevant to NHAR will help in preparing the knowledge product.

15. The TA will be implemented over an 18-month period from 1 November 2014 to 30 April 2016 and will require a total of 17 person-months for six international consultants and 36 person-months for seven national consultants. ADB will engage individual consultants and firms using quality- and cost-based selection (90:10), in accordance with the Guidelines on the Use of Consultants (2013, as amended from time to time). The team leader (international consultant) will be responsible for coordination and management of the consulting team, assisted by the deputy team leader (national consultant). TA proceeds will be disbursed in accordance with the *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

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<sup>19</sup> Established by ADB.

16. The consulting team will require expertise in (i) low-carbon urban transport policy and strategies; (ii) travel demand forecast methods and practices; (iii) emissions estimation methods, including For Future Inland Transport Systems, TEEMP, and travel demand forecast-based methods; (iv) preparing cost estimates for policy and investment project implementation; and (v) familiarity with the Government of the PRC organizational structures and financial mechanisms in the transport sector. It will be responsible for organizing a TA working group and workshops, seminars, study tours, and surveys, with assistance from the executing agency during TA implementation.

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

17. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$500,000 to be financed on a grant basis by the Climate Change Fund, and (ii) ADB providing the balance not exceeding the equivalent of \$500,000 on a grant basis to the Government of the People's Republic of China for Developing Pathways to Low-Carbon Transport in Ningxia Hui Autonomous Region, and hereby reports this action to the Board.

### DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Reduced carbon emissions from the transport sector in the NHAR</p>	<p>Reduction of transport sector carbon emissions in the NHAR by 25% in 2030 compared to business-as-usual baseline projection for the same year</p>	<p>Report from the provincial government</p>	<p><b>Assumption</b> Central government maintains low-carbon transport policy with a monitoring mechanism.</p>
<p><b>Outcome</b> Adopted low-carbon transport policy with supporting provincial and local government reform and private sector participation</p>	<p>ASI strategies are reflected in the phased transport sector investment plans of the provincial and five local governments.</p> <p>Reform of the provincial and five local governments' organization and financing mechanism for mainstreaming low-carbon transport policy</p>	<p>Transport sector investment plan of the provincial and local governments</p> <p>Provincial and local governments' reports on approved reforms</p>	<p><b>Assumption</b> Provincial government intensifies policy interventions and necessary incentives for promoting low-carbon transport policy and support.</p> <p><b>Risks</b> The risk of maintaining consistency of low-carbon policies among the different levels of the government exists.</p>
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1. City-level ASI strategies and phased implementation plans</li> <li>2. Carbon emissions estimation and monitoring framework</li> <li>3. Provincial low-carbon transport policy and implementation plan</li> <li>4. Institutional reform and capacity development for implementation</li> <li>5. Knowledge products</li> </ol>	<p>Five cities have customized ASI strategies and phased implementation plan by month 6</p> <p>Carbon emissions estimation and monitoring model is prepared for five cities by month 10</p> <p>Low-carbon transport policy and phased implementation plan and financial plans are prepared by month 8 and reviewed by the provincial government</p> <p>Recommendations for provincial and five local governments' organizational structure and financing mechanism for ASI implementation are prepared by month 12</p> <p>Government staff are trained on ASI strategies and emissions estimation tools</p> <p>A knowledge product on low-carbon transport policy and strategies for small cities and provinces in the PRC is produced for dissemination by month 18</p>	<p>Consultant report for output 1</p> <p>Consultant report for output 2</p> <p>Consultant report for output 3</p> <p>Consultant report for output 4 and progress report</p> <p>Consultant deliverable for output 5</p>	<p><b>Assumption</b> Local governments in the NHAR are committed to implementing a low-carbon transport policy.</p> <p><b>Risks</b> Political risks of changes in leadership in the provincial government (executing agency)</p>

