



Report and Recommendation of the President to the Board of Directors

Project Number: 42382
August 2009

Proposed Loan and Administration of Grant People's Republic of China: Liaoning Small Cities and Towns Development Demonstration Sector Project

CURRENCY EQUIVALENTS

(as of 25 August 2009)

Currency Unit – yuan (CNY)

CNY1.00 = \$0.1463

\$1.00 = CNY6.8313

For the purpose of calculations in this report, an exchange rate of \$1.00 = CNY6.83 has been used.

ABBREVIATIONS

ADB	–	Asian Development Bank
DCG	–	Donggang city government
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
EMP	–	environmental monitoring plan
FIRR	–	financial internal rate of return
FYP	–	five-year plan
GDP	–	gross domestic product
KMACG	–	Kazuo Mongolian Autonomous county government
LCG	–	Linghai city government
LDRC	–	Liaoning Development and Reform Commission
LIBOR	–	London interbank offered rate
LPG	–	Liaoning provincial government
O&M	–	operation and maintenance
PEAP	–	public education and awareness program
PMO	–	project management office
PRC	–	People's Republic of China
PPMS	–	project performance management system
SEIA	–	summary environmental impact assessment
TA	–	technical assistance
WACC	–	weighted average cost of capital

WEIGHTS AND MEASURES

km ²	–	square kilometer
m ²	–	square meter
m ³ /day	–	cubic meter per day

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	Targeting classification: Targeted intervention (nonincome Millennium Development Goals) Sector (subsectors): Multisector (water supply and other municipal infrastructure and services (water supply and sanitation, waste management, energy utility services, urban transport) Themes (subthemes): Economic growth (promoting macroeconomic stability), social development (human development), environmental sustainability (urban environmental improvement) Climate change: Climate change adaptation Location impact: Rural (low), urban (high)
Environment Assessment	Category A. An environmental impact assessment was completed. 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 19 November 2008.
Project Description	The Project aims to help promote balanced and environmentally sustainable urbanization; narrow the urban–rural gap; and improve production, employment, and living conditions in small cities and towns in Liaoning Province. It will support the development of selected small cities and towns in the province. The Project is being processed as a sector loan to allow the Liaoning provincial government (LPG) to respond to rapidly changing needs of cities and towns across the province. The Project includes about seven subprojects, including three core subprojects—Donggang City, Kazuo Mongolian Autonomous County, and Linghai City. Subsequent subprojects will be selected, prepared, and appraised during project implementation following an agreed set of criteria and procedures. The Donggang City core subproject has three components: (i) roads and bridge, and associated services; (ii) drainage and wastewater treatment; and (iii) river improvement and area upgrading. The Kazuo Mongolian Autonomous County core subproject has one water supply component. The Linghai City core subproject has one component for construction and upgrading of roads, and associated services.
Rationale	The PRC Government is committed to developing small cities and towns as a way to generate jobs, narrow the rural–urban income gap, and increase national economic productivity. Growth of small cities and towns creates economic opportunities for farmers to move to urban areas and gain higher value-added employment; this is the key to realizing the PRC's vision of a "harmonious society," in which the benefits of growth will be shared more equitably. The PRC's 11th Five-Year Plan (11FYP) 2006–2010 identifies small city and town development as a means to provide a higher standard of living to rural migrants without exacerbating infrastructure fatigue and other problems afflicting large cities. Building on the conclusions of the ADB-financed Town-Based Urbanization Strategy

Study, the national town development policy calls for strengthening physical and economic linkages between major cities in metropolitan areas or development corridors and the smaller settlements at their periphery, and stresses the development of small cities and towns by facilitating the development of larger urban agglomerations.

Liaoning Province, located in the southern part of the PRC's northeast, functions as a major hub between the PRC's northeastern economic region and the Pan-Bohai economic region. Historically a base for industrial materials and machinery, it has faced economic challenges related to industrial restructuring moving from state-owned heavy industries to light and service industries to promote balanced development and focus on growth based on economic demand. Many state firms have closed or are experiencing major losses. While state investment has aided the industrial transformation, local governments, particularly small cities and towns, have had difficulty finding catalysts for new employment and economic growth. Small cities and towns in the province have made progress in recent years in facilitating economic growth, but still lag the big cities. The rapid development and race to urbanize and industrialize have left many with significant pollution problems and correspondingly poor living conditions, and outstripped the capacity to provide services. More jobs are also needed to stimulate growth driven by domestic demand instead of relying on exports. While many small cities and towns have made significant investments in different types of urban infrastructure, few have developed an integrated approach to the development of various infrastructure sectors. LPG is promoting the development of small cities and towns in a more coordinated and cost-effective manner by encouraging more sustainable investments in physical and environmental protection infrastructure to improve the quality of life and create conditions favorable for a strategic shift of the rural labor force.

The Project is a direct response to Liaoning's 11FYP to promote sustainable economic development, particularly in its small cities and towns, via construction and upgrading of road infrastructure, water supply, and environmental improvement. All components in the Project are integral components of the 11FYP. The proposed subprojects focus on supporting sustainable urban development and comprise a number of sector interventions primarily targeted to support job creation, economic growth, environmental protection, improvement of infrastructure and municipal services, and industrial development, to address key infrastructure sector issues in the subproject cities and towns. The main sectors are roads and associated services, water and wastewater, solid waste management, river improvement and area upgrading, and district heating. ADB's experience and knowledge in urban environmental improvement and management, including supporting utility tariff reforms, will add value to the Project, especially for small cities and towns undergoing urbanization and economic transformation.

To allow greater flexibility during project implementation, the Project uses a sector loan approach and develops subproject identification, selection, and appraisal criteria and procedures to achieve the objectives of sector policies and plans.

Impact and Outcome The impacts of the Project are improved living conditions and increased employment generation in small cities and towns in Liaoning Province. The project outcome is improved urban infrastructure and municipal services in about seven small cities and towns in the province.

Project Investment Plan The investment cost of the Project is estimated at \$236.5 million, including taxes and duties of \$16.0 million.

Financing Plan	Source	Amount (\$ million equivalent)	% of Total
	Asian Development Bank Loan	100.0	42.3
	Multi-Donor Trust Fund under the Water Financing Partnership Facility ^a	0.3	0.0
	Donggang City Government	49.7	21.0
	Kazuo Mongolian Autonomous County Government	7.6	3.2
	Linghai City Government	17.2	7.3
	Other City and County Governments	61.7	26.2
	Total	236.5^b	100.0

^a Contributors: the governments of Australia, Austria, and Norway. Actual amount is \$250,000.

^b Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

A loan of \$100,000,000 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 26-year term including a grace period of 6 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 PRC Government will relend the loan proceeds to LPG, the Executing Agency, on the same terms and conditions as the ADB loan. LPG will then onlend the loan proceeds to the subproject municipal, city, and county governments and then to the implementing agencies on the same terms and conditions as those of the ADB loan. The end-borrowers will assume the foreign exchange rate variation risks of the ADB loan.

Period of Utilization Until 31 March 2016

Estimated Project Completion Date 30 September 2015

Executing Agency Liaoning Provincial Government through the Provincial Project Coordination Group

Implementation Arrangements

The Provincial Project Coordination Group comprising the Liaoning Finance Bureau, Development and Reform Commission, Construction Bureau, Land Resources Bureau, Audit Bureau, Price Bureau, and Environmental Protection Bureau will provide overall guidance, supervision, and support to project preparation and implementation. A Liaoning project management office (PMO) was established to undertake and manage day-to-day activities in connection with the Project, including selection and appraisal of subsequent subprojects. In each subproject city and town, a PMO has been set up to liaise with the Liaoning PMO and departments and bureaus concerned, and to oversee and manage (i) work undertaken by the implementing agencies, (ii) overall project finance, and (iii) project implementation.

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

The Project will provide funding for international and national consulting services to support the PMOs and implementing agencies with project implementation, management, and institutional capacity building. The consulting services will cover (i) project management, (ii) the project performance management system, (iii) financial management, (iv) social and environmental support, (v) operation and maintenance, and (vi) 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

The Project will benefit 260,000 residents of the three core subproject cities and towns of Liaoning, as well as residents of four subsequent subproject cities and towns that have a total urban population of about 660,000. The percentage of poor among beneficiaries in the three core subproject towns is 9.0% in Kazuo, 4.5% in Linghai, and 3.5% in Donggang. Major socioeconomic impacts include (i) improvement of living standards through the provision of essential public infrastructure; (ii) improvement of public health through infrastructure and environmental improvement; (iii) improvement of the quality and affordability of basic services; (iv) job creation; (v) environmental protection through improvement of the sewage collection system and flood control; (vi) facilitation of mobility, access, and affordability of key basic services and destinations through road construction; and (vii) provision of skills training.

The infrastructure improvements financed under the Project are anticipated to produce substantial environmental and economic benefits. Provision of water supply will have quantifiable impacts on public health in terms of savings made on medical consultations and purchase of medicines. This will reduce domestic work, largely

undertaken by women, such as water collection and disposal, cleaning, and caring for the sick. Jobs created will attract surplus rural labor to urban areas and address unemployment, provide new skills to workers, and stimulate a number of secondary industries.

The Project will contribute to climate change adaptation through measures to improve flood control and strengthen water resources management in the subproject cities and towns that are prone to increasing floods and droughts.

Risks and Assumptions

The Project does not have any unusual technical risks. Conventional engineering designs with proven records of reliable performance will be adopted for (i) road and bridge construction, (ii) installation of municipal services along roads, (iii) water supply and wastewater management, (iv) river improvement and area upgrading, (v) solid waste treatment, (vi) environmental sanitation, (vii) heating, and (viii) landscaping. During implementation, the loan implementation consultant will support the PMOs and implementing agencies to ensure that equipment and works comply with design and quality assurance requirements.

The following risks could affect the timely implementation, economic viability, and realization of project benefits: inadequate preparation and late selection, appraisal, and implementation of subsequent subprojects; failure to implement institutional strengthening for effective project implementation and management, and corporate governance; lack of proper operation and maintenance of project facilities; late consultant selection; delay in completion of associated projects; major amendments and changes to implementation of the master plans in subproject cities and towns; delay in the provision of counterpart funding; failure to establish or increase water and wastewater tariffs to meet cost recovery targets; and unforeseen land acquisition and resettlement issues, which could hamper the efficient implementation of project works and the restoration of livelihoods of affected persons.

These risks will be mitigated through effective institutional arrangements and project management; extensive and appropriate training on ADB and domestic procedures and requirements; provision of institutional capacity building, and appropriate project implementation and monitoring arrangements for the subproject city and town PMOs and implementing agencies with support from the loan implementation consultant; synchronization of the project design and implementation schedules with associated projects planned; covenanted assurances from the subproject city and town governments on the provision of counterpart funding, and on regular tariff reviews and increases; strengthening of internal monitoring and supervision by the Liaoning subproject city and town PMOs and the implementing agencies; and engagement of a qualified external agency to monitor and evaluate resettlement.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan, and (ii) proposed administration of a grant to be provided by the Multi-Donor Trust Fund under the Water Financing Partnership Facility, both to the People's Republic of China (PRC) for the Liaoning Small Cities and Towns Development Demonstration Sector Project. The design and monitoring framework is in Appendix 1. The stakeholders analysis, and problems and objectives tree analyses are in Supplementary Appendix A.

2. The Government asked the Asian Development Bank (ADB) to help improve urban infrastructure and municipal services in about seven small cities and towns in Liaoning Province by constructing and upgrading roads, water supply, wastewater treatment, heating, and other environmental services to facilitate sustainable and inclusive economic development and enhance the quality of life of residents, including the poor, in the less developed small urban settlements in the province.

II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Performance Indicators and Analysis

3. Since the 1980s, the PRC Government has progressively relaxed migration policies to access low-cost rural labor. The urban population has tripled, reaching 577 million in 2006, accounting for 44% of the total population; it is expected to exceed 50% by 2015. The urban–rural income gap is large; the average disposable income of urban residents is about 3.3 times the average net income of farmers in 2006. With increasing mechanization in the agriculture sector, millions of rural migrants seek employment in urban areas each year. The challenges of providing employment, housing, and services to the urban population are massive. The Government favors urbanization as a means to increase national economic productivity and promote harmonious development, in which the benefits of economic growth will be shared more equitably. The 11th Five-Year Plan (FYP) 2006–2010 continues the policy of promoting the development of small cities and towns, which has the potential to (i) provide higher living standards to migrants without exacerbating infrastructure capacity and problems afflicting large cities, (ii) increase productivity, and (iii) narrow the income gap, thereby contributing to social stability.¹ It proposes “coordinated development of big, medium and small cities and small towns” and identifies urban agglomerations as the main model for future urbanization. Building on the conclusions of the ADB-financed Town-Based Urbanization Strategy Study,² the 11FYP proposes strengthening physical and economic linkages between major cities in metropolitan areas or major development corridors and smaller settlements at their periphery.

4. Over the last 20 years, economic progress in the PRC has largely taken place in large metropolitan regions and provincial capitals with better access to resources. In large cities infrastructure networks such as transport, water supply, wastewater management, and electrical power are overused and showing signs of fatigue; economic efficiency is being compromised; and environmental costs are rising. Small cities and towns represent an underutilized resource in the PRC urban system. The average combined annual growth rate of the secondary and tertiary sectors in large and medium-sized cities was 14.2% during 2001–2005, compared with 5.4% in small cities and towns. During 1988–2002, the gap between public investment per capita in large and medium-sized cities versus small cities and towns grew at an average rate of 2.8%, contributing to a gap in gross domestic product (GDP) growth, which grew at 3.1% annually. While many cities and towns have made significant investments in urban infrastructure, few have

¹ Liaoning Provincial Government. 2005. *Liaoning Province National Economic and Social Development Eleventh Five-Year Plan*. Liaoning Province.

² ADB. 2004. *Technical Assistance to the People's Republic of China for the Town-Based Urbanization Strategy Study*. Manila.

developed an integrated approach to urban development that combines infrastructure improvements with demand-driven pro-poor development, and appropriate town-specific urban design. Through the development of physical and social infrastructure, small cities and towns can attract investment and in-migration from rural areas, thereby playing a more significant role in the PRC's drive to urbanize, increase economic productivity, and distribute the benefits of economic growth more equitably. Development of small cities and towns aims to attract investment and create jobs to absorb rural migrants. Increases in disposable income will stimulate domestic demand and economic growth.³

5. The revised criteria for an “ecologically sound province” and an “ecologically sound city and county” announced by the Ministry of Environmental Protection (then the State Environmental Protection Administration) on 17 January 2008 give balanced emphasis to environmental protection and economic development, illustrating the Government's preference for sustainable development indicators to assess the performance of local governments and officials. The Chinese Public's Environment and Inhabitant Livelihood Index 2007⁴ shows that Chinese people are most dissatisfied with air pollution, with 25.8% saying they are very concerned with air quality. Awareness of the adverse effects of the PRC's unprecedented industrialization is increasing. The country is now the world's second biggest emitter of greenhouse gases responsible for climate change; creating negative impacts on biodiversity, livelihoods, and economic development. The Government aims to integrate economic growth, natural resource management, and climate change mitigation and adaptation to achieve sustainable development.

