



Report and Recommendation of the President to the Board of Directors

Project Number: 40643
June 2009

Proposed Loan

People's Republic of China: Xinjiang Urban Transport
and Environmental Improvement Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 5 June 2009)

Currency Unit – yuan (CNY)

CNY1.00 = \$0.1463

\$1.00 = CNY6.83

ABBREVIATIONS

ADB	–	Asian Development Bank
EA	–	executing agency
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
EMDP	–	ethnic minority development plan
EMP	–	environmental management plan
FGD	–	focus group discussion
FYP	–	five-year plan
GDP	–	gross domestic product
IA	–	implementing agency
ICB	–	international competitive bidding
km ²	–	square kilometer
LIBOR	–	London interbank offered rate
m ²	–	square meter
MSL	–	minimum standard of living
NCB	–	national competitive bidding
NMT	–	nonmotorized transport
O&M	–	operation and maintenance
PLG	–	project leading group
PMO	–	project management office
PRC	–	People's Republic of China
PPMS	–	project performance management system
SEIA	–	summary environmental impact assessment
TA	–	technical assistance
XUARG	–	Xinjiang Uygur Autonomous Region government

NOTES

- (i) The fiscal year (FY) of the Government of the People's Republic of China ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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LOAN AND PROJECT SUMMARY

Borrower	People's Republic of China (PRC)
Classification	<p>Targeting classification: Targeted intervention (Millennium Development Goal 7)</p> <p>Sectors: Multisector (transport and information and communication technology, water supply and other municipal infrastructure and services)</p> <p>Subsectors: Urban transport, waste management, other municipal services</p> <p>Themes (Subthemes): Economic growth (promoting economic efficiency and enabling business environment), environmental sustainability (urban environmental improvement), capacity development (institutional development)</p> <p>Location impact: Urban (medium)</p>
Environment Assessment	Category A. An environmental impact assessment was undertaken. The summary environmental impact assessment was circulated to the Board of Directors of the Asian Development Bank (ADB) and posted on the ADB website on 26 September 2008.
Project Description	<p>The Project aims to improve urban road infrastructure, traffic management and safety, and environmental sanitation in the following cities of the Xinjiang Uygur Autonomous Region (Xinjiang): Altay, Changji, Hami, Kuytun, and Turpan. The Project consists of five components that seek to improve urban living conditions and public health, and protect the environment by upgrading and extending roads and sanitation infrastructure in the project cities. Based on specific transport conditions of the project cities, the Project will (i) construct 37.4 kilometers (km) of new roads and upgrade 70.5 km of existing roads; (ii) install traffic signal systems, bus stops and bays, road furniture including road barriers, pedestrian crossings, signage, and marking; and (iii) construct and install environmental sanitation facilities such as public toilets, garbage collection stations, trash cans, as well as provide solid waste management equipment.</p>
Rationale	<p>ADB has been actively supporting the PRC's Western Region Development Strategy, which aims to spur economic development of the Western Region of the PRC including Xinjiang, by providing technical assistance and financial resources to improve urban infrastructure (transportation, communications, power, and water resources) and support inclusive economic growth. The main pillars of the strategy are investments in urban infrastructure, preservation of the environment, and attraction of private sector investments in the region's economy. The Project will complement other ADB-financed projects aimed at improving infrastructure and environment in the region.</p>

The Project, which covers the fast growing cities of Altay, Changji, Hami, Kuytun, and Turpan, is designed to (i) improve the urban road infrastructure and achieve the environmental objectives approved in the city master plans and 11th Five-Year Plan 2006–2010, (ii) facilitate access to environmental sanitation facilities and enable their proper functioning, (iii) improve air quality and reduce dust pollution caused by poor surface road conditions, (iv) improve road safety and reduce traffic delay, (v) improve environmental hygiene and public health through the construction of sanitation infrastructure and provision of environmental sanitation equipment, (vi) introduce environmental management in urban downtown areas and expanding urban areas, and (vii) catalyze economic growth and improve poor people's well-being.

The Project is consistent with ADB's Urban Sector Strategy (1999), which supports investments in the urban sector as a dynamic engine of economic growth and employment creation, innovation, and entrepreneurship. The Project also supports ADB's country partnership strategy for the PRC to strengthen inclusive growth, improve the environment, catalyze investments, and improve governance. The Project complements the ADB-financed Xinjiang Municipal Infrastructure and Environmental Improvement Project, which aims to improve road infrastructure and utility services in Alashankou land port, Kanas scenic region, and Yining City of Xinjiang.

Impact and Outcome

The impact of the Project is sustainable socioeconomic growth and improved living standards in five cities of Xinjiang. The outcome of the Project is improved urban road infrastructure, traffic management, and environmental sanitation in the cities of Altay, Changji, Hami, Kuytun, and Turpan.

Project Investment Plan

The investment cost of the Project is estimated at \$187.2 million, including taxes and duties of \$26.6 million.

Financing Plan

Source	Amount	
	(\$ million equivalent)	% of Total
Asian Development Bank	100.0	53.4
Altay City Government	17.3	9.3
Changji City Government	25.7	13.7
Hami City Government	10.1	5.4
Kuytun City Government	15.3	8.2
Turpan City Government	18.8	10.0
Total^a	187.2	100.0

^a Numbers may not sum precisely because of rounding.
Source: Asian Development Bank.

A loan of \$100.0 million from the ordinary capital resources of ADB will be provided under ADB's London interbank offered rate (LIBOR)-based lending facility. The loan will have a 25-year term including a grace period of 5 years, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a

commitment charge of 0.15% per annum, and such other terms and conditions set forth in the draft Loan Agreement.

**Allocation and
Relending Terms**

The Government of the PRC will relend the loan proceeds to Xinjiang Uygur Autonomous Region government (XUARG), the Executing Agency, on the same terms and conditions as the ADB loan. The loan proceeds will then be lent to Altay, Hami, and Turpan Prefecture governments and Changji Hui and Ili Kazakh Autonomous Prefecture governments on the same terms and conditions as those of the ADB loan. The respective recipient city governments shall bear the foreign exchange and interest rate variation risks in proportion to the loan amount they receive.

Period of Utilization

Until 31 December 2014

**Estimated Project
Completion Date**

30 June 2014

**Implementation
Arrangements**

XUARG is the Executing Agency for the Project. A project leading group (PLG) has been established to provide overall guidance and support to the preparation and implementation of the Project. The Xinjiang project management office (PMO) that is implementing the ADB-financed Xinjiang Municipal Infrastructure and Environmental Improvement Project will undertake and manage the day-to-day activities in connection with the Project. A PLG and PMO have been set up in each project city to liaise with the Xinjiang PMO and to oversee and manage (i) the work undertaken by the implementing agencies, (ii) overall management of project finance, and (iii) project implementation.

Executing Agency

Xinjiang Uygur Autonomous Region government

Procurement

Goods, works, and services will be procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). International competitive bidding, national competitive bidding, or shopping procedures will be used for procurement, based on the circumstances of each contract package.

Consulting Services

About 17 person-months of international consulting services and 35 person-months of national consulting services will be provided to support the PMOs and implementing agencies in project management, implementation, and institutional capacity building. The consulting services will cover (i) support to the Xinjiang and city PMOs and implementing agencies in project preparation and management, (ii) the project performance management system, (iii) transport planning and traffic control, (iv) financial management, (v) social development, (vi) environmental management, (vii) operation and maintenance, and (viii) institutional strengthening. Consultants will be recruited according to ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time).

Project Benefits and Beneficiaries

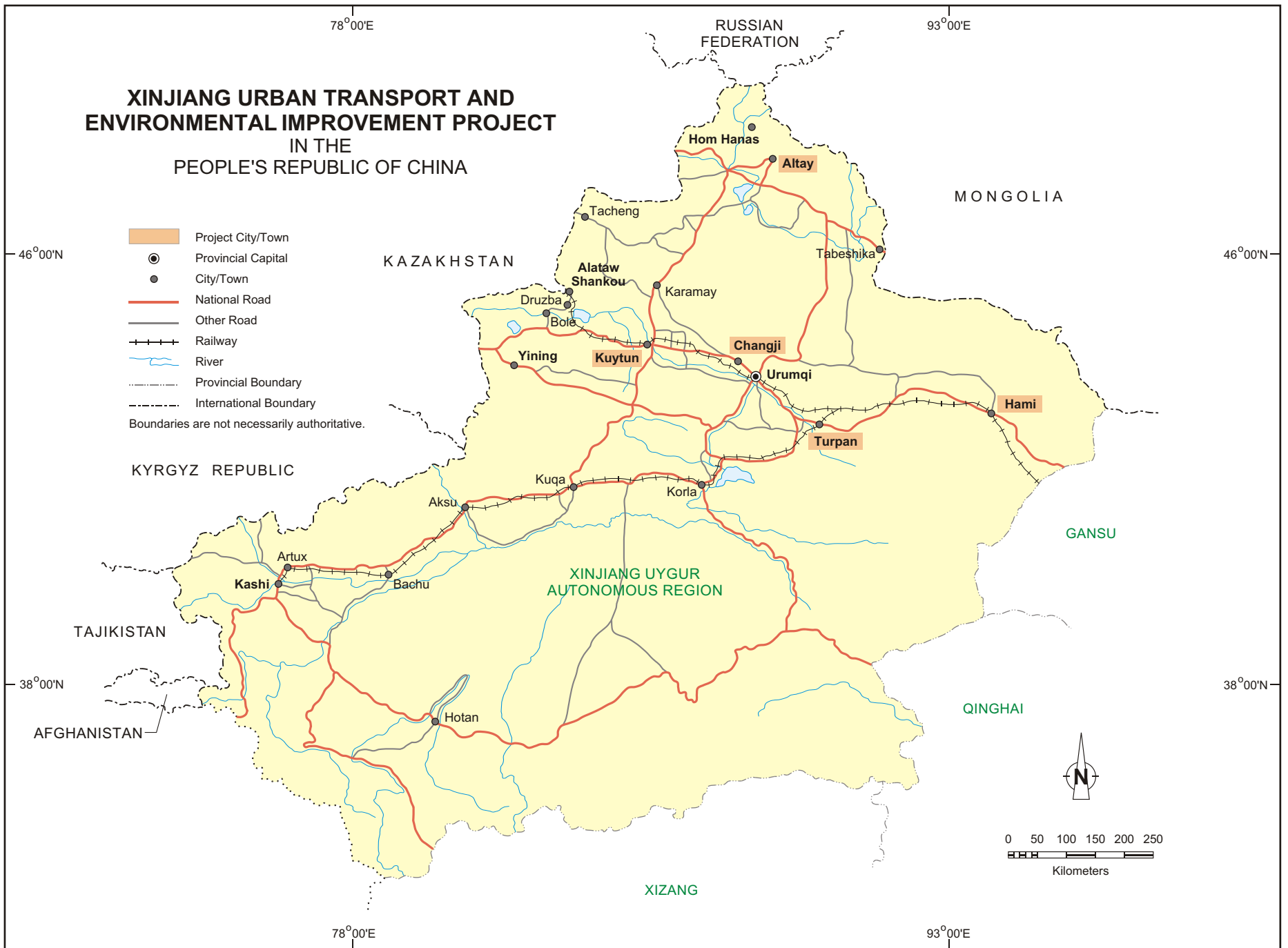
Xinjiang is predominantly an ethnic minority region of Western PRC, with 40.0% of the population being Han. The major ethnic group is the Uygur, constituting 45.9% of the total population. Other significant ethnic minority groups include the Kazakh constituting 6.9% of the total population and the Hui constituting 4.4%. Of the five cities, Turpan has the highest percentage of ethnic minorities (78%), followed by Altay (39%), Changji (28%), and Kuytun (5%). According to the socioeconomic survey undertaken during project preparation, the urban poverty rate is about 27% in Altay, 10.9% in Changji, 17.4% in Hami, 8.5% in Kuytun, and 12.2% in Turpan. Average per capita incomes are CNY1,332 per annum (\$0.52 per day) in Altay, CNY1,493 (\$0.58 per day) in Changji, CNY1,116 (\$0.44 per day) in Hami, CNY1,000 (\$0.39 per day) in Kuytun, and CNY918 (\$0.36 per day) in Turpan.

The project beneficiaries will be the residents in the five project cities, including the ethnic minorities and the poor. The Project is expected to entail the following benefits: (i) generation of employment opportunities directly and indirectly related to the Project; (ii) improved living standards in the project cities because of the upgraded and newly constructed roads and facilitation of greater mobility, access, and affordability of key basic services and destinations for the local population; (iii) improved urban road safety and reduced incidence of traffic accidents; and (iv) improved environment and public health associated with the provision of public toilets and bathrooms, and sustainable solid waste management practices.

Risks and Assumptions

The main project risks include (i) timely provision of counterpart funding; (ii) low institutional capacity in terms of project technical, financial, and environmental management; and (iii) timely construction of project infrastructure because of the short construction period. These risks will be mitigated through the following measures: (i) comprehensive capital budgeting and securing a formal commitment from the project city governments and loan assurances regarding adequate and timely allocation of counterpart funds in the city budgets during the project implementation period; (ii) provision of extensive training in infrastructure project technical, financial, and environmental management under the Project; (iii) selection of qualified project implementation consultants; (iv) installation of appropriate project implementation monitoring and mitigation arrangements; and (v) active project management assistance from the ADB project team.

**XINJIANG URBAN TRANSPORT AND
ENVIRONMENTAL IMPROVEMENT PROJECT**
IN THE
PEOPLE'S REPUBLIC OF CHINA



I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of China (PRC) for the Xinjiang Urban Transport and Environmental Improvement Project.

2. The Government requested the Asian Development Bank (ADB) to help improve and expand urban transport and sanitation infrastructure, and the environment in the cities of Altay, Changji, Hami, Kuytun, and Turpan in Xinjiang Uygur Autonomous Region (Xinjiang). The report is based on the results of the loan appraisal mission, as well as discussions with the central and local governments and community organizations. The design and monitoring framework is in Appendix 1. The problems and objectives tree analyses are in Supplementary Appendix A.

II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Performance Indicators and Analysis

3. The PRC economy has experienced robust economic growth during the last decade. Annual gross domestic product (GDP) growth accelerated from 10.1% in 2004 to 13.0% in 2007 and eased to 9.0% in 2008. GDP per capita in current market prices reached \$3,308.1 in 2008.¹ Economic growth has been accompanied by rapid urbanization, with the country's urban population reaching about 577 million. According to World Bank estimates, urbanization in the PRC can pass the 60% mark by 2020, with 200 million or more rural people joining the urban population.² Growth in personal incomes has resulted in increased vehicle ownership, which within a 10-year period doubled to 28.12 vehicles per 1,000 people nationwide, and is likely to continue increasing rapidly in the future. Rapid growth in vehicles and passenger transport has put increasing pressure on the urban road network and environment.

4. Rapid urbanization and industrialization have had a high environmental cost. Many cities face environmental threats from pollution. The growing urban population, industrialization, and economic development will continue to increase demand for infrastructure services such as roads and associated environmental sanitation infrastructure, and call for increased investments in urban infrastructure, transport planning, and improved road and traffic management. In the PRC's 11th Five-Year Plan (11FYP) 2006–2010, the Government has emphasized inclusive and balanced economic development as a key strategic priority and has prioritized addressing environmental protection and pollution control issues through policy reform, increased investment, and improved urban infrastructure management as pillars of sustainable economic growth. The sector analysis is in Appendix 2.

B. Analysis of Key Problems and Opportunities

5. Located in the hinterland of the Eurasian continent, Xinjiang shares borders with eight countries and covers about 1.7 million square kilometers (km²), about one-sixth of the total area of the PRC.³ In 2007, its population was about 20.5 million (about 1.5% of the population of the PRC), comprising 40% Han Chinese and 60% of other ethnic groups, the largest of which is the Uygur. Xinjiang has lagged behind other regions of the PRC in terms of economic growth and poverty reduction. Despite the abundance of natural resources, Xinjiang remains one of the

¹ ADB estimates and ADB. 2008. *Key Indicators for the Asia and Pacific 2008*. Manila.

² World Bank. 2008. *China Urbanizes*. Washington, DC.

³ Xinjiang shares borders with Afghanistan, India, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Russian Federation, and Tajikistan.

poorest provinces of the country. In 2007, about 8% of its urban population and 12% of its rural population lived below the official poverty line, compared with a national average poverty incidence of 3.7% among the urban population and 2.3% among the rural population. In 2007, the per capita disposable income of urban households in Xinjiang was CNY8,871 (\$1,267), which was the lowest of all the PRC provinces.⁴

6. To spur economic growth of the Western Region, including Xinjiang, the Government launched the National Strategy for Development of the West that aims to stimulate economic development and raise the living standard of the population.⁵ In November 2008, to arrest the ongoing economic slowdown, the Government launched a substantial fiscal stimulus package equivalent to 16% of the 2007 nominal GDP that largely focused on infrastructure development.⁶ As a result of the ongoing economic development, Xinjiang has experienced rapid urbanization. In 2006, the urban population in Xinjiang at 7.78 million accounted for 38% of the population; it is expected to increase to 42% by 2010 and further to 47% by 2015. The increasing urban population, industrialization, and economic development will continue to increase the demand for urban infrastructure services such as roads and solid waste management. From 1995 to 2007, the length of paved roads in urban areas increased by about 68% from 2,403 km to 4,044 km, and the area of paved roads increased by 150% from 26 km² to 65 km². Private vehicle ownership in Xinjiang increased from 14.9 to 35.0 vehicles per 1,000 people during the same period. The urban transport and road network are the main mode of transportation in the cities. Rapid growth in vehicles and passenger transport have put increasing pressure on the road network and capacity expansion.

7. Growing urbanization and passenger transportation have resulted in increased disposal of waste, including solid waste. Uncollected and untreated solid waste cause significant environmental threats for the urban areas. In 2007, about 2.78 million tons of municipal solid waste were collected and disposed of in the region but only 51% of this was disposed of at sanitary landfill sites. Meanwhile, 655 million tons of wastewater were discharged, where 69% came from municipal sources and 31% from industrial sources. For municipal wastewater, only about 60% was collected and treated in the cities and towns in 2007. Considerable investments are needed to construct environmental sanitation facilities such as public toilets, solid waste collection, and processing facilities.

8. Improvement of the urban environment in the cities of Xinjiang—by reducing air and noise pollution, improving solid waste management, and strengthening environmental protection and management—is crucial to achieving and sustaining their development objectives. An efficient, safe, and environmentally sustainable road network, together with improved sanitation infrastructure, is important to raise the living standards of the poor and to cope with the increasing demand for municipal services resulting from economic growth and urbanization. Transport planning, improved road and traffic management, and vehicular emission control are key areas in the Government's policy to ensure sustainable development while protecting the environment. Unlike the PRC's coastal cities, where rapid growth has entailed serious environmental problems, Xinjiang still has better opportunities to avoid negative environmental externalities of rapid economic growth and achieve sustainable development through this Project and other future initiatives.

⁴ Xinjiang Uygur Autonomous Region. 2007. *Xinjiang Statistical Yearbook*. Xinjiang.

⁵ The State Council of PRC. 2000. *The National Strategy for Development of the West*. Beijing.

⁶ As part of the economic stimulus package, the Government had committed to provide about CNY3.3 billion (\$482.5 million) from the central budget to finance infrastructure projects in Xinjiang in early 2009.

9. **Project Rationale.** The main pillars of the Western Region Development Strategy are investments in urban infrastructure, preservation of the environment, and attracting private sector investments in the region's economy. ADB has been actively supporting the strategy by providing technical assistance (TA) and financial resources aimed at improving urban infrastructure (transportation, communications, power, and water resources) and supporting inclusive economic growth.⁷ The Project will complement other ADB-financed projects aimed at improving infrastructure and the environment in the region.⁸

10. The Project, which covers the fast-growing cities of Altay, Changji, Hami, Kuytun, and Turpan, is designed to (i) improve the urban road infrastructure and achieve the environmental objectives approved in the city master plans and 11FYP; (ii) facilitate access to environmental sanitation facilities and enable their proper functioning; (iii) improve air quality and reduce dust pollution caused by poor surface road conditions; (iv) improve the safety and comfort of road users, including pedestrians and drivers, and reduce traffic delay; (v) improve environmental hygiene and public health through the provision of environmental sanitation equipment and facilities; (vi) introduce environmental management in urban downtown areas and expanding urban areas; and (vii) catalyze economic growth and improve poor people's well-being.

11. The Project is consistent with ADB's urban sector strategy, which supports investments in the urban sector, as a dynamic engine of economic growth and employment creation, innovation, and entrepreneurship; and supports ADB's country partnership strategy for the PRC to strengthen inclusive growth, improve the environment, catalyze investments, and improve governance.⁹ The proposed Project is an integral part of the provincial urban development master plan. The first ADB Project that follows the master plan is the ongoing Xinjiang Municipal Infrastructure and Environmental Improvement Project, which focuses on improving the road infrastructure and utility services in Alashankou land port, Kansas scenic region, and Yining City of Xinjiang.¹⁰

12. **Policy Dialogue.** The Project will build on ADB's policy dialogue on (i) sustainable economic growth and environmental management, (ii) integrated urban transport planning, (iii) effective traffic management and road safety, (iv) institutional development of the Project's executing agency (EA) and implementing agencies (IAs), and (v) social and poverty aspects.

13. The Xinjiang Uygur Autonomous Region government (XUARG) recognizes that to achieve long-term sustainable growth there is a need to balance economic development and environmental concerns. The Project will introduce measures to prevent and control pollution

⁷ ADB. 2005. *Technical Assistance to the People's Republic of China for Provincial Development Strategy of Selected Provinces in Northwestern Region*. Manila (TA 4727-PRC); ADB. 2006. *Technical Assistance to the People's Republic of China for Preparing the Xinjiang Regional Road Improvement Project*. Manila (TA 4773-PRC); ADB. 2007. *Technical Assistance to the People's Republic of China for Preparing the Xinjiang Municipal Infrastructure and Environmental Improvement Project*. Manila (TA 4805-PRC); and ADB. 2006. *Technical Assistance to the People's Republic of China for Logistics Development and Capacity Building in Xinjiang Uygur Autonomous Region*. Manila.

⁸ ADB. 2007. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of China for the Xinjiang Regional Road Development Project*. Manila (\$150 million); and ADB. 2008. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of China for the Xinjiang Municipal Infrastructure and Environmental Improvement Project*. Manila (\$105 million).

⁹ ADB. 2008. *Country Partnership Strategy (2008–2010): People's Republic of China*. Manila.

¹⁰ The project was approved on 23 April 2008 and became effective on 17 November 2008. The elapsed loan period is 18% and estimated physical progress is 20%. To date, \$6.1 million have been disbursed, 77 contracts have been tendered, and 44 contracts have been awarded.

and ensure environmentally sustainable economic growth through proper environmental planning, management, and public education.

14. Sustainable transport planning and policy reforms are crucial to ensure that the Project creates economic value added and the benefits are passed on to the road users. Urban transport planning must take into consideration the linkages among land use, accessibility, transport services, social and poverty aspects, road accidents, road maintenance, and interagency coordination and cooperation. The master plan for each of the project cities is being updated to meet the needs of the growing economy. The Xinjiang and the project city governments recognize that integration of urban and transport planning is important. The Project will assist local city authorities in strengthening their capacity to update and improve urban development and transport master planning.