Activities with Milestones	Inputs
<p><b>1. City-level ASI strategies and phased implementation plans</b> (months 1–6)</p> <p>1.1 Inception workshop with executing and implementing agencies</p> <p>1.2 Assessments of transport sector and urban development of each city</p> <p>1.3 Travel demand analysis and forecast</p> <p>1.4 Identification and assessment of applicable ASI strategies for each city</p> <p>1.5 Phased implementation and investment plan</p> <p><b>2. Carbon emissions estimation and monitoring framework</b> (months 5–8)</p> <p>2.1 Carbon emissions estimation and monitoring framework tailored for each city</p> <p>2.2 Carbon emissions estimation results for selected ASI strategies</p> <p>2.3 Capacity development to assist city officers in using the framework and user guidelines</p> <p><b>3. Provincial low-carbon transport implementation plan</b> (months 6–10)</p> <p>3.1 ASI strategy prioritization and selection criteria to support implementation</p> <p>3.2 Provincial government consolidated and phased ASI implementation plans for the five cities</p> <p>3.3 Low-carbon transport investment plan for phased implementation</p> <p>3.4 Interim workshop with executing and implementing agencies</p> <p><b>4. Institutional reform and capacity development to support avoid–shift–improve strategy implementation</b> (months 8–14)</p> <p>4.1 City-level institutional reform of the government and transport operators for implementing ASI strategies</p> <p>4.2 Provincial government institutional arrangements for supervising and monitoring city governments' ASI strategy implementation</p> <p>4.3 Capacity building for officers and transport operators about ASI strategy implementation</p> <p>4.4 Final workshop with executing and implementing agencies</p> <p><b>5. Knowledge products</b> (months 14–18)</p> <p>5.1 Prepare knowledge products on low-carbon transport policy and strategies for provincial and local government</p> <p>5.2 Organize knowledge-sharing workshop with executing and implementing agencies</p>	<p><b>ADB: \$500,000</b></p> <p><b>Climate Change Fund: \$500,000</b></p> <p>Note: 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 as needed; and other in-kind contributions.</p>

ADB = Asian Development Bank, ASI = avoid–shift–improve, NHAR = Ningxia Hui Autonomous Region, PRC = People's Republic of China.

Source: Asian Development Bank.

**COST ESTIMATES AND FINANCING PLAN**

(\$'000)

Item	Amount
<b>A. Asian Development Bank<sup>a</sup></b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	204.0
ii. National consultants	108.0
b. International and local travel	31.0
c. Reports and communications	10.0
2. Equipment <sup>b</sup>	15.0
3. Training, seminars, workshops, and study tour <sup>c</sup>	30.0
4. Surveys <sup>d</sup>	52.0
5. Contingencies	50.0
<b>Subtotal (A)</b>	<b>500.0</b>
<b>B. Climate Change Fund<sup>e</sup></b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	204.0
ii. National consultants	108.0
b. International and local travel	31.0
c. Reports and communications	10.0
2. Equipment	15.0
3. Training, seminars, workshops, and study tour <sup>c</sup>	30.0
4. Surveys <sup>d</sup>	52.0
5. Contingencies	50.0
<b>Subtotal (B)</b>	<b>500.0</b>
<b>Total</b>	<b>1,000.0</b>

Note: The technical assistance (TA) is estimated to cost \$1,100,000, of which contributions from the Asian Development Bank and the Climate Change Fund are presented in the table above. 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 as needed; and other in-kind contributions. The value of government contribution is estimated to account for 10% 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> Equipment includes computer, printer, and office consumables. The equipment budget will be administered by the consulting team leader under the supervision of the executing agency. The procurement will be in line with ADB's Procurement Guidelines (2013, as amended from time to time) and will be turned over to the executing agency upon completion of TA activities.

<sup>c</sup> Training, seminars, workshops, and study tour will be administered by the consulting team leader under the supervision of the executing agency. The study tour will be conducted within ADB member countries.

<sup>d</sup> Survey budget will be administered by the consulting team leader under the supervision of the executing agency.

<sup>e</sup> Established by the Asian Development Bank.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### A. Objective and Scope

1. The objective of the technical assistance (TA) is to assist the Government of the Ningxia Hui Autonomous Region (NHAR) and five local governments in developing a low-carbon transport policy, strategies, a phased implementation plan, and policy reform. The TA will adopt the avoid–shift–improve (ASI) paradigm for the generation of a low-carbon transport strategy for each of the NHAR’s five prefecture cities, and a bottom-up approach for developing a consolidated low-carbon transport strategy for the provincial government.
2. The scope of the consulting services is to produce the following five outputs:
  - (i) Output 1: City-level ASI strategies and implementation plans.
  - (ii) Output 2: Carbon emissions estimation and monitoring framework for the NHAR.
  - (iii) Output 3: Provincial low-carbon transport implementation plan.
  - (iv) Output 4: Institutional reform and capacity development to support ASI strategy implementation.
  - (v) Output 5: Knowledge products.
3. The consulting services also include capacity development support for the executing agency and implementing agency for generating a low-carbon transport policy and ASI strategies, technical training for estimating carbon emissions from the transport sector, surveys, and arranging a study tour for the executing agency.