6. The Liaoning Project is one of three small cities and towns development projects supported by the Government. The aim is to promote the development of selected small cities and towns in the provinces of Hebei, Liaoning, and Shanxi in a way that can be replicated in other small cities and towns in these provinces and elsewhere in the PRC. The three provinces were selected following the successful outcome of two ADB-financed TAs: the Town-Based Urbanization Strategy Study (footnote 2) and the Hebei Provincial Development Strategy.⁵ While the small cities and towns in these provinces face many similar problems and challenges, they also have different characteristics in terms of geographic location and economy that offer unique opportunities for promoting inclusive and sustainable development. Appendix 2 provides a sector and subsector analysis.

B. Analysis of Key Problems and Opportunities

7. **Project Background.** Liaoning Province, located in the southern part of the PRC's northeast, functions as a hub between the northeastern and the Pan-Bohai economic regions. In 2007, its total population of 42.98 million comprised mainly Han, with 6.8 million ethnic minorities (16% of the total), who are mostly rural residents; those in urban areas are integrated into the Han culture. The urban population represented 59% of the total in 2007, and is expected to reach 63% by 2010. About 5.6% of the total urban population lived on incomes below the official poverty line, compared with 3.8% nationally.⁶ Unemployment was 4.4% in 2007, slightly higher than the national average of 4.0%. In Kazuo, one of the subproject towns, unemployment in 2007 was 33%. Liaoning is historically a base for industrial materials and machinery but has faced economic challenges related to an industrial restructuring process of state-owned heavy industries giving way to light (e.g., agriculture) and service (including tourism) industries. The aim is to promote balanced economic development and focus on demand-driven growth instead of relying on exports. In 2006,

³ This is in line with the latest PRC Government incentive to stimulate sustainable growth by increasing domestic demand and decreasing reliance on exports.

⁴ Released by the China Environmental Culture Promotion Association in January 2008.

⁵ ADB. 2002. *Technical Assistance to the People's Republic of China for the Hebei Provincial Development Strategy*. Manila.

⁶ At the end of 2007, 1.41 million urban people were living under the minimum living guarantee in Liaoning; 22.71 million in the whole of the PRC (website of Ministry of Civil Affairs of the PRC); Liaoning's total urban population was 25.44 million; the PRC's was 593.79 million (website of National Bureau of Statistics of China).

the total losses of Liaoning's loss-making enterprises amounted to CNY25 billion (\$3.7 billion), the highest among all provinces in the PRC.⁷ About 77% of state industrial firms closed down from 1996 to 2006. While state investment for fixed assets has aided the industrial transformation since 2003, the recipients are mostly large cities. While the number of private enterprises, including small- and medium-sized enterprises increased by 20% during 2003–2007, most were established in large cities. Small city and town governments have difficulty catalyzing new employment and economic growth.

8. Small cities and towns in Liaoning Province have made substantial progress in recent years in facilitating economic growth. Some resource-based cities and towns have taken advantage of the growth of the mining and metals sectors; and some located within metropolitan areas and development corridors have become manufacturing centers, transportation hubs, or agroprocessing sites. Others have benefited from multiplier effects through growth in the service sector. However, economic development of the counties still lags the big cities. In 2005, per capita GDP of all the counties in the province was CNY12,427—65% of the provincial GDP and 45% of that of large cities.⁸ In addition, the government-wide priority for GDP focused on industrial development over service sector growth, limiting the impact of investment in job creation. Also, the rapid development and rush to urbanize and industrialize have left many cities and towns with significant atmospheric, aquatic, and ground pollution and poor living conditions, threatening human health and life expectancy. The environments of small cities and towns have been neglected as central and provincial governments have historically focused on larger cities and provincial capitals, which have financial capacity. Thirty-three percent of the six major rivers monitored by the Liaoning provincial government (LPG) in 2005 showed worse than class V COD_{Cr} standard and 67% worse than class V NH₃-N standard,⁹ indicative of impacts from domestic wastewater discharge. In Donggang City, one of the subproject cities, storm water and untreated wastewater flow into Dadonggou River via open channels, resulting in serious water quality deterioration and siltation problems that threaten public health. Meanwhile, centralized heating has limited coverage making the use of coal-burning stoves widespread. The major air pollutant in most cities is PM₁₀,¹⁰ mainly from coal dust during the heating season. Urban population increases have outstripped the capacity to provide services, and poor asset maintenance has compounded the problem. Public service providers are unable to manage sustainable operations, and restructuring is important to ensure viability and independence. Realigning skills to match the growing demand for labor in secondary industries is also necessary.

9. As of 2005, 5.37 million people resided in 616 small cities and towns in Liaoning Province (footnote 1). While these cities and towns can serve as effective linkages between large cities and villages, and between nonfarming and farming sectors, as well as absorb most of the surplus rural workforce, their development has lagged larger cities. Infrastructure provision in most small cities and towns is lacking and outdated. Buildings are generally of low standard. Road density is low, and most existing roads are old and of poor quality. Potable water coverage is only 39%. Many water supply facilities are aged, network coverage is low, and water production capability is inadequate. Many drainage pipes and channels, used for 40 or more years, are resulting in severe breakage and blockage. Only a few wastewater treatment plants are operating and no sanitary landfill is available for domestic garbage, which is either disposed of in the open or buried underground, thus polluting water resources. Most garbage collection vehicles are worn out and garbage collection stations are few.¹¹ Continuing urbanization highlights the inadequacy of road

⁷ Liaoning Statistics Bureau. 2007. *Liaoning Statistics Yearbook 2007*. Liaoning Province (August).

⁸ Liaoning Construction Bureau. 2007. *Liaoning County-level Economy and City and Town Planning Development Study*. Liaoning Province (December).

⁹ COD_{Cr}, i.e., chemical oxygen demand (dichromate) and NH₃-N, i.e., ammonia nitrogen of a water body are two measures of water quality in terms of pollution. PRC water quality standards range from level I (pristine) to level V (very polluted). Level III is the lowest suitable for a municipal raw water source.

¹⁰ PM₁₀, i.e., tiny particles with aerodynamic diameters of 10 micrometers or less in air, is a measure of air pollution.

¹¹ Liaoning Development and Reform Commission. 2006. *Application for ADB Funding for Small Cities and Towns Project*. Liaoning Province (August).

networks and public services, and has resulted in increasing demand for private cars, changes in lifestyle that create more diversified travel demands, and changes in land use patterns. In addition, cities and towns face pollution of surface water and groundwater from garbage, flooding, and untreated wastewater.

10. In LPG's January 2007 Work Report, the provincial governor stated that LPG would develop county seats and key towns, creating conditions favorable for a strategic shift of the rural labor force. Development of cities and towns would be integrated with economic development of the counties and rural enterprises. Industrial projects and tertiary industries would be concentrated in the county seats and key towns to promote prosperity. LPG is bringing about sustainable investments in physical and environmental infrastructure for coordinated and cost-effective development of small cities and towns. City and town governments are implementing elements of the master plans and investing in roads, water supply, heating, and environmental improvement including garbage treatment, drainage, and connection of households to the wastewater network. They need better infrastructure and municipal services to (i) attract investment, especially in employment-intensive industries and services; (ii) provide a decent living environment for residents; and (iii) extend benefits of growth to all residents.

11. **Project Rationale.** The Project is a response to Liaoning's 11FYP to promote sustainable economic development, particularly in its small cities and towns, via construction and upgrading of road infrastructure and water supply, and environmental improvement. It aims to promote balanced and environmentally sustainable urbanization; narrow the urban-rural gap; and improve production, employment, and living conditions in small cities and towns in Liaoning Province. Developing markets and creating jobs by supporting urbanization and protecting the environment in small cities and towns are in line with ADB's strategic objective of promoting growth with equity in the PRC. All components of the Project are integral features in the 11FYP. The core subprojects are Donggang City, Kazuo Mongolian Autonomous County, and Linghai City. The availability of viable projects in line with approved master plans, the potential to serve as models for subsequent subprojects during sector loan implementation, and the preparedness to undertake investments in municipal infrastructure are some of the considerations in the selection of the core subprojects. Selection of subsequent subprojects will be based, among other factors, on their potential to grow economically and provide jobs for rural migrants. Employment growth will contribute more to the Government's goal of closing the urban-rural income gap than production growth. The subprojects focus on townwide primary and secondary infrastructure, with emphasis on environmental infrastructure.

12. A key development strategy of Liaoning, called "5 points along one line," incorporates five key industrial areas along a coastal strip and a new highway that will connect the cities. The concept aims to capitalize on Liaoning's resources and manufacturing ability to bring new growth. Donggang City, a strategically located port city with a harbor near the national border, is an international trading hub and distribution center within the easternmost "point" and will become an important gateway to attract investment to and drive large-scale development of the poorer eastern interior region of the province. Its development will have a demonstration effect on many similar small cities also with substantial fishing and agricultural populations. Linghai City is a coastal city along the transport corridor between the northeastern provinces and the Pan-Bohai economic region. It has an agricultural, fisheries, and food crop base, with recent growth in light industries, clothing, agroprocessing, and mechanical and electrical equipment manufacturing. It has potential to drive the development of a large area. Kazuo Mongolian Autonomous County is an inland county representative of the poor western part of Liaoning. Improved infrastructure will serve poor villages and a growing industrial district that is close to abundant mineral resources and transport lines, but presently constrained by water shortage.

13. Key issues in the subproject cities and towns are (i) inadequacy of infrastructure, (ii) severe air and/or water pollution, (iii) significant share of the population living under the poverty line, and (iv) lack of integrated and coordinated planning and management of the development of various infrastructure sectors. The Project will address these issues through several sector

interventions such as support for job creation, economic growth, environmental protection, improvement of infrastructure, and industrial development. Different cities and towns will promote different sectors, depending on their base and their development potential and needs. The main sectors are roads and associated municipal services such as (i) street lights; traffic signs, signals, and safety facilities; power and communication lines; and pipe network; (ii) water and wastewater; (iii) solid waste management; (iv) upgrading and greening of rivers; and (v) district heating. The subprojects involve (i) construction of new roads focusing on town bypasses, upgrading inadequate or unsurfaced roads, and improving traffic planning and management; (ii) increase in the capacity to supply potable water and coverage of distribution networks, and provision of sewerage systems with associated treatment facilities; (iii) river improvement and area upgrading works to reduce the risk of seasonal flooding and increase the capacity to impound water for various uses; (iv) provision of modern solid waste collection equipment, development of engineered waste disposal sites, and strengthening of management of operations; and (v) provision of centralized heating plants and associated distribution networks. The Project includes measures to strengthen environmental management in the subproject cities and towns. It incorporates approaches and solutions to problems that can be replicated in urban centers throughout Liaoning Province and be demonstrated to other provinces wishing to formulate planning strategies and implement programs to support the structured development of small cities and towns. The Project uses a participatory approach, where city and town stakeholders identify major urban problems and highlight actions to address those problems. The subprojects will directly support the actions. Supplementary Appendix C provides a sector policy framework.

14. The Project is aligned with ADB's country partnership strategy for the PRC,¹² which includes foci on managing the environment, catalyzing investment, and improving governance. ADB's experience and knowledge in urban environmental improvement and management, including support for utility tariff reforms, will add value to the Project, especially in small cities and towns undergoing urbanization and economic transformation. The Project conforms to ADB's Water Policy¹³ and Water Financing Program,¹⁴ both of which seek to improve urban water investments through technical assistance (TA) and investments in water supply, sanitation, wastewater management, and environmental improvement. It is consistent with ADB's urban sector strategy, which supports infrastructure investment in settlements that are dynamic engines of economic growth and employment creation, innovation, entrepreneurship, and social services provision. The Project will have a positive impact on the living environment of residents, including the poor, through improved roads and traffic safety and management, water supply, wastewater treatment, solid waste management, district heating, and river rehabilitation. It also indirectly supports ADB's various renewable energy, energy efficiency, and climate change initiatives¹⁵ by improving the transportation network and connectivity, as well as traffic management, thus reducing vehicle emissions per trip, enhancing water resources management, and protecting coastal cities by constructing dikes.

15. **Sector Lending Approach.** The Project was formulated in line with the Liaoning 11FYP and Liaoning Small City and Town Framework Plan (2003–2020), which highlight the promotion of small city and town development to support economically, socially, and environmentally sustainable urbanization. LPG plans to use the ADB loan to support investment in about seven small cities and towns in the province. In view of the varying degree of preparedness of subprojects to be included in the Project, and the possibility that some of the subprojects may change during project implementation, the PRC Government agrees that the ADB sector loan modality, which allows for greater flexibility during project implementation, is appropriate.

¹² ADB. 2008. *Country Partnership Strategy (2008–2010): People's Republic of China*. Manila.

¹³ ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

¹⁴ ADB. 2006. *Water for All: ADB's Water Financing Program 2006–2010*. Manila.

¹⁵ ADB. 2008. *ADB's Climate Change Program*. Manila.

16. The sector loan approach is based on the following: (i) the Government's sector policies, development objectives, and approach to urban infrastructure development and environmental management are well formulated; progress in policy implementation is satisfactory, and the Government is continually updating sector policies with ADB support;¹⁶ (ii) the sector institutions are well developed, and with strengthening and support provided under the Project will have the capacity to implement the sector investment plan; LPG has substantial experience implementing similar projects; and (iii) the sector investment plan and subprojects are well conceived and appropriately formulated to meet the priority needs of the urban development master plan. LPG has met the conditions and developed subproject identification, selection, and appraisal criteria and procedures to ensure that the Project will facilitate achieving the objectives of sector policies and plans. Appendix 3 shows the process of subproject identification, selection, preparation, and appraisal. Supplementary Appendix B shows the summary appraisal criteria and report template.

17. **Policy Dialogue.** The Project will build on and further ADB's policy dialogue on (i) integrated urban planning and infrastructure development for subregional cities and towns that will promote equitable economic growth and capacity building; (ii) sustainable environmental management; (iii) managerial, technical, and financial sustainability of utility service operations; (iv) governance and anticorruption; and (v) participatory approach to project design.