15. Traffic management issues include the increased number and severity of road accidents, conflict between pedestrians and motorists, nonmotorized transport operations, and public transport efficiency. Road safety problems are serious in the PRC and are mainly caused by insufficient road network and inefficient traffic management. Poor traffic management also causes health, environmental, and social consequences that negatively affect national economic growth. The Project will introduce an appropriate road safety strategy in the project cities. This includes traffic engineering considerations in road design, focusing on existing major accident black spots, traffic management focusing on signage and appropriate use of traffic signal control systems, increasing community and industry awareness in road safety, and dissemination of road safety knowledge. Reduction of the frequency, severity, and cost of road accidents will particularly benefit low-income people including pedestrians, public bus users, and bicycle riders; and increase the economic benefits of the investment. The Project will improve road surfaces and introduce traffic management measures to ensure efficient energy consumption by vehicles and minimize pollution to the environment.

16. ADB's urban infrastructure projects emphasize the importance of capacity building to enhance organizational capability to ensure that (i) the project components are designed and constructed in a cost-effective manner and are implemented in compliance with environmental and social safeguards, (ii) operation and maintenance (O&M) procedures are in place to enable the completed facilities to perform efficiently, (iii) adequate funding mechanism is established for effective O&M so that project benefits can be sustained in the long term, and (iv) there is overall enhancement of organizational performance in the delivery of municipal and environmental protection services. Institutional development is an important part of the Project because (i) the project cities have no experience in implementing ADB-financed projects, and (ii) the Project involves a variety of works in geographically dispersed locations involving many levels of personnel.

17. From a social and poverty perspective, policy dialogue is necessary in a number of areas: (i) the nature of demand-driven urban development improvements; (ii) approaches to urban development that are pro-poor and sensitive to gender and ethnic minorities; and (iii) improvements in urban infrastructure and landscapes. These have been taken into consideration in the project design. Details of the policy dialogue are in Supplementary Appendix B.

18. **External Assistance.** Since 1992, ADB has provided more than 39 loans totaling nearly \$4.9 billion to the PRC for urban infrastructure and environmental improvement projects. ADB has also provided over \$69 million for more than 100 TA studies to prepare these projects and to review and study key issues in urban infrastructure, environmental improvement, and

pollution control. ADB is also providing a number of TA projects to the Government on Western Region development to facilitate regional cooperation with Central Asia. External assistance to Xinjiang for implementing its urban transport and environmental improvement projects has been provided by the World Bank (Tarim Basin Water Conservancy and Agriculture Support, Kuytun to Syimlake Expressway, and Urumqi Urban Transportation Improvement); Government of Japan (Xinjiang Cities Integrated Environment Management, Urumqi Hetan Road, and Yining City Integrated Environment Management); Government of the Republic of Korea (Korla Outer Ring Road); and several European governments. The details of external assistance are in Appendix 3.

19. **Lessons Learned.** Lessons from urban transport projects financed by ADB and other international financial institutions include the (i) benefits of a participatory approach and multiagency coordination during project preparation; (ii) efficiently planned and well-coordinated resettlement planning preceded by adequate consultation with affected parties; and (iii) importance of public transport and traffic management, including aspects of traffic forecasting, road safety, vehicle emission control, and road maintenance. These lessons have been considered in the project design.

20. To ensure timely implementation of the Project and to minimize delays caused by a short construction season, it is important to (i) factor in a shorter construction period typical for the Xinjiang climate; and (ii) undertake advanced actions within the frames of retroactive financing allowed by ADB's *Procurement Guidelines* (2007, as amended from time to time). To avoid potential delays in the project procurement process, emphasis needs to be put on (i) strict adherence to ADB's mandatory bidding documents, (ii) efficient bid evaluation in accordance with ADB-approved evaluation criteria, and (iii) clear substantiation of bid evaluations.

III. THE PROPOSED PROJECT

A. Impact and Outcome

21. The impact of the Project is sustainable socioeconomic growth and improved living standards in five cities of Xinjiang. The outcome of the Project is improved urban road infrastructure, traffic management, and environmental sanitation in the cities of Altay, Changji, Hami, Kuytun, and Turpan.

B. Outputs

22. The Project has five physical components: (i) Altay Roads and Environmental Improvement, (ii) Changji Roads and Environmental Improvement, (iii) Hami Roads and Environmental Improvement, (iv) Kuytun Roads and Environmental Improvement, and (v) Turpan Roads and Environmental Improvement. Based on specific transport conditions of the project cities, the Project will (i) construct 37.4 km of new roads and upgrade 70.5 km of existing roads; (ii) install traffic signal system, bus stops and bays, and road furniture, including road barriers, pedestrian crossings, signage, marking, and green separators; and (iii) construct and install environmental sanitation facilities such as public toilets, garbage collection stations, trash cans, as well as provide street sweeper trucks. A summary of the five components, which are further broken down into 10 subcomponents, is in Table 1. Technical analysis of the components is in Supplementary Appendix C.

Table 1: Summary Description of the Project Components and Subcomponents

Component	Subcomponent	Description
Altay Roads and Environmental Improvement	Roads	Construct/upgrade 19 municipal roads with a total length of 28.02 km, including construction of 3 new roads, and upgrading of 16 existing roads; construct 5 new bridges; construct associated road facilities; and purchase road maintenance equipment.
	Environmental Improvement	Construct 10 public toilets and 20 garbage collection stations; install 654 trash cans and 102 refuse collection points; and purchase 1 garbage compaction truck, 1 rear loader garbage truck, 1 street sweeper truck, 2 snow removing trucks, 1 grapple garbage truck, 1 excavator, 1 wheel loader, and 2 dump trucks.
Changji Roads and Environmental Improvement	Roads	Construct 9 new municipal roads with a total length of 23.24 km, including 1 bridge; construct associated road facilities; and purchase road maintenance equipment.
	Environmental Improvement	Construct 8 public toilets and 8 garbage collection stations; install 394 trash cans and 33 refuse collection points; and purchase 5 garbage compaction trucks, 5 garbage trucks, 4 street sweeper trucks, 2 snow removing trucks, 1 wheeled excavator, 1 aerial work vehicle, 1 crane, 1 tip truck, 1 sprinkling vehicle, and 1 pesticide spraying vehicle.
Hami Roads and Environmental Improvement	Roads	Upgrade 3 municipal roads, with a total length of 9.02 km; construct 3 culverts; construct associated road facilities; and purchase road maintenance equipment.
	Environmental Improvement	Install 182 trash cans and purchase 2 street sweeper trucks and 1 street cleaning truck.
Kuytun Roads and Environmental Improvement	Roads	Upgrade 13 municipal roads, with a total length of 23.6 km, including 2 trunk roads, 2 secondary roads, 9 branch roads, and construct 2 bridges; construct associated road facilities; and purchase road maintenance equipment.
	Environmental Improvement	Construct 11 public toilets and 21 garbage collection stations; install 480 trash cans, 105 garbage containers, and 3 rest stations for environmental sanitation workers; and purchase 4 garbage compaction trucks, 2 street sweeper trucks, 2 snow removing trucks, and 2 sprinkling vehicles.
Turpan Roads and Environmental Improvement	Roads	Construct/upgrade 14 municipal roads, with a total length of 22.76 km, including 5 trunk roads, 7 secondary roads, and 2 branch roads; construct 2 culverts, construct associated road facilities; and purchase road maintenance equipment.
	Environmental Improvement	Construct 11 public toilets and 26 garbage collection stations; install 502 trash cans and 130 garbage containers; and purchase 5 garbage compaction trucks, 4 street sweeper trucks, and 2 sprinkling vehicles.

km = kilometer.

Source: Asian Development Bank.

23. The Project also provides for institutional development and capacity building to ensure effective implementation of the Project and sustainable O&M of the project facilities. Capacity building will include provision of (i) project management consulting services, and (ii) training during loan implementation. The training program will improve the knowledge and practical skills

of the EA and IAs to conduct (i) infrastructure project design, planning, and management; (ii) project financing and financial management, including financial accounting, reporting and auditing, and project capital budgeting; (iii) traffic planning and management, including public transport and nonmotorized vehicles; and (iv) proactive environmental management and public education.

C. Special Features

24. Provision of Access to Environmental Facilities. The Project will improve urban transport infrastructure and help cities achieve the environmental objectives of the project city master plans and the 11FYP. The implementation of the proposed roadworks will facilitate access to environmental facilities, including waste treatment plants and landfill sites. It will also allow the installation and connections of associated underground wastewater, water supply, heating, and gas pipelines for most parts of the project cities. Thus, the Project will improve and extend road accessibility and enable connection to environmental facilities.

25. Enhancement of Essential Road Network. As part of the project cities' master plans, the proposed road links will be constructed to meet the anticipated traffic demand and to resolve part of the existing traffic problems in these cities. Most of the traffic problems or issues identified in these cities are related to traffic engineering and road safety. The Project will provide capacity building in areas of urban transport planning and development control; basic traffic engineering and management techniques; implementation of road safety education; and auditing throughout the Project from design, implementation, and operation. Enhancement of the essential road network will enable better management of city urban traffic by reducing traffic delays in their road network, improving public transport services in terms of routing efficiency and journey time, and comfort of road users, including pedestrians and drivers. This is particularly relevant to cities such as Altay, Hami, and Turpan, where tourism is one of the key economic growth drivers. These fast-growing tourism areas are inhabited by a range of ethnic minorities, including the Hui, Kazakh, and Uygur, and will benefit from road improvements.

26. Promotion of Environmental Protection Awareness. The Project will improve environmental hygiene and public health through the provision of environmental sanitation equipment and facilities. Such facilities include 40 public toilets, 2,212 trash cans, 67 garbage collection stations, and street cleaning trucks along with the road construction. These project facilities will address the present inadequacy of sanitation infrastructure along the roads and will increase the present level of hygiene as well as introduce environmental management principle in the project areas.

27. Sustainable environmental protection requires a well-prepared environmental management plan (EMP) that covers environmental management, environmental monitoring, and institutional enhancement. The plan (i) ensures implementing necessary mitigation and environmental monitoring measures; and (ii) describes the actions and responsibility of each stakeholder involved in implementing the management plan, thereby increasing awareness on environmental protection. However, a well-prepared plan is not sufficient, as this needs to be complemented by institutional enhancement. It is necessary to build up and strengthen the capacity of the supervising agencies, project management offices (PMOs), and IAs so that their institutional organization and responsibilities are well defined and recognized before commencement of the Project. Institutional strengthening, capacity building, and training related to environmental sanitation include integrated waste management, waste minimization, better definitions of waste quantities and compositions of waste, and establishment of clear roles and responsibilities for managing solid waste.

28. Environmental protection is not just the responsibility of the Government; the public also plays an important part. Environmental protection education through media and education institutes is an effective approach to help achieve project objectives. The Project will initiate public awareness and participation activities that will cover the full range of stakeholders, with special focus on women and children.

D. Project Investment Plan

29. The project investment cost is estimated at \$187.2 million, including taxes and duties of \$26.6 million. The total cost includes physical and price contingencies, interest, and other charges during implementation. Table 2 provides a summary of the project investment plan and further details are in Appendix 4.

Table 2: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Urban Roads	148.4
2. Environmental Sanitation	6.5
3. Capacity Building	1.5
Subtotal (A)	156.4
B. Contingencies^c	
1. Physical Contingency	12.9
2. Price Contingency	8.8
Subtotal (B)	21.7
C. Financing Charges During Implementation^d	9.1
Total (A+B+C)	187.2

^a Includes taxes and duties of \$26.6 million.

^b In end-2008 prices.

^c Physical contingencies computed at 10% for civil works. Price contingencies computed by year and expenditure type based on cumulative domestic and foreign price inflation. Exchange rate fluctuations are estimated using a purchasing power parity adjustment model.

^d Includes interest and commitment charges. Interest during construction has been computed at the 5-year forward London interbank offered rate as of 15 December 2008 plus a spread of 0.2%.

Source: Asian Development Bank estimates.

E. Financing Plan

30. The Government has requested a loan of \$100.0 million from ADB's ordinary capital resources to finance 53% of the cost of the Project. The loan will cover civil works, equipment and supplies, project management consulting services and training, financial charges on the loan during construction, and bank charges on the project imprest account. The Government will finance contingencies, taxes, duties, and land acquisition and resettlement costs. The city governments of Altay, Changji, Hami, Kuytun, and Turpan through tax and nontax revenues will provide counterpart funding, for which they have provided commitment letters to XUARG and ADB.

31. A financing plan for the Project is summarized in Table 3 and the details of the cost estimates and financing plans for each component are in Appendix 4. A loan of \$100.0 million

from the ordinary capital resources of ADB will be provided under ADB's London interbank offered rate (LIBOR)-based lending facility. The loan will have a 25-year term including a grace period of 5 years, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a commitment charge of 0.15% per annum, and such other terms and conditions as set forth in the draft Loan Agreement. The Government has provided ADB with (i) reasons for its decision to borrow under ADB's LIBOR-based lending facility on the basis of these terms and conditions, and (ii) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB.

32. The borrower of the loan is the PRC. The loan will be entirely made available to XUARG. Different portions of the loan proceeds will be made available to concerned city governments. The terms and conditions of such loan proceeds transferred within the government system will be the same as those of the ADB loan. The respective recipient city governments will bear the foreign exchange and interest rate variation risks in proportion to the loan amount they receive. The indicative flow of funds and onlending arrangements are in Appendix 5. Detailed cost estimates and financing plan are in Supplementary Appendix D.

Table 3: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank	100.0	53.4
Altay City Government	17.3	9.3
Changji City Government	25.7	13.7
Hami City Government	10.1	5.4
Kuytun City Government	15.3	8.2
Turpan City Government	18.8	10.1
Total	187.2	100.0

Source: Asian Development Bank estimates.

F. Implementation Arrangements

1. Project Management

33. XUARG is the EA for the Project. A project leading group (PLG) has been established under the chairmanship of a vice governor of XUARG to provide overall guidance and support to the preparation and implementation of the Project and to liaise with ADB, the Ministry of Finance, and the National Development and Reform Commission. A regional project PMO¹¹ has been established under the PLG, chaired by the director of the Xinjiang Construction Bureau. The PMO members include officials from the Xinjiang Construction Bureau, Xinjiang Finance Bureau, and Xinjiang Development and Reform Commission. The PMO will undertake day-to-day activities including interdepartmental coordination and liaison with the consulting team and ADB on matters relating to the preparation and implementation of the Project. Details of the project organization are in Appendix 6. Details of the institutional arrangement and assessment of the EA and IAs are in Supplementary Appendix E.

34. The municipal government of each project city has established city PLGs and PMOs that are responsible for (i) project implementation in the respective cities, (ii) liaison with the

¹¹ The executing agency and the regional PMO are the same as for the ADB-financed Loan 2420-PRC: Xinjiang Municipal Infrastructure and Environmental Improvement Project. See footnote 8.

provincial PMO, (iii) project financing, and (iv) overseeing the work of the IAs. The construction bureau in each project city will be responsible for project component construction and O&M of the project facilities. The construction bureaus are departments of the municipal governments and report to the heads of municipal governments.

2. Implementation Period

35. The Project will be implemented over a period of 5 years from 2009 to 2014. The estimate for the implementation period is based on the project scope, the construction technology requirements, and climate conditions. The schedule is considered realistic and achievable because the EA (i) has experience with implementation of World Bank- and ADB-financed projects, (ii) the project implementation structure is in place, and (iii) preparatory works are under way. ADB's prior experience with similar projects in the PRC, combined with the knowledge and experience of XUARG in municipal infrastructure and environmental improvement projects, indicates that the schedule is realistic and achievable. The project implementation schedule is in Appendix 7.

3. Procurement and Consulting Services

36. Goods, works, and services financed under the loan will be procured in accordance with ADB's *Procurement Guidelines*. Preliminary contract packages have been formulated in consultation with the IAs, and a procurement capacity assessment of the EA, PMOs, and IAs has been undertaken. Contracts for goods estimated to cost \$1.0 million or more, and contracts for works estimated to cost \$10.0 million or more shall be procured using international competitive bidding (ICB) procedures. Contracts for goods and works estimated to cost less than the above ICB thresholds but more than \$100,000 shall be procured on the basis of national competitive bidding (NCB) procedures in accordance with the PRC tendering and bidding laws, subject to modifications agreed with ADB. Contracts for goods and works estimated to cost \$100,000 or less shall be procured using shopping procedures. Prior review will be applied for all ICB contracts, the first NCB contract for works and goods, and post review for other procurement modes.

37. Preliminary contract packages have been formulated in consultation with the IAs and a procurement capacity assessment of the EA, PMOs, and IAs has been undertaken. Based on the assessment, it is recommended that prior review be applied for all ICB contracts and the first NCB contract for works and goods in each project city, together with the post review for other procurement modes. A procurement plan for the Project is in Appendix 8. Details of the procurement assessment of the executing and implementing agencies are in Supplementary Appendix F.

38. The Project will provide funding for 17 person-months of international consulting services and 35 person-months of national consulting services to support the PMOs and IAs in project implementation and management and institutional capacity building.¹² Consulting firms will be recruited in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) using the quality- and cost-based selection method.¹³ The Project will provide funding for international consulting services and national consulting services to support the Xinjiang and city PMOs and IAs in project implementation and management and institutional capacity building. XUARG has requested advance contracting for the recruitment of consultants.

¹² Consulting service inputs estimates are subject to revision based on results of detailed technical design.

¹³ The quality- and cost-based selection procedure will be undertaken with the quality–cost ratio of 80:20.

The consulting services will cover (i) support to the Xinjiang and city PMOs and IAs in project preparation and management, (ii) PPMS, (iii) transport planning and traffic control, (iv) financial management, (v) social development, (vi) environmental management, (vii) O&M, and (viii) institutional strengthening. Capacity building for the PMOs and IAs will be achieved through consultant inputs, training courses provided by universities, specialized institutes and firms, in-country and/or overseas study visits, and acquisition of additional equipment financed from the loan. Outline terms of reference for project consulting services are in Supplementary Appendix G.

4. Advance Contracting and Retroactive Financing

39. To expedite project implementation, XUARG has requested advance contracting for the recruitment of consultants, training, and procurement of goods and civil works. It has also requested retroactive financing of eligible expenditures of up to \$20 million (equivalent to 20% of the ADB loan). Advance contracting will include (i) preparation of tender documents, (ii) evaluation of bids, and (iii) recruitment of consultants. All advance contracting and retroactive financing will be undertaken in conformity with ADB's *Procurement Guidelines*. The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. XUARG has been informed that retroactive financing is permitted only if (i) it is specifically agreed by ADB and the Borrower; (ii) the goods, works, services, and consultants for which it is requested are procured in accordance with ADB's *Procurement Guidelines* or *Guidelines on the Use of Consultants*; and (iii) the amount to be retroactively financed does not exceed 20% of the loan amount. The expenditures must have been incurred before effectiveness of the loan, but generally no earlier than 12 months before the signing date of the Loan Agreement. The Government, XUARG, and the IAs have also been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the Project.

5. Anticorruption Policy

40. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the EA, PMOs, and IAs. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the loan regulations and will be included in the bidding documents for the Project. In particular, all contracts financed by ADB in connection with the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EA and all contractors, suppliers, consultants, and other service providers as they relate to the Project. XUARG has indicated its commitment to fight corruption and a number of anticorruption actions will be included as covenants in the Loan and Project Agreements. Under these covenants, XUARG will

- (i) involve the agencies responsible for oversight of each IA in bidding and construction to enhance construction quality control and supervise effective work;
- (ii) introduce a dual-signing system in which the civil works contract winner also signs an anticorruption contract with the employer;
- (iii) periodically inspect the contractor's activities related to fund withdrawals and settlements; and
- (iv) engage a project management consultant to support the Xinjiang and city PMOs and the IAs to ensure good governance, accountability, and transparency in project operations.

6. Disbursement Arrangements

41. The ADB loan funds will be disbursed in accordance with the procedures in ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). To expedite project implementation through timely release of loan proceeds, XUARG will immediately establish an imprest account after loan effectiveness at a commercial bank acceptable to ADB. Disbursement to the IAs from the imprest account will be based on the actual expenditures and submission of full supporting documentation to XUARG. Such documentation will demonstrate that, among other things, the goods and/or services have been produced in or from ADB's members, and are eligible for ADB financing. The initial amount to be deposited in the imprest account will not exceed the Project's estimated implementation expenditures for the next 6 months, or 10% of the loan amount, whichever is lower. The ADB statement of expenditures procedure may be used for reimbursement of eligible expenditures. Individual payments to be reimbursed or liquidated under the procedure will not exceed \$200,000. The statement of expenditures procedure will be used only at XUARG level to request withdrawals from ADB. Direct payment procedures may be used for large civil works contracts. Following the recommendation of the financial management assessment to improve the internal control system of the IAs, XUARG will review and approve all withdrawal applications prior to submission to ADB.

7. Accounting, Auditing, and Reporting

42. The Xinjiang PMO will coordinate with the city PMOs to prepare semiannual progress reports indicating progress made, problems encountered during the period under review, steps taken or proposed to remedy the problems, the proposed program of activities, and progress expected in the next 6 months. The IAs will keep records to allow the identification of goods and services financed from the loan proceeds, following accounting principles and practices prescribed by the accounting laws of the PRC. This law requires that the financial statements shall generally follow recognized accounting standards. The IAs will set up and maintain separate project accounts and records. The financial statements of project accounts and the annual corporate financial statements for IAs will be subject to external audit by the audit bureau of the cities concerned, the XUARG audit bureau, and the state audit bureau. The audits will be carried out in accordance with PRC audit regulations and must meet ADB requirements. A separate auditor's opinion on the use of the imprest account and statement of expenditure will be part of the audit reports. The IAs' annual audited financial statements and audited project accounts will be submitted to ADB no later than 6 months after the end of the fiscal year throughout the implementation period. XUARG and the IAs will submit reports and information to ADB concerning the use of the loan proceeds, project implementation, and IA performance. These reports will include (i) semiannual progress reports on project implementation, (ii) annual reports, and (iii) a project completion report not later than 3 months after the completion of project facilities.

8. Project Performance Monitoring and Evaluation

43. The PPMS indicators, their relevance, and monitoring practicalities have been discussed with the Xinjiang and city PMOs and IAs during project preparation. The indicators are based on the monitoring indicators in the design and monitoring framework. At the start of project implementation, the Xinjiang and city PMOs and IAs, with the loan implementation consultant's assistance, will develop comprehensive PPMS procedures to systematically generate data on

the inputs and outputs of the subcomponents, as well as the indicators to be used to measure the project impact. The Xinjiang and city PMOs will (i) refine the PPMS; (ii) confirm achievable targets; (iii) finalize monitoring and recording arrangements; and (iv) establish systems and procedures, no later than 6 months after loan effectiveness.