### B. Consulting Team

4. The TA requires 53 person-months of consulting services (six international consultants totaling 17 person-months and seven national consultants totaling 36 person-months). ADB will engage a combination of individuals and firms recruited through quality- and cost-based selection (90:10), in accordance with the Guidelines on the Use of Consultants (2013, as amended from time to time). All international consultants should have a good command of English in verbal and written forms, and all national consultants should be able to communicate in English.
5. The composition of the consulting team is summarized in the following table:

<b>Composition of the Consulting Team</b>			
<b>International Consultants</b>	<b>Person-</b>	<b>National Consultants</b>	<b>Person-</b>
<b>Name of Position</b>	<b>months</b>	<b>Name of Position</b>	<b>months</b>
Team leader and urban transport policy specialist	6	Deputy team leader and transport policy specialist <sup>a</sup>	12
Public transport specialist	4	Public transport specialist	6
Nonmotorized transport specialist	2	Nonmotorized transport specialist	4
Travel demand forecast specialist	2	Transport model specialist	4
Vehicle emission estimation specialist <sup>a</sup>	1	Urban planning specialist	2
Urban planning specialist	2	Public administration specialist <sup>a</sup>	6
		Transport economist	2
<b>Total</b>	<b>17</b>		<b>36</b>

<sup>a</sup> Individual consultant.

Source: Asian Development Bank.

**a. International Firm (16 person-months)**

6. **Urban transport policy specialist and team leader** (6 person-months). The team leader will be an urban transport specialist with 15 years of experience in urban transport policy, planning, and management. Specific work experience in low-carbon transport policy formulation and traffic management for different sizes of cities are essential for the task. The team leader will have a bachelor's degree or higher in a relevant field. The team leader will be responsible for preparing an initial scope of ASI strategies for five different cities and consolidating other team members' outputs for preparing final deliverables. The team leader will also be responsible for conducting policy dialogue with the executing and implementing agencies, and planning and leading workshops with the assistance of the deputy team leader. The team leader will spend at least 4.5 person-months on location in Ningxia.

7. The urban transport specialist and team leader is responsible for the following tasks:
- (i) Analyze the transport sector in the NHAR and five cities.
  - (ii) Analyze current policies of national, provincial, and local governments for promoting low-carbon transport and ongoing ASI initiatives implemented in other cities of the People's Republic of China (PRC).
  - (iii) Prepare baseline projections of travel demand, travel patterns, and carbon emissions considering future urban development in NHAR travel demand, with the assistance of other team members.
  - (iv) Conduct and supervise consultations, trainings, and workshops with executing and implementing agencies during TA implementation.
  - (v) Prepare, assess, and select ASI strategies for each city for phased implementation and prepare an indicative investment plan.
  - (vi) Prepare recommendations for the provincial and central government for promoting low-carbon transport policy at the local government level.
  - (vii) Prepare the monthly progress reports.

8. **Public transport specialist** (4 person-months). The international public transport specialist should have at least 10 years of experience in public transport planning and operations, urban transport policy, planning, and management. The specialist will have a bachelor's degree or higher in a relevant field. Work experience in low-carbon transport policy formulation for different sizes of cities is essential. The public transport specialist will spend at least 3.5 person-months on location in Ningxia and will be responsible for the following tasks:

- (i) Analyze the public transport sector for five cities and provincial bus services including comparisons of different operational arrangements and support to local governments from the central and provincial governments.
- (ii) Identify potential public transport priority measures including bus rapid transit and multimodal hubs suitable for each city and provincial bus services and indicative investment costs and prepare phased public transport improvement plans.
- (iii) Provide the team leader with results of public transport work for preparing a consolidated implementation plan for each city and final deliverables.