18. The Project will help small city and town governments integrate planning and development of subregions on the sectors covered. Efficient and equitable targeting of resources to small cities and towns can reduce environmental degradation in large cities, support employment generation, and contribute to urban and rural poverty reduction. Most subproject cities and towns have limited or no previous involvement in foreign-financed infrastructure projects. Their project management capacity and professional skills for planning and infrastructure delivery are much less developed compared with municipal-level cities. The Project will provide consulting services, training, and exposure to best practices in project management and implementation support, urban and traffic planning and management, infrastructure development, institutional improvement, financial management, utility operations, tariff setting, billing, and management of operations with special focus on human resource development.

19. To achieve sustainable growth, development must be balanced with social and environmental concerns. The Project will introduce measures to prevent and control pollution, and ensure environmentally sustainable growth through proper environmental planning and management. It will include training on environmental awareness and the environmental management system. Most of Liaoning, in particular the western part, is water scarce. The Project will include programs for both supply- and demand-side water management, including the analysis of long-term water balance and planning horizons for domestic, industrial, and agricultural uses; water conservation education; water source protection; pollution control and prevention; wastewater reuse; restrictions of groundwater use; and treatment of effluent to an acceptable discharge standard. For the Donggang, Linghai, and subsequent subprojects that have road components with associated services, the Project will include training on traffic and road management, road safety, and wastewater management.

20. The implementing agencies are currently government agencies, but state-owned enterprises may assume operations of some of the project facilities. ADB supports corporate governance reform, namely, (i) structuring enterprises along commercial lines, providing assistance in preparing business plans, and strengthening operation of the board of directors and accountability through supervisory boards; (ii) implementing external and internal audit arrangements; and (iii) reforming tariffs to improve cost recovery. The Project will support LPG and the implementing agencies to reform tariffs to reflect a clear policy on cost recovery, and use

¹⁶ ADB has provided TA to the PRC on updating its urbanization policies and strategies. Recent studies include the *Town-Based Urbanization Strategy Study* (TA 4335-PRC, footnote 2) and ADB. 2005. *Technical Assistance on the Study on Sustainable Urbanization in Metropolitan Regions*. Manila (TA 4702-PRC).

accounting systems in accordance with international practice. The water tariff reform program can be implemented gradually to discourage wastage, with initial tariffs to pay for operation and maintenance (O&M) costs, eventually reaching full cost recovery. For government agencies implementing nonrevenue-earning components, ADB encourages strengthening the organization structure to improve service delivery; supervision and monitoring, including checks and balances; and effective allocation of resources for implementing and operating infrastructure.

21. ADB is fully committed to good governance, accountability, and transparency. Bidders, suppliers, and contractors must observe the highest ethical standards for the procurement and execution of ADB-financed contracts. Sanctions will apply if fraud and corruption in procurement are discovered. Measures are incorporated in the project design in line with ADB's PRC country partnership strategy (2008–2010), which includes a goal of promoting good governance through support for reform and capacity development in corporate governance. LPG and all subproject governments are recommended to consider involving full-time officials from discipline investigation bureaus and audit departments in bidding and construction to enhance construction quality control and supervision, and in consultation with relevant central government ministries, updating rules and regulations on local and corporate governance, anticorruption, and enhancement of transparency of the implementing agencies' operations.

22. The Project is formulated to take into consideration and incorporate in the project design comments and ideas from various levels of government, beneficiaries, and affected people including vulnerable groups, through stakeholder meetings, focus group discussions, informant interviews, and household surveys. This ensures local participation and involvement in subproject identification and implementation, and O&M of improved infrastructure. A design and monitoring framework is created and refined in the process. For future urban projects, the Liaoning project management office (PMO) and subproject governments can use the knowledge and experience from this participatory approach to guide their interventions.

23. **External Assistance.** Since 1992, ADB has provided 29 loans totaling more than \$3.7 billion to the PRC for urban environmental improvement and infrastructure projects, and \$57 million for 80 TA studies to prepare these projects and study key issues in environmental improvement and infrastructure. The Project is based on the Town-Based Urbanization Strategy Study TA, which recommends measures to facilitate development of small cities and towns. ADB and the World Bank have provided external assistance for infrastructure development in large and medium-sized cities of Liaoning Province. Appendix 4 provides details of the external assistance.

24. **Lessons.** Lessons from ADB and LPG experience in urban development projects include (i) strategic master plans play an important role in providing a comprehensive framework for urban development and environmental management; (ii) public awareness and education are important for environmental improvement; therefore public consultation, involvement, and awareness training on environmental health and protection should be provided; (iii) an effective internal and external monitoring mechanism for resettlement implementation is important for effective coordination and timely implementation of land approval, compensation, and rehabilitation measures. The relevant lessons are incorporated in the project design.

25. Experience in the PRC's water and wastewater sector indicates that projects are well-planned and implemented, and tariffs are increased as required. Willingness-to-pay analysis indicates that consumers are willing to pay substantially higher prices for water, and to a certain extent, wastewater treatment. Issues related to tariffs, cost recovery, and commercial orientation of water utilities are addressed during project preparation. Lessons from previous projects are reflected in the project design, including (i) focus on institutional strengthening to improve corporate governance, (ii) improved provincial coordination, and (iii) financial and institutional arrangements for proper O&M.

26. Lessons from ADB and World Bank experience in urban transport projects highlight the importance of (i) comprehensive and participatory approaches to project preparation; (ii) adequate consultation with those affected preceding a planned and well-coordinated resettlement scheme; (iii) professional approach to traffic demand forecasts; (iv) attention to public transport, traffic management, road safety, vehicle emission control, and road maintenance to complement investment in urban roads; and (v) participation and coordination of all agencies with responsibilities for urban transport. These lessons were considered in the project design.

27. The recommendations of the Town-Based Urbanization Strategy Study TA were incorporated in the project design, especially in subproject selection, namely, (i) town development should be conceived and implemented as part of the development of metropolitan areas, development corridors, and other subregions; and (ii) towns should be targeted for development based on their potential for economic growth and job creation.

III. THE PROPOSED PROJECT

A. Impact and Outcome

28. The impacts of the Project are improved living conditions and increased employment generation in small cities and towns in Liaoning Province. The project outcome is improved urban infrastructure and municipal services in about seven small cities and towns in Liaoning.

B. Outputs

29. The Project includes about seven subproject cities and towns. Detailed assessment and analyses were undertaken for the three core subprojects: (i) Donggang City, (ii) Kazuo Mongolian Autonomous County, and (iii) Linghai City. Supplementary Appendix D shows the indicative candidate subsequent subprojects.

30. The Donggang City subproject has three components: (i) roads, bridge, and associated municipal services; (ii) drainage and wastewater treatment; and (iii) river improvement and area upgrading. Component (i) will construct a new trunk road, reconstruct two trunk roads, construct a bridge, and install road lights including transformers. Component (ii) will install storm-water pipes and wastewater pipes, construct storm-water pumping stations and wastewater pumping stations, and install a box culvert. Component (iii) will construct embankment dikes along Dadonggou River including planting 1.1 million square meters (m²) of landscaped area along the embankment. Supplementary Appendix E provides technical details of this subproject.

31. The Kazuo Mongolian Autonomous County subproject has one water supply component that will construct a water intake including a lifting pumping station with 26,000 cubic meters per day (m³/d) capacity and a primary sedimentation tank, an intermediate pumping station with a capacity of 26,000 m³/d, and a water treatment plant with a capacity of 25,000 m³/d; and install water transmission pipes and water distribution pipes. Supplementary Appendix F provides technical details of this subproject.

32. The Linghai City subproject has one component for construction and upgrading of roads and associated municipal services. It will construct a series of roads (two upgraded trunk roads, eight upgraded secondary roads, and one upgraded branch road), a water pumping station, and a water storage tank with a volume of 2,000 m³; landscape 150,000 m² of land along the new and upgraded roads; install road lights with transformers, storm-water pipes, and box culverts; lay water supply pipes; and procure road maintenance equipment. Supplementary Appendix G provides technical details of this subproject.

33. The Project also provides for institutional development and capacity-building measures in small city and town development, municipal infrastructure, and environmental management and policy reforms to ensure sustainability of the Project and related facilities. The Project is the first ADB sector loan for the Liaoning PMO. The subproject cities and towns have limited experience with internationally funded projects and are not familiar with ADB procedures and international best practices, hence training is needed to develop and strengthen institutions that will implement the subprojects and operate the project facilities so they will be sustainable from an operation and financial perspective.

C. Special Features

34. The development of the Project was directly supported by ADB-financed advisory policy and strategy studies. The underlying technical approach for the Project is based on the findings of a successfully completed advisory TA on town-based urbanization strategy with Liaoning and Shanxi as case study provinces, a provincial development strategy study for Hebei Province, and government policies and plans for small city and town development. These studies highlighted an opportunity for ADB to support the PRC's rural–urban integration policy by strengthening the capacity of small cities and towns to deliver basic urban infrastructure.

35. The Project supports rural–urban integration in promoting the growth of small cities and towns with various economic functions and infrastructure needs, while incorporating environmental and social considerations in planning and development. This will demonstrate to similar cities and towns in Liaoning and other provinces how they can achieve economically, socially, and environmentally sustainable urban development; as well as achieve greater integration with rural areas and large cities. The Liaoning PMO will ensure that lessons identified by project cities and towns are disseminated to nonproject cities and towns through seminars, field visits, promotional materials, and/or the media. ADB will also support dissemination and sharing of lessons by financing seminars: (i) provincial seminars to demonstrate how the advisory TA strategy is operationalized through the different subprojects and their components, and (ii) national and international seminars to showcase innovative features in the approach of this sector project and those in Shanxi and Hebei in preparing and implementing sustainable small city and town development projects.

36. The ADB Water Financing Partnership Facility will provide a \$250,000 grant for this Project to strengthen financial and operating management and corporate governance of water and wastewater agencies and companies in small cities and towns in Liaoning for them to become commercially viable entities.¹⁷ Appendix 5 provides a summary of the support and Supplementary Appendix H is a brief description of the grant.

37. The project design follows a planned approach. Identification of long-term planning needs and design of the subprojects are based on (i) growth strategies and provincial, city, county, and town development master plans; and (ii) the principle of integrating provision of various infrastructure services to maximize benefits from individual sector improvements. Improved access to production factors, inputs, markets, and market information is a driving force of pro-poor growth. The Donggang and Linghai subprojects will upgrade the road network, which carries associated services such as water supply and wastewater pipes; thus extending and improving environmental infrastructure for built-up areas, as well as facilitating pedestrian and cargo transport including job creation for rural residents and for the sale of agricultural produce.

¹⁷ ADB is providing TA to the PRC to strengthen urban wastewater and solid waste management, including tariff reform, in small cities and towns (ADB. 2007. *Technical Assistance to the People's Republic of China for Urban Wastewater and Solid Waste Management for Small Cities and Towns*. Manila [TA 7002-PRC]).

D. Project Investment Plan

38. The project investment cost is estimated at \$236.5 million including taxes and duties. Table 1 provides the project investment plan; details are in Appendix 6 and Supplementary Appendix I.

Table 1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Donggang subproject	56.2
2. Kazuo subproject	11.2
3. Linghai subproject	24.9
4. Subsequent subprojects	82.5
5. Institutional strengthening	2.1
Subtotal (A)	176.9
B. Contingencies^c	48.2
C. Financing Charges during Implementation^d	11.4
Total (A + B + C)	236.5

^a Includes taxes and duties of \$16.0 million. The Asian Development Bank (ADB) loan will include taxes and duties on items financed by ADB.

^b In mid-2008 prices.

^c Physical contingencies are computed at 10%. Price contingencies are 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 is computed at the 5-year forward London interbank offered rate plus a spread of 0.2% and commitment charges at 0.15%.

Source: Asian Development Bank estimates.

E. Financing Plan

39. The Government has requested a loan of \$100,000,000 from ADB's ordinary capital resources, to help finance the Project. The loan will have a 26-year term, including a grace period of 6 years, an interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per annum, and such other terms and conditions set forth in the draft loan and project agreements. The Government has provided ADB with (i) the 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. The loan, which will finance 42.3% of the project cost will cover civil works, equipment and supplies, project consulting services and training, and financing charges on the loan during construction. The Government will finance contingencies. Donggang city government, Kazuo Mongolian Autonomous county government, and Linghai city government will provide counterpart funding through tax and nontax revenues, for which they have provided commitment letters. The Water Financing Partnership Facility will provide a grant of \$250,000 to be administered by LPG for supporting institutional and financial management capacity development of water and wastewater entities. The financing plan for the Project is summarized in Table 2, with details provided in Appendix 6 and Supplementary Appendix I.

40. The PRC is the Borrower of the loan. The PRC Government will relend the loan to LPG.¹⁸ LPG will then onlend different portions of the loan proceeds to the municipal, city, and county

¹⁸ In loans involving some form of financial intermediation, the term "relend" is used when ADB loans are relented by the borrower to one or more intermediaries. The term "onlend" is used when the funds are then onlent by these intermediaries to subborrowers.

governments concerned and then to the implementing agencies. The terms and conditions of the loan proceeds transferred within the government system will be the same as those of the ADB loan, with the subproject municipal, city, and county governments concerned bearing the interest and the exchange rate variation risk. If the implementing agency for a subproject is a legally registered company or a separate legal entity, the loan proceeds will be provided to the company or the legal entity under an onlending agreement between the local government concerned and the implementing agency, based on the same terms and conditions as those of the ADB loan with the implementing agency bearing the interest and exchange rate variation risk. Appendix 7 shows the onlending arrangements and indicative flow of funds.

Table 2: Financing Plan
(\$ million)

Source	Total	%
Asian Development Bank Loan ^a	100.0	42.3
Multi-Donor Trust Fund under the Water Financing Partnership Facility ^b	0.3	0.0
Donggang City Government (Donggang subproject)	49.7	21.0
Kazuo Mongolian Autonomous County Government (Kazuo subproject)	7.6	3.2
Linghai City Government (Linghai subproject)	17.2	7.3
Other City and County Governments (subsequent subprojects)	61.7	26.2
Total	236.5	100.0

^aThe Asian Development Bank (ADB) loan will include bank charges, taxes, and duties on items financed by ADB.

^b Contributors: the governments of Australia, Austria, and Norway. Actual amount is \$250,000.

Source: Asian Development Bank estimates.