9. Project Review

44. In addition to joint project reviews carried out at least once a year, ADB, XUARG, and the IAs will undertake a comprehensive midterm review 2 years after the start of project implementation. This will include a detailed evaluation of the scope, implementation arrangements, resettlement, achievement of scheduled targets, and progress on the agenda for policy reform and capacity-building measures. Feedback from the PPMS activities will be analyzed.

IV. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS

45. **Social Aspects.** According to the socioeconomic survey undertaken during project preparation, the urban poverty rate is 27% in Altay, 10.9% in Changji, 17.4% in Hami, 8.5% in Kuytun, and 12% in Turpan. Average per capita incomes are CNY1,332 per annum (\$0.52 per day) in Altay, CNY1,493 (\$0.58 per day) in Changji, CNY1,116 (\$0.44 per day) in Hami, CNY1,000 (\$0.39 per day) in Kuytun, and CNY918 (\$0.36 per day) in Turpan. The Project has a range of benefits, including the generation of employment opportunities directly and indirectly related to the Project. The road construction and upgrading will facilitate greater mobility, access, and affordability for the local population to key basic services and destinations and will make urban roads safer for travel thereby reducing traffic accidents. Measures include construction of footpaths, street lighting, controlled pedestrian crossings, and traffic calming. Environmental improvements are associated with a greater emphasis on public hygiene through the provision of public toilets (and bathrooms in one city) and sustainable solid waste management practices. The Project is classified a targeted intervention for Millennium Development Goal (MDG) 7 Target 10. The summary poverty reduction and social strategy is in Appendix 9.

46. The roads to be upgraded for the Kuytun component will be on existing alignments and will involve merely road surfacing. Although this component will also occupy a large amount of state-owned land, the land is not fertile and no people will be affected. Therefore, no resettlement plan is required for the Kuytun component. Four full resettlement plans have been prepared for the Altay, Changji, Hami, and Turpan components in compliance with ADB's *Involuntary Resettlement Policy* (1995), endorsed by the relevant city PMOs and uploaded on the ADB website. During project implementation, the resettlement plans will be updated based on detailed engineering design, disclosed to affected persons, and submitted to ADB for approval prior to award of civil works contracts. To avoid or minimize land acquisition and resettlement; close consultations with local officials, village committees, and affected persons were undertaken during resettlement plan preparation. The Altay, Changji, Hami, and Turpan PMOs will retain the services of a domestic external monitor every 6 months to (i) review resettlement progress and the general welfare of those affected; (ii) recommend ways to resolve any issues or problems; and (iii) provide advice to IAs and local officials, and submit such reports to ADB. The summary resettlement plan is in Appendix 10.

47. The Project is classified category A for indigenous peoples. To ensure that the Project will benefit indigenous people, an ethnic minority development plan (EMDP) has been developed for each project city. Xinjiang is predominantly an ethnic minority region of Western

PRC, and 40.0% of its population is Han. The major ethnic group is the Uygur, constituting 45.9% of the total population. Other significant ethnic minority groups include the Kazakh constituting 6.9% of the total population and the Hui constituting 4.4%. Of the five cities, Turpan has the highest percentage of ethnic minorities (78%), followed by Altay (39%), Changji (28%), and Kuytun (5%). The Project has been designed and reflected in the EMDPs for each of the five cities and the social action plan to ensure that the specific social aspects of each of the five cities are incorporated into overall project design. The EMDPs have been endorsed by the relevant city PMOs and uploaded on the ADB website. The summary EMDP is in Appendix 11.

48. **Financial Aspects.** The historical financial performance of the IAs has been analyzed to determine whether they can provide the required counterpart funds during the construction period and necessary funds for O&M and debt service during the operating period. In addition, annual average growth rates of revenues and expenditures during the project period are calculated. All IAs operate as departments of their respective city governments. The construction bureaus are financed through tax and nontax revenues, and annual operational budgets are provided by the city governments. Annual forecast of debt service and O&M costs for the Altay, Changji, Hami, Kuytun, and Turpan components were compared with the relevant annual revenues and indicated acceptable fiscal risk since it is expected that city government revenues will grow in line with economic development, providing more mobility to finance proposed project components, and central budget transfers and municipal bond issues will provide additional cushion to the provincial and city budgets.

49. The financial management assessment of XUARG and the IAs and their previous experience in managing investment projects financed by international financial institutions confirms that the financial management systems and practices of the EA and IAs are adequate for implementation of the Project.

50. The overall financial management arrangements of the IAs are generally satisfactory and reliable. All IAs will establish and maintain separate project accounts and records, which will be audited in accordance with the PRC audit regulations and meet ADB requirements. A separate auditor's opinion on the use of the imprest account and statement of expenditure will be part of the audit reports. The IAs' annual audited financial statements and audited project accounts will be submitted to ADB no later than 6 months after the end of the fiscal year throughout the implementation period. XUARG and the IAs will submit reports and information to ADB concerning the use of the loan proceeds, project implementation, and performance.

51. The Project will assist each of the IAs to establish a sound and solid financial management system for project implementation. A capacity building component to strengthen financial management has been included in the Project. The capacity building component will strengthen IAs' capacity in: (i) financial management, project finance, accounting, and business planning; and (ii) management information system and cost management and control. The financial analysis of the Project is in Appendix 12.

52. **Economic Aspects.** The economic analysis for the Project covers (i) the economic rationale for public intervention, (ii) the goals of the investment plan, and (iii) the design of the plan. The economic rationale is sound as the Project will (i) support XUARG in promoting urban development of the cities in a more coordinated and cost-effective manner; and (ii) bring about more sustainable investments in infrastructure, which aim to support inclusive economic growth and improve the quality of life. The economic analysis also evaluates the components relative to least-cost analysis criteria and standard benefit-cost analysis. The results of the economic analysis indicate that the project components are economically viable and the subproject

components stand up to sensitivity analyses that combined variations of costs increases and benefits decreases. A summary economic analysis is in Appendix 13. Under various sensitivity analyses, including increase in costs and decrease in benefits, a delay of project implementation by 1 year does not have a significant impact on the base case economic internal rate of return. The overall economic internal rate of return under the base case is 19.7%, which is above the 12.0% economic opportunity cost of capital.

53. **Environmental Aspects.** The Project is classified environment category A. Extensive public consultations involving surveys, meetings with stakeholders, and focus group discussions were undertaken during project preparation. A summary environmental impact assessment (SEIA) has been prepared based on the domestic environmental impact assessments (EIAs). In addition, a peer review meeting to discuss the draft SEIA was held in ADB on 29 May 2008. Comments from ADB have been incorporated in the final SEIA, which was prepared by XUARG. The SEIA was circulated to ADB's Board of Directors and posted on the ADB website on 26 September 2008.

54. The Project will improve the living and working environment of residents in the project cities. Construction of sanitation facilities will have environmental and public health benefits. The construction of public toilets, garbage bins, and garbage storage and transfer stations are important subcomponents to achieve these benefits. If sanitation facilities are not in place at the scheduled time, there would be adverse impacts on environmental and ecological resources in the conservation areas. Health impact analysis is in Supplementary Analysis H.

55. The project cities and the hinterland areas presently lack adequate road networks and construction of new roads will improve connectivity within them. Upgrading of existing dirt roads will improve the currently dusty conditions during the dry season and muddy conditions during rainy and winter seasons, which is a major inconvenience to the residents. The above roadworks will also provide opportunities to install or upgrade municipal services such as pipelines, cables and conduits for water supply, wastewater collection, power, heating, and telecommunications that will bring environmental and social benefits to the population. Importantly, the Project provides an opportunity for XUARG to put in place sound environmental management systems in fast growing cities and towns before economic development begins to take off, and establish adequate institutional capacity to ensure environmental sustainability for future developments.

56. During the construction works, dust from construction sites, noise from powered mechanical equipment, wastewater, solid wastes, and construction traffic are expected to be the major potential adverse impacts. Good project management and effective mitigation measures have been identified through environmental assessment and are described in the EMP. With proper implementation of the EMP, the impacts will be mitigated to acceptable levels. The EMP also includes institutional strengthening for implementation of the mitigation measures and undertaking of the monitoring requirements. The EMP will be further developed as the Project progresses so that all mitigation requirements are met.

57. **Project Risks and Mitigation Measures.** The main project risks include (i) timely provision of counterpart funding; (ii) low institutional capacity in terms of project technical, financial, and environmental management and failure of the PMOs, IAs, and O&M organizations to monitor environmental impacts and implement the EMP during construction and operation of the Project; and (iii) timely construction of project infrastructure caused by a short construction period. These risks will be mitigated through a set of measures such as (i) obtaining formal commitment from the project city governments and loan assurances with regard to adequate

and timely allocation of counterpart funds in the city budgets during the project implementation period; (ii) providing extensive training in project technical, financial, and environmental management under the Project; (iii) selecting qualified project implementation consultants; (iv) following appropriate project implementation monitoring and mitigation arrangements; and (v) active project management assistance from the ADB project team. Project risks, mitigation measures, and sustainability are outlined in Supplementary Appendix I.

V. ASSURANCES

58. In addition to the standard assurances, the Government of the PRC; XUARG; city governments of Altay, Changji, Hami, Kuytun, and Turpan; and IAs have given specific assurances, which are incorporated in the legal documents:

- (i) XUARG will cause the IAs to ensure that all the works of the Project are designed and constructed in accordance with national standards and specifications, and that the construction supervision, quality control, contract management, and completion inspection and acceptance follow applicable national laws and regulations.
- (ii) XUARG will cause the IAs to, with the assistance of the loan implementation consultant, prepare and submit training plans to be implemented under the Project for ADB's review and concurrence, and ensure that training institutes for such purpose be selected in accordance with procedures acceptable to ADB. Following each training event, the concerned IA will submit a training completion report to Xinjiang PMO for consolidation and transmission to ADB.
- (iii) XUARG will cause each project city and municipal government and IA to ensure that (a) all local and foreign currency counterpart financing necessary for the Project will be provided in time as required to enable completion of project activities, and prompt debt repayment after project completion; (b) additional counterpart funding will be provided for any shortfall of funds or cost overruns; and (c) in each fiscal year adequate funds are allocated for O&M of the project facilities, and such facilities are operated and maintained in good condition.
- (iv) XUARG will cause the IAs to establish and maintain a sound financial management system in accordance with ADB's *Guidelines for the Financial Governance and Management of Investment Projects Financed by ADB* (2002), including the establishment of separate bank accounts and the maintenance of minimum balances to ensure smooth cash flow and the timely settlement of project construction liabilities and future debt servicing. The financial management system will comprise (a) financial planning, budgeting, and budgetary control; (b) accounting consistent with applicable PRC standards; (c) internal control; (d) data processing; and (e) financial reports.
- (v) Each project city, municipal government, and IA will ensure that adequate funding, human resources, and procedures are allocated to ensure the project roads and bridges and environmental sanitation facilities are maintained and operated in good condition.
- (vi) XUARG will cause the IAs to ensure that contractors will comply with all applicable labor laws and not employ child labor. These requirements will be tracked by the PPMS and external monitoring reports for resettlement plan and EMDP implementation.
- (vii) The IAs will ensure that (a) contractors will not employ child labor; and (b) provisions are stipulated in all works contracts of the Project to require contractors to incorporate occupational safety norms, disseminate information

- and training on HIV and sexually transmitted diseases prevention, and observe protocols concerning acceptable behavior toward the local population.
- (viii) XUARG will cause the IAs to ensure that provisions are stipulated in all works contracts of the Project requiring contractors to incorporate minimum workplace occupational safety norms, and observe local protocols concerning acceptable behavior toward the local population.
 - (ix) XUARG will cause the IAs to set employment targets for the poor and ethnic minorities who meet the job requirements for all construction and maintenance activities and ensure that the contractors will provide the workers with adequate on-the-job training, use local unskilled labor and not differentiate wages based on gender, and monitor the project impact on poverty in accordance with guidelines set forth in the PPMS.
 - (x) XUARG will cause the IAs to take all reasonable and necessary steps to encourage women living in the project areas to participate in the design, planning, implementation, and evaluation of the Project, including causing the contractors to maximize employment of women in connection with the Project; and monitor the Project's impacts on women during project implementation and report them in the PPMS.
 - (xi) XUARG will cause the IAs to ensure that staff and resources will be made available for monitoring women's involvement in the project planning, implementation, and evaluation, public awareness and education program, and on health, safety, and labor issues.
 - (xii) XUARG will cause the IAs to ensure conduct of public awareness and education programs, before, during, and after the project implementation, targeted at all stakeholders in project areas in the languages of the local ethnic minority groups, on health, hygiene, managing solid waste disposal and wastewater, environmental improvement, and the developmental objectives of the Project.
 - (xiii) XUARG will cause the municipal governments and IAs in those cities where the Project necessitates land acquisition and resettlement to ensure that (a) prior to the commencement of construction works, all land and rights-of-way required by the Project will be made available in a timely manner in accordance with PRC laws and regulations, including land use approvals and agreements with affected persons; (b) the resettlement plans will be implemented promptly and efficiently in accordance with their terms, and the provisions of the resettlement plans will be implemented in accordance with all applicable PRC laws and regulations and ADB's *Involuntary Resettlement Policy*; (c) all affected persons will be given adequate opportunity to participate in resettlement planning and implementation, and they will be at least as well off as they would have been in the absence of the Project; (d) counterpart funds will be provided in time for land acquisition and resettlement activities; and (e) any amounts in excess of the resettlement plan budget estimates will be provided.
 - (xiv) XUARG will cause the IAs to ensure that each resettlement plan will be updated according to the final design, including detailed measurement surveys for the respective subcomponents of the Project, and updated resettlement plans will be submitted to ADB for its concurrence prior to award of civil works contracts and disclosed to affected persons in accordance with ADB's applicable information disclosure requirements for resettlement.
 - (xv) XUARG will cause the IAs to ensure that (a) adequate staff and resources will be committed to supervising and internally monitoring the implementation of each subcomponent resettlement plan and provide ADB with semiannual monitoring reports during resettlement implementation and a resettlement completion report

- for each subcomponent; (b) an independent agency acceptable to ADB will be contracted to carry out monitoring and evaluation, including data disaggregated by gender where applicable, and forward reports to ADB semiannually; (c) ADB will be promptly advised of any substantial changes in the resettlement impacts and, if necessary, a revised resettlement plan will be submitted to ADB for its approval; (d) construction contract specifications will include requirements to comply with the resettlement plans and ensure prompt payment and delivery of entitlements to compensate affected persons for any permanent and temporary project impacts to affected persons; and (e) the construction and demolition contractors will be supervised to ensure compliance with requirements of the resettlement plans, applicable laws, and ADB's *Involuntary Resettlement Policy*.
- (xvi) XUARG will cause the IAs to ensure that (a) the action plan developed for the EMDP will be implemented in accordance with its terms and the outcomes made available for public comment; (b) benefits will target ethnic minorities in the project areas in accordance with ADB's *Policy on Indigenous Peoples* (1998); (c) works contract specifications will include requirements to comply with the EMDP and as a priority provide employment to ethnic minorities; and (d) adequate staff and resources will be committed to supervision and monitoring of the implementation of the EMDP and progress, if any, will be reported to ADB on a semiannual basis.
 - (xvii) XUARG will cause each project city to construct, operate, maintain, and monitor the project facilities in strict conformity with (a) all applicable national and provincial environmental laws and regulations, ADB's *Environment Policy* (2002), and other national, Xinjiang, and local laws and regulations and standards on environmental protection, health, labor, and occupational safety; and (b) all environmental mitigation and monitoring measures detailed in the design and construction contracts, the operational guidelines, and the approved EIAs, SEIA, and EMP for the Project.
 - (xviii) XUARG will cause each project city to ensure that an adequate number of full-time personnel and sufficient resources are provided to monitor the implementation of the environmental monitoring program, under the guidance of the Xinjiang Environmental Protection Bureau, Altay, Changji, Hami, Kuytun, and Turpan environmental protection bureaus or other environmental monitoring centers.
 - (xix) XUARG will cause each project city to ensure that the Xinjiang environmental protection bureau and PMO will review any changes to the project design that may have a potential for causing negative environmental impacts, so that environmental monitoring and mitigation measures are adjusted accordingly in consultation with ADB.
 - (xx) XUARG will ensure that each project city will build the associated solid waste, wastewater treatment, and underground facilities in parallel with the proposed road components and complete the connections and maintain them in good condition.
 - (xxi) XUARG will ensure that each project city will take necessary actions to minimize the impact of water supply, wastewater collection, and other utility services during the construction of project road and associated facilities.
 - (xxii) XUARG will ensure that the IAs submit regular monitoring reports to the PMO, who will prepare and submit to ADB semiannual environmental reports in a format acceptable to ADB, until loan closure.

VI. RECOMMENDATION

59. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$100,000,000 to the People's Republic of China for the Xinjiang Urban Transport and Environmental Improvement Project from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan and Project Agreements presented to the Board.

Haruhiko Kuroda
President

5 June 2009

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
Impact Sustainable socioeconomic growth and improved living standards in five cities of Xinjiang Uygur Autonomous Region (Xinjiang)	By 2017 (baseline year 2006) Disposable income of urban households and suburban farmers and herdsmen increased by 40% (sex disaggregated) Proportion of poor population reduced by 30% (sex disaggregated)	Annual social economic statistics reports Records of environmental protection bureaus	Assumptions 11 FYP and all five city master plans are implemented effectively. The good socioeconomic development of Xinjiang will continue after the 11FYP. All applicable national, regional, and city environmental laws are enforced effectively.
Outcome Improved urban road infrastructure, traffic management, and environmental sanitation in the cities of Altay, Changji, Hami, Kuytun, and Turpan	Altay City By 2014 (baseline year 2006) Amount of collected and transported waste increased by 10% Number of traffic accidents per 10,000 vehicles reduced by 25% Running time of urban public transport and residents travel time shortened by 62%–66% Incidence of environmental-related diseases reduced by 10% Changji City By 2014 (baseline year 2006) Urban road density increased by 0.9% Public transport operation rate increased by 0.6% Treatment of municipal waste increased by 10% Traffic accidents per 10,000 vehicles reduced by 3% Incidence of environmental-related diseases reduced by 10% Hami City By 2014 (baseline year 2006) Road network density increased by 0.7% Volume of municipal waste recycling increased by 6.1% Number of traffic accidents per	Municipality records and statistics Police records/statistics Records of public transport companies	Assumption Urban road infrastructure and associated facilities are properly operated and maintained. Risks Traffic growth is underestimated. The road network and adjacent infrastructure are inadequately maintained because of lack of budget allocation for operation and maintenance.

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
	<p>10,000 vehicles reduced by 14.8%</p> <p>Incidence of environmental-related diseases reduced by 10%</p> <p>Kuytun City By 2014 (baseline year 2006)</p> <p>Number of public transport routes increased by 18.2%</p> <p>Amount of collected and transported wastes increased by 103.8%</p> <p>Number of traffic accidents per 10,000 vehicles reduced by 6.5%</p> <p>Delay of public transport reduced from 5%–6% to 1%</p> <p>Incidence of environmental-related diseases reduced by 10%</p> <p>Turpan City By 2014 (baseline year 2006)</p> <p>Number of traffic accidents per 10,000 vehicles reduced by 5%</p> <p>Amount of collected and transported wastes increased by 100%</p> <p>Public transport running time reduced by 45%</p> <p>Incidence of environmental-related diseases reduced by 10%</p>		
<p>Output Component 1: Altay Roads and Environmental Improvement</p> <p>1.1 Constructed 3 new roads, upgraded 16 existing roads, and constructed 5 new bridges</p> <p>1.2 Built and procured new environmental sanitation facilities and equipment</p>	<p>By 2014</p> <p>1.59 km of new roads, 26.43 km of upgraded roads, and 281 m of bridges opened to traffic</p> <p>10 public toilets, 20 garbage collection stations, 654 trash cans, and 102 refuse collection points; 1 garbage compaction truck, 1 rear loader garbage truck, 1 street cleaning truck, 2 snow removing trucks, 1 grapple garbage truck, 1 wheeled excavator, 1 wheel loader, and 2 tip trucks purchased</p>	<p>Regular IA reports on contract expenditure and works progress</p> <p>Monitoring of project implementation and progress by ADB review missions</p> <p>Works construction records</p> <p>Works supervision records</p> <p>Works completion and</p>	<p>Assumption</p> <p>The works of the adjacent underground infrastructure are properly constructed, operated, and maintained.</p> <p>Risks</p> <p>Delayed provision of counterpart funding</p> <p>Low institutional capacity in terms of project technical, financial, and environmental management</p> <p>Failure of the PMOs, IAs, and operation and maintenance</p>

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
Component 2: Changji Roads and Environmental Improvement 2.1 Constructed 9 new roads and 1 new bridge 2.2 Built and procured new environmental sanitation facilities and equipment	By 2014 23.24 km of new roads and 1 bridge opened to traffic 8 public toilets, 8 garbage collection stations, 394 trash cans, and 33 refuse collection points; 5 garbage compaction trucks, 5 garbage collection vehicles, 3 street cleaning trucks, 2 snow removing trucks, 1 wheeled excavator, 1 aerial work vehicle, 1 crane, 1 tip truck, 2 sprinkling vehicles, and 1 pesticide-spraying vehicle purchased	acceptance records Information from final accounts of works	organizations to monitor environmental impact and implement the environmental management plan during the project construction and operation Delayed construction because of short construction period
Component 3: Hami Roads and Environmental Improvement 3.1 Upgraded 3 existing roads 3.2 Built and procured new environmental sanitation facilities and equipment	By 2014 9.02 km of upgraded roads opened to traffic 182 trash cans and 2 street cleaning trucks and 1 high pressure cleaning vehicle operational		
Component 4: Kuytun Roads and Environmental Improvement 4.1 Upgraded 13 existing roads and constructed 2 new bridges 4.2 Built and procured new environmental sanitation facilities and equipment	By 2014 23.6 km of upgraded roads and 2 bridges opened to traffic 11 public toilets, 21 garbage collection stations, 480 trash cans, 105 garbage containers, and 3 rest stations for environmental sanitation workers; 4 garbage compaction trucks, 2 street cleaning trucks, 2 snow removing trucks, 2 sprinkling vehicles purchased		
Component 5: Turpan Roads and Environmental Improvement 5.1 Constructed 6 new roads and upgraded 8 existing roads 5.2 Built and procured new environmental sanitation facilities and	By 2014 11.89 km of new roads and 10.87 km of upgraded roads opened to traffic 11 public toilets, 26 garbage collection stations, 502 trash cans, and 130 garbage containers; 5		

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
equipment For all 5 components: Improved institutional management capacity	garbage compaction trucks, 4 street cleaning trucks, and 2 sprinkling vehicles purchased By 2014 Xinjiang PMO and the five project city PMOs and IAs: Project facilities management improved Traffic management improved Traffic planning improved City planning improved Financial management improved Landscaping management improved Capacity of road maintenance enhanced	 ADB review missions Monitoring reports on institutional development including number of staff trained, areas of training, and strengthened organizations and procedures	

Activities with Milestones	Inputs
Component 1: Altay Roads and Environmental Improvement 1.1. By 2009, design the facilities, acquire land, and procure the works. 1.2. By 2014, construct/upgrade 19 municipal roads with a total of 28.02 km, including 3 proposed new roads and 16 roads to be upgraded; construct 5 new bridges; construct associated road facilities; and purchase road maintenance equipment. 1.3. By 2014, construct 10 public toilets and 20 garbage collection stations; install 654 trash cans and 102 refuse collection points; and procure 1 garbage compaction truck, 1 rear loader garbage truck, 1 street sweeper truck, 2 snow removing trucks, 1 grapple garbage truck, 1 excavator, 1 wheel loader, and 2 tip trucks.	ADB Provide \$100 million loan with timely disbursement based on the construction schedule of the works Government and IA Provide about \$87.2 million equivalent in counterpart funds with timely disbursement based on the construction schedule of the works: Altay Municipal Government: \$17.3 million Changji Municipal Government: \$25.7 million Hami Municipal Government: \$10.1 million Kuytun Municipal Government: \$15.3 million
Component 2: Changji Roads and Environmental Improvement 2.1. By 2009, design the facilities, acquire land, and procure the works. 2.2. By 2014, construct 9 new municipal roads with a total length of 23.24 km, including 1 bridge; construct associated road facilities; and purchase road maintenance equipment. 2.3. By 2014, construct 8 public toilets and 8 garbage collection stations; install 394 trash cans and 33 refuse collection points; and purchase 5 garbage compaction trucks, 5 garbage collection vehicles, 4 street cleaning trucks, 2 snow removing trucks, 1 wheeled excavator, 1 aerial work vehicle, 1 crane, 1 tip truck, 1 sprinkling vehicle, and 1 pesticide-spraying vehicle.	
Component 3: Hami Roads and Environmental Improvement 3.1. By 2009, design the facilities, acquire land, and procure the works. 3.2. By 2014, upgrade 3 municipal roads, with a total length of 9.02 km; construct associated road facilities; and purchase road maintenance and greening equipment. 3.3. By 2014, procure 182 trash cans, 2 street sweepers, and 1 street high-pressure cleaning truck.	
Component 4: Kuytun Roads and Environmental Improvement 4.1. By 2009, design the facilities, acquire land, and procure the works. 4.2. By 2014, upgrade 13 municipal roads, with a total length of 23.6 km, including 2 trunk roads, 5 secondary roads, 9 branch roads, and construct 2 bridges; construct associated road facilities; and purchase road maintenance equipment.	