9. **Nonmotorized transport specialist** (2 person-months). The international nonmotorized transport specialist will have at least 10 years of experience in nonmotorized transport planning and design, particularly in the PRC. The specialist will have a bachelor's degree or higher in a relevant field. The nonmotorized transport specialist will spend at least 1.5 person-months on location in Ningxia and will be responsible for the following tasks:

- (i) Conduct the assessment of current nonmotorized transport provision practices in five cities.



- (ii) Identify nonmotorized transport development options and opportunities in five cities.
- (iii) Prepare a phased nonmotorized transport development plan and indicative investment costs.
- (iv) Provide the team leader with results of the nonmotorized transport part of the work for preparing a consolidated implementation plan for each city and final deliverables.

10. **Urban planning specialist** (2 person-months). The urban planning specialist will have at least 10 years of experience in urban planning, including 5 years of experience in the PRC. The specialist will have a bachelor's degree or higher in a relevant field. The specialist will spend at least 1.5 person-months on location in Ningxia with the following main tasks:

- (i) Collect information on existing urban planning for the five cities.
- (ii) Review existing plans with respect to the integration of transport (particularly public transport, nonmotorized transport, parking, etc.).
- (iii) Prepare proposals for the integration of ASI strategies in urban planning.

11. **Travel demand forecast specialist** (2 person-months). The international travel demand forecast specialist will have at least 10 years of work experience in forecasting travel demand. The specialist will have a bachelor's degree or higher in a relevant field. The specialist will spend at least 1.5 person-months on location in Ningxia with the following main tasks:

- (i) Supervise travel data collection methods and survey execution.
- (ii) Prepare an appropriate demand forecast methodology for the TA.
- (iii) Present travel demand patterns of the NHAR and each city using commercial travel demand forecast software.
- (iv) Incorporate refined emission factors for the NHAR and five cities into the commercial travel demand forecast software and produce transport software outputs for generating and monitoring emission impact of ASI measures.

**b. International Individual Consultant** (1 person-month)

12. **Vehicle emissions estimation specialist** (1 person-month). The international vehicle emissions estimation specialist will have at least 10 years of work experience on vehicle emissions. The specialist will have a bachelor's degree or higher in a relevant field. The vehicle emissions specialist will spend at least 0.75 person-months on location in Ningxia and will be responsible for the following:

- (i) Review vehicle emission standards in the PRC applicable to the NHAR.
- (ii) Prepare vehicle emissions inventory and emission factors in the NHAR.
- (iii) Develop emissions estimation methods for the TA using For Future Inland Transport Systems, Transport Emissions Evaluation Model for Projects, and/or travel demand model based methods.
- (iv) Prepare vehicle emission predictions with and without the implementation of the low-carbon policy generated from the TA.
- (v) Provide training to executing and implementing agencies on using the developed emissions estimation method.

**c. National Firm** (18 person-months)

13. **Public transport specialist** (6 person-months). The national public transport specialist will have at least 10 years of experience in public transport planning and operation in the PRC.

The specialist will have a bachelor's degree or higher in a relevant field. At least 4.5 person-months will be spent in Ningxia with the following main tasks:

- (i) Collect data and assist in international public transport sector analysis of five cities and provincial bus services including comparisons of different operational support to local governments from central and provincial government.
- (ii) Assist the international specialist in estimating future urban development, public transport demand, and service requirement on the basis of travel demand and travel pattern analysis provided by the travel demand forecast specialist.
- (iii) Verify potential public transport priority measures, including bus rapid transit and multimodal hubs, suitable for each of the cities and provincial bus services and indicative investment costs.
- (iv) Assist the international consultant to generate indicative investment costs.

14. **Nonmotorized transport specialist** (4 person-months). The national nonmotorized transport specialist will have at least 10 years of experience in nonmotorized transport planning and design. The specialist will have a bachelor's degree or higher in a relevant field. At least 3.0 person-months will be spent in Ningxia. The main tasks of the specialist are as follows:

- (i) Assist the international team in conducting the assessment of current nonmotorized transport provision practices in five cities.
- (ii) Assist the international team in identifying nonmotorized transport development options and opportunities in the five cities.
- (iii) Assist the international team in preparing phased nonmotorized transport development plans for each city and indicative investment costs.