F. Implementation Arrangements

1. Project Management

41. LPG through the Provincial Project Coordination Group and Liaoning PMO is the Executing Agency for the Project. The Provincial Project Coordination Group, comprising the Liaoning Finance Bureau, Development and Reform Commission, Construction Bureau, Land Resources Bureau, Audit Bureau, Price Bureau, and Environmental Protection Bureau will provide overall guidance, supervision, and support to project preparation and implementation. The Liaoning PMO¹⁹ was established to undertake and manage day-to-day project activities, including selection and appraisal of subsequent subprojects. In each subproject city and town, a PMO was set up to liaise with the Liaoning PMO and departments and bureaus concerned, and to oversee and manage (i) work undertaken by the implementing agency, (ii) overall project finance, and (iii) project implementation. Appendix 8 shows the project organization; details of the institutional arrangement and assessment are in Supplementary Appendix J.

2. Subproject Preparation and Appraisal

42. In addition to the three core subprojects, additional subprojects will be selected, prepared, and appraised during sector project implementation using the following three-stage process.

43. **Subproject Identification and Selection.** The subprojects are selected in accordance with the following criteria: (i) confirmation by the local government of its ability and willingness to arrange counterpart financing and comply with ADB safeguard policies and other requirements; (ii) confirmation by the concerned local government on its willingness to comply with ADB safeguard policies and other requirements; (iii) implementation of the subproject will be within 2009–2015; (iv) eligibility of the components (roads and associated services, water supply, wastewater management, river improvement, solid waste management, and district heating); and

¹⁹ The Liaoning PMO is called the Liaoning Urban Construction and Renewal Project Office.

(v) anticipated positive impact on the urban environment, employment generation, economic growth, and coverage or service level of infrastructure and municipal services.

44. **Subproject Preparation.** The participating city or county government and implementing agency will, under the guidance of the Liaoning Development and Reform Commission and with the help of the Liaoning PMO, prepare project design documents including a project proposal, feasibility study, and preliminary engineering design for the components of the proposed subproject in accordance with the national project investment specifications. The project design documents will cover subproject rationale; scope; components; technical analysis; cost estimates; financing plan; implementation arrangements; financial management assessment; and financial, economic, social, and institutional analyses. These documents will be submitted to the Liaoning Development and Reform Commission for approval. The participating city or county government will also prepare an environmental impact assessment (EIA) and a resettlement plan to be submitted to the concerned provincial departments and bureaus for approval.

45. **Subproject Appraisal and Approval.** The Liaoning PMO will be responsible for review of the subprojects in accordance with criteria agreed to by the Government and ADB. The subproject PMO will prepare a subproject appraisal report, which will follow the template in the project preparatory TA final report, and submit the appraisal report to the municipal finance bureau for review and then to the Liaoning PMO for further review. The Liaoning PMO will submit the subproject appraisal report to the Liaoning Finance Bureau and Liaoning Development and Reform Commission for endorsement before submitting it to ADB for review and approval.

46. Subsequent subprojects will receive the same extent of environmental safeguard scrutiny, modeled on the EIAs for the three core subprojects and the summary EIA (SEIA). The Liaoning PMO will submit the EIAs to ADB for review, after which the revised EIAs will be posted on the ADB website. An environmental assessment and management framework was prepared to assess subsequent subprojects. For other safeguard concerns, a resettlement framework and an ethnic minority development framework were prepared for subsequent subprojects. Draft resettlement plans will be prepared using core subproject resettlement plans as models.

3. Implementation Period

47. Since this is the first sector project for LPG, selection and appraisal of the initial one or two subsequent subprojects may take additional time to meet ADB and domestic requirements. To allow for more flexibility for LPG to select subsequent subprojects to meet the various pace of development of small cities and towns, the Project will be implemented over 6 years from late 2009 to late 2015 (Appendix 9).

4. Procurement and Consulting Services

48. Goods, works, and services financed under the loan will be procured in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time). Preliminary contract packages were formulated in consultation with the implementing agencies, and a procurement capacity assessment of LPG, the PMOs, and the implementing agencies was undertaken (Supplementary Appendix K). Results of the procurement capacity assessment indicate that the Liaoning PMO has the capacity and experience to carry out advance procurement. Contracts for goods estimated to cost \$1 million or more and contracts for works estimated to cost \$10 million or more will be procured using international competitive bidding procedures. Contracts for goods and works estimated to cost less than these international competitive bidding thresholds but more than \$100,000 will be procured on the basis of national competitive bidding procedures in accordance with the PRC Tendering and Bidding Law, subject to modifications and clarifications agreed to with ADB. Contracts for goods and works estimated to cost \$100,000 or less will be procured using shopping procedures. Prior review will be adopted for all international competitive bidding packages and the first national competitive bidding package. More details of the procurement plan

are provided in Appendix 10 and Supplementary Appendix L.

49. The Project will provide funding for about 154 person-months of international and national consulting services to support the Liaoning and subproject PMOs and implementing agencies in project implementation and management, and institutional capacity building. A consulting firm will be engaged in accordance with ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) using the standard quality- and cost-based selection method (80% quality and 20% cost) and simplified technical proposal. The consulting services will cover (i) support of the Liaoning and subproject PMOs and implementing agencies in project preparation and management including procurement, (ii) development of the project performance management system (PPMS), (iii) financial management including ADB disbursement and imprest account procedures, (iv) social and environmental support, (v) O&M, and (vi) institutional strengthening. Capacity building for the PMOs and implementing agencies will be achieved through consultant inputs; training courses provided by universities, specialized institutes, and firms; in-country and/or international study visits; and acquisition of additional equipment financed from the loan. To assist the PMOs and implementing agencies in expediting project implementation, another consulting firm will be engaged using the consultants' qualification selection method to prepare several contracts for advance contracting and design review, and construction supervision for half a year, prior to the recruitment of the consulting firm for the majority of the consulting services. The outline terms of reference for consulting services are in Supplementary Appendix M.

5. Advance Contracting and Retroactive Financing

50. ADB has approved the Government's request for advance contracting for the recruitment of consultants, training, and procurement of goods and civil works; and retroactive financing of eligible expenditures up to \$20 million (equivalent to 20% of the ADB loan), incurred before loan effectiveness, but not more than 12 months before the signing of the loan agreement.²⁰ Advance contracting will include (i) prequalification of contractors, tendering, and bid evaluation for civil works packages; (ii) preparation of tender documents to procure materials and equipment; (iii) evaluation of bids; and (iv) recruitment of consultants. All advance contracting and retroactive financing will be undertaken in conformity with ADB's *Procurement Guidelines* and ADB's *Guidelines on the Use of Consultants*. The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The Government, LPG, and the implementing agencies have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the Project.

6. Governance and Anticorruption Policy

51. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with LPG, the PMOs, and the implementing agencies. 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 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 Executing Agency and all contractors, suppliers, consultants, and other service providers as they relate to the Project. This is in line with ADB's PRC country partnership strategy (2008–2010), which includes the goal to promote good governance through supporting reform and capacity development in corporate governance. LPG

²⁰ The advance action on the procurement and recruitment of consultants, and the posting of the general procurement notice on the ADB website, will facilitate the start of the advance action process. ADB Management approved advance contracting and retroactive financing at the Management review meeting on 20 November 2008.

has indicated its commitment to fight corruption and a number of anticorruption actions are included as covenants in the loan and project agreements.²¹ Under these covenants, LPG will

- (i) involve the agencies responsible for oversight of each implementing agency in bidding and construction to monitor construction quality control and supervise effective work;
- (ii) introduce a dual-signing system in which the civil works contract winner also signs an anticorruption agreement with the implementing agency;
- (iii) periodically inspect the contractors' activities related to fund withdrawals and settlements; and
- (iv) engage the loan implementation consultant to support the Liaoning and subproject PMOs and the implementing agencies to ensure good governance, accountability, and transparency in project operations.

7. Disbursement Arrangements

52. The ADB loan funds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). To expedite project implementation through timely release of loan proceeds, the Liaoning Finance Bureau will establish one imprest account promptly after loan effectiveness at a commercial bank acceptable to ADB.²² This imprest account established in the provincial finance bureau will be responsible for all withdrawal applications from municipalities and counties. Disbursements from the imprest account to the implementing agencies will be based on actual expenditures with full supporting documents, which is in line with Ministry of Finance internal regulations. Withdrawal applications will demonstrate, among other things, that the goods and/or services were produced in or from ADB members, and are eligible for ADB financing. The maximum amount to be deposited in the imprest account will not exceed ADB's estimated share of eligible project expenditures to be financed through the imprest account for the next 6 months, or 10% of the loan amount, whichever is lower. The statement of expenditure procedure will be used for liquidation and replenishment of the imprest account and reimbursement of eligible expenditures not exceeding \$200,000 per individual payment. No withdrawal will be made from the loan account for subprojects in which one or more of the implementing agencies are legally registered companies until the following condition has been met: the Ministry of Finance has submitted to ADB the certification that (i) the subproject government and the company have completed an onlending agreement, and (ii) such onlending agreement contains the same financial terms and conditions and other obligations as required in the loan agreement. The Liaoning Finance Bureau will set up a separate bank account for the \$250,000 grant from the Water Financing Partnership Facility to be used for engaging consultants, and conducting training programs and workshops.

8. Accounting, Auditing, and Reporting

53. The Liaoning PMO will coordinate with subproject PMOs to prepare semiannual progress reports indicating (i) progress made, (ii) problems encountered during the review period, (iii) steps taken or proposed to remedy the problems, (iv) the proposed program of activities, and (v) progress expected in the next 6 months. The implementing agencies 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 Law of the PRC. This law requires that financial statements generally follow recognized accounting standards. The implementing agencies will set up and maintain separate project accounts and records. The financial statements of the project accounts and the annual corporate financial statements for implementing agencies will be subject to external audit by the audit bureau of the city or county concerned, LPG audit bureau,

²¹ In line with ADB's *Country Partnership Strategy (2008–2010): People's Republic of China* (footnote 12), which includes a goal of promoting good governance.

²² Bank charges on the imprest account will be financed from the ADB loan.

and the state audit bureau. The audits will be carried out in accordance with the 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 implementing agencies' 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. LPG and the implementing agencies will submit reports and information to ADB concerning the use of the loan proceeds, project implementation, and implementing agency performance. These reports will include (i) semiannual progress reports, (ii) annual reports, and (iii) a project completion report not later than 3 months after project completion.

9. Project Performance Monitoring and Evaluation

54. The PPMS indicators, their relevance, and monitoring practicalities were discussed with the Liaoning and subproject PMOs and implementing agencies during project preparation. The indicators are based on the monitoring indicators in the design and monitoring framework, including (i) job creation; (ii) service levels; (iii) water supply, wastewater treatment, solid waste collection coverage, and other operating performance measures; (iv) water quality; (v) relevant social and economic data; (vi) traffic conditions; and (vii) air quality indicators. At the start of project implementation, the Liaoning and subproject PMOs and implementing agencies, with the assistance of the loan implementation consultant, will develop comprehensive PPMS procedures to generate data systematically on the inputs and outputs of the components, as well as indicators to be used to measure project impact. The Liaoning and subproject 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.

10. Project Review

55. In addition to joint project reviews carried out at least once a year, ADB, LPG, and the implementing agencies 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

56. **Social Aspects.** The poverty and social assessment identifies key areas where the Project will benefit the poor and vulnerable groups and contribute to poverty reduction by removing infrastructure constraints, improving the condition of drinking water, addressing environmental concerns, and promoting sustainable economic growth in seven small cities and towns of Liaoning Province. Provision of water supply in Kazuo will have quantifiable impacts on public health in terms of savings made on medical consultations and purchase of medicines (the health impact analysis is in Supplementary Appendix N). This will also reduce domestic work (largely undertaken by women), such as fetching and disposal of water; cleaning; and caring for children, the sick, and the elderly. Women will greatly benefit from improvements in the living environment as they are primarily responsible for household chores. Jobs created through the Project during facility construction and operation will attract surplus rural labor to urban areas and address unemployment, expediting urbanization, with the additional benefits of providing new skills to workers and stimulating various secondary industries. Women in the subproject cities and towns will also benefit from future employment due in part to project interventions to stimulate economic activity. A labor reemployment framework is in Supplementary Appendix O.

57. The Project will benefit 260,000 people residing in the three core subproject cities and towns, as well as residents in four subsequent subproject cities and towns with a total urban population of about 660,000. Half of the beneficiaries will be women. The percentage of poor among the beneficiaries in subproject areas is 9.0% in Kazuo, 4.5% in Linghai, and 3.5% in

Donggang. Key socioeconomic impacts of core subprojects include (i) creation of jobs and employment opportunities; (ii) improvement of public health through infrastructure and environmental improvement; (iii) environmental protection through improvement of the sewage collection system and flood control; (iv) mobility, access, and affordability of key basic services and destinations through road construction; and (v) provision of skills training. The summary poverty reduction and social strategy is in Appendix 11; details of the poverty and social assessment and the social action plan are in Supplementary Appendix P.

58. Ethnic minorities in core subproject areas account for 3% of the population and have socioeconomic characteristics similar to those of Han people. Although their culture and language are different from the Han's, they mostly speak Han language and intermarriage with other ethnic groups, particularly the Hans, is common. On the basis of the findings of the socioeconomic survey, focus group discussions, and consultation in the core subproject areas, an ethnic minority development plan is not needed. In line with the requirement of the sector loan modality, an ethnic minority development framework (Supplementary Appendix Q) was prepared for subsequent subprojects.

59. The Project is classified as category A for resettlement. On the basis of project impact investigation in the feasibility study reports, the Donggang subproject will necessitate relatively large amounts of land acquisition and resettlement: 25.7 hectares [ha] of land and 194 households or 715 people from seven villages in three towns. A total of 11,174 m² of structures will be demolished, including 7,645 m² of residential structures, affecting 91 households or 336 people; and 3,529 m² of nonresidential structures, affecting eight enterprises and 61 shops with 225 employees. A full resettlement plan was prepared based on ADB procedures. The Kazuo subproject will involve permanent land acquisition of 1.5 ha of farmland from three villages, which will affect 12 households and 52 people. During pipeline construction, a total 7.6 ha will be temporarily occupied. No house demolition and relocation is required. Consequently, resettlement impacts are slight and a short resettlement plan for the Kazuo subproject was prepared. The road and pumping station component of the Linghai subproject will be constructed either on the existing right-of-way or on the land area acquired in 2007. Therefore, only a due diligence report is required for the Linghai subproject. The subproject governments endorsed the resettlement plans, which were disclosed to those affected in mid-October 2008. The summary resettlement plan is in Appendix 12. To assess the resettlement aspects of subsequent subprojects, a resettlement framework (Supplementary Appendix R) was prepared.