Activities with Milestones	Inputs
<p>4.3. By 2014, construct 11 public toilets, and 21 garbage collection stations; install 480 trash cans, 105 garbage containers, and 3 rest stations for environmental sanitation workers; and procure 4 garbage compaction trucks, 2 street sweeper trucks, 2 snow removing trucks, and 2 sprinkling vehicles.</p> <p>Component 5: Turpan Roads and Environmental Improvement</p> <p>5.1. By 2009, design the facilities, acquire land, and procure the works.</p> <p>5.2. By 2014, construct/upgrade 14 municipal roads, with a total length of 22.76 km, including 5 trunk roads, 7 secondary roads, and 2 branch roads; construct associated road facilities; purchase road maintenance equipment; and construct 2 open culverts.</p> <p>5.3. By 2014, construct 11 public toilets and 26 garbage collection stations; install 502 trash cans and 130 garbage containers; and procure 5 garbage compaction trucks, 4 street sweeper trucks, and 2 sprinkling vehicles.</p> <p>Institutional Capacity Building for Project Management</p> <p>1. Complete organizational arrangements for Xinjiang PMO to be able to implement the Project by 2009.</p> <p>2. Complete necessary organizational arrangements for IAs (hiring staff; setting up accounting systems; and improving financial, administrative, and human resource policies and procedures) by 2009.</p> <p>3. Develop plans, budgets, and procedures for loan implementation and project control in Xinjiang PMO by 2010.</p> <p>4. Complete Xinjiang PMO and IA staff training (training in ADB procedures, procurement, traffic management, road maintenance, pollution control, environmental monitoring, and financial management) by 2014.</p> <p>5. Xinjiang PMO and IAs refine the PPMS and establish targets and procedures no later than 6 months after loan effectiveness.</p>	<p>Turpan Municipal Government: \$18.8 million</p>

ADB = Asian Development Bank, FYP = five-year plan, IA = implementing agency, km = kilometer, m = meter, m² = square meter, PMO = project management office, PPMS = project performance management system.

SECTOR ANALYSIS

A. Urban Development in the People's Republic of China

1. The People's Republic of China (PRC) is undergoing rapid urbanization. From 1980 and 2006, the urban population increased from 190 million to 577 million, comprising 44% of the national population. It is estimated that by 2015 the urban population will reach 50% of the national population. By 2020, the PRC will have about 70–100 cities with populations exceeding 1 million people, which will account for about 30% of the national population. The 11th Five-Year Plan (11FYP) 2006–2010 recognizes urbanization as one of the vehicles to reduce the urban–rural income gap and alleviate poverty.¹ Rapid economic development has impacted the environment and municipal services, and requires implementation of coherent and comprehensive urban planning and management. Investments in road construction prevailed over investments in road maintenance and traffic management, and pedestrians and nonmotorized transport have been marginalized, posing serious safety hazards for traffic participants.

2. Growth of vehicle ownership, an increase in road accidents, and lack of parking management have compounded the conditions of the urban transport sector. Without prompt mitigation measures aimed at improving urban transport management, the quality of life and efficiency of urban economies could be hampered. It is also important to improve the institutional capacity of local government agencies to undertake urban planning and management to ensure the sustainability of urban infrastructure. Development of urban public transport systems and improvement of the environment were prioritized in the Prime Minister's Report on the Work of the Government for 2008.²

B. The National Strategy for Development of the West

3. The PRC's Western Region has not benefited as much as the coastal regions from rapid economic growth and reforms. Urban infrastructure and service provision cannot match increasing demand—thereby hindering investment, degrading the environment, and limiting growth opportunities. In 1999, the Government launched the National Strategy for Development of the West to promote balanced growth, stimulate economic development, and raise living standards in the Western Region.³ This strategy remains a key thrust for the 11FYP, which focuses on improving border facilities, strengthening cooperation and trade with neighboring countries, improving infrastructure, protecting the environment, and encouraging private sector investment. The Asian Development Bank (ADB) is actively supporting this initiative.

4. Xinjiang Uygur Autonomous Region (Xinjiang), located in the northwest PRC, has 46 ethnic minority groups that represent about 62% of its population. Sharing 5,600 kilometers (km) of frontier with eight countries, it is the gateway between the PRC and the Central Asian republics, with which it has many cultural similarities and economic complementarities. Its history and ethnic culture have promoted tourism development and its rich natural resources provide a sound basis for development. Considering these advantages, to maximize potential

¹ The People's Congress of the PRC. 2006. 11th Five Year Program for National Economy and Social Development in the People's Republic of China. Beijing.

² Government of the PRC. 2008. Report to the National People's Congress on the Work of the Government. Report presented during the First Session of the Eleventh National People's Congress, Beijing, People's Republic of China.

³ The State Council of the People's Republic of China. 2000. *The National Strategy for Development of the West*. Beijing.

for growth and raise the living standards of the people, the Xinjiang government focuses its development strategy on its potential role in the Central Asia Regional Economic Cooperation Program, and in the high priority accorded by the 11FYP to sustainable economic development via construction and upgrading of infrastructure while protecting the environment.

C. Land Use Transport Planning

5. As with many other areas in the PRC, the cities of Xinjiang face the challenge of increasing demand for urban utilities. The lack of land use transportation planning has led to poor provisions in infrastructure and environmental protection and has an impact on the transport strategy, public transport provisions, and road safety considerations for pedestrians, cyclists, drivers, and passengers. Poor traffic management has contributed to reduced accessibility and an increase in traffic accidents.

6. The City of Changji is the only one among the five project cities that has conducted a comprehensive land use transport study as the first step toward the sustainability of infrastructure developments. The other four cities (Altay, Hami, Kuytun, and Turpan) have not undertaken any comprehensive land use transport study as part of their medium and longer-term transport planning. The Project will offer an opportunity for these four cities to improve their planning techniques as part of the planning capacity building program. The summary of city baseline data is in Table A2.

Table A2: City Baseline Data

Item	Altay	Changji	Hami	Kuytun	Turpan
Population (total)	228,700	411,200	420,500	305,500	263,200
Population (urban)	133,700	285,200	274,500	280,300	69,200
Length of paved roads (km)	60.1	113.3	75.0	53.0	30.91
Length of unpaved roads (km)	29.3	25.0	35.0	32.2	28.2
Density of roads (km/km ²)	3.8	3.73	3.4	2.1	2.19
Number of public transport routes (2007)	3 (17.1 km)	51	15 (229.9 km)	11	7 (45.15 km)
Number of public vehicles (2007)	58	371	232	80	92
Three-Year Personal Injury Accidents (2005–2007) (Total Number)					
Slight injuries	98	150	109	145	23
Serious injuries	15	33	45	65	9
Fatalities	33	139	109	47	16
Air Quality (2006)					
PM ₁₀ (mg/m ³)	0.025	0.092	0.081	0.096	0.108
SO ₂ (mg/m ³)	0.003	0.038	0.005	0.002	0.008
NO ₂ (mg/m ³)	0.014	0.033	0.040	0.019	0.013
Days of air quality equal to or above grade II (days)	360	341	338	313	314

km = kilometer, km² = square kilometer, mg/m³ = milligram/cubic meter, PM₁₀ = particulate matters₁₀.

Source: Asian Development Bank.

D. The Need for Road Improvements and Road Safety

7. After years of construction, many cities in Xinjiang have established basic urban road networks. However, the conditions of many networks are not satisfactory and suffer from the slow pace of road construction, poor maintenance, and inadequate transport infrastructure

planning and management. The road subcomponents of the Project will fulfill the functional urban transport requirements of the city urban areas. Apart from improving accessibility, they will provide an opportunity for extension of municipal services to the existing and proposed urban infrastructure premises, thereby enhancing the urban living environment.

8. Road safety, which has always been a concern in the urban development sector, involves road safety education for different groups of people in the project cities; design of transport facilities with road safety considerations and enforcement; and a set of other measures aimed to increase road safety, accessibility, and efficiency. Therefore, improvement of road safety and traffic control has been identified as the prime concern in managing transport infrastructure in the project cities. The 3-year traffic accident records (2005–2007) indicate that the number of accidents in the project cities is high. The lack of road safety consideration in the design of transport infrastructure, general road safety education, and traffic safety enforcement are the main reasons for the high incidence of road accidents.

E. Air Quality and Vehicle Emission Control

9. The ambient air quality in the PRC's cities is poor, but it is difficult to distinguish the contributing share to the pollution from local industries and vehicle emissions. The concentration of nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and total suspended particle level particulate matters₁₀ (PM₁₀) in the project cities complies with the class II air quality standards of the PRC.⁴ The existing vehicular emission levels were monitored in the project cities and projected for the scenarios with the proposed road improvements as part of the environmental assessment required by the city authorities. The assessment reveals that the concentrations of NO₂ and CO from traffic emissions will comply with the class II Environment Air Quality Standards during the road design horizon of 15 years.

F. Public Transport and Nonmotorized Transport

10. The Project will improve the internal transport connectivity of the five cities and at the same time, it offers the opportunity to improve and extend their public transport services to underserved or poorly served urban areas. The provision of public transport facilities includes construction and installation of bus bays/stops, associated pedestrian crossing facilities along the existing and newly constructed roads, and other facilities including bus terminal facilities at both ends of the bus service routes.

11. In collaboration with the city transport planning authorities, the Project will (i) increase the number of paved roads in the city networks; (ii) optimize the number of public transport routes; (iii) improve public transport forecasting, planning, and management; and (iv) increase the number of bus stops/bays, as well bus terminal facilities. The above measures will improve the quality and coverage of public transport systems in the project cities.

12. Nonmotorized transport (NMT), mainly bicycles, is still a popular mode of transportation in the PRC. Apart from Altay, where hilly topography prevails, cycling is still the most popular private transport for the other four project cities because it provides door-to-door service for short and medium trips. Therefore, safety and separation of NMT from motorized vehicles on roads is an important part of the road safety design considerations of the Project. In terms of traffic control at intersections, NMT should be given higher priority over other motorized vehicles.

⁴ The Ambient Air Quality Standards of the People's Republic of China (GB3095, 1996). The standards are categorized into five classes, class I being the best and class V being the worst.

The road subcomponents under the Project will take this particular road safety aspect into account.

G. Road Maintenance

13. The common approach to road maintenance adopts a periodic maintenance and rehabilitation program. As the pavement condition deteriorates, major maintenance work is required, but because of maintenance budget constraints, defects have to be addressed through a routine maintenance program that means further reductions in periodic maintenance and rehabilitation. Today, the existing road networks in the project cities are poorly maintained because of inefficient management of the road maintenance system and insufficient financial, technical, and human resources allocated for road operation and maintenance (O&M). The municipal governments have failed to allocate sufficient budget resources to finance routine road maintenance. Instead, maintenance is conducted on an ad hoc basis and financed through loans from local banks. To meet the O&M requirements, the Project will (i) procure road maintenance equipment; (ii) provide capacity building on road maintenance systems to develop and sustain a professional and efficient approach that quantifies the long-term maintenance requirements; and (iii) help estimate realistic expenditures for maintaining the roads in the project cities. Training for the maintenance staff on the characteristics of bituminous materials under extreme weather conditions and repair methods for various kinds of defects is important.

H. Municipal Waste Collection Facilities

14. The completion of roadworks will enhance economic activities along the roads and lead to more pollution loading, such as wastewater and solid waste. While other international financial institutions are financing the water and wastewater sector, this Project focuses on providing public toilet and municipal waste collection and transportation equipment for O&M after the completion of roadworks.

15. The project cities have experienced a rapid increase in municipal waste generation during the last decade as a result of rapid urbanization and economic growth. They are now facing multiple problems in municipal waste collection and transportation. The equipment for municipal collection and transportation is insufficient. There is lack of road infrastructure to access the existing sanitation facilities, such as landfill sites. Moreover, none of the five project cities has snow removing trucks, which hampers the collection and transport of municipal waste during the adverse weather in winter. The Project includes road components to improve accessibility to existing sanitation facilities in the project cities. The Project will provide public toilets and municipal waste collection and transportation equipment, such as garbage collection stations, garbage cans, garbage containers, garbage compaction vehicles, rear loader garbage trucks, and grapple garbage trucks along the newly constructed and upgraded existing roads. Snow removing trucks will be purchased to improve road conditions and facilitate municipal waste transportation during wintertime.

EXTERNAL ASSISTANCE

Table A3.1: Assistance Funded by ADB for Transport and Environmental Improvement

No.	Name	Date of Approval	Amount (\$ million)
A.	Loans		
1205	Qingdao Environmental Improvement	10 Dec 92	103.00
1270	Tangshan and Chengde Environmental Improvement	25 Nov 93	140.00
1313	Dalian Water Supply	20 Sep 94	160.00
1336	Beijing Environmental Improvement	29 Nov 94	157.00
1490	Anhui Environmental Improvement	26 Nov 96	28.00
1491	Anhui Environmental Improvement (Industrial Component)	26 Nov 96	112.00
1543	Xian–Xianyang–Tongchuan Environment Improvement	24 Sep 97	156.00
1544	Zhejiang–Shanxi Water Supply (Phase I)	24 Sep 97	100.00
1636	Fuzhou Water Supply and Wastewater Treatment	30 Sep 98	102.00
1692	Suzhou Creek Rehabilitation	29 Jun 99	300.00
1797	Tianjin Wastewater Treatment and Water Resources Protection	11 Dec 00	130.00
1985	Hebei Province Wastewater Management	19 Dec 02	82.36
1995	Harbin Water Supply	11 Mar 03	100.00
1996	Wuhan Wastewater Management	25 Apr 03	83.00
2175	Jilin Water Supply and Sewerage Development	18 Jul 05	100.00
2176	Fuzhou Environmental Improvement	29 Jul 05	55.80
2207	Henan Wastewater Management and Water Supply Sector	9 Dec 05	100.00
2237	Shandong Hai River Basin Pollution Control	21 Jun 06	80.00
2239	Guangxi Nanning Urban Environmental Upgrading	26 Jun 06	100.00
2240	Wuhan Wastewater and Stormwater Management	26 Jun 06	100.00
2297	Nanjing Qinhuai River Environmental Improvement	18 Dec 06	100.00
2328	Anhui Hefei Urban Environment Improvement	24 Apr 07	150.00
2360	Jilin Urban Environmental Improvement	29 Oct 07	100.00
2388	Kunming Qingshuihai Water Supply	12 Dec 07	80.00
2393	Xinjiang Regional Road Improvement (Korla–Kuqa Section)	13 Dec 07	150.00
2407	Gansu Baiyin Urban Development	23 Jan 08	80.00
2408	Gansu Heihe Rural Hydropower Development Investment Program (Tranche 2)	29 Jan 08	28.0
2420	Xinjiang Municipal Infrastructure and Environmental Improvement	23 Apr 08	105.00
2426	Guangdong Energy Efficiency and Environment Improvement Investment Program (Tranche 1)	09 Jun 08	35.0
2428	Integrated Ecosystem and Water Resources Management in the Baiyangdan Basin	24 Jun 08	100.0
2436	Ningxia Integrated Ecosystem and Agricultural Development	29 Aug 08	100.0
2448	Central Yunnan Roads Development	25 Sep 08	200.0
2471	Lanzhou–Chongqing Railway Development	18 Nov 08	300.0
2474	Dryland Sustainable Agriculture	25 Nov 08	83.0
2481	Chongqing–Lichuan Railway Development	08 Dec 08	150.0
2487	Songhua River Basin Water Pollution Control and Management	11 Dec 08	200.0
2491	Guangxi Wuzhou Urban Development	15 Dec 08	100.0
2494	Qingdao Water Resources and Wetland Protection	17 Dec 08	45.0
2508	Emergency Assistance for Wenchuan Earthquake Reconstruction	19 Feb 09	400.0
	Subtotal (A)		4,795.2
B.	Advisory Technical Assistance		
0987	Institutional Strengthening of National Environmental Protection Agency	10 Jun 88	0.34
1436	Environmental Impact Assessment and Training	10 Dec 90	0.60
1464	Management of Environment and Natural Resources in Hainan	11 Jan 91	0.60
1621	Beijing Region Water Resources Management	30 Mar 92	0.26
1772	Institutional Strengthening of the Qingdao Environmental Protection Bureau	30 Oct 92	0.60
1835	Haihe Basin Environmental Management and Planning Study	31 Dec 92	1.24
1916	Institutional Strengthening of Environmental Protection Bureaus in Tangshan and Chengde Municipalities	28 Jul 93	0.45
1988	Environmental Impact Assessment and Training Phase II	18 Nov 93	0.90
2015	Urban Environmental Improvement Planning	14 Dec 93	0.48
2090	Legislative Reform for Protecting the Environment and Natural Resources	18 May 94	0.50
2210	Capacity Building of Beijing Municipal Environmental Protection Bureau	29 Nov 94	0.60
2398	Improving Environmental Monitoring and Enforcement in Henan	15 Sep 95	0.09
2456	Pilot Environmental Plans for Selected Medium-Size Cities	4 Dec 95	0.54
2504	Seminar on Build-Operate-Transfer in Water Supply Sector	22 Dec 95	0.10
2505	Strengthening the Environmental Standards and Enforcement	22 Dec 95	0.60
2693	Formulation of Integrated Environmental Management Plan for Chao Lake Basin	26 Nov 96	0.80
2726	Water Quality Management for Suzhou Creek	23 Dec 96	0.60
2726	Water Quality Management for Suzhou Creek (Supplementary)	13 Feb 98	0.40
2751	Capacity Building of Wastewater Treatment Operations in Anhui	27 Jan 97	0.40
2773	Water Supply Tariff Study	24 Mar 97	0.60
2804	Build-Operate-Transfer Chengdu Water Supply Project	2 Jun 97	0.60
2817	Strategic Operations for the Water Sector (including supplementary)	26 Jun 97	1.24
2873	Improvement of Environmental Management in Shanxi Province	24 Sep 97	0.94
2906	Leadership Training on Urban Environmental Management in Key Cities	3 Nov 97	0.60
2951	Promotion of Market-Based Instruments for Environmental Management	16 Dec 97	0.70