15. **Urban planning specialist** (2 person-months). The urban planning specialist will have at least 10 years of experience in urban planning and design in second- and third-tier cities in the PRC. The specialist will have a bachelor's degree or higher in a relevant field. At least 1.5 person-months will be spent in Ningxia. The main tasks of the specialist are as follows:

- (i) Collect information on existing urban planning for the five cities.
- (ii) Review existing plans with respect to the integration of transport (particularly public transport, nonmotorized transport, parking, etc.).
- (iii) Prepare proposals for integration of ASI strategies in urban planning.

16. **Transport model specialist** (4 person-months). The national transport model specialist will have at least 10 years of work experience in the PRC of forecasting travel demand using transport software. The specialist will have a bachelor's degree or higher in a relevant field. At least 3.0 person-months will be spent in Ningxia. The main tasks of the specialist are as follows:

- (i) Collect data about current travel demand by modes and assist the international consultant in preparing an appropriate demand forecasting methodology.
- (ii) Assist the international consultant in designing a travel demand survey and supervising the execution of the survey.
- (iii) Prepare network and demand data for the selected travel demand forecast software under the supervision of the international specialist and calibrate.
- (iv) Incorporate refined emission factors for the NHAR and five cities into the commercial travel demand forecast software and produce model outputs.

17. **Transport economist** (2 person-months). The transport economist will have at least 10 years of work experience in transport economic evaluation and cost-benefit analysis in the PRC. The specialist will have a bachelor's degree or higher in a relevant field. At least 1.5 person-months will be spent in Ningxia. The main tasks of the specialist are as follows:

- (i) Prepare estimates of the investment costs of the defined ASI strategies.

- (ii) Prepare a cost–benefit analysis for the five cities, indicating the monetized economic. Comparison is to be made to a business-as-usual scenario, to be defined by the team.
- (iii) Identify the nonmonetary benefits of the identified strategies, in particular the emissions (in cooperation with the vehicle emissions specialist).
- (iv) Prepare a prioritization of investments, in cooperation with the transport specialists and urban planning specialists.

**d. National Individual Consultants (18 person-months)**

18. **Transport policy specialist and deputy team leader (12 person-months).** The deputy team leader will be a transport policy specialist with 15 years of experience in urban transport policy, planning, and management. Experience in low-carbon transport policy formulation for different sized cities in the PRC is required. The deputy team leader will have a bachelor's degree or higher in a relevant field and have strong project management skills. The deputy team leader is responsible for providing an overview of low-carbon policy and related issues to the international consultants and assisting the team leader in coordinating the consulting team with the executing agency and implementing agencies for conducting policy dialogue workshops. At least 10 person-months will be spent in Ningxia with the following main tasks:

- (i) Together with the other team members, produce transport sector analysis of the NHAR and five cities and collect current policies of national, provincial, and local governments for promoting low-carbon transport.
- (ii) Review ASI strategies prepared by the team leader to reflect local conditions and assist preparing a phased implementation and an indicative investment plan.
- (iii) Coordinate, conduct, and supervise consultations, trainings, and workshops with the executing and implementing agencies during the TA implementation.
- (iv) Consolidate other team members' works to produce the final deliverables.
- (v) Assist the team leader in preparing recommendations for the provincial and central government for promoting a low-carbon transport policy.

19. **Public administration specialist (6 person-months).** The national public administration specialist will have at least 10 years of work experience in the financial mechanisms and institutional structure of national, provincial, and local governments with regard to the transport sector in the PRC. The specialist must have a bachelor's degree or higher in a relevant field. At least 4.5 person-months will be spent in Ningxia. The main tasks of the specialist are as follows:

- (i) Collect information and assist the international consultant in reviewing the national, provincial, and local government organizational structure of the transport sector in the PRC generally and in the NHAR specifically.
- (ii) Collect information and assist the international consultant in reviewing the current PRC funding mechanism for promoting low-carbon transport.
- (iii) Assist the international consultant in preparing a recommended institutional reform and financial mechanism for national, provincial, and local governments for promoting and implementing a low-carbon transport policy.

**C. Reporting Requirements**

20. The consulting team will be engaged in the TA intermittently from November 2014 to April 2016 and will produce the following: (i) inception report by 31 January 2015, (ii) monthly progress and work plan update by the first of every month, (iii) interim report by 1 July 2015, (iv) draft final report and knowledge product by November 2015, and (v) final report and knowledge product by April 2016.