60. **Financial Aspects.** Financial analysis was carried out for the revenue-generating Kazuo water supply component. Financial sustainability analysis was completed for the nonrevenue-generating roads and river improvement components. Financial management assessments comprised LPG and the implementing agencies. A summary financial analysis is in Appendix 13, and details are in Supplementary Appendix S.

61. The financial internal rate of return for the Kazuo water supply component is computed at 6.1%, comparing favorably with the weighted average cost of capital of 1.2%. The sensitivity analysis confirms that the financial internal rate of return is above the weighted average cost of capital even if costs and revenues change adversely by 10%.

62. The current water tariffs in Kazuo need to increase gradually to achieve full cost recovery, i.e., to cover O&M costs, debt service, and depreciation of proposed facilities. During the first year of operation, tariffs in Kazuo will cover 76% of cost; full cost recovery will be achieved after 3 years. The Government has given assurance that tariffs will be increased in phases, taking into account affordability factors.

63. The affordability assessment shows that in Kazuo, water cost as a percent of average household income is 1.0%–1.2%. Response from the household survey indicates that these rates are affordable. The expenditure on utility costs as a percentage of income for the poor is relatively

higher. The Kazuo government provides a subsidy to low-income families through the Minimum Living Standard Scheme and has assured that subsidies to poor families will continue.

64. Financial sustainability of the non-revenue-generating components was determined by examining O&M and debt service costs as a percentage of local government revenues. Affordability was assessed by comparing identified financing sources with the annual funds required for the counterpart portion of capital expenditures during project implementation. Forecasted debt service and O&M costs for the subproject components were compared as a percentage of revenues and found to be 1% or less, indicating acceptable fiscal risk. During the peak project implementation period, counterpart funds for all three subprojects will not exceed 5% of revenue. Therefore, the non-revenue-generating components are considered both financially sustainable and affordable.

65. The results of the financial management assessment indicate that LPG has an adequate financial management system and experience in managing projects funded by foreign financial institutions. The three implementing agencies of the core subprojects operate as bureaus or departments of the project local governments. Accounting and financial management systems for financial reporting and accounting are developed and adequate for loan implementation, although improvements to internal control might be required to ensure that separate individuals handle authorization, recording, and custody of assets and/or transactions. Audit arrangements are generally adequate and the implementing agencies will be required to submit independently audited annual financial statements and project accounts to ADB as a loan covenant. The water utility in Kazuo will be assisted to establish a reliable financial management system at the beginning of project implementation. It will keep accounts in accordance with commercial accounting principles and be subject to an independent external audit by a suitably qualified firm of commercial auditors. Accounting will be in accordance with relevant PRC standards. A capacity-building component to strengthen financial management is included in the Project. Supplementary Appendix T provides details of the financial management assessment.

66. **Economic Aspects.** The economic analysis for the Project is based on analysis of the three core subprojects, taking into account their socioeconomic indicators and preparedness to undertake investments in municipal infrastructure. It covers the (i) economic rationale for public intervention, (ii) goals of the investment plans, and (iii) design of the plans. The economic rationale is sound as the Project will (i) support Liaoning to promote city and town development in a more coordinated and cost-effective manner, and (ii) bring about more sustainable investments in infrastructure that 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 components are economically viable and stand up to sensitivity analyses where costs increase and benefits decrease. The economic internal rate of return for the three core subprojects is 17.7%; and for the individual subprojects: 18.0% for Donggang City, 16.7% for Kazuo Mongolian Autonomous County, and 18.4% for Linghai City. A summary economic analysis is in Appendix 14; the detailed economic analysis is in Supplementary Appendix U.

67. **Environmental Aspects.** The Project is classified as environment category A. Extensive public consultations involving surveys, meetings with stakeholders, and focus-group discussions were undertaken during project preparation. The EIA of the Project is based on the results of the EIAs prepared for the three core subprojects, which are representative of the types and nature of subsequent subprojects. The SEIA was circulated to ADB's Board of Directors on 19 November 2008. An environmental assessment and management framework was developed for subsequent subprojects.

68. The Project supports climate change adaptation including (i) incorporation of climate change issues, such as energy efficient measures, in urban master plans; (ii) comprehensive water management, such as long-term water availability forecasting for new

development areas and adopting comprehensive water balance measures during project implementation; (iii) sustainable wastewater and solid waste management including sludge digestion and biogas extraction; (iv) improved urban roads management and reduced pollution from cars through improved connectivity and better travel conditions; and (v) promotion of clean energy for more efficient central heating.

69. The Project aims to promote balanced and environmentally sustainable urbanization; narrow the urban–rural gap; and improve production, employment, and living conditions in small cities and towns of Liaoning Province. It will have substantial environmental, health, and socioeconomic benefits. Roads will improve the transportation network and connectivity, thereby reducing travel time and vehicle emissions per trip, reducing the potential for increased greenhouse gas emissions and climate change impacts. Water supply and wastewater treatment will improve public health and reduce pollutant discharge to rivers and groundwater sources. River improvement, and embankment and landscaping works will provide flood protection, reducing economic loss and public health hazard due to flooding, as well as enhancing wetland habitats. The Project promotes climate change awareness, stimulates internal demand for climate change initiatives, opens discussion for climate adaptation, advances climate change mitigation efforts in various sectors, and empowers practitioners with user-friendly tools. It provides an opportunity for LPG to put in place sound environmental management systems in small cities and towns, and establish adequate institutional capacity in environmental management to ensure sustainability for future development.

70. Adverse impacts on the physical and natural environment during the construction and operation phases of the Project will be insignificant with good project management and implementation of recommended mitigation measures identified in the environmental management plan. The plan includes institutional strengthening for implementing mitigation measures and monitoring requirements, and will be continuously developed as the Project progresses to provide more details so that all mitigation requirements are met.

71. The subsequent subprojects under this sector loan are also required to meet ADB's EIA requirements. An environmental assessment and management framework, in Supplementary Appendix V, is prepared as an instruction manual to assist Liaoning PMO, the subproject PMOs, the implementing agencies, and the local design institutes in preparing and reviewing EIA reports and the environmental management plan for subsequent subprojects. It describes the environmental criteria in subproject selection and implementation, key environmental issues, conduct of the EIA, preparation of the EIA reports, and review procedures. Training was provided to LPG on implementation of the environmental assessment and management framework.

72. **Project Risks and Mitigation Measures.** The Project does not have any unusual technical risks. Conventional engineering designs with proven records of reliable performance will be adopted for road and bridge construction, installation of municipal services along roads, water supply and wastewater management, river improvement and area upgrading, solid waste treatment, environmental sanitation, heating, and landscaping. During project implementation, the loan implementation consultant will support the PMOs and implementing agencies to ensure that equipment and works comply with the design requirements and quality assurances.

73. The following risks could affect timely implementation, economic viability, and realization of project benefits: inadequate preparation and late selection, appraisal, and implementation of subsequent subprojects; failure to implement institutional strengthening for effective project implementation and management, and corporate governance; lack of proper O&M of project facilities; late consultant selection; delay in completion of associated projects; major changes to implementation of the master plans in the subproject cities and towns; delay in the provision of counterpart funding; failure to establish or increase tariffs to meet cost-recovery targets; and unforeseen land acquisition and resettlement issues that hamper efficient implementation of project works and restoration of livelihoods of those affected.

74. These risks will be mitigated through effective institutional arrangements and project management, as well as extensive and appropriate training on ADB and domestic procedures and requirements, provision of institutional capacity building (including the grant provided by the Water Financing Partnership Facility), and appropriate project implementation and monitoring arrangements for the subproject city and town PMOs and implementing agencies with support of the loan implementation consultant and a consulting firm engaged early in the Project, synchronization of the project design and implementation schedules with associated projects planned, covenanted assurances from the subproject city and town governments on the provision of counterpart funding and on regular tariff reviews and increases, strengthening of the internal monitoring and supervision by LPG and subproject PMOs and implementing agencies, and engagement of a qualified external agency to monitor and evaluate resettlement. LPG and the subproject governments demonstrate high ownership in preparing and committing to implement the Project.

V. ASSURANCES AND CONDITIONS

A. Specific Assurances

75. In addition to the standard assurances, the Government of the PRC, LPG, the subproject governments, and the implementing agencies have given the following assurances, which are incorporated in the legal documents:

- (i) LPG will cause the implementing agencies of subproject components with road components to implement road safety measures, in cooperation with the traffic police, in line with the national road transport safety law.
- (ii) The concerned municipal and subproject governments will ensure timely provision of all counterpart financing necessary for the Project, including additional counterpart funding to meet any shortfall of funds or cost overruns. The subproject governments will ensure that in each fiscal year adequate funds are allocated for O&M of the project facilities, and that such facilities are operated and maintained according to sound engineering practices.
- (iii) LPG will cause the subproject governments with the respective components to ensure that (a) water supply, wastewater, and heating tariffs will be progressively set to achieve full cost recovery of O&M, depreciation and debt service obligations, and reasonable profit margin for operations; (b) regular reviews of tariffs and fees will be undertaken; and (c) a review will be conducted on the impact of increased water supply, wastewater, and heating tariffs on the poor.
- (iv) LPG will cause the concerned municipal and subproject governments to ensure the implementing agencies establish and maintain a sound financial management system in accordance with ADB's *Financial Management and Analysis of Projects* (2005), including the establishment of a separate bank account for the subproject and 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) LPG will cause the subproject governments to ensure that in the event that any change in ownership of the component project facilities or any sale, transfer, or assignment thereof is anticipated, they will consult ADB prior to implementation of such change.
- (vi) The municipal and subproject governments concerned will ensure that the implementing agencies provide quarterly environmental monitoring reports during the construction period to Liaoning PMO, which will prepare and submit to ADB semiannual environmental reports in a format acceptable to ADB until project completion.

- (vii) LPG will cause subproject governments and implementing agencies 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 the 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* (1995) and *Operations Manual* (September 2006); (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.
- (viii) LPG will cause each subproject city and town to ensure the implementing agencies construct, operate, maintain, and monitor the project facilities in strict conformity with (a) all applicable national, Liaoning, and local laws, 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 and in the operating guidelines. LPG will cause each subproject city and town and implementing agency to ensure that an adequate number of full-time personnel and sufficient resources are provided to monitor implementation of the environmental monitoring program, under the guidance of LPG and subproject city and town environmental protection bureaus.

B. Condition for Disbursement

76. No withdrawal will be made from the loan account for those subproject components in which one or more of the implementing agencies is a legally registered company until the Ministry of Finance has submitted to ADB the certification that (i) the subproject government and the company have entered into an onlending agreement, and (ii) such onlending agreement contains the same financial terms and conditions and other obligations as required in the ADB Loan Agreement.

VI. RECOMMENDATION

77. 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

- (i) the loan of \$100,000,000 to the People's Republic of China for the Liaoning Small Cities and Towns Development Demonstration Sector 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 26 years, including a grace period of 6 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; and
- (ii) the administration of a grant not exceeding the equivalent of \$250,000 to the People's Republic of China for the Liaoning Small Cities and Towns Development Demonstration Sector Project to be provided by the Multi-Donor Trust Fund for the Water Financing Partnership Facility.

Haruhiko Kuroda
President

25 August 2009

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Improved living conditions and increased employment generation in small cities and towns in Liaoning Province</p>	<p>By 2018 (baseline year 2007), in the subproject small cities and towns in Liaoning Province</p> <p>Per capita annual disposable income of urban households increased by 84%</p> <p>Unemployment reduced to and maintained at no more than 5%</p> <p>Days of air quality equal to or above grade II in county-level cities and counties increased to 240 per year</p> <p>Surface water quality in county-level cities and counties increased from class V to class IV^a</p>	<p>Annual socioeconomic surveys undertaken as part of the PPMS</p> <p>City and county records and statistics</p> <p>Annual socioeconomic statistics reports</p> <p>ADB project performance audit reports</p>	<p>Assumptions</p> <p>The 11FYP and all small city and town master plans are effectively implemented</p> <p>Good socioeconomic development of Liaoning Province will continue after the 11FYP</p> <p>Government updates and coordinates sector policies</p> <p>All applicable environment laws are effectively enforced</p> <p>Other small cities and towns will replicate approaches developed by the Project on the formulation of planning strategies and implementation of programs</p> <p>Risks</p> <p>Global financial, food, and/or fuel crises affect economy</p> <p>Implementing agencies do not hire or properly manage suitable external monitoring agencies, so that socioeconomic data are not collected</p> <p>Development pressures outpace planned infrastructure development</p>
<p>Outcome</p> <p>Improved urban infrastructure and municipal services in about seven small cities and towns in Liaoning Province</p>	<p>By 2015 (baseline year 2007), in the subproject cities and towns (specific indicators provided for three core subproject cities and towns: Donggang, Kazuo, and Linghai)</p> <p>Road components Damage rate of roads decreased: - Donggang by 5% - Others to be determined</p>	<p>ADB project completion report</p> <p>Operating and financial reports of water supply and wastewater companies</p>	<p>Assumptions</p> <p>Government commitment and support for infrastructure development continues</p> <p>Infrastructure facilities built are properly operated and maintained</p> <p>Customers are willing to pay increased tariffs</p> <p>Resources are adequate to sustain growth</p>

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
	<p>Water supply components Water supply coverage of the subproject area increased: - Kazuo from 30% to 90% - Linghai from 93% to 98% - Others to be determined</p> <p>Ratio of unaccounted-for-water decreased: - Kazuo by 50% - Linghai by 50% - Others to be determined</p> <p>Days of disruption of water supply each year decreased: - Kazuo by 60% - Others to be determined</p> <p>Drainage components Length of storm-water drainage network increased: - Donggang by 25% - Others to be determined</p> <p>Wastewater components Wastewater collection and treatment increased: - Donggang from 50% to 90% - Linghai from 60% to 90% - Others to be determined</p> <p>Solid waste components Rate of increase of sanitary treatment to be determined</p> <p>Heating components Percentage of population with access to heating increased to be determined</p> <p>Revenue-generating components (water, wastewater, heating) Tariff gradually increased to achieve full cost recovery</p>	<p>Public health department audits on water quality</p> <p>City and county records and statistics</p> <p>Records of environment protection bureaus</p> <p>Air quality data to be collected as part of the PPMS</p> <p>Public health department statistics</p> <p>Flood records</p>	<p>Risks</p> <p>Actual growth and population increases are far from the estimates</p> <p>Actual utility demands and wastes generated are far from the estimates</p>
<p>Output</p> <p>Subproject 1: Donggang City</p> <p>1.1 One new trunk road, two upgraded trunk roads, and a bridge opened to traffic and associated services operating</p> <p>1.2 New storm-water and wastewater pipe network, culvert, and pumping stations operating</p>	<p>By 2015</p> <p>3.2 km of a new trunk road, 4.7 km of two upgraded trunk roads, and a 172 m long bridge opened to traffic. Associated services along the roads operating</p> <p>7.3 km of storm-water pipes, 8.1 km of wastewater pipes, 740 m of 2.6 m x 2 m box culverts, 4 storm-water pumping stations, and 2 wastewater pumping stations operating</p>	<p>Regular implementing agency 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>Assumptions</p> <p>Project financing is provided on time</p> <p>Relevant authorities offer strong support to the city and town PMOs and implementing agencies for capacity development for project implementation and operation</p> <p>Effective stakeholder participation and ownership is developed</p> <p>Different specialist disciplines are well-</p>