No.	Name	Date of Approval	Amount (\$ million)
2975	Environmental Impact Assessment Training and Curriculum Development	31 Dec 97	0.60
3079	Technical Assistance Cluster to the PRC for the Promotion of Clean Technology	29 Sep 98	3.50
3095	Hai River Basin Wastewater Management and Pollution Control	10 Nov 98	0.57
3211	Improving Environmental Management in Suzhou Creek	29 Jun 99	0.84
3250	Water Tariff Study II	3 Sep 99	0.95
3377	Urban Poverty Study	27 Dec 99	0.41
3447	Strengthening Urban Solid Waste Management	25 May 00	0.60
3588	Transjurisdiction Environment Management (Technical Assistance Cluster)	11 Dec 00	2.10
3749	National Guidelines for Urban Wastewater Tariffs and Management Study	25 Oct 01	0.70
4061	Songhua River Water Quality and Pollution Control	10 Jan 03	1.00
4095	Policy Reform Support	11 April 03	0.15
4215	Safe Drinking Water and Sanitation for the Rural Poor	12 Nov 03	0.40
4335	Town-Based Urbanization Strategy Study	06 May 04	0.75
4694	Urban Poverty Strategy Study II	23 Nov 05	0.30
4702	Study on Sustainable Urbanization in Metropolitan Regions	28 Nov 05	0.50
4967	Study on Market-Based Allocation of Wastewater Discharge Permit and Related Trading System	11 Sep 07	0.50
7002	Urban Wastewater and Solid Waste Management for Small Cities and Towns	10 Dec 07	1.00
7052	Asset-Backed Securitization for Expressway Financing and Corporate Debt Restructuring in Yunnan Province	11 Jan 08	0.15
7081	Providing Emergency Response to Sichuan Earthquake	26 May 08	1.00
7083	Urban Wastewater Reuse and Sludge Utilization Policy Study	26 May 08	0.70
7095	Supporting Fiscal Reforms in High Priority Sectors	10 Jul 08	1.00
7115	Strengthening the Capacity of the Judiciary to Implement Economic Laws	15 Aug 08	0.40
7127	River Basin Water Resources Allocation and Management Policy	02 Sep 08	0.50
7146	Capacity Strengthening in Planning and Implementation of Integrated Gasification Combined Cycle Plant	08 Oct 08	0.20
7147	Enhancing the Competitiveness and Efficiency of Railway Passenger Operations	08 Oct 08	0.50
7159	New Models for Civil Society Participation in Poverty Reduction	30 Oct 08	0.40
7163	Improvement of Public Employment Service System in the Western Region	08 Nov 08	0.40
7170	Provincial Development Strategies for Two Northeastern Provinces	14 Nov 08	0.80
7171	Railway Sector Energy Efficiency Strategy	18 Nov 08	0.80
7174	Transport Efficiency Through Logistics Development Policy Study	18 Nov 08	0.50
7187	Rural Finance Development and Supervision	18 Nov 08	0.40
7191	Design of the National Sulfur Dioxide Emission Trading System	10 Dec 08	0.50
7192	Fiscal Policy Support for Economic Development in Henan	10 Dec 08	0.40
7202	Utilization of Foreign Capital to Promote Energy Conservation and Energy-Efficient Power Generation Scheduling	11 Dec 08	0.60
7203	Promoting a More Inclusive and Effective Disaster Risk Management System	12 Dec 08	0.65
7212	China Clean Development Mechanism Fund Capacity Development	11 Dec 08	0.30
7217	Preparing National Guidelines for Eco-Compensation in River Basins and a Framework for Soil Pollution Management	08 Dec 08	0.40
7219	Enabling the Protection of Jiaozhou Bay Water Quality and Wetland Ecosystem	17 Dec 08	0.35
Subtotal (B)			40.60
C. Project Preparatory Technical Assistance			
1549	Qingdao Environmental Improvement	18 Jun 91	0.10
1831	Tangshan and Chengde Environmental Improvement	31 Dec 92	0.10
1852	Dalian Water Supply	10 Mar 93	0.10
1917	Beijing Environmental Improvement	28 Jul 93	0.60
2187	Anhui Environmental Improvement Project for Wastewater Component	19 Oct 94	0.28
2445	Xian-Xianyang-Tongchuan Environment Improvement	16 Nov 95	0.50
2770	Fuzhou Water Supply and Wastewater Treatment	14 Mar 97	0.60
2901	Shanxi Environment Improvement	21 Oct 97	0.59
3049	Zhejiang-Shanxi Water Supply (Phase II)	21 Jul 98	0.54
3095	Hai River Basin Wastewater Management and Pollution Control	10 Nov 98	0.57
3215	Heilongjiang Water Supply	1 Jul 99	1.00
3216	Tianjin Wastewater Treatment and Water Resources Protection	2 Jul 99	0.80
3488	Hebei Province Wastewater Management	30 Aug 00	0.85
3571	Harbin Water Supply	12 Dec 00	0.72
3638	Wuhan Wastewater Treatment	19 Mar 01	0.50
3863	Mudanjiang Water Supply	15 May 02	0.15
4014	Fuzhou Environmental Improvement	5 Dec 02	0.60
4223	Shandong Hai River Basin Pollution Control	21 Nov 03	0.60
4227	Jilin Water Supply and Sewerage Development	26 Nov 03	0.65
4233	Henan Wastewater Treatment	3 Dec 03	0.80
4385	Guangxi Nanning Urban Infrastructure Development	3 Sep 04	0.56
4436	Preparing Wuhan Wastewater and Storm-Water Management Project	18 Nov 04	0.70
4617	Nanjing Qinhuai River Environmental Improvement	27 Jul 05	0.60
4628	Hefei Urban Environment Improvement	15 Aug 05	0.75
4804	Jilin Urban Environmental Improvement	22 Jun 06	0.50
4805	Xinjiang Municipal Infrastructure and Environmental Improvement	23 Jun 06	0.80
4808	Kunming Qingshuihai Water Supply	29 Jun 06	0.60
4818	Gansu Baiyin Urban Development	19 Jul 06	0.50
4867	Preparing the Qingdao Water Resources Management Project	16 Nov 06	0.60

No.	Name	Date of Approval	Amount (\$ million)
4930	Xinjiang Urban Transport and Environmental Improvement	11 May 07	0.70
4959	Small Cities and Towns Development Demonstration Sector Projects	6 Aug 07	1.70
4960	Guangxi Wuzhou Urban Development	9 Aug 07	0.50
4970	Western Yunnan Roads Development II (Supplementary)	14 Mar 08	0.10
4971	Songhua River Basin Water Pollution Control and Management	28 Sep 07	1.30
4987	National Strategies for Environmental Management and Energy Conservation	13 Nov 07	0.90
7036	Provincial Development Strategies for Selected Provinces in the Central Region	12 Dec 07	1.00
7108	Chongqing Urban–Rural Infrastructure Development Demonstration Project	29 Jul 08	0.90
4970	Western Yunnan Roads Development II (Supplementary) Project	14 Mar 08	0.10
4995	Lanzhou Sustainable Urban Transport (Supplementary)	22 Dec 08	0.15
7103	Qinghai Rural Water Resources Management	23 Jul 08	0.70
7108	Chongqing Urban–Rural Infrastructure Development Demonstration	29 Jul 08	0.90
7117	Heilongjiang Road Development II (Yichun–Nenjiang)	22 Aug 08	0.60
7119	Anhui Road Network Development	29 Aug 08	0.60
7160	Guangxi Border Cities Development	04 Nov 08	0.80
7164	Chongqing–Guiyang Railway Development	05 Nov 08	0.50
7177	Wuhan Urban Environmental Improvement	21 Nov 08	0.70
7179	Jiangxi Sustainable Forest Ecosystem Development	24 Nov 08	0.70
Subtotal (C)			29.01
Total for Technical Assistance (B + C)			69.61

Source: Asian Development Bank.

Table A3.2: Assistance Funded by Other Aid Agencies for Xinjiang Uygur Autonomous Region for Transport and Environmental Improvement
(from 1995 to date)

Project	Total Investment (\$ million)	Foreign Loan (\$ million)	Foreign Loan Provider	Status
Tarim Basin Water Conservancy and Agriculture Support	301.0	150.0	World Bank	Completed
Kuytun to Syimlake Expressway	413.0	150.0	World Bank	In progress
Urumqi Transportation Improvement	281.0	100.0	World Bank	Completed
Yining Integrated Environment Management	107.0	37.0	Japanese Bank for International Cooperation	In progress
Urumqi Hedong WWTP	39.0	10.0	Nordic Development Fund, Finland	Completed
Urumqi Hetan Road	110.0	45.0	Export-Import Bank of Japan	Completed
Urumqi Chaiwopu Lake West Water Supply	8.6	2.6	Finland	Completed
Shihezi District Heating	7.5	4.1	Danida, Denmark	Completed
Changji Second WWTP	16.0	4.9	Norway	Completed
Hami WWTP	18.0	3.8	Austria	Completed
Wusu WWTP	7.0	4.8	Finland	Completed
Korla Outer Ring Road	25.0	10.0	Government of the Republic of Korea	Completed
Aksu Integrated Environment Management	105.0	22.0	Saudi Arabian Development Bank	In progress
Kashgar WWTP	18.0	4.8	Government of Germany	In progress
XUAR Integrated Environment Management (Hami, Turpan, Kuytun, Wusu, Altay, and Atushi)	206.0	150.0	Government of Japan	In progress
Changji Solid Waste Treatment Project	5.6	2.8	Government of Austria	In progress
Total	2,515.1	701.8		

WWTP = wastewater treatment plant, XUAR = Xinjiang Uygur Autonomous Region.

Source: Xinjiang Uygur Autonomous Region government.

SUMMARY COST ESTIMATES AND FINANCING PLAN

Table A4.1: Summary Cost Estimates

Item	CNY10,000			\$ Million			Percent of Total Project Costs
	Foreign Exchange Costs	Local Currency Costs	Total Costs	Foreign Exchange Costs	Local Currency Costs	Total Costs	
A. Base Costs^a							
1. Construction							
Civil Works	32,715.1	34,050.4	66,765.6	47.8	49.7	97.5	52
Equipment	14,371.3	0.0	14,371.3	21.0	0.0	21.0	11
Land Acquisition and Resettlement	0.0	17,915.6	17,915.6	0.0	26.2	26.2	14
Environmental Protection	0.0	1,611.1	1,611.1	0.0	2.4	2.4	1
Survey, Research, Design, and Consulting Services	0.0	5,422.7	5,422.7	0.0	7.9	7.9	4
Subtotal (A1)	47,086.4	58,999.8	106,086.2	68.7	86.2	154.9	82.7
2. Capacity Building							
Consulting Services	342.5	0.0	342.5	0.5	0.0	0.5	0
Training	479.5	0.0	479.5	0.7	0.0	0.7	0
Management	205.5	0.0	205.5	0.3	0.0	0.3	0
Subtotal (A2)	1,027.5	0.0	1,027.5	1.5	0.0	1.5	0.8
Total Base Costs (A)	48,113.9	58,999.8	107,113.7	70.2	86.2	156.4	83.5
B. Contingencies							
Physical Contingency ^b	5,405.2	3,428.0	8,833.2	7.9	5.0	12.9	7
Price Contingency ^c	1,463.8	4,582.0	6,045.8	2.1	6.7	8.8	5
Total Contingencies	6,869.0	8,010.0	14,879.0	10.0	11.7	21.7	11.6
C. Financing Charges During Implementation^d							
Interest During Implementation - ADB Loan	6,146.3	0.0	6,146.3	9.0	0.0	9.0	4.9
Commitment Charges - ADB Loan	89.0	0.0	89.0	0.1	0.0	0.1	0.1
Total Financing Charges During Implementation	6,235.3	0.0	6,235.3	9.1	0.0	9.1	4.9
Total Project Costs	61,218.2	67,009.8	128,228.0	89.4	97.9	187.2	100.0

ADB = Asian Development Bank.

^a In end-2008 prices.

^b Physical contingency is estimated at 10% of base costs.

^c Price contingency is estimated at 1.2% foreign inflation rate and 5% local currency inflation rate from 2009 onwards.

^d Interest during construction computed at the 5-year forward London interbank offered rate, plus a spread of 0.20%.

Exchange rate used: CNY6.85 = \$1.

Source: Asian Development Bank estimates.

Table A4.2: Costs and Financing by Expenditure Account

Item	Cost		ADB Loan	Financing by Expenditure Account (\$ Million)					ADB Share by Expenditure Account ^a
	CNY 10,000	\$ Million		Altay City Gov't	Changji City Gov't.	Hami City Gov't.	Kuytun City Gov't.	Turpan City Gov't.	
A. Base Cost									
1. Construction									
Civil Works	66,765.6	97.5	68.4	7.9	5.6	3.1	9.0	3.4	70%
Equipment	14,371.3	21.0	21.0	0.0	0.0	0.0	0.0	0.0	100%
Land Acquisition and Resettlement	17,915.6	26.2	0.0	2.9	11.1	3.1	0.0	9.0	0%
Environmental Protection	1,611.1	2.4	0.0	0.1	0.1	0.0	0.1	0.1	0%
Survey, Research, Design, and Consulting Services	5,422.7	7.9	0.0	2.1	2.6	1.2	2.1	1.9	0%
Total Construction	106,086.2	154.9	89.4	13.0	19.4	7.5	11.2	14.3	58%
2. Capacity Building									
Consulting Services	342.5	0.5	0.5	0.0	0	0	0	0	100%
Training	479.5	0.7	0.7	0.0	0	0	0	0	100%
Project Management	205.5	0.3	0.3	0.0	0	0	0	0	100%
Total Capacity Building	1,027.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	100%
Total Base Cost (A1+A2)	107,113.7	156.4	90.9	13.0	19.4	7.5	11.2	14.3	58%
B. Contingencies									
Physical Contingency	8,833.2	12.9	0.0	2.5	3.9	1.5	2.5	2.5	0%
Price Contingency	6,045.8	8.8	0.0	1.7	2.4	1.0	1.6	2.1	0%
Total Contingencies	14,879.0	21.7	0.0	4.3	6.2	2.5	4.1	4.6	0%
C. Financing Charges During Implementation									
Interest During Implementation - ADB Loan	6,146.3	9.0	9.0	0.0	0.0	0.0	0.0	0.0	100%
Commitment Charges - ADB Loan	89.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	100%
Total Financing Charges During Implementation	6,235.3	9.1	9.1						
Total Project Costs (A+B+C)	128,228.0	187.2	100.0	17.3	25.7	10.1	15.3	18.8	53%
Financing by Source of Funds			53%	9%	14%	5%	8%	10%	

ADB = Asian Development Bank, Gov't. = government.

^a Amount of ADB loan proceeds allocated to the cost category.

Notes:

1. The amount disbursed by ADB for eligible expenditures under a cost category will be subject to the ceiling set by the allocation of loan proceeds for such cost category.

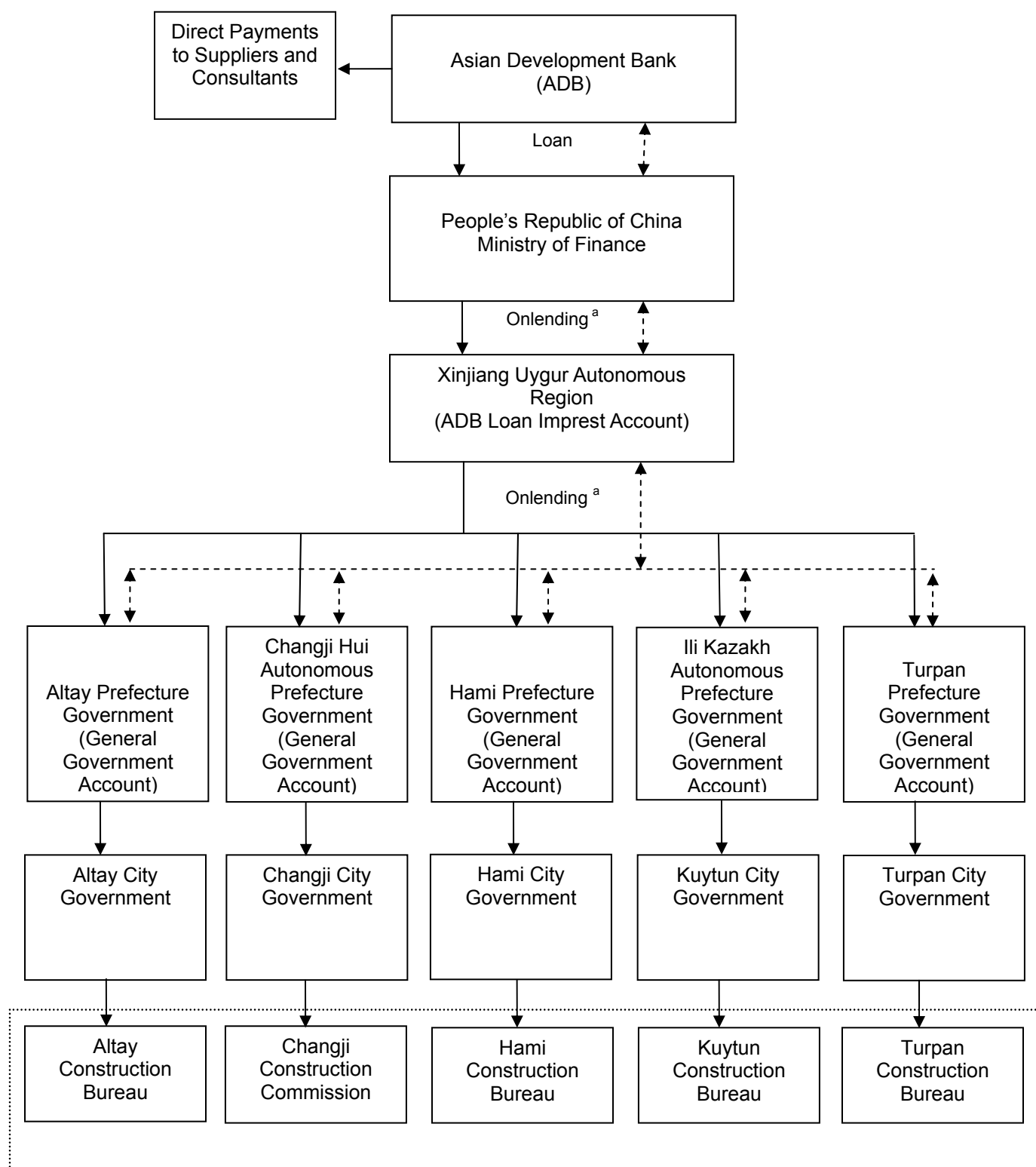
2. Counterpart funds will be from the city budgets.

3. Taxes and duties will be financed from the counterpart fund for the categories with 100% financing from ADB resources. However, percentage of financing for civil works is calculated on the gross of tax basis and financing is reduced to 70%. Bank charges will be financed from the loan resources.

4. Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

ONLENDING ARRANGEMENTS AND INDICATIVE FUNDS FLOW



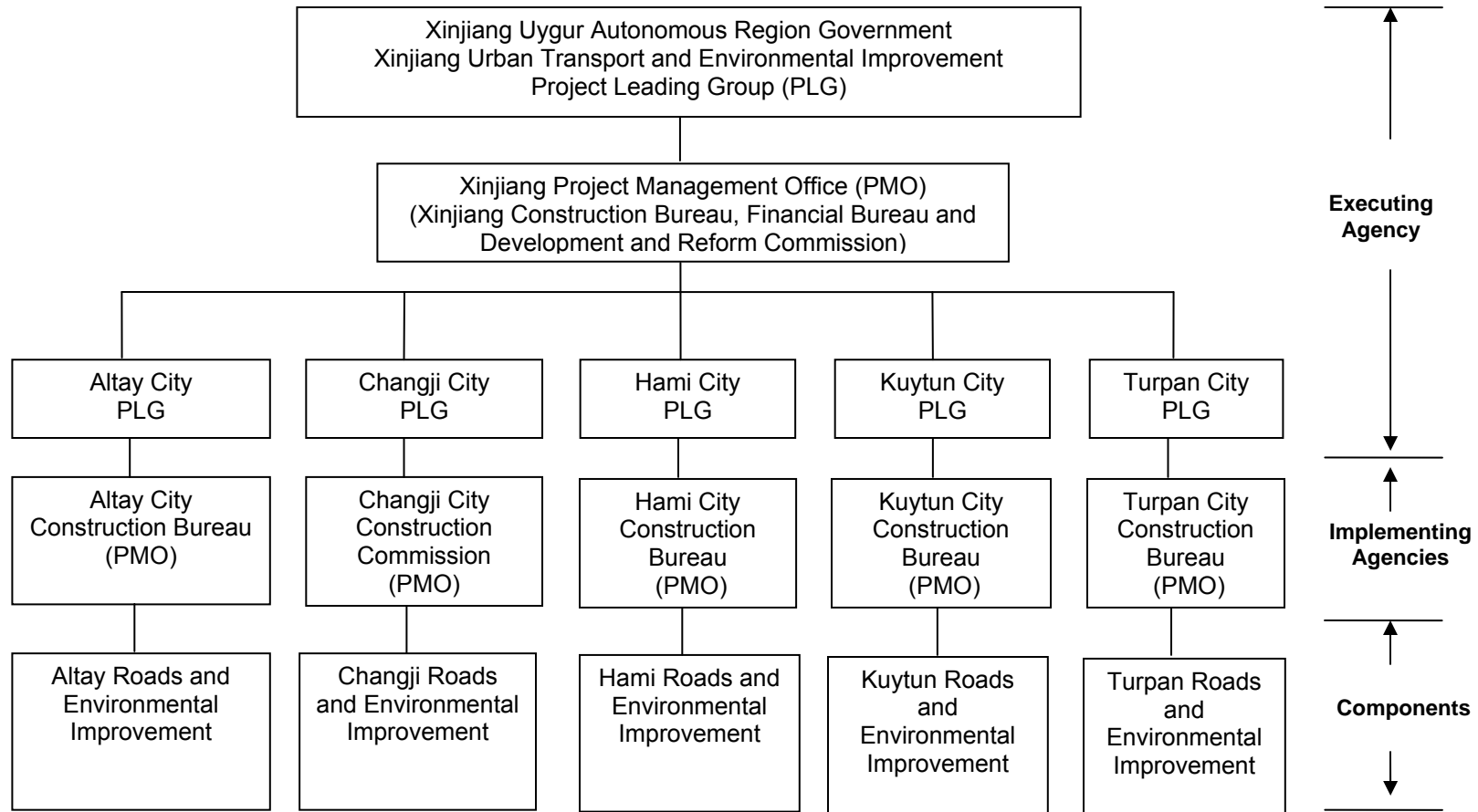
^a ADB loan will be onlent on the same terms and conditions as those received by the Ministry of Finance.

→ Flow of fund

↔ Onlending

Source: Asian Development Bank.

PROJECT IMPLEMENTATION ORGANIZATION



Source: Asian Development Bank.

IMPLEMENTATION SCHEDULE

	Task Name	Start	Finish	2009				2010				2011				2012				2013				2014			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A.	Altay Urban Roads and Environmental Sanitation	1/1/09	6/27/14																								
1.	Design and Tender Documentation	1/1/09	12/4/09																								
2.	Tendering	8/3/09	9/24/10																								
3.	Construction and Installation (including ancillary works)	6/2/10	9/27/13																								
4.	Procurement of Equipment	10/14/09	12/31/10																								
5.	Testing and Commissioning and Final Account	9/30/13	6/27/14																								
B.	Changji Urban Roads and Environmental Sanitation	1/1/09	6/27/14																								
1.	Design and Tender Documentation	1/1/09	12/4/09																								
2.	Tendering	4/6/09	5/31/13																								
3.	Construction and Installation (including ancillary works)	5/6/09	3/28/14																								
4.	Procurement of Equipment	10/7/09	12/31/10																								
5.	Testing and Commissioning and Final Account	1/6/14	6/27/14																								
C.	Hami Urban Roads and Environmental Sanitation	1/1/09	5/27/12																								
1.	Design and Tender Documentation	1/1/09	12/4/09																								
2.	Tendering	4/2/09	10/30/10																								
3.	Construction and Installation (including ancillary works)	5/6/09	9/26/12																								
4.	Procurement of Equipment	10/7/09	4/30/10																								
5.	Testing and Commissioning and Final Account	11/29/11	9/27/12																								
D.	Kuytun Urban Roads and Environmental Sanitation	1/1/09	5/25/12																								
1.	Design and Tender Documentation	1/1/09	12/4/09																								
2.	Tendering	4/6/09	4/29/11																								
3.	Construction and Installation (including ancillary works)	8/3/09	10/28/12																								
4.	Procurement of Equipment	8/19/09	8/27/10																								

	Task Name	Start	Finish	2009				2010				2011				2012				2013				2014			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
5.	Testing and Commissioning and Final Account	10/31/11	5/25/12																								
6.	Turpan Urban Roads and Environmental Sanitation	1/1/09	10/26/12																								
7.	Design and Tender Documentation	1/1/09	12/4/09																								
8.	Tendering	6/1/09	6/24/11																								
9.	Construction and Installation (including ancillary works)	10/5/09	3/30/12																								
10.	Procurement of Equipment	9/7/09	9/30/11																								
11.	Testing and Commissioning and Final Account	4/2/12	10/26/12																								

Source: Asian Development Bank.

PROCUREMENT PLAN

1. This procurement plan shows the thresholds and particular contracts required to carry out the Project. Project information for the procurement plan is in Table A8.1.

Table A8.1: Project Information

Country	People's Republic of China
Name of Borrower	People's Republic of China
Project Name	Xinjiang Urban Transport and Environmental Improvement Project
TA Reference	TA 4930-PRC
Date of Effectiveness	
Amount	\$100.0 million
Of which committed	
Executing Agency	Xinjiang Uygur Autonomous Region Government
Date of the Original Procurement Plan	27 May 2009
Period Covered by this Plan	2009–2014

TA = technical assistance.