Design Summary	Performance Targets and/or Indicators	Data Sources and/or Reporting Mechanisms	Assumptions and Risks
<p>1.3 New river improvement and area upgrading works completed</p> <p>Subproject 2: Kazuo Mongolian Autonomous County 1.1 New water supply system and associated facilities operating</p> <p>Subproject 3: Linghai City 1.1 Two upgraded trunk roads, five upgraded secondary roads, and one upgraded branch road opened to traffic and associated services operating</p> <p>Subsequent subproject cities and towns Urban infrastructure and services improved and operating</p> <p>For all subprojects Institutional management capacity improved</p>	<p>2.4 km of embankment dikes and 1.1 million m² of landscaped area (including lakes within) completed</p> <p>By 2015</p> <p>Water intake including a 26,000 m³/d lifting pumping station and a primary sedimentation tank, 18 km of water transmission pipes, 26,000 m³/d intermediate pumping station, 25,000 m³/d water treatment plant, and 58.5 km of water distribution pipes operating</p> <p>By 2015</p> <p>7.0 km of two upgraded trunk roads, 10.5 km of eight upgraded secondary roads, and 0.7 km of one upgraded branch road opened to traffic. Road maintenance equipment procured. Greening, water supply, drainage, and other associated services along the roads operating</p> <p>By 2015</p> <p>To be determined</p> <p>By 2015</p> <p>Liaoning PMO and the subproject city and town PMOs and implementing agencies:</p> <p>Strengthen financial management and corporate governance in water and wastewater agencies and/or companies in any subproject city and town with a water supply or wastewater component</p> <p>A 6-year (2009–2015) training plan for project management, O&M, financial management and institutional development implemented</p> <p>Organization structure and financial management systems improved</p>	<p>Works completion and acceptance records</p> <p>Information from final accounts of works ADB review missions</p> <p>Monitoring reports on institutional development including number of staff trained, areas of training, and strengthened organizations and procedures</p>	<p>coordinated</p> <p>Land acquisition and resettlement policies are effectively implemented; the stakeholders accept and cooperate with the implementation process</p> <p>Project design and construction are implemented effectively</p> <p>Risks</p> <p>Recruitment of the loan implementation consultant is delayed</p> <p>Local geological conditions affect construction activities</p> <p>Exceptional weather affects the annual effective construction period</p> <p>Costs are much higher than foreseen</p> <p>Assumptions</p> <p>The loan implementation consultant provides good services</p> <p>Staff trained apply in their work what they have learned and do not leave their posts</p>

Activities with Milestones	Inputs
<p>Subproject 1: Donggang City</p> <p>1.1 Roads and Bridge and Associated Services Activity 1: Design the facilities, acquire land, and procure the works by 2012. Activity 2: Construct 3.2 km of a new trunk road and 4.7 km of two upgraded trunk roads with associated services along the roads by 2013. Activity 3: Construct a 172 m long bridge by 2012.</p> <p>1.2 Wastewater and Drainage Activity 4: Design the facilities, acquire land, and procure the works by 2011. Activity 5: Construct 7.3 km of storm-water pipes, 8.1 km of wastewater pipes, 740 m of 2.6 m x 2 m box culverts, four storm-water pumping stations, and two wastewater pumping stations by 2012.</p> <p>1.3 River Improvement and Area Upgrading Activity 6: Design the facilities, acquire land, and procure the works by 2011. Activity 7: Construct 2.4 km of embankment dikes by 2011. Activity 8: Construct 1.1 million m² of landscaped area (including lakes within) by 2014.</p> <p>Subproject 2: Kazuo Mongolian Autonomous County</p> <p>2.1 Water Supply Activity 9: Design the facilities, acquire land, and procure the works by 2011. Activity 10: Construct water intake including 26,000 m³/d lifting pumping station and primary sedimentation tank by 2011. Activity 11: Construct 18 km of water transmission pipes and 26,000 m³/d intermediate pumping station by 2011. Activity 12: Construct 25,000 m³/d water treatment plant by 2012. Activity 13: Construct 58.5 km of water distribution pipes by 2012.</p> <p>Subproject 3: Linghai City</p> <p>3.1 Roads and Associated Services Activity 14: Design the facilities, acquire land, and procure the works by 2012. Activity 15: Construct 7.0 km of two upgraded trunk roads, 10.5 km of eight upgraded secondary roads, and 0.7 km of one upgraded branch road with associated services; and procure road maintenance equipment by 2014.</p> <p>Other Subprojects Activity 16: Design the facilities, acquire land, and procure the works by 2014. Activity 17: Construct urban infrastructure and municipal services by 2015.</p> <p>Institutional Capacity Building for Project Management Activity 18: Strengthen financial management and corporate governance in water and wastewater agencies and/or companies in any subproject city and town with a water supply or wastewater component by 2014. Activity 19: Complete necessary organizational arrangements for implementing agencies (hiring staff; setting up accounting systems; and improving financial, administrative, and human resource policies and procedures) by 2010. Activity 20: Develop plans, budgets, and procedures for loan implementation and project control in Liaoning PMO by 2010. Activity 21: Complete Liaoning PMO and implementing agency staff training (training in ADB procedures, procurement, traffic management, road maintenance, water supply, pollution control, environmental monitoring, and financial management) by 2015. Activity 22: Liaoning PMO and implementing agencies refine the PPMS and establish targets and procedures no later than 6 months after loan effectiveness.</p>	<p>ADB</p> <p>\$100 million loan with timely disbursement based on the construction schedule of the works</p> <p>\$0.25 million grant from the Water Financing Partnership Facility for strengthening operating and financial sustainability of service utilities</p> <p>Government and Implementing Agencies</p> <p>\$136.2 million equivalent in counterpart funds with timely disbursement based on the construction schedule of the works</p>

ADB = Asian Development Bank, 11FYP = 11th five-year plan, km = kilometer, m = meter, m² = square meter, m³/d = cubic meter per day, mg/m³ = milligram per cubic meter, O&M = operation and maintenance, PMO = project management office, PPMS = project performance management system.

^a PRC GB3838-2002 classifies surface water quality into five categories. Class V is polluted and class IV is for industrial water supply and recreational waters with no direct human contact.

SECTOR AND SUBSECTOR ANALYSIS

A. Development of Small Cities and Towns

1. **The People's Republic of China.** The People's Republic of China (PRC) has long promoted the development of small cities¹ and towns as a way to achieve a more balanced urban system. It has been wary that large-scale migration from the countryside would lower the productivity of the fledgling urban economy and undermine industrial growth, and so curbed migration for many years through the *hukou* (household registration) system and promoted the development of small cities and towns as alternative destinations for rural migrants. Waves of migration into urban areas since the 1980s have contributed to a steep rise of urbanization in the country over the last 30 years. In 2006, about 44% of the national population lived in urban areas, up from 18% in 1978. The results of the development policy since the mid-1990s have been uneven. While almost all provincial governments have success stories, most of the growth of cities and towns has taken place in the eastern and southern regions of the country, where the rise of export-oriented manufacturing has benefitted settlements of all sizes. While government policies have been instrumental in building the linkages between town-based and city-based firms, national macroeconomic and trade policies have contributed as much to small city and town development in coastal regions as urbanization policy. The relative lack of development in small cities and towns in western, northern, and some central provinces provides evidence of this.

2. The 11th Five-Year Plan (11FYP) 2006–2010 takes advantage of the potential of small cities and towns to increase national economic productivity, while narrowing the urban income gap, thereby contributing to social stability. It calls for strengthening the physical and economic linkages between major cities in metropolitan areas or major development corridors, and the small cities and towns at their periphery. Continuity with previous policy is achieved through an explicit priority on migration to small cities and towns rather than to the megacities. Consistent with the PRC's emphasis on "harmonious development," the plan also calls for equitable distribution of the benefits of urban development.

3. **Liaoning Province.** Many small cities and towns in Liaoning recently have experienced rapid development but now face challenges similar to those of other northern Chinese provinces. Rapid growth has resulted in environmental pollution and/or worsening of living conditions; the inadequacy of infrastructure provisions has constrained growth. The provision of employment for the current citizens and migrants from the rural and less-developed areas is a great challenge, and necessitates substantial investment, usually overstressing limited finances.

4. Most of the small cities and towns in the province have a relatively low population, averaging about 9,000, and cannot serve as effective linkage between large and medium-sized cities and the rural areas, or absorb most of the surplus rural workforce. Regional disparity is apparent as most of the 15 poor counties are in the western part. To provide role models for sustainable growth of small cities and towns, employment generation, and improved living standards, the Liaoning Small City and Town Framework Plan (2003–2020) stresses the development of cities and towns along major transport routes, especially near major cities that have the ability to spur the development of surrounding areas, while helping less-developed areas. The Liaoning 11FYP calls for strengthened construction of small cities and towns, planned expansion of the built-up area of county-level cities, and focused development of industrial districts in counties to boost urbanization. The Liaoning Province Committee of the Chinese Communist Party issued Circular Number [2006] 9, which recommends ways to expedite county-level economic development, such as developing industries producing spare

¹ Small cities in the PRC are generally considered to have populations in the 100,000–250,000 range.

parts, promoting tertiary industries, expediting growth of county seats and key towns, and giving more assistance to underdeveloped counties.

5. Based on these, all the three core subprojects chosen for this Project are along major transport corridors, have employment generation potential, and have attained a certain level of development. The loan will offer Kazuo Mongolian Autonomous County, from the poorer and drier western part, the opportunity to develop environmentally sustainable infrastructure that will enable investments in natural resource processing, manufacturing, and services. The cities of Donggang located on the eastern coast and Linghai on the central coast have achieved high growth rates, and can improve living conditions and the environment by investing in urban environmental infrastructure financed by the loan.

6. The Project involves several levels of government intervention. The Liaoning provincial government is promoting development in multiple cities and towns across the province in a more coordinated and cost-effective manner. It is uniquely positioned to achieve demonstration effects of the subprojects by sharing success stories, development approaches, and implementation mechanisms with other small cities and towns across the province. The city and county governments are implementing their master plans through capital investment in roads, water supply, wastewater, solid waste management, and district heating works; and will own and manage most of the completed facilities.

7. The national and Liaoning provincial policies on small cities and towns, in line with the recommendations in the Asian Development Bank-funded Town-Based Urbanization Strategy Study in Liaoning and Shanxi provinces, form the basis of the Project.² Poor small cities and towns in Liaoning need to develop their infrastructure to attract investment in natural resource processing, manufacturing, and services. Others that have achieved high growth require better infrastructure to improve living conditions and protect the environment.

B. Roads and Associated Services

8. The 11FYP calls for reduction of the economic distance to markets, linkage of the western and eastern provinces, and integration of rural areas into national transport networks. Governments of high-growth small cities and towns are challenged to provide roads and associated services to accommodate the need for industrial, commercial, and residential development. In most cases they must build the roads themselves to establish the physical framework to attract investment in industry, and commerce and provide decent housing to current and future residents, essential for their future growth.

9. Due to the rapid growth of Liaoning and resulting increase in traffic volume, the Comprehensive Transport Plan of Liaoning Province, put forward in Liaoning City and Town System Planning (2003–2020), was used as the basis for the road sector analysis. The traffic plan associated with the Liaoning 11FYP set high investment targets for land and sea transport infrastructure, and related technological and service improvements. Targets include that by 2010, every county will be connected to an expressway and every village connected to a paved road and provided with public passenger transport. A network of ring and radial types of major expressways across the province and connected to major ports and other provinces will be completed. Outdated roads in county-level cities and above will be reconstructed. The road

² ADB. 2004. *Technical Assistance to the People's Republic of China for the Town-Based Urbanization Strategy Study*. Manila. The study concludes that the overarching factor should not be growth of production, but rather growth of employment that will contribute more to the Government's goal of closing the rural–urban income gap. The study recommended growing both cities and towns by facilitating the development of larger urban agglomerations made up of different types of urban settlements and proposed that key towns should be selected based on their “employment rate of return,” i.e., the number of jobs created per yuan invested by government.

components of the Donggang and Linghai subprojects will improve accessibility of individual areas and enable extension of municipal services to existing and proposed premises, thus enhancing living standards. This will upgrade inadequate and outdated infrastructure for residents and the markets; and serve future residential, commercial, and office uses. This will strengthen the economy, improve the physical and business environment, and support urban area trade with rural areas and other cities.

10. Donggang City is a seaport in southeastern Liaoning, facing the Yellow Sea to the south. It is the northern starting point of the PRC's coastline, with the Democratic People's Republic of Korea across Yalu River to the southeast. With an important harbor near the border, it is being developed as a distribution center for many agricultural, aquatic, and industrial products outside the province; the subproject road component will promote this development. A new trunk road will link existing roads to form a loop around the city center. Upgrading of two existing trunk roads and a secondary road with associated drainage and wastewater pipes and lighting, as well as construction of a bridge, is included in the component. The bridge, located on the West Ring Road across the Dadonggou, the main river crossing the city and draining to the Yellow Sea, will link major districts of the city. The upgraded roads will improve the traffic condition and facilitate public transport. More products are expected to pass through the city upon subproject completion, generating employment and developing markets for agricultural products near and far, which will particularly benefit those engaged in agricultural production. Capacity building in urban planning and traffic engineering will improve the authorities' traffic management capability.

11. Linghai City is a coastal city on Liaodong Bay in Bohai. It has four markets: one for agricultural products, one for spare parts for cars, and the other two for daily necessities where women are major traders. Many roads in the built-up area have outdated services, lack proper drainage and lighting, and are not served by public transport. The subproject component includes the upgrading of two trunk roads, eight secondary roads, and a branch road, with associated water supply and drainage pipes and lighting. This will improve living standards, facilitate traffic flow, promote economic growth, and improve road safety. Public transport services will be introduced in the areas served.

C. Water Supply, Drainage, and Wastewater

12. Rapid urbanization in the PRC, including development of small cities and towns, has exacerbated water resource depletion and deterioration of the water environment. Water shortage due to pollution of water sources is a key reason for the inadequacy of potable water. This threatens the drinking water safety of urban and rural residents. In view of this, the Government is making efforts to promote centralized water supply facilities to minimize safety problems of scattered water sources, and encourages construction of centralized municipal wastewater treatment plants. Nevertheless, municipal wastewater in most small cities and towns is not effectively collected due to inadequate municipal sewer networks. Construction of water supply and wastewater treatment facilities requires substantial funding, which brings financial pressure to the small city and town governments.

13. Liaoning Province's water resources are scarce: only 800 cubic meters per capita, 1/3 of the national average. The potable water coverage is only 39%. Many water supply facilities are old, network coverage is low, and production capability of the water sources is inadequate. Many drainage pipes and channels have been used for 40 years, some for 100 years; breakage and blockage are serious. In rural areas, some of the underground water sources contain high fluorine content, taste bitter, and are unhygienic.

14. Kazuo Mongolian Autonomous County is poor but recently has expedited growth in its Gongyingzi New District with investment from a number of industrial enterprises that employ

many workers. However, water shortage constrains development: the capacity and coverage of the water supply system is too low, and too many individual wells do not favor the unified management and scheduling of water supply. An environmentally sustainable water source is a river basin at Nanliangzi village, 18 kilometers from the new district. The proposed water supply component includes water intake works at the water source, water transmission pipes, an intermediate pumping station, a water treatment plant, and water distribution pipes. It will improve the infrastructure to previously unserved villages where the rate of poverty is high, and serve as a growth engine creating employment opportunities for the surplus labor and expediting development in the new district.

15. The present water supply and drainage networks of Donggang and Linghai cities are outdated, density of the pipe network is low, and standards of design and construction are poor. To improve living standards and the urban environment, storm-water and wastewater pipes, pumping stations, and a box culvert are included in the Donggang subproject; and water supply pipes, a reservoir, a pumping station, storm-water pipes, and a box culvert are included in the Linghai subproject.

D. River Improvement

16. Rivers in the PRC are seasonal—about 70% of annual rainfall occurs from June to September in most areas—and the channel beds are often littered with solid waste, filled with sediment, and polluted by untreated wastewater. River improvement projects aim to reshape the river channels; install embankments; and landscape riverbanks with walkways, trees, shrubs, and vegetation, providing flood control as well as a scenic urban park.

17. Dadonggou River is a key part of the flood prevention and tidal protection system of Donggang City, and an important passage for urban drainage and fishing and freight ships going out to the Yellow Sea. The local government has been endeavoring to improve the river and its banks for decades. From 1936 to 1998, 19 large-scale floods, 9 gales with a wind scale of 9 or above, astronomical tides, and basinwide rainstorms threatened life and property. The 2.4 kilometer (km) long embankment dikes included in the Donggang subproject are on the right bank of the Dadonggou, and will reinforce and connect to the existing embankment. The design standard adopted for flood and tidal protection will be for a return period of 50 years, up from 5 years at present. In addition, 1.1 square kilometers (km²) along the riverbank will be landscaped, with some recreational facilities added for the general public. The river rehabilitation and dredging, riverside renewal, and area upgrading works will provide a cleaner environment for residents, alleviate flooding damage, help realize the comprehensive benefits of all the works on the Dadonggou, and contribute to the sustainable development of Donggang City.

E. Waste Management and Sanitation

18. While the core subprojects do not include any solid waste management or environmental sanitation components, these elements are included in some of the subsequent subprojects. None of the small cities and towns in Liaoning have a sanitary landfill for domestic garbage, all of which is disposed in the open or buried in a simple manner, polluting water resources. Most garbage collection vehicles are seriously worn, and there are few garbage collection stations. For proper waste management and sanitation, waste collection and disposal facilities should be constructed and/or procured, including sanitary landfills, public toilets, garbage collection stations, dustbins, and garbage collection vehicles.

PROCESS OF SUBPROJECT IDENTIFICATION, SELECTION, PREPARATION, AND APPRAISAL

1. Under the sector loan approach, the Liaoning provincial government (LPG), the Executing Agency, has established a three-stage approach for identifying, selecting, preparing, and appraising subprojects for inclusion in the Project. These procedures will be used to appraise subsequent subprojects, and identify and select additional subprojects needed to ensure full utilization of the Asian Development Bank (ADB) loan. LPG has delegated various actions and decisions to the Liaoning project management office (PMO).

A. Stage 1: Subproject Identification and Selection

2. LPG has invited county-level city and county governments in Liaoning Province to express their interest in participating in the Project to be partly financed by the ADB loan. In issuing this invitation, LPG refers to basic selection criteria:

- (i) The subproject must be in the urban development sector, i.e., related to the physical development of small cities and towns, with particular emphasis on infrastructure development. The eligible subsectors for subproject investment are roads and associated municipal services, water supply, wastewater management, river improvement, area upgrading, solid waste management, district heating, and education.
- (ii) The subproject must be a county-level city or county or a town.
- (iii) A master plan supports the subproject.
- (iv) The subproject must improve environmental quality and/or enable employment generation, as follows:
 - (a) Improve environmental quality by accomplishing one of the following:
 - (1) rehabilitate polluted areas in the subproject city and town;
 - (2) lower the rate of (or slow the rate of) pollution of water, land, and/or air in urban areas;
 - (3) treat solid waste or wastewater prior to discharge into the natural environment; and/or
 - (4) increase environmental sustainability of the subproject city and town development through more ecologically sensitive settlement patterns or infrastructure services.
 - (b) Increase employment generation by accomplishing one of the following:
 - (1) facilitate investment in labor-intensive economic sectors including the service sector;
 - (2) remove a specific infrastructure-related barrier to growth of an economic sector in the subproject city and town (that is, enable economic growth through provision of infrastructure service);
 - (3) enable the development of residential areas for employees of new or expanding businesses (i.e., providing roads and associated municipal services for urban expansion areas);
 - (4) strengthen linkages of the subproject city and town economy with the metropolitan or subregional economy (including growth corridors and clusters); and/or
 - (5) increase access of the urban poor to economic opportunities.
- (v) The local government must confirm its ability and willingness to arrange counterpart financing.
- (vi) The local government must confirm its willingness for the subproject to comply with ADB safeguard policies and other requirements.
- (vii) Implementation must be during 2009–2015.

B. Stage 2: Subproject Preparation

3. Preparation by local governments involves designating an implementing agency (or initially an office of the government) to prepare project design documents including a project

proposal and feasibility study report under the guidance of the Liaoning Development and Reform Commission (LDRC); with the help of the Liaoning PMO, an environmental impact assessment, and (if required) a resettlement plan to standards necessary to meet both domestic and ADB requirements. Governments must also determine suitable institutional arrangements for project implementation and prepare a detailed financing plan.

4. Local design and other specialist institutes (locally appointed) will support local governments in their work and compliance with ADB requirements.

5. To facilitate an orderly and consistent appraisal of the subprojects, the Liaoning PMO requires a subproject appraisal report in a common format to be prepared (to ADB standards) for each proposed subproject, including technical, social, resettlement, financial, economic, institutional, and environmental analysis.

C. Stage 3: Subproject Appraisal and Approval

6. The ADB project team has developed a detailed set of evaluation criteria, which was discussed and agreed with LPG. This is to ensure that individual subproject appraisal is conducted in accordance with ADB standards. The appraisal of the three core subprojects will also serve as guidance for the appraisal of subsequent subprojects.

7. Each subsequent subproject PMO will prepare a subproject appraisal report, which will follow the template provided in Supplementary Appendix B (which also shows the summary appraisal criteria), and submit it to the municipal finance bureau for review and then to the Liaoning PMO for review. The Liaoning PMO will submit the appraisal report to the Liaoning Finance Bureau and LDRC for endorsement.

8. Rejected subprojects are to be referred to the relevant local governments with indications of where the preparations and proposals are deficient, and for additional preparation work (assuming the subprojects have a realistic chance of meeting the agreed evaluation criteria).

9. Subprojects approved by LDRC will be forwarded to ADB for approval.

10. All subproject approvals by ADB or LPG will only be made if

- (i) the subproject includes an environmental impact assessment which has been endorsed by the Liaoning Environmental Protection Bureau and ADB, and has been subject to relevant public consultation and disclosure; and
- (ii) a resettlement plan, meeting ADB requirements, has been prepared and approved by the relevant local government, and endorsed as satisfactory by ADB.

EXTERNAL ASSISTANCE

Table A4.1: Asian Development Bank Assistance for Infrastructure and Environmental Improvement in the People's Republic of China

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 Environment 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 Environmental 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	27 Jun 05	100.00
2176	Fuzhou Environmental Improvement	8 Jul 05	55.80
2207	Henan Wastewater Management and Water Supply	18 Nov 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
2407	Gansu Baiyin Urban Development	23 Jan 08	80.00
2420	Xinjiang Municipal Infrastructure and Environmental Improvement	23 Apr 08	105.00
2487	Songhua River Basin Water Pollution Control and Management	11 Dec 08	200.00
2491	Guangxi Wuzhou Urban Development	15 Dec 08	100.00
2526	Xinjiang Urban Transport and Environmental Improvement	29 Jun 09	100.00
	Subtotal (A)		3,680.16
B.	Advisory Technical Assistance		
987	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
1772	Institutional Strengthening of the Qingdao Environmental Protection	30 Oct 92	0.60
1835	Haihe Basin Environmental Management and Planning Study	31 Dec 92	1.24
1916	Institutional Strengthening of the Environmental Protection Bureau	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 & 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	0.60
2504	Seminar on BOT in Water Supply Sector	22 Dec 95	0.10
2505	Strengthening the Environmental Standards and Enforcement	22 Dec 95	0.60
2693	Formulation Integrated EMPs 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	0.20
2773	Water Supply Tariff Study	24 Mar 97	0.60
2804	BOT 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	Promotion of Clean Technology (Technical Assistance Cluster)	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	Trans-jurisdiction 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	Pilot Study on Market-Based Instruments for Water Pollution Control	11 Sept 07	0.50
4987	National Strategies for Environmental Management and Energy Conservation	13 Nov 07	0.90
7002	Urban Wastewater and Solid Waste Management for Small Cities and Towns	10 Dec 07	1.00
7036	Provincial Development Strategies for Selected Provinces in the Central Region	12 Dec 07	1.00
7083	Urban Wastewater Reuse and Sludge Utilization Policy Study	26 May 08	1.00
Subtotal (B)			32.35
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
917	Beijing Environment Improvement	28 Jul 93	0.60
2187	Anhui Environmental Improvement Project for Wastewater Component	19 Oct 94	0.28
2445	Xian–Xianyang–Tongchuan Environmental 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 (including supplementary)	19 Mar 01	0.70
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	Wuhan Wastewater and Storm-Water Management	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 Infrastructure	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
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
4971	Songhua River Basin Water Pollution Treatment	28 Sep 07	1.30
7108	Chongqing Urban–Rural Infrastructure Development Demonstration	29 Jul 08	0.90
7160	Guangxi Border City Development	4 Nov 08	0.80
7177	Wuhan Urban Environment Improvement	21 Nov 08	0.70
7323	Xinjiang Altay Urban Infrastructure and Environmental Improvement	3 Aug 09	0.80
Subtotal (C)			24.51
Total (B + C)			56.86

BOT = build-operate-transfer, EMP = environmental management plan, MIS = management information system.

Source: Asian Development Bank.

Table A4.2: Assistance Funded by Aid Agencies for Liaoning Province for Infrastructure and Environmental Improvement (1990–2008)

Project	Total Investment (\$ million)	Foreign Loan (\$ million)	Foreign Loan Provider	Status
Yingkou Port	–	22.0	ADB	Completed
Dandong Port	–	2.0	ADB	Completed
Dalian Water Supply	380	160.0	ADB	Completed
Heating Supply for Urban Poor in Liaoning	–	100.0	ADB	In progress
Liaoning Environmental Improvement	161	70.0	ADB	In progress
Liaoning Urban Infrastructure	–	77.8	WB	Completed
Liaoning Environment	–	110.0	WB	Completed
Liaoning Urban Transport	–	150.0	WB	Completed
Liao River Basin	–	100.0	WB	In progress
Liaoning Medium Cities Infrastructure	525	218.0	WB	In progress
Second Liaoning Medium Cities Infrastructure	–	173.0	WB	In progress
Anshan Environmental Improvement	–	120.0	JBIC	In progress
Shenyang Environmental Improvement I	–	50.0	JBIC	In progress
Yinkou Water Source	–	20.0	JBIC	In progress
Shenyang Environmental Improvement II	–	50.0	JBIC	In progress
Total	–	–		

ADB = Asian Development Bank, JBIC = Japan Bank for International Cooperation, WB = World Bank.
Source: Liaoning project management office.

SUMMARY OF SUPPORT FOR WATER AND WASTEWATER UTILITIES

A. Objectives

1. To enhance the sustainability of the Asian Development Bank (ADB)-financed water supply and wastewater infrastructure, ADB will provide a grant to strengthen the institutional and financial management capacity of entities involved in planning, financing, implementing, operating, and maintaining water and wastewater systems in the subproject small cities and towns. This includes water supply and wastewater service providers participating in both core and subsequent subprojects. The assistance, to be administered by the Liaoning provincial government, will also focus on improving the provincial policy and regulatory framework for these providers and, where appropriate, the national policy and regulatory framework.

2. The capacity-building assistance will improve the ability of water and wastewater service providers to respond to ongoing urbanization challenges by enhancing their ability to deliver sustainable services. Specifically it will

- (i) help the participating entities develop a comprehensive corporate strategy to water and wastewater service provision in which organization structures, personnel, and systems and procedures are aligned with corporate goals and objectives;
- (ii) adopt a demand-driven approach for service delivery, in which service levels and coverage for water and wastewater are set, and interventions designed in response to the expressed priorities and preferences of end users; and
- (iii) strengthen financial management and cost recovery so that revenues cover costs to the extent possible and the service provider is able to meet its substantial financial obligations in an environment of rapidly expanding service provision.