2. Equipment, materials, and goods and services financed under the loan will be procured in accordance with the *Procurement Guidelines* (2007, as amended from time to time) of the Asian Development Bank (ADB) and follow ADB procedures. Necessary thresholds for all contract packages envisaged in this Project are shown in Table A8.2.

Table A8.2: Procurement Thresholds, Goods and Services, Works, Supply, and Installation

Procurement Method	To be Used for Value
ICB Works	\$10.0 million or more
ICB Goods	\$1.0 million or more
NCB Works	More than \$0.1 million but less than \$10.0 million
NCB Goods	More than \$0.1 million but less than \$1.0 million
Shopping	\$0.1 million or less
Exceptional Methods	None anticipated

ICB = international competitive bidding, NCB = national competitive bidding.

3. Consulting services will be selected using quality- and cost-based selection, consultants' qualifications selection, and least-cost selection. The threshold for consulting services selection is in Table A8.3.

Table A8.3: Procurement Thresholds, Consultants Services

Procurement Method	To be Used for Value
Quality- and Cost-Based Selection	\$200,000 or more
Consultants' Qualifications Selection	Above \$100,000 but less than \$200,000
Least-Cost Selection	\$100,000 or less
Alternative Methods	No alternative methods are proposed

4. The prior or post review requirements for the procurement and consultant recruitment methods are shown in Table A8.4.

Table A8.4: ADB Prior or Post Review

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB Works	Prior	The first draft English language version of the procurement documents should be submitted for ADB review and approval regardless of the estimated contract amount in each project city. ADB-approved procurement documents should be used as a model for all NCB procurement financed by ADB for the Project, and need not be subjected to further review. ADB will review the BER and award of contract on a post-review basis. Prior review will be applied for all ICB contracts, the first NCB contract for works and goods, and post review for other procurement modes.
ICB Goods	Prior	
NCB Works	Prior	
NCB Goods	Prior	The first draft English language version of the procurement documents should be submitted for ADB review and approval regardless of the estimated contract amount in each project city. ADB-approved procurement documents should be used as a model for all NCB procurement financed by ADB for the project, and need not be subjected to further review. ADB will review the BER and award of contract on a post-review basis. Prior review will be applied for all ICB contracts, the first NCB contract for works and goods, and post review for other procurement modes.
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection	Prior	
Quality-Based Selection	Prior	
Other selection methods:	Prior	
Consultants' Qualifications, Least-Cost Selection, Fixed Budget, and Single Source		

ADB = Asian Development Bank, BER = bid evaluation report, ICB = international competitive bidding, NCB = national competitive bidding.

5. Goods and works contracts (more than \$1 million) are shown in Table A8.5 and consulting services contracts (more than \$100,000) are in Table A8.6. Smaller-value goods, works, and consulting services contracts are summarized in Table A8.7. An indicative list of all procurement over the life of the Project is shown in Table A8.8. All international competitive bidding packages will be procured following ADB's *Procurement Guidelines*.

Table A8.5: Goods and Works Contracts Estimated to Cost More Than \$1 Million

Ref	General Description	Procurement Method	Prequalification of Bidders (y/n)	Advertisement Date	Comments
A. Works					
Altay Roads and Environmental Improvement					
A.1	Gongyuan Road, Jinshan Road, Jinshan North Road, Wenhua Road, Tuanjie South Road, Tuanjie North Road civil works, and lighting installation	NCB		Aug 2009	
A.2	1–10 Branch Roads, Qianjin Street, Yuanyichang Road, Beier Road, Huanchengxi Road,	NCB		Sep 2009	

Ref	General Description	Procurement Method	Prequalification of Bidders (y/n)	Advertisement Date	Comments
A.3	Qiaodong Road civil works and lighting installation Hongdun Road, Tuanjie South Road, Jiefang North Road, Donghou Street, Donghoujie Road civil works and lighting installation	NCB		Jul 2010	
A.4	Binghe Road, Lanjing Road, and other affiliated facilities	NCB		May 2009	Proposed for advance contracting and retroactive financing
A.5	Bridges and affiliated facilities	NCB		Aug 2009	
Changji Roads and Environmental Improvement		NCB		Apr 2009	Proposed for advance contracting and retroactive financing
A.6	South Park Road civil works and street lighting installation, and traffic safety facilities				
A.7	North Waihuan Road, West Waihuan Road civil works, and street lighting installation	NCB		Aug 2009	
A.8	Jianguo West Road, Jiankang West Road, Ningbian West Road civil works, and street lighting installation	NCB		Mar 2012	
A.9	Tacheng Road civil works and street lighting installation	NCB		Mar 2013	
A.10	Qingnian Road, Shihezi Road civil works, and street lighting installation	NCB		Mar 2011	
Hami Roads and Environmental Improvement		NCB		Jul 2009	
A.11	Bayinan Road, Bayibei Road civil works, and street lighting installation				
A.12	Renmin Road civil works and street lighting installation	NCB		Mar 2009	Proposed for advance contracting and retroactive financing
Kuytun Roads and Environmental Improvement		NCB		Apr 2009	Proposed for advance contracting and retroactive financing
A.13	Wulumuqi West Road, Xiyi Street, and Hebukesaiier Street, Eming Street, Wusu Street, Kuerle Road, and Kashi Road				
A.14	Beijing East Road, Wulumuqi East Road, Hutubi Street, Tacheng Road, and Qitai West Road	NCB		Feb 2010	
A.15	Tuanjie South Street	NCB		Feb 2011	

Ref	General Description	Procurement Method	Prequalification of Bidders (y/n)	Advertisement Date	Comments
Turpan Roads and Environmental Improvement					
A.16	Gaochang Road, Wenhua West Road, Xingfu Road civil works, and street lighting installation	NCB		Mar 2010	
A.17	Junmingongjian Road, Guangmin Road, Yucai Road civil works, and street lighting installation	NCB		Mar 2011	
A.18	Qiquanhu Road, Donghuan Road, Bozikelike Road civil works, and street lighting installation	NCB		Mar 2011	
A.19	Munaer Road, Huoyanshan Road civil works, and street lighting installation	NCB		Apr 2009	Proposed for advance contracting and retroactive financing
A.20	Sichou Road, luzhou Road, Changyeyuan Road civil works, and street lighting installation	NCB		Mar 2010	
B. Goods					
Altay Roads and Environmental Improvement					
B.1	Street Lighting	ICB		Aug 2009	
B.2	Environmental Sanitation Facilities/Vehicles and Road Maintenance Equipment	ICB		Aug 2009	
Changji Roads and Environmental Improvement					
B.3	Environmental Sanitation Facilities/Vehicles and Road Maintenance Equipment	ICB		Jun 2009	
Kuytun Roads and Environmental Improvement					
B.4	Streetlights for Wulumuqi West Road, Xiyi Street, and Hebukesaiier Street, Eming Street, Tacheng Street, Kuerle Road, Kashi, and Qitai West Road	ICB		May 2009	
B.5	Streetlights for Beijing East Road, Wulumuqi East Road, Hutubi Street, Wusu, and Tuanjie South Street	ICB		Feb 2010	
B.6	Environmental Sanitation Facilities/Vehicles and Roads Maintenance Equipment	ICB		May 2009	
Turpan Roads and Environmental Improvement					
B.7	Environmental Sanitation Facilities/Vehicles and Road Maintenance Equipment	ICB		Jul 2009	

ICB = international competitive bidding, NCB = national competitive bidding.

Table A8.6: Consulting Services Contracts Estimated to Cost More than \$100,000

General Description	Recruitment Method	Advertisement Date	Comments
C1. Consulting Service	QCBS (80/20)	Jun 2009	
C2. Project Management	CQS	Jun 2009	

CQS = consultants' qualifications selection, QCBS = quality- and cost-based selection.

Table A8.7: Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000

General Description	Number of Contracts	Procurement/ Recruitment Method	Comments
Consulting Service for Project Start-Up Preparation (one domestic)	1	SSS	Proposed for advance contracting and retroactive financing
External Resettlement Plan and Ethnic Minority Development Plan Monitoring Organization	1	LCS	Proposed for advance contracting and retroactive financing
Works for Public Toilets, Garbage Stations, Public Transport Station	5	NCB	Contract packaging details are listed in Table A8.9
Road Safety Facilities, Streetlights, Roads Maintenance Equipment and Greening Equipment, Sanitation Equipment	11	NCB	Contract packaging details are listed in Table A8.9

LCS = least-cost selection, NCB = national competitive bidding, SSS = single source selection.

Table A8.8: Indicative List of Packages Required Under the Project¹

General Description	Procurement Method	Domestic Preference Applicable	Comments
Works	ICB/NCB		
Goods	ICB/NCB		
	Recruitment Method	Type of Proposal	Comments
Consulting Services	QCBS(80/20)		

ICB = international competitive bidding, NCB = national competitive bidding, QCBS = quality- and cost-based selection.

¹ The current package value estimates were calculated based on the currency exchange rate at the time of project appraisal and subject to revision in accordance with the currency exchange rate at the time of procurement.

A. National Competitive Bidding

4. **National Competitive Bidding.** The Borrower's Law of Tendering and Bidding of the People's Republic of China promulgated by Order No. 21 of the President of the People's Republic of China on 30 August 1999, is subject to the following clarifications required for compliance with the Guidelines:

- (i) All invitations to prequalify or to bid shall be advertised in the national press, or official gazette, or a free and open access website in the Borrower's country. Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of 30 days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.
- (ii) Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.
- (iii) If bidding is preceded by a prequalification process, all bidders that meet the qualification criteria set out in the prequalification document shall be allowed to bid and there shall be no limit on the number of pre-qualified bidders.
- (iv) All bidders shall be required to provide a performance security in an amount sufficient to protect the Borrower/Project Executing Agency in case of breach of contract by the contractor, and the bidding documents shall specify the required form and amount of such performance security.
- (v) Bidders shall be allowed to submit bids by mail or by hand.
- (vi) All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.
- (vii) All bid evaluation criteria shall be disclosed in the bidding documents and quantified in monetary terms or expressed in the form of pass or fail requirements.
- (viii) No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.
- (ix) Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.
- (x) Each contract financed with the proceeds of the loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.
- (xi) Government-owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law, and (c) are not a dependent agency of the Borrower/Project Executing Agency.
- (xii) Rebidding shall not be allowed solely because the number of bids is less than three (3).

Table A8.9: List of Goods and Works Contracts Estimated to Cost Less than \$1 Million

Ref	Contract Package Type and Description		Estimated Cost (\$ million)	Procurement Method
Works for public toilets, garbage stations, and public transport station				
Altay				
D1	Roads	Public Transport Station	0.31	NCB
D2	Environmental Sanitation	Public Toilets	0.74	NCB
Changji				
D3	Environmental Sanitation	Public Toilets and Garbage Collection Stations	0.15	NCB
Kuytun				
D4	Environmental Sanitation	Public Toilets and Garbage Collection Stations	0.75	NCB
Turpan				
D5	Environmental Sanitation	Public Toilets and Garbage Collection Stations	0.20	NCB
Total			2.15	
Road safety facilities, streetlights, roads maintenance equipment and greening equipment, sanitation equipment				
Hami				
E1	Roads	Streetlights for Bayinan Road, Bayibei Road and Renmin Road	0.77	NCB
E2	Roads	Traffic Safety Facilities for Baiyinan Road, Beiyibei Road and Renmin Road	0.31	NCB
E3	Roads	Roads Maintenance Equipment and Greening Equipment	0.30	NCB
E4	Environmental Sanitation	Sanitation Equipment	0.26	NCB
Changji				
E5	Roads	Streetlights for North Waihuan Road, West Waihuan Road, Ningbian West Road, South Park Road	0.97	NCB
E6	Roads	Streetlights for Jianguo West Road, Tacheng Road, Shihezi Road	0.95	NCB
E7	Roads	Streetlights for Qingnian Road and Jiankang West Road	0.81	NCB
Turpan				
E8	Roads	Streetlights for Munaer Road, Huoyanshan Road and Sichou Road.	0.91	NCB
E9	Roads	Streetlights for Luzhou Road, Chanyeyuan Road, Gaochang Road, Wenhua West Road and Xingfu Road.	0.73	NCB
E10	Roads	Streetlights Junmingongjian Road, Guangmin Road, Yucai Road, Qiquanhu Road, Donghuan Road and Bozikelike Road.	0.67	NCB
E11	Roads	Traffic Safety Equipment	0.54	NCB
Total			7.22	

NCB = national competitive bidding.

SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

Country/Project Title: People's Republic of China/Xinjiang Urban Transport and Environmental Improvement Project

Lending/Financing
Modality:

Project Loan

Department/
Division:

East Asia Department/
Urban and Social Sectors Division

I. POVERTY ANALYSIS AND STRATEGY^a

A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy

The Xinjiang Urban Transport and Environmental Project will contribute to poverty reduction through improvements in urban transport network connectivity and environmental conditions, promoting sustainable economic growth, and supporting institutional reforms in five of Xinjiang Uygur Autonomous Region's (Xinjiang) cities: Altay, Changji, Hami, Kuytun, and Turpan. Xinjiang is the largest region (17% of total area) in the People's Republic of China (PRC), with a relatively small population (20,500,000), 60.39% of which belongs to ethnic minority groups (the Uygur is the largest, constituting 45% of this total). As the historic Silk Road passes through it, Xinjiang has a rich history and culture that is now serving as the base for development of the tourism industry in the Region. Despite these assets, it remains one of the poorest regions in the PRC, with 22 out of 27 cities and 68 counties classified poor. In 2007, about 8.1% of Xinjiang's urban population lived on incomes below the official poverty line, compared with the national average of 4.0%, with even higher rates of poverty for ethnic minorities living in the cities of Xinjiang. The Project is in line with the Government's strategy to develop the Western Region of the country, which seeks to reduce the economic and social disparities created by the eastern PRC's rapid economic development and supports the Government's development vision of *xiaokang* (moderately well-off, articulated in the 11th Five-Year Plan [11FYP] 2006–2010), aimed at maintaining high rates of growth, but channeling it toward poverty reduction and reducing disparities. The Project supports ADB's PRC country partnership strategy priority areas of (i) strengthening economic and social inclusiveness through increasing investment in the urban development of small cities, (ii) improving the physical environment of small cities, and (iii) promoting regional cooperation and integration.^b The Project will do the following:

- (i) **Create jobs and employment opportunities.** It is anticipated that 3,396 full-time jobs during the construction period and 8,114 follow-on multiplier effect jobs will be created. Of the total construction jobs created, 75% will be for unskilled workers. The loan assurances specifically address employment of vulnerable groups, ethnic minorities, and women.
- (ii) **Improve living standards.** Road construction will facilitate mobility, access, and affordability for local populations to key basic services and destinations. It will also make urban roads safer for travel, thereby reducing the number of traffic accidents. Measures include the construction of footpaths, street lighting, controlled pedestrian crossings, and traffic calming measures. The environmental improvements will improve health-related issues associated with a greater emphasis on public hygiene through the provision of public toilets and bathrooms, sustainable solid waste management practices, and improvement in the general aesthetic appearance of urban areas.
- (iii) **Protect the environment.** The environmental management plan (EMP) outlines clear actions for environmental protection (land, water, and archaeological sites) during construction, and these are accounted for in the loan assurances.
- (iv) **Focus on predominantly ethnic minority areas.** Xinjiang is predominantly an ethnic minority region. Of the five cities, Turpan has the highest percentage of ethnic minorities (78%), followed by Altay (39%), Hami (28%), Changji (22%), and Kuytun (5%). Ethnic minority development plans (EMDPs) have been formulated for each of the project cities. These plans ensure mitigation of negative impacts and attempt to maximize participation of and benefits for ethnic minority populations in the project cities.
- (v) **Provide skills training.** The Project will include skills training (including language) to support job opportunities such as operation and maintenance of public toilets/bathrooms, construction, peri-urban agriculture and local tourism. Vulnerable groups, ethnic minorities, and women are prioritized for this training in the loan assurances.
- (vi) **Support gender inclusion.** Loan assurances will ensure the participation of women through the Project. In addition, a Gender and Development Fund grant proposal has been initiated to support the development of Turpan women's cultural tourism enterprises. This grant will also facilitate women's involvement in decision-making and development activities in Turpan.

B. Poverty Analysis

Targeting Classification: Targeted intervention (Millennium Development Goal 7, Target 10)

1. Key Issues

The Project is classified as targeted intervention–Millennium Development Goal (goal 7, target 10). It will benefit 227,778 people in Altay, 403,218 in Changji, 418,918 in Hami, 302,089 in Kuytun, and 260,271 in Turpan. The urban poverty rate in Altay according to the project socioeconomic surveys is 27.0% (41.7% for ethnic minorities and 27.7% for single adult households), Changji 10.9% (13.3% for ethnic minorities and 10.5% for single adult households), Hami 17.4% (30.7% for ethnic minorities and 18.8% for single

adult households), Kuytun 8.5% (13.6% for ethnic minorities and 16.5% for single adult households), and Turpan 12% (19.6% for ethnic minorities and 13% for single adult households). Average per capita incomes for poor households in Altay are CNY1,332 per annum (\$0.52 per day), Changji CNY1,493 per annum (\$0.58 per day), Hami CNY1,116 per annum (\$0.44 per day), Kuytun CNY1,000 per annum (\$0.39 per day), and Turpan CNY918 (\$0.36 per day).

The causes of poverty in the five project cities vary. In Altay, there are few employment or other income-generation activities outside the public sector because it is a relatively small and remote city. In Changji and Hami, while a significant number of households derive income from agricultural-based activities, unless they also derive a portion of their income from nonfarm income-generation activities, they are relatively poor. The poorest households are largely urban-based, with no options for livelihood diversification. In Kuytun, the very poorest are those that have to rely on day wage-labor and are temporary workers in the oil fields. In Turpan, the very poor are those households that do not have access to public sector employment and rely on seasonal tourism for income generation. In all five project cities, the poor are typically less well-educated, are likely to fall ill more often, and have a higher dependency ratio. All poor households surveyed by the Project have a small annual surplus of income over expenditure but the level of savings is very low and other assets such as housing are lower in value than for non-poor households. Poor households cannot easily trade their way out of poverty either because they lack access to affordable micro-finance and the management skills and experience to develop and operate small businesses profitably.

Project benefits for poor people will include project-related employment and expanded employment opportunities as a result of improvements to urban transport infrastructure that will improve access to local employment opportunities and the ability to provide a range of goods and services more readily to other consumers—including tourists in Altay, Turpan, and Hami, oil and gas workers in Kuytun, and new investors in Changji city's economic development. The household survey and focus group discussion (FGD) revealed that the poor are more likely to be pedestrians, have own forms of non-motorized transport (NMT), and benefit from improved traffic management and road safety. Personal security, especially for poor women and children, will also be improved through the provision of street lighting. In Altay, the Project has been able to respond effectively to local demands, and culturally appropriate toilets and bathrooms will be constructed for communal use. Other environmental improvements common to all five cities will contribute to improvements in public hygiene that will benefit the poor.

2. Design Features

The design has been highly participatory in nature, involving detailed consultations with affected people—including, most importantly, vulnerable people, ethnic minorities, and women—in an attempt to reduce impacts on land acquisition and resettlement, and maximize opportunities for positive benefits through design and implementation choices. Examples include the time spent on exploring options to the demolition of a century-old mosque in Hami, avoiding the acquisition of arable land in Changji and Turpan, mitigating noise and safety risks in close proximity to educational facilities in Altay and Kuytun, and designing culturally appropriate community shower and toilet facilities in Altay. Project assurances call for the employment of local labor, especially vulnerable people, ethnic minorities, and women. EMDPs outline strategies for mitigating adverse impacts and promoting positive benefits such as employment, skills training, language training, and cultural understanding training for contractors and workers. An HIV/AIDS awareness program for each of the five cities has been included not just as a reactive approach to the social risk but also as a proactive approach to empower workers.

II. SOCIAL ANALYSIS AND STRATEGY

A. Findings of Social Analysis

Individual households living in close proximity to the roads to be constructed or upgraded will benefit directly from footpaths and street lighting. This intervention is strongly supported by the majority of people consulted during project design, especially women and other NMT road users, because it improves road safety, personal security, and makes movement on foot more convenient. The construction of public toilets in downtown areas will benefit all people who frequent downtown areas for shopping, business, or recreational purposes. Positioning of garbage cans at strategic intervals in downtown areas also contributes to a cleaner and greener environment, rendering each of the five cities better places to live in. FGDs confirmed that the residents of these five cities support the cleaning and greening of their individual city, although not at the expense of economic development.

Impacts on Health and Safety. Dust generated by unsealed roads in all five cities is considered a major cause of respiratory disorders by at least 40% of the population. The permanent sealing of unsealed roads will contribute to addressing this health issue. Rerouting of heavy traffic will result in lower noise levels, especially at night when there is more heavy traffic traveling through these cities, and will also result in lower exhaust emissions. Over 35% of the people surveyed in each city consider this to have a significant impact on health. Improved public hygiene through better management of solid waste, including rubbish in areas where the public congregate will also be an outcome of the Project. Households in the project area consider themselves capable of managing household level hygiene issues but not broader public hygiene issues. Better roads with improved traffic management and road safety measures will have a positive impact on the safety of road users, including the users of NMT, because there will be a more rational and coordinated approach to multimodal forms of transport. Keeping heavy trucks out of residential and downtown areas is a very positive safety impact.

Affordability. This is not an issue in this Project, except for the use of public bathrooms in Altay because the Project will not be

providing access to public utilities. In Altay, potential beneficiaries have all agreed they are able and willing to pay for the use of the proposed bathrooms because they cannot afford the same in their own houses. Local people will be hired by the city as maintenance workers for this new community infrastructure.

Impacts on Employment. About 3,396 full-time jobs (1,683 in Altay, 1,278 in Changji, 105 in Hami, 130 in Kuytun, and 200 in Turpan) will be created over the construction period and follow-on multiplier effects are expected to create 8,114 full-time jobs (220 in Altay, 5,584 in Changji, 90 in Hami, 270 in Kuytun, and 1,950 in Turpan). This translates into CNY72,215,500 (CNY38,539,000 in Altay, CNY24,733,600 in Changji, CNY1,132,900 in Hami, CNY2,842,000 in Kuytun, and CNY4,968,000 in Turpan) of costs returned to the northern and central Xinjiang economy. Loan assurances will ensure that vulnerable, ethnic minorities, and women are beneficiaries of employment (during construction and operation) opportunities.

The EMDPs ensure that ethnic minorities will benefit equitably from the Project and that any negative impacts affecting them will be reduced or mitigated. Provisions to enhance the economic conditions of ethnic minorities have been integrated into the project design and project assurances. Compensation and livelihood restoration measures are included in the resettlement plans to ensure that ethnic minority households affected by land acquisition benefit equally from the Project.

B. Consultation and Participation

1. During the project preparatory technical assistance, several participatory approaches were used to solicit inputs from a range of stakeholders in the project cities. A socioeconomic survey at the household level covered 806 households and information relating to 2,874 people. Thirty FGDs involving an average of 18 persons per FGD or a total of 540 people were also held. In Hami, where the mosque was slated to be demolished based on the preliminary alignment of the road improvement, additional public consultations were held involving the Imam of the mosque, mosque attendees, local traders, merchants and shopkeepers, the Islamic Association, community residential centers, and independent experts both in Hami and Urumqi. Four separate visits and three rounds of consultations involving over 500 people were made to clarify this sensitive issue and a detailed narrative of the discussions and records of those participating in the consultations has been documented. Key informant interviews were also held with bureaus and the All-China Women's Federation to inform the project design. For the resettlement plans, separate socioeconomic surveys, community meetings, opinion surveys, and specific impact studies of 3,439 affected people were involved. Development of the environmental impact assessments and EMP involved two rounds of public consultations. EMDPs have been prepared collaboratively and discussed with the communities. The resettlement plans, EMDPs, and EMP set out detailed ongoing public participation plans.

2. What level of consultation and participation (C&P) is envisaged during the project implementation and monitoring?

☒ Information sharing ☒ Consultation ☐ Collaborative decision making ☐ Empowerment

3. Was a C&P plan prepared? ☒ Yes ☐ No

Public disclosure of all project documents will be made at the project management office in both Urumqi and each of the project offices in the five cities, including appropriate ethnic minority languages on the Asian Development Bank website. This includes the project information document, design and monitoring framework, EMDPs, resettlement plans, summary environmental impact assessment, report and recommendation of the President, public sector legal agreement, project administration memorandum, and social and environmental monitoring reports. A project information document will be prepared for each project city. Booklets outlining the resettlement plans will be distributed to the affected households and disclosure meetings will be held. Copies of the booklet will be available for project management offices, and each affected community residential association office. Each project information document (available in Chinese and local languages) will contain (i) a map of the affected areas; (ii) description of the Project, its aims, and subcomponents; (iii) details of the works; (iv) a timetable of the project activities, including estimated commencement and completion dates; (v) expected social, economic, and environmental impacts; (vi) environmental and social safeguards; (vii) the compensation policy and entitlements; (viii) an outline of livelihood restoration measures; (ix) the workings of the compensation committee and grievance redress committee; (x) an outline of how consultation and participation with resettlement plans and communities will continue; and (xi) the project communications strategy, including how people can find out what business opportunities may arise in conjunction with the Project and where people can get further information about the Project. Resettlement plans and EMDPs indicate how consultation will continue through implementation.

C. Gender and Development

1. Key Issues.

Aside from the economic and employment impacts, the social impacts of the Project are clearly gender based. Upgrading and constructing new footpaths with street lighting, controlled pedestrian crossings, and traffic calming measures are interventions that women in each of the five project cities strongly support. They also support measures to improve public hygiene associated with rubbish collection and for poorer women without access to indoor toilets or bathrooms, the complementary measures proposed are measures the women themselves proposed. Women anticipate benefits such as an improved living environment, increased road safety and personal security, new employment opportunities, reduced time burdens, and reduced incidence of preventable diseases.

2. Key Actions. Measures included in the design to promote gender equality and women's empowerment—access to and use of relevant services, resources, assets, or opportunities and participation in decision-making process:

☐ Gender plan ☒ Other actions/measures ☐ No action/measure

Project assurances prioritize women, especially poor and ethnic minority women, for employment and skills training and ensure monitoring of their involvement. The proposed Gender and Development Fund grant project in Turpan focuses on providing training and opportunities to enter into cultural tourism for ethnic minority women in the city.

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Involuntary Resettlement	Significant	Altay, Changji, Hami, and Turpan resettlement plans have been prepared in accordance with the Government's own regulations and those of the Asian Development Bank, and disclosed to the affected people and the public. Internal and external monitoring arrangements will be put in place.	<input checked="" type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action
Indigenous Peoples	Significant	The project areas are majority ethnic areas and project land acquisition affects ethnic minorities to a greater degree than the general population. The EMDPs have been prepared for all five project cities. Ethnic minority issues and assistance has been included in the resettlement plans. The EMDPs further mitigate any negative impacts of the Project and attempt to maximize the positive benefits through training and other activities. The loan assurances will ensure ethnic minority prioritization for employment.	<input checked="" type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input type="checkbox"/> No Action
Labor <input checked="" type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input type="checkbox"/> Core labor standards	Significant	The Project will create 3,396 full-time jobs over the construction period. Project assurances will ensure that all employment and labor standards as provided in applicable laws and regulations are complied with, address core labor standards, and prioritize local labor basic training and skills promotion.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action
Affordability	No Impact	The Project does not involve components that require an affordability analysis.	<input checked="" type="checkbox"/> Action <input type="checkbox"/> No Action
Other Risks and/or Vulnerabilities <input checked="" type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human trafficking <input type="checkbox"/> Others (conflict, political instability, etc.), please specify	Limited	HIV/AIDS is a limited problem in the project cities but with an increase in both migration and tourism and normal risks during the construction period, the Project will provide information and education on sexually transmitted infections, including HIV/AIDS.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action

IV. MONITORING AND EVALUATION

Are social indicators included in the design and monitoring framework to facilitate monitoring of social development activities and/or social impacts during project implementation? ☒ Yes ☐ No
 Social indicators include increased disposable incomes of urban households and suburban farmers and herdsmen by 40% (sex disaggregated); reduced proportion of poor populations by 30% (sex disaggregated); reductions in travel time (depending on city); reduction in public transport waiting time (depending on city); and provision and location of project community infrastructure (i.e., toilets, trash cans, etc.).

AIDS = acquired immune deficiency syndrome or acquired immunodeficiency syndrome, C&P = consultation and participation, EMP = environmental management plan, EMDP = ethnic minority development plan, FGD = focus group discussion, HIV = human immunodeficiency virus, NMT = non-motorized transport, PRC = People's Republic of China.

^a The poverty and social assessment is in Supplementary Appendix M.

^b ADB. 2008. *Country Partnership Strategy (2008–2010): People's Republic of China*. Manila.

SUMMARY RESETTLEMENT PLAN

A. Background

1. The Xinjiang Urban Transport and Environmental Improvement Project (the Project) consists of five components: (i) Altay Roads and Environmental Improvement Component (Altay component), (ii) Changji Roads and Environmental Improvement Component (Changji component), (iii) Hami Roads and Environmental Improvement Component (Hami component), (iv) Turpan Roads and Environmental Improvement Component (Turpan component), and (v) Kuytun Roads and Environmental Improvement Component (Kuytun component). All of the five city components include construction and installation of environmental sanitation facilities and accessories.

2. The Altay component includes the subcomponent to construct and upgrade 19 roads (total road length is 28.02 kilometers [km]) and 5 bridges with a total length of 281 meters (m). Additionally, there will be construction of footpaths, street lighting, and other traffic calming solutions. The environmental sanitation subcomponent includes 10 public toilets and bathhouses, 654 garbage bins, 102 refuse collection points, and 20 garbage collection stations. A range of vehicles will be purchased to collect and dispose of solid waste materials, clean streets, and clear snow.

3. The Changji component includes the subcomponent to construct/upgrade 8 main roads and 1 secondary road (total road length is 23.24 km), the 32 m-long South Park Road bridge, and maintenance facilities. The environmental sanitation subcomponent involves the procurement of 8 public toilets, 394 garbage bins, and 33 refuse collection points; and a variety of vehicles will be purchased to collect and dispose of solid waste materials, clean streets, and clear snow.

4. The Hami component includes the subcomponent to construct/upgrade 3 main roads (total road length is 9.02 km) and the environmental sanitation subcomponent involves the procurement of 182 garbage cans in addition to 2 street cleaning machines.

5. The Kuytun component includes the subcomponent to construct/upgrade 13 municipal roads (total length of 23.6 km) including 2 trunk roads, 2 sub-trunk roads, and 9 branch roads. The environmental sanitation subcomponent includes 11 public toilets, 26 refuse collection points, 480 garbage bins, and a variety of vehicles to collect and dispose of solid waste materials, clean streets, and clear snow.

6. The Turpan component includes the subcomponent to construct/upgrade 14 municipal roads (total length is 22.76 km) including 5 trunk roads, 7 sub-trunk roads, 2 branch roads, and construct 2 10-m culverts. The environmental subcomponent includes 11 public toilets, 26 refuse collection points, 502 garbage bins, 130 garbage containers, and a variety of vehicles to collect and dispose of solid waste materials and clean streets.

7. Based on the feasibility study report, the Altay, Changji, Hami, and Turpan components will necessitate large amounts of land acquisition and resettlement. The roads to be upgraded in the Kuytun component will be on existing alignments and will just involve road surfacing. Although this component will also occupy a large amount of state-owned land, the land is non-fertile and no people will be affected. Therefore, no resettlement plan will be required for the Kuytun component. Four full resettlement plans have been prepared for the Altay, Changji, Hami, and Turpan components in compliance with the *Involuntary Resettlement Policy* (1995) of the Asian Development Bank (ADB). During project implementation, the resettlement plans will be updated based on detailed engineering design, disclosed to affected persons, and submitted to ADB for approval prior to award of civil works contracts.

B. Resettlement Impacts

8. To avoid or minimize land acquisition and resettlement, close consultations with local officials, village committees, and affected persons have been undertaken during resettlement plan preparation.

9. The Project will affect 28 subdistricts/villages/townships/neighborhoods in Altay, Changji, Hami, and Turpan. Land acquisition and/or house demolition will directly affect 3,921 persons—1,475 persons (369 households) from land acquisition; 1,719 persons (449 households) from household demolition; 170 persons (45 households) from both land acquisition and house demolition; 160 persons from 10 small business shops (9 shops and 1 market); and 397 persons from 26 enterprises and institutions. About 0.354 square kilometers (km²) of stated-owned land will be permanently occupied, 0.724 km² of collective land will be acquired and about 0.088 km² of residential housing will be demolished. The details are summarized in Table A10.

Table A10: Summary of Land Acquisition and Resettlement Impacts of the Project

Component	Site	Affected Township/ Community/ Villages	Permanent Collective Land Acquisition (m ²)	Permanent Stated- Owned Land Occupation (m ²)	Temporary Land Acquisition (m ²)	Households/ Shops/ Enterprises (m ²)	Directly Affected Persons
Altay	Altay City	3/	7,687	21,393	0	13,187/	346
		3/				87/	
		1				2,890	
Changji	Changji City	2/	474,382	107,874	0	22,123/	1,511
		0/				2,214/	
		8				11,293	
Hami	Hami City	1/	48,047	160,47	0	20,445/	450
		3/				0/	
		3				2,581	
Turpan	Turpan City	2/	194,148	208,288	0	32,211/	1,614
		0/				883/	
		5				100	
Total		8/6/17	724,264	353,602	0	87,966/ 3,184/ 16,864	3,921

m²= square meter

Source: Asian Development Bank.

C. Policy and Legal Framework

10. The resettlement plans have been prepared in compliance with the Land Administration Law of the People's Republic of China, 2004, relevant regulations of Xinjiang Uygur Autonomous Region, and ADB's *Involuntary Resettlement Policy*. Based on consultations with local governments and affected persons and general practices in the project area, the implementing agencies (IAs) adopted a set of resettlement principles, and an entitlement matrix has been prepared for the Project. Compensation for land acquisition, residential housing, and nonresidential buildings (shops and enterprises) will be paid to all users whether titled or not. For land acquisition, compensation fees include land compensation, resettlement subsidy, and compensation for crops and trees. The land compensation will be paid to the affected villages/affected persons and the

resettlement subsidy to the affected persons. The land acquisition compensation is rated at the land's average annual output value. For business shop and house demolition, compensation will be paid to owners for rehabilitation of the affected persons. The compensation payments will be in cash according to the appraised value of the land and fixed property assets. Compensation for crops, trees, other facilities, and temporary impacts will be paid directly to affected persons. Income losses resulting from reduced production/sales and wages caused by the Project will be assessed and compensated in cash.

D. Resettlement and Rehabilitation

11. To minimize the resettlement impacts to affected persons and restore their living standards, detailed programs of restoration and relocation have been arranged in each resettlement plan. People can choose the available programs according to their requirements. Based on the economic characteristics of affected villages, different schemes for income restoration will be carried out.

12. Since the resettlement impacts differ among the four components, the emphasis varies according to the component. Most of the land acquisition will occur in Changji and most of the house demolition, including a market demolition, will take place in Turpan. In Altay and Hami there is not only land acquisition but also house demolition, and compared with Changji and Turpan the impacts are less significant.

13. Some common strategies and measures will be taken in each city for the affected persons and villages, including low-yield land improvement and livestock raising. Assistance measures like the provision of employment in project construction, provision of skills training, and employment information will be provided to all affected persons (at least 50% of whom are women). In Hami and Altay, the affected persons who lose all their land can take urban minimum living security. For families that lose part of their land, the land loser is identified by the average area of land acquisition and entered into urban minimum living security. The fund will be operated according to the minimum living support scheme, the calculation, and the amount of land acquisition. Through these measures, it is envisaged that all affected persons can maintain or acquire more stable incomes to restore and enhance their living standards.

14. Regarding residential housing demolition, irrespective of whether it is urban or rural, the affected households will receive compensation at replacement costs for the lost structures and attachments without depreciation after property assessment. Urban households also have compensation for residential state-owned land after real estate assessment. Salvage of the structural materials will be allowed and a relocation subsidy will be provided. With the compensation money, the rural affected households can rebuild their houses by themselves with free homestead provided according to their wishes or purchase economically affordable housing and resettlement houses. There are low-rental houses, especially for low-income households, in which they can live on a long-term basis. In the project cities that have more ethnic minorities (like Hami City and Turpan City), there are several types of resettlement houses such as apartment buildings and one-story houses with a yard. The resettlement plan, in conjunction with the ethnic minority development plan, will ensure that ethnic minorities are offered houses consistent with their cultural preferences.

15. For nonresidential buildings and structures (small business shops and enterprises), the affected owners will be compensated with cash at replacement costs for the lost structures. The affected shops and enterprises can be either moved back and rebuilt on the existing backyard of shops along upgraded roads or built on free sites provided by the project management office (PMO), depending on the practicality of moving back and their preference. In addition, special attention will be paid to vulnerable groups for their resettlement and rehabilitation, who will receive

additional assistance: (i) set-up of special supporting funds in each component, and (ii) provision of potential employment opportunities and skills training.

E. Resettlement Cost and Fund Management

16. The cost estimate for land acquisition and resettlement of the four components is CNY192.8849 million in latter half 2007 prices, including contingencies and land taxes, equivalent to \$28.16 million.¹ The city PMOs will fund land acquisition and resettlement costs, included as part of the total project cost. According to the compensation policies and standards defined in the resettlement plans, the payment and usage of compensation funds will be carried out under the supervision of internal monitoring agencies, with regular audit review and regular review by the external monitoring agency. Detailed measurement surveys will be conducted in the villages, small shops, and enterprises. The compensation contracts will be negotiated and signed with village committees, households, small business shops, and enterprises. On this basis, the final costs might be adjusted.

F. Information Disclosure, Participation, and Grievances

17. The affected persons have been informed about the key elements of land acquisition and resettlement through consultation during the planning stage and information disclosure sessions with the affected persons, villages, and county governments during the project preparation stage. During meetings, interviews, focus group discussions, public consultation workshops, and community consultation meetings, local representatives participated in the planning and their concerns were integrated into the resettlement plans. The resettlement information booklet—confirming the project affected areas, implementation schedule and framework, compensation standards for land acquisition and other assets, relocation assistance, livelihood rehabilitation strategy, and dispute resolution procedures—was distributed to affected persons at the end of June 2008. Draft resettlement plans were distributed and disclosed to the affected counties, townships, villages, and affected persons in July. In accordance with ADB's *Public Communications Policy* (2005), the final resettlement plans were posted on the ADB website prior to appraisal. The PMO will set up project resettlement agencies to supervise implementation, continue public consultations, monitor progress, and deal with grievances.

G. Implementation Arrangement and Schedule

18. Xinjiang PMO and city PMOs will assume overall responsibility for implementation of resettlement. Each city/area PMO coordinates the planning, implementation, financing, and reporting of land acquisition and resettlement. The IAs are Altay Construction Bureau for the Altay component, Changji Urban and Rural Construction Commission for the Changji component, Hami Construction Bureau for the Hami component, and Turpan Construction Bureau for the Turpan component. IAs will take primary responsibility for the resettlement consultation, implementation, and timely delivery of entitlements. To ensure smooth implementation, staff in charge of land acquisition and resettlement will undertake relevant training on resettlement implementation organized by Xinjiang PMO. The resettlement implementation schedule for four components has been prepared. No land acquisition or demolition shall start until resettlement plans are updated based on detailed designs and approved by ADB. It is anticipated that land acquisition and house demolition will start in 2009 and be completed by the end of 2013.

¹ Exchange rate: \$1 = CNY6.85.

H. Monitoring and Evaluation

19. Internal and external monitoring of resettlement implementation will be conducted. Each city PMO will carry out internal supervision and monitoring to ensure compliance with the provisions of the resettlement plan. Xinjiang PMO and the city/area PMOs will engage an independent agency for semiannual monitoring and annual evaluation for four components of land acquisition and resettlement until 2 years after the completion of land acquisition and resettlement. The independent agency will monitor and evaluate the progress of resettlement implementation, payment, and dispute resolution. It will identify the impacts for affected persons on (i) whether they have received the approved compensation and entitlements on time, and (ii) whether their living standard and income level have been restored to pre-project status. A baseline survey will be carried out before land acquisition and house demolition starts. External monitoring reports will be forwarded directly to the PMO and ADB.

SUMMARY ETHNIC MINORITY DEVELOPMENT PLAN

A. Introduction

1. The Altay City, Changji City, Hami City, Kuytun City, and Turpan City ethnic minority development plans (EMDPs) ensure that ethnic minorities will benefit equitably from the Project and that any negative impacts affecting them will be reduced or mitigated. Provisions to enhance the economic conditions of ethnic minorities have been integrated into the project design and project assurances. Compensation and livelihood restoration measures are included in the resettlement plans to ensure that ethnic minority households affected by land acquisition benefit equally from the Project. Government policies and programs for ethnic minority development further protect and enhance project benefits. The EMDPs are based on relevant laws and regulations of the People's Republic of China (PRC) and the *Policy on Indigenous Peoples* (1998) of the Asian Development Bank (ADB).

B. Project Descriptions

2. Generally, the project components in all five cities are the same. These include (i) road construction and associated infrastructure, and (ii) environmental sanitation facilities. There is greater emphasis on environmental subcomponents in cities with the largest ethnic minority populations.

C. Socioeconomic Profiles

3. As the PRC's largest autonomous region, Xinjiang Uygur Autonomous Region (Xinjiang) is a low-income region with a small population (20 million), of which 60.4% is composed of ethnic minority groups. The Uygur are the largest of these groups constituting 45.9% of the population, and the Tartar the smallest constituting 0.1% of the population. Other significant ethnic minority groups include the Kazakh (6.9%), and the Hui (4.4%).

4. Altay City is located in the northern frontier region of Xinjiang and is the capital of Altay Prefecture. In 2007, the population was 228,700 and of these 65.0% was classified nonagricultural. Altay's population is made up of 26 nationalities, including Han, Kazakh, Uygur, Hui, Mongolian, Xibo, Uzbek, Russian, Tartar, Manchu, and Daur. The minority population of Altay is 39.19% of the total population. In January 2008, there were 4,716 households consisting of 12,492 persons or 10.8% of the nonagricultural population of Altay city entitled to the minimum standard of living (MSL) subsidy. The urban unemployment rate in Altay is about 1.95%. In 2006, the annual per capita net income of the farmers and herders in Altay is CNY3,837. This is high compared to the Xinjiang Province average level of CNY2,737 and the annual disposable income of the urban residents in Altay of CNY10,539 compared to the autonomous regional average level of CNY9,120.

5. Changji is the capital of Changji Hui Autonomous Prefecture and it is the satellite town of Urumqi, the provincial capital. The distance between these two cities is only 30 kilometers. The gross domestic product of Urumqi and Changji accounts for one-third of the regions' gross domestic product. In December 2004, Xinjiang Uygur Autonomous Region government (XUARG) decided to combine Urumqi and Changji and implement the Urumqi and Changji economic integration strategy. In 2006, Changji had 138,100 households consisting of 411,200 persons of whom 70% were engaged in nonagricultural based activities. In 2006, the minority population was 91,600 accounting for 22.28% of the total city population. The major ethnic minority group is the Hui, followed by the Kazakh, Uygur, Mongol, Manchu, Xibo, Russian, Uzbek, Kyrgyz,

Tartar, Daur, and Tajik. There are 6,397 persons or 2.22% of nonagricultural persons entitled in the MSL system for urban residents. In 2006, the income of urban residents was CNY8,740 per capita, but the income of farmers and herders was lower at CNY6,059.

6. Hami city is located in the eastern area of Xinjiang. It is the capital of Hami Prefecture and is famous for the Hami melon. In 2006, the total population of Hami was 420,500 and the nonagricultural population accounted for 68.3% of this total. Hami's population is made up of 24 nationalities, including Uygur, Han, Kazakh, Manchu, Mongol, Xibo, Russian, Tajik, Daur, Tartar, and Uzbek. The ethnic minority population accounted for 28.48% of the total population. In 2006, Hami had 5,530 households constituting 11,182 persons or 4.08% of nonagricultural persons receiving MSL.

7. Kuytun is a city in Ili Kazakh Autonomous Prefecture and is located in the center of the "Golden Triangle" of the Tianshan Mountain Northern Slope economic belt. In 2006, the total population of Kuytun was 305,500 and the nonagricultural population accounted for 96.5% of this total. Kuytun's population is made up of 30 nationalities, the main ethnic minority being the Hui followed by Kazakh, Xibo, Uzbek, Manchu, Mongol, Kyrgyz, Tajik, and Daur. The ethnic minority population accounted for 7.27% of the total population. In 2007, Kuytun had 890 households constituting 2,203 persons or 1.57% of nonagricultural beneficiaries receiving MSL. In 2006, the annual urban resident disposable income was CNY8,148 per capita and the annual net income of farmers and herders was CNY2,903 per capita. The registered unemployment rate in Kuytun was below 3.9%.

8. Turpan city is the capital of Turpan Prefecture. It was a traditional destination on the Silk Road and today the prefecture has become an important tourism site and a priority development area for Xinjiang. In 2007, the visitors to Turpan numbered 4.04 million and they generated a total of CNY0.78 billion in tourism revenue. In 2006, the population was 263,200 of whom 32% was classified nonagricultural. Turpan's population is made up of 29 nationalities, with the Uygur constituting 71% of the total population followed by the Hui, Manchu, Mongol, Russian, Xibo, Uzbek, and Daur. The ethnic minority population accounts for 78.7% of the total population. The annual urban resident disposable income was CNY7,068 per capita and the annual net income of farmers and horticulturalists was CNY3,777 per capita. There are 2,170 households constituting 5,164 persons or 6.7% of the nonagricultural population of Turpan city who are entitled to the MSL subsidy.

D. Project Benefits and Impacts

9. The EMDPs ensure that (i) ethnic minority people are given opportunities to participate in all stages and receive the benefits of the Project, and (ii) the strategies developed to mitigate against negative impacts are sensitive to the culture of affected minority groups. Project assurances address prioritization of ethnic minorities and vulnerable groups for employment opportunities. The skills and language training will help ensure sustainability of incomes and livelihoods.

10. The social and poverty assessment indicates that the overall positive impacts of the Project (improved mobility and access, sanitation, and environmental protection) on ethnic minorities will be the same as on the Han population. However, in relation to the development of the tourism industry, ethnic minorities will be the major beneficiaries, especially in Altay, Hami, and Turpan. Impacts are expected to be gender neutral, with men and women benefiting from temporary job creation; and women from reduced domestic and care work, opportunities for income generation from tourism growth, and project related business initiatives.

11. The Project involves resettlement and relocation caused by demolition of houses and shops. Of the 117 affected households in Altay, 14% are ethnic minorities. In Changji, among the total of 349 affected households, 48 households or 13.8% are ethnic minority households. In Hami, of the 99 affected households, there are 65 ethnic minority households accounting for 65.7% of affected households. In Turpan, of the 310 affected households, 304 households or 98% of households are ethnic minority households. Of affected people requiring partial income restoration, 15.7% of such households are ethnic minority households in Changji, 46.5% in Hami, and 70.7% in Turpan. There are no land acquisition and resettlement impacts in Kuytun. The resettlement plans for each of the four cities affected by resettlement and the environmental management plan, outline strategies for mitigation of negative impacts that will be equally applicable to both ethnic minorities and Han people. In cooperation with the Civil Affairs Department, the resettlement plans also outline special funds that have been established to provide additional aid, including subsidies and medical care for vulnerable and ethnic minority groups.

12. The project management office (PMO) has agreed to the assurances obliging contractors to employ local labor, and workers from ethnic minorities will be particularly targeted. Skills training in construction, language training, and tourism will be provided in coordination with other government and local stakeholders. Attention to ethnic minority cultural issues will be addressed through awareness building with workers and prohibitions on construction near religious sites on particular days, such as during Friday prayers at the mosque. Information and education activities on sexually transmitted diseases and HIV will be supported by the Project and the Center for Disease Control in each city. The expansion of bus and taxi services will pay attention to ensuring that public transportation is available for the new relocation sites and improved roads (predominantly ethnic minority areas).

E. Consultation and Disclosure

13. During preparation, affected persons and ethnic minority populations living in the five project cities were extensively consulted about the likely positive and negative impacts of the Project and participated in outlining actions to enhance positive outcomes. Other stakeholders consulted include (i) heads of affected person households (excluding Kuytun), (ii) village heads and villagers' representatives, (iii) local government agencies and departments, and (iv) women and vulnerable groups. From March to May 2008, consultative meetings were held in the five project cities and Urumqi to discuss and finalize the EMDPs. Upon ADB approval, the EMDPs will be endorsed and disclosed to the targeted villages, townships, and subdistricts and uploaded to the ADB website. The participation and disclosure plan will use notices and meetings to deal with all aspects of the Project, such as notification of employment and training opportunities, land acquisition details, EMDP actions, and general information and feedback sessions. During the project implementation period, the PMOs will encourage affected persons to participate in additional resettlement activities such as skills training. Ethnic minorities will participate in the formulation of compensation standards and relocation plans. To resolve any grievances and ensure smooth construction and project implementation, a clear, transparent, and efficient complaint and appeals channel with redress mechanisms has been outlined. This will be the same for grievances arising from both resettlement plan and EMDP implementation. Monitoring indicators related to participation and feedback have been incorporated into the plan.

F. Implementation/Institutional Arrangements

14. The city government and implementing agency (IA) in each project city will be responsible for implementing the EMDP. The Ethnic Affairs Bureau will provide support to coordinate, advise, and monitor implementation progress. Implementation arrangements for the EMDPs have been integrated into project management, or are part of ongoing government programs. Other key agencies include the Center for Disease Control, Civil Affairs Bureau, Labor and Social Security Bureau, and the All-China Women's Federation. The Ethnic Affairs Bureau will provide oversight and review of external monitoring, evaluation reports, and provide recommendations. Township governments and subdistrict offices will assign staff for implementation and coordination. The IA will have a member responsible for EMDP implementation.

G. Budgeting and Financing Sources

15. The EMDP activities will not require a separate budget. The actions are either included as (i) part of the project budgets, or (ii) part of local government development budgets. Local government agencies will collaborate with the Executing Agency and city government, while local government budgets cover their staffing and related costs. Project actions are cost under the resettlement plans and project contracts.

H. Monitoring and Evaluation

16. Regular monitoring and evaluation of the EMDPs will ensure that the plans are implemented properly. Objectives of the monitoring and evaluation plans with respect to ethnic minorities will be (i) to collect data and information to identify project impacts based on the development monitoring framework in the social and poverty assessment and the monitoring frameworks for resettlement, including qualitative information to describe social or poverty changes on ethnic minorities and their communities; and (ii) to ensure that appropriate approaches have been adopted and the goals have been achieved. The city government and executing agency in each city will undertake internal monitoring. Independent organizations will be hired for each area in conjunction with the resettlement plan external monitoring agency to provide independent advice on progress, impacts, and outcomes. Terms of reference for external monitoring are appended to the EMDPs. The project component in five cities is scheduled to commence in 2009 and finish in 2013.

FINANCIAL ANALYSIS

A. Introduction

1. Financial analysis has been prepared in accordance with the Asian Development Bank's (ADB's) *Guidelines for the Financial Management and Analysis of Projects*.¹ Financial analysis was carried out to ensure fiscal sustainability of the project components by analyzing city government finances of Altay city government, Changji city government, Hami city government, Kuytun city government, and Turpan city government.

B. Financial Analysis of Non-Revenue Generating Components

2. The historical financial performance of the city governments has been analyzed to determine whether they can provide the required counterpart funds during the construction period and necessary funds for operation and maintenance (O&M) and debt service during the operating period. In addition, annual average growth rates of revenues and expenditures during the project period are calculated. The average income growth rate ranged from 11% to 12% per year. The same growth rates are used in projecting the revenues of the cities during implementation of the Project. The sources of income of these cities are from tax and nontax revenues and from subsidies and/or direct transfers from the provincial prefectures and the regional governments. Kuytun registered surplus for the period 2003 and 2004. Altay, Changji, Hami, and Turpan over the last 5 years did not register any surplus funds; their incomes are just enough to sustain their operations. Altay and Turpan have been very dependent on transfers from the regional government. The transfers and subsidies to the city budgets are in Table A.12.1. Their internally generated funds from tax and nontax resources are not sufficient to cover recurring costs. It is recommended that assurance be sought for additional transfer from the national budget to support the provision of counterpart funds during implementation of the Project.

Table A12.1: Financial Performance Assessment Results
(%)

Item	Altay City	Changji City	Hami City	Kuytun City	Turpan City
Annual Income Growth	11	11	12	11	12
Tax and Nontax Revenues	22	84	68	89	59
Subsidies and Transfers	78	16	32	11	41

Source: Asian Development Bank.

C. Fiscal Impact Assessment

3. Financial sustainability of the components during both the implementation and operation phase has been determined. The fiscal impact assessment of the implementing agencies (IAs) has been assessed by comparing annual collections from the identified financing sources with the annual counterpart funds required for (i) capital expenditures during project implementation, and (ii) recurrent costs for O&M and debt services of the project components during operation. Interest and principal repayments for the ADB loan are estimated based on a grace period of 5 years and a maturity of 20 years. Table A12.2 shows the total amount of funds that each city

¹ ADB. 2005. *Guidelines for the Financial Management and Analysis of Projects*. Manila.

government must earmark, which may include new budgets and allocation that will be earmarked.

Table A12.2: Summary of Annual Funds Required
(CNY million)

Implementing Agency	Annual Funds to be Made Available	Implementation Period		Operational Period			Annual Funds Required
		Total Counterpart Funds ^a	Duration	Annual Counterpart Funds Required	Annual Debt Service	Annual O&M ^b	
Altay City	34.6	118.5	5	23.7	9.7	1.2	10.9
Changji City	50.3	175.8	5	35.2	14.6	0.6	15.1
Hami City	19.5	68.9	5	13.8	5.6	0.2	5.8
Kuytun City	30.0	104.7	5	20.9	8.5	0.6	9.1
Turpan City	36.4	129.1	5	25.8	10.2	0.4	10.6

O&M = operation and maintenance.

^a Total counterpart funds needed for implementation was based on total project costs which include contingencies.

^b Operation and maintenance costs are provided by the city government.

Source: Asian Development Bank.

4. Altay city government will provide about \$17.3 million in counterpart funds during implementation and \$1.6 million per year during operation. Changji city government will provide about \$25.7 million in counterpart funds during implementation and \$2.2 million per year during operation. Hami city government will provide about \$10.1 million in counterpart funds during implementation and \$0.8 million per year during operation. Kuytun city government will provide about \$15.3 million in counterpart funds during implementation and \$1.3 million per year during operation. Turpan city government will provide about \$18.8 million in counterpart funds during implementation and \$1.5 million per year during operation. Assessment of projected annual revenues shows that each IA has the necessary counterpart funds for its respective components.

5. The analysis indicates that based on the identified fund sources during project preparation (including new budgets, subsidies, and allocation that will be earmarked), all components should have sufficient funds available for counterpart funds during implementation and O&M costs and debt service during operation period. Estimated annual forecasted debt service and O&M costs are found to be about 2% of the city budget annual revenues. This indicates acceptable fiscal risk since it is expected that fiscal revenues of the city governments will grow in line with economic development, providing more mobility for the city governments to finance proposed project components. Detailed financial analysis is in Supplementary Appendix J.

D. Financial Management Assessment

6. The financial management assessment of Xinjiang Uygur Autonomous Region government (XUARG) and the city governments of Altay, Changji, Hami, Kuytun, and Turpan has been undertaken using the financial management assessment questionnaire provided by ADB.² It determined the accounting and financial capacity needs of XUARG and the city

² ADB. 2005. *Financial Management and Analysis of Projects, Knowledge Management Addendum*. Manila (page 16).

governments during project implementation and operations after project completion. Details of the financial management assessment are in Supplementary Appendix K.

7. The questionnaire was administered to the finance departments of XUARG and the city governments. It has determined the accounting and financial capacity needs during project implementation and operations after project completion. The assessment of XUARG's previous experience in managing foreign-assisted projects confirms that its financial management practices are adequate for implementation of the Project. XUARG is currently implementing an ADB-financed project and has adequate capacity and experience to implement this Project. In the case of the IAs, each city will be assisted to establish a sound and solid financial management system at the beginning of project implementation. Each city will keep accounts in accordance with the PRC's accounting standards and subject to independent external audit by suitably qualified commercial or government auditors. Accounting will be in accordance with relevant PRC national accounting standards. All IAs will meet ADB requirements for auditing arrangements and submit audited financial statements to ADB annually. A capacity building component to strengthen financial management has been included in the Project.

8. The IAs have adequate procedures in managing and safeguarding their assets. All IAs' subsidiary ledgers of fixed assets and inventories are well maintained. Office buildings and other fixed assets are provided with insurance coverage. Physical inventories of fixed assets are conducted periodically. The IAs have effective asset management systems in place and are found to be generally satisfactory.

9. The overall financial management arrangements of the IAs are generally satisfactory and reliable. ADB's financial due diligence requirements, especially the audit and reporting requirements, will be particularly emphasized to the IAs. The IAs' staff concerned will be trained in ADB loan processing and policies and related procedures for procurement and disbursement, among others. Staff will undergo training in project management and relevant ADB procedures during implementation of the Project. With the help of international and national consultants, capacity will be strengthened in (i) project financial management, accounting, and business planning; and (ii) management information system and cost management and control. The respective IAs will establish a well-staffed project management office. The IAs will be required to maintain a separate book of accounts specifically for the Project to ensure that project construction and management activities can be accounted for separately. This will facilitate the preparation of the financial reports required to be submitted to ADB annually during the duration of the Project.

ECONOMIC ANALYSIS

A. Introduction

1. The economic analysis covers five components of the Project. For the overall Project, the analysis covers (i) economic rationale for public intervention, (ii) the goals of the investment plan, and (iii) the design of the plan. The economic analysis also evaluates the components relative to least-cost analysis criteria and standard benefit-cost analysis. Economic analysis was conducted in accordance with the Asian Development Bank's (ADB's) *Guidelines for Economic Analysis of Projects* (2001). The detailed economic analysis and least-cost analysis are in Supplementary Appendix L.

B. Analysis of the Overall Project

2. **Rationale for Public Intervention.** The primary motivation for the Project results from the increasing concern over the effects of population growth and economic growth on the inadequacy of public services in the cities of Xinjiang Uygur Autonomous Region (Xinjiang). Continuing urbanization has resulted in increasing demand for private cars, changes in lifestyle that create a more diversified range of travel demands, and changes in urban land use patterns that are increasingly dependent on motorized transport. This contributes to major deficiencies in urban road networks and services. Furthermore, urban areas face environmental threats from pollution of surface and subsurface waters from untreated garbage. In 2006, the urban population in Xinjiang accounted for about 37% of the total population. This is expected to increase to 42% by 2010 and 47% by 2015.

3. The strategic location of Xinjiang as a major transport corridor and as the gateway between the People's Republic of China and the Central Asian countries¹ is expected to spur economic development and contribute to tourism development. The region is also rich in natural resources including oil, metals, and minerals, which provide a sound basis for economic development. With the expected rise in trade and tourism brought about by cooperation activities under the Central Asia Regional Economic Cooperation Program, development of necessary infrastructure support facilities is critical to sustained economic growth and development.

4. Poor condition of urban roads and solid waste management demonstrate the need for government investments. The private sector, which is a victim of poor roads and solid waste management, does not possess sufficient investment resources to solve the problems and improve the quality of urban infrastructure and services. Therefore, government intervention is economically sound and justified. The Government has a role in controlling negative externalities from untreated waste and coordinating the management of urban roads. It has a role in promoting urban development in a more coordinated manner and integrating both government and beneficiary efforts in bringing more sustainable investments in physical infrastructure. Since the output of the proposed projects cannot be reasonably be sold, local government departments will be the managers and maintainers. However, contracting operations and maintenance of urban roads and solid waste management to the private sector is encouraged.

5. The Project involves government intervention at several different levels. The Xinjiang Uygur Autonomous Region government (XUARG) is promoting development in the cities in a more coordinated and cost-effective manner by bringing about more sustainable investments in physical and environmental protection infrastructure that aim to improve the quality of life. Involvement of the XUARG is justified since the development program spans several prefectures

¹ The Second Eurasia Continental Bridge railway line connects Europe to East Asia through the Xinjiang Uygur Autonomous Region.

and cities. The city governments are coordinating and implementing the elements of urban road master plans and making individual investments in roads and environmental sanitation. They will also be involved in owning and managing the completed facilities. The Government has a role in promoting urban development in a more coordinated manner and integrating both government and beneficiary efforts in bringing about more sustainable investments in physical infrastructure. Government involvement in individual projects is justified since both solid waste management and urban roads are natural monopolies. City governments through the construction bureau manage urban roads, sanitation, and other essential public utilities and services in the towns.

6. **Goals of the Investment Plan.** The Project is a direct response to Xinjiang's 11th Five-Year Plan (11FYP) to promote sustainable economic development, particularly in its cities, via construction and upgrading of roads infrastructure while protecting the environment. The 11FYP recognizes that achieving these goals will require the improvement of basic municipal services and environmental quality in these areas. All subcomponents in the proposed Project are integral components of the 11FYP. City governments are required to make investments in roads and environmental sanitation. The city and area government master plans are reasonably sound and are integrated with the overall planning process.

C. Traffic Analysis and Projections

7. In Changji City, the existing traffic was determined using travel demand volumes and patterns. The traffic volume was based on existing travel patterns, population, and the proposed land use of the road's zone of influence. The demand model contains some form of mathematical relationships that relate travel demand with external factors such as population and land use. Since a complete dataset of travel demand patterns and behavioral parameters fundamental to the accurate description of the existing situation is very costly to obtain (e.g., origin–destination movements of travelers are difficult to obtain without interviewing), the demand forecasting model relies on estimation techniques and professional judgment for the development of the base year model to represent the existing situation. The model area was set (zone A and zone B). The zone encompasses the area over which all the economic benefits and costs of the Project will be felt. The model was segmented to reflect the characteristics of the area's zone of influence as follows: (i) peak hours since travel time varies significantly between morning peak hour and evening peak hour; and (ii) vehicle classes were differentiated within the model, such as cars, trucks, and buses. Traffic forecast was determined based on socioeconomic trends that took into account changes in variables such as gross domestic product, population, and vehicle ownership. The forecast gross domestic product growth rates were applied to the calibrated base year matrices to produce passenger and freight vehicle flows.

8. The other cities' traffic analyses were performed in terms of (i) selecting and defining vehicle type's representative, (ii) assessing annual average daily traffic, and (iii) forecasting demand. A vehicle fleet consists of a mix of several vehicle types that use a road network. The traffic survey serves as the basis for determining average annual daily traffic. To establish the average annual daily traffic from the average daily traffic, seasonal variations were assessed taking into account the main factors driving changes in traffic patterns, such as the rainy season, winter, and tourist season. Winter has a direct impact on traffic patterns. Heavy snowfall can cause frequent road closures. Traffic forecast is composed of (i) growth for normal traffic, which corresponds to the growth that would occur even without improving the road network; and (ii) generated traffic, which occurs only in cases where there is a significant improvement in the road network. In both cases, traffic projections also took into account potential generated traffic.

D. Evaluation of Individual Components

9. The least-cost analysis ensures that each subproject is optimally designed to meet the goals of the Project and does not involve unnecessary extra costs. The least-cost analysis has covered all feasible alternatives for a given component, including variations in technology and location. Each subproject has been designed at least cost in terms of location, scale (planning horizon), and technology. Detailed evaluation of options has been undertaken to meet the least-cost criterion. The present value of economic cost approach has been adopted for the roads, including environmental sanitation. The analysis uses a simplified approach based on annualized capital, operation, maintenance, and management costs; and an economic opportunity cost of capital of 12%. Detailed calculation and discussion of the cost-effectiveness analysis is presented in Supplementary Appendix L.

10. In addition to being part of the 11FYP, each component is economically justified on its own. Economic internal rates of return (EIRRs) have been estimated for each road subproject. The EIRRs are compared with the economic opportunity cost of capital, which is assumed to be 12%. Major benefits that have been quantified for the roads include the following: (i) savings in vehicle operating costs resulting from reduced travel distance and improved road conditions, (ii) savings resulting from fewer accidents, (iii) reduced maintenance costs, (iv) savings in the value of passengers' time and of freight tied up in transit, and (v) generated traffic resulting from reduced transportation costs.

11. The economic analysis has been conducted over 25 years, including project construction. Economic benefits and costs are denominated in domestic price numeraire at constant mid-2008 prices. Foreign currency costs have been converted into local currency costs using the exchange rate of CNY6.85 per \$1 and adjusted based on purchasing power parity assumption. Project tradable components have been adjusted to economic prices using a shadow exchange rate factor of 1.013 and non-tradable components valued at domestic market prices. Project costs and benefits have been estimated on a without-project and with-project basis. Transfer payments have been excluded in the valuation of cost estimates in economic prices. The financial prices of the different components of volatile organic compounds (such as fuel, lubricants, tires, vehicle maintenance cost, driver/crew cost) have been adjusted to economic prices using appropriate conversion factors: 1.013 for tradable and 1.0 for non-tradable. A shadow wage conversion factor of 0.67 is applied for all types of work time for vehicle maintenance labor and vehicle operator labor and 1.0 for nonworking time. The shadow coefficient used for budget transfers such as taxes and subsidies is zero. Passenger time savings are divided into working and leisure. Leisure time is assumed at 30% of work time. Passenger working time is adjusted by the shadow wage rate factor of 0.67 and the nonworking time by a conversion factor of 1.0. Standard sensitivity tests, and additional tests for a 1-year implementation delay and 20% increase in operation and maintenance costs, have been conducted.

12. The economic costs include (i) the capital cost, including physical contingencies, land acquisition, resettlement, environmental monitoring, and mitigation costs; and (ii) the cost of operation and maintenance, including the cost of replacement of depreciated equipment. The land acquisition and resettlement costs have been based on their opportunity costs, that is, the agricultural output forgone and the re-siting of displaced economic activities.² Residual values, if any, have been treated as negative costs at the end of the project life.

² The economic opportunity costs of land have been assumed to be equivalent to the replacement value of farmland, which has been calculated for land compensation.

E. Results of Economic Analysis of Individual Components

13. Tables A13.1 and A13.2 show the results of the base cases and sensitivity tests. EIRRs are higher than the economic opportunity cost of capital of 12%, indicating that the roads including environmental improvement and institutional strengthening are economically justified.

Table A13.1: Results of Economic Analysis

Component	EIRR (%)	NPV (CNY million)
Altay City Roads and Environmental Improvement	17.0	45.1
Changji City Roads and Environmental Improvement	26.4	215.5
Hami City Roads and Environmental Improvement	17.5	23.7
Kuytun City Roads and Environmental Improvement	18.1	50.7
Turpan City Roads and Environmental Improvement	19.6	69.4
Overall Project EIRR	19.7	404.6

EIRR = economic internal rate of return, NPV = net present value.

Source: Project preparatory technical assistance consultant estimates.

Table A13.2: Results of Sensitivity Analysis

Sensitivity Indicator	Altay City Roads and Environmental Improvement		Changji City Roads and Environmental Improvement		Hami City Roads and Environmental Improvement		Kuytun City Roads and Environmental Improvement		Turpan City Roads and Environmental Improvement	
	EIRR	NPV (CNY M)	EIRR	NPV (CNY M)	EIRR	NPV (CNY M)	EIRR	NPV (CNY M)	EIRR	NPV (CNY M)
Construction cost up by 10% (A)	15.4	33.1	24.2	197.8	16.3	20.6	16.4	39.7	17.8	57.7
O&M cost up by 20%	16.2	37.1	25.9	207.3	15.2	14.4	17.2	42.3	18.9	62.1
Benefits down by 10% (B)	14.8	24.6	23.8	172.1	15.1	13.3	15.8	30.5	17.3	47.1
Combination of A and B	12.9	8.6	21.6	150.3	14.1	9.6	13.8	15.3	15.3	31.7
Benefits delay by 1 year	14.9	28.7	22.3	173.3	15	14.6	15.9	34.9	17	50.2

EIRR = economic internal rate of return, NPV = net present value.

Source: Project preparatory technical assistance consultant estimates.

F. Overall Project Analysis and Conclusions

14. The above analysis indicates that the project components are economically viable and that they stand up to sensitivity tests where costs increase and benefits decrease. The cost of institutional development has been incorporated into the road and environmental sanitation economic analysis. The overall EIRR for the project components has been calculated as 19.7%. The economic analysis demonstrates the economic viability of the project components. The results of the sensitivity analysis confirm the robustness of the project components' economic viability: changes in key variables—10% increase in construction costs, 20% increase in operation and maintenance costs, 10% decrease in benefits, and 1-year delay in completion.