B. Scope of Work

3. The team implementing the capacity-building assistance will assess the institutional and financial capacity of the designated service providers, formulate a program to strengthen institutional capacity (including training, assistance with corporate reform, improvement of administrative systems and procedures, and design of pilot interventions), and assist with implementing the program. The team will coordinate closely with the provincial project management office (PMO) and work closely with the subproject PMOs and implementing agencies. The Executing Agency will be responsible for administration of the grant and recruitment of consultants.

C. Period of Performance

4. The work will be carried out over 12 months commencing in early 2010.

D. Staffing

International consultants will comprise an operations and institutional specialist, and a financial management specialist. National consultants will comprise a financial specialist, an operations and institutional specialist, a water and wastewater pricing specialist, a training specialist, and a customer outreach specialist.

SUMMARY COST ESTIMATES AND FINANCING PLAN

Table A6.1: Summary Cost Estimates

Item	CNY Million			\$ Million			Percentage of Total Costs
	Foreign Exchange Costs	Local Currency Costs	Total Costs	Foreign Exchange Costs	Local Currency Costs	Total Costs	
A. Base Costs ^a							
1. Construction							
a. Civil Works	263.8	615.5	879.3	38.8	90.5	129.3	55
b. Capital Goods	39.6	92.4	131.9	5.8	13.6	19.4	8
c. Land Acquisition and Resettlement	0.0	90.5	90.5	0.0	13.3	13.3	6
d. Survey, Research, Design, and Consulting Services	0.0	65.3	65.3	0.0	9.6	9.6	4
e. Environmental Management	1.6	5.8	7.4	0.2	0.8	1.1	0
Subtotal (A1)	305.0	869.5	1,174.5	44.8	127.8	172.7	73
2. Institutional Strengthening							
a. Consulting Services and Training	9.3						
b. Capacity Building (grant) ^b	2.0	3.1	14.4	1.6	0.5	2.1	1
Subtotal (A2)	11.3	3.1	14.4	1.6	0.5	2.1	1
3. Recurring Costs							
Implementing Agency Management	0.0	14.4	14.4	0.0	2.1	2.1	1
Subtotal (A3)	0.0	14.4	14.4	0.0	2.1	2.1	1
Total Base Cost (A)	316.3	887.0	1,203.3	46.4	130.4	176.9	75
B. Contingencies							
1. Physical Contingency ^c	26.9	95.5	122.4	4.0	14.0	18.0	7
2. Price Contingency ^d	25.3	179.9	205.2	3.7	26.5	30.2	13
Subtotal (B)	52.2	275.4	327.6	7.7	40.5	48.2	20
C. Financing Charges during Implementation ^e							
Interest during Implementation—ADB Loan	77.6	0.0	77.6	11.4	0.0	11.4	5
Total Financing Charges during Implementation	77.6	0.0	77.6	11.4	0.0	11.4	5
Total Project Cost (A+B+C)	446.0	1,162.4	1,608.4	65.6	170.9	236.5	100

^a In mid-2008 prices.

^b Actual amount \$250,000.

^c Physical contingencies computed at 10%.

^d Price contingencies computed by year and expenditure type based on cumulative domestic and foreign price inflation.

^e Interest during construction computed at 4.5% based on the London interbank offered rate and spread.

Exchange rate used: CNY6.8 = \$1.

Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

Table A6.2: Costs and Financing by Expenditure Account Total Project

Item	Total Cost		Financing by Expenditure Account (\$ million)						ADB Loan Finance Share by Expenditure Account
	(CNY million)	(\$ million)	ADB Loan ^a	Multi-Donor Trust Fund	Kazuo Mongolian Autonomous County	Donggang City	Linghai City	Other City and County	
A. Base Costs									
1. Construction									
a. Civil Works	879.3	129.3	67.4		3.9	20.4	9.7	28.0	52%
b. Capital Goods	131.9	19.4	19.4		0.0	0.0	0.0	0.0	100%
c. Land Acquisition and Resettlement	90.5	13.3	0.0		0.9	2.9	0.0	4.7	
Survey, Research, Design, and	65.3	9.6	0.0		0.2	8.5	1.9	3.9	
d. Consulting Services									
e. Environmental Management	7.4	1.1			0.1	0.6	0.4		
Subtotal (A1)	1,174.5	172.7	86.8		5.2	32.3	11.9	36.5	50%
2. Institutional Strengthening									
a. Consulting Services and Training	12.4	1.8	1.8 ^b						
b. Capacity Building (grant)	2.0	0.3		0.3 ^c					
Subtotal (A2)	14.4	2.1	1.8	0.3					85%
3. Recurring Costs									
Implementing Agency Management	14.4	2.1	0.0		0.1	0.6	0.4	1.1	
Subtotal (A3)	14.4	2.1	0.0		0.1	0.6	0.4	1.1	
Total Base Costs (A)	1,203.3	176.9	88.6	0.3	5.5	32.9	12.3	37.6	50%
B. Contingencies									
1. Physical Contingency	122.4	18.0	0.0		1.1	6.4	2.5	8.0	0.0
2. Price Contingency	205.2	30.2	0.0		1.2	10.4	2.4	16.1	0.0
Subtotal B	327.6	48.2	0.0		2.3	16.8	4.9	24.1	0.0
C. Financing Charges during Implementation									
Interest during Implementation—ADB Loan	77.6	11.4	11.4						100%
Total Financing Charges during Implementation	77.6	11.4	11.4						100%
Total Project Cost (A+B+C)	1,608.4	236.5	100.0	0.3	7.6	49.7	17.2	61.7	42%

Exchange rate: CNY6.8 = \$1.

Numbers may not sum precisely because of rounding.

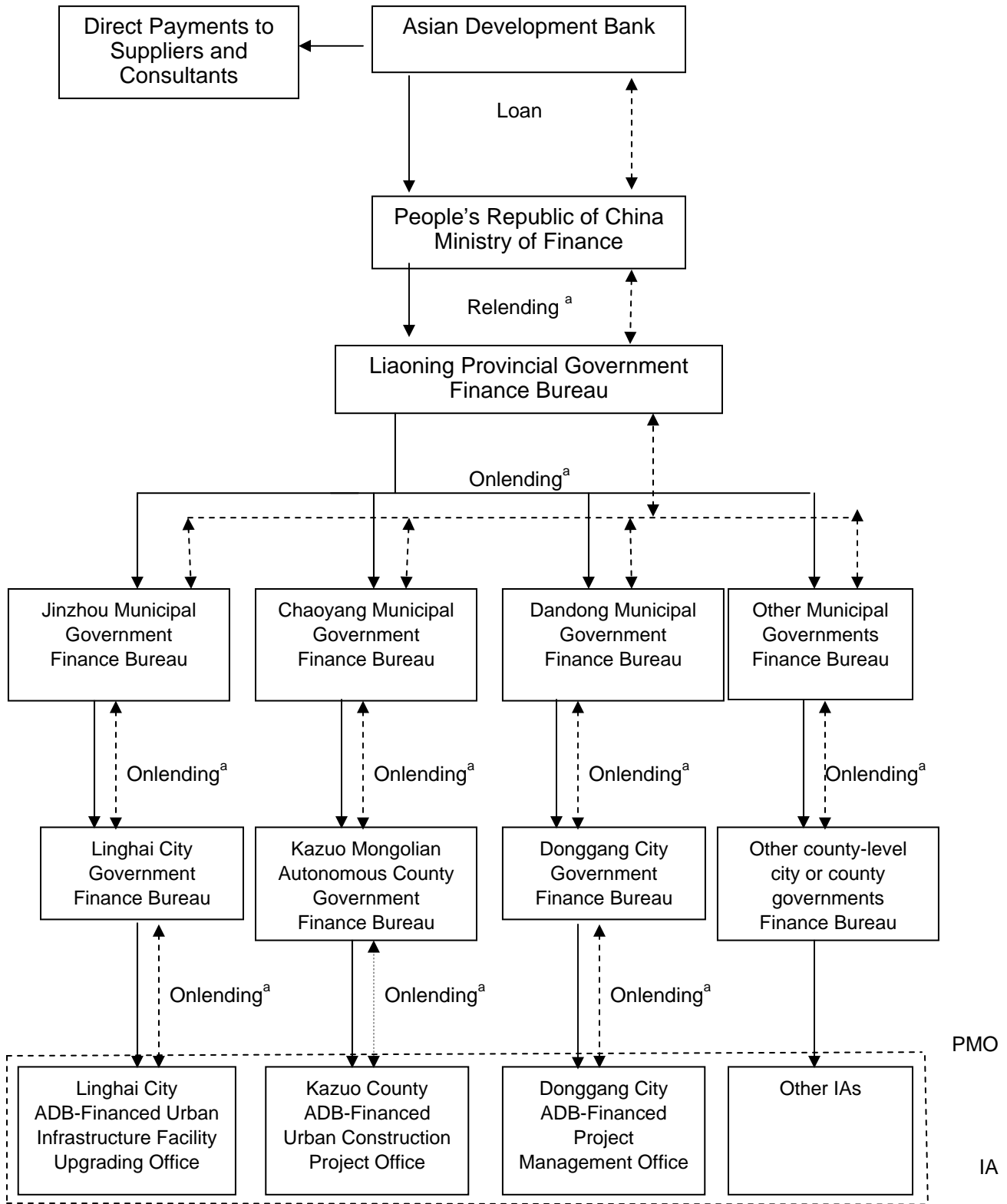
^a The Asian Development Bank (ADB) loan will cover bank charges and taxes and duties for works, supplies, equipment and services financed by ADB.

^b Includes project implementation and training equipment.

^c Under the Water Financing Partnership Facility. Contributors: the governments of Australia, Austria, and Norway. Actual amount is \$250,000. To be administered by the Liaoning provincial government.

Source: Asian Development Bank estimates.

ONLENDING ARRANGEMENTS AND INDICATIVE FLOW OF FUNDS



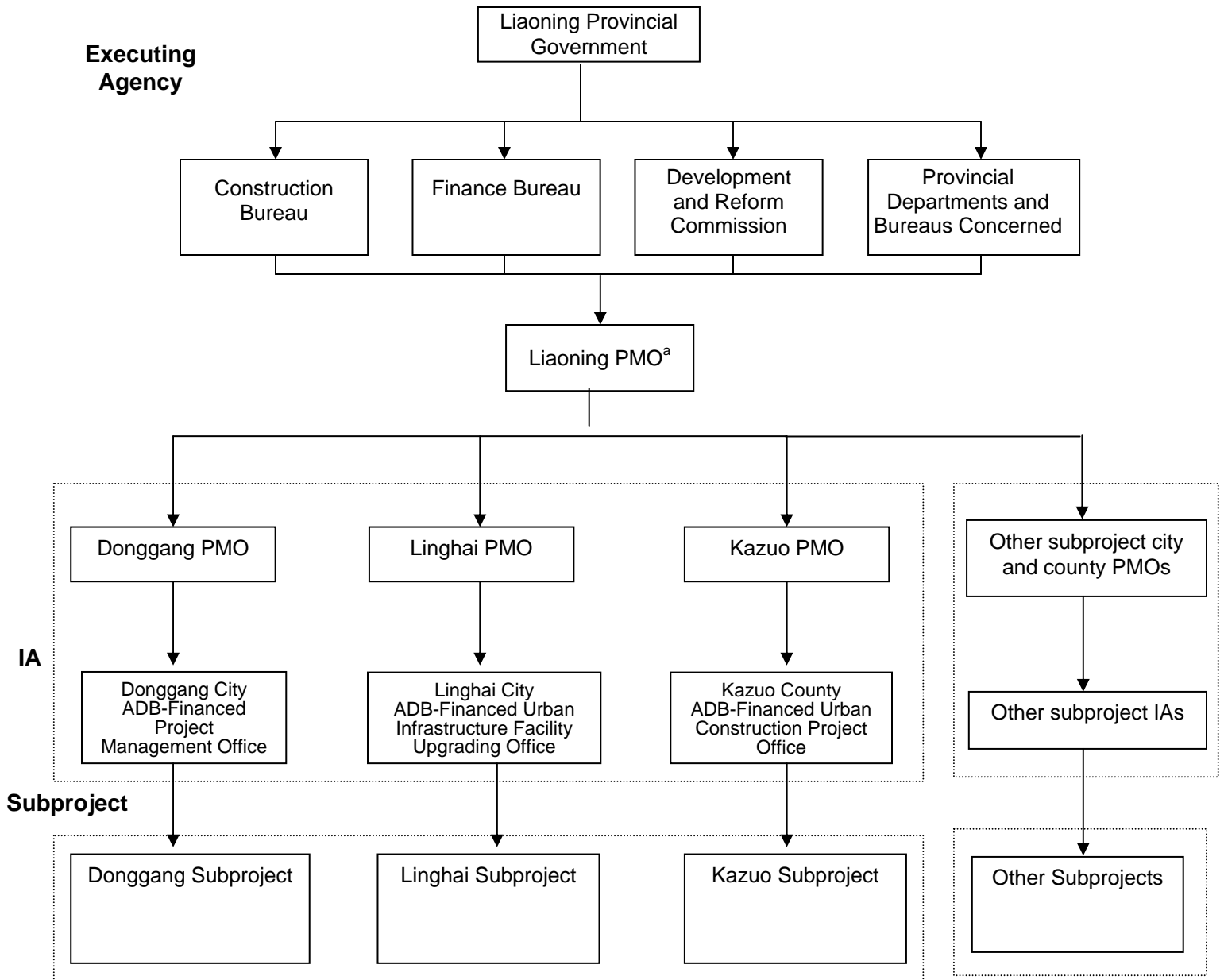
PMO = project management office, IA = implementing agency.

^a The Asian Development Bank loan will be relent and onlent on the same terms and conditions as those received by the Ministry of Finance.

→ Flow of fund; ← - → relending and repayment; onlending and repayment

Source: Asian Development Bank.

PROJECT IMPLEMENTATION ORGANIZATION



^a Liaoning Urban Construction and Renewal Project Office.
 IA = implementing agency. PMO = project management office.
 Source: Asian Development Bank.

IMPLEMENTATION SCHEDULE

Task Name	Start	Finish	2009				2010				2011				2012				2013				2014				2015			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Donggang City	1/1/09	6/30/14																												
Land Acquisition and Resettlement	2/1/09	2/28/12																												
Design and Tender Documentation	1/1/09	2/28/12																												
Tendering	5/1/09	4/30/12																												
Qingnian North Road and Services	5/1/11	6/30/13																												
Yingbin West Street and Services	7/1/09	3/31/11																												
Xincheng Road and Services	5/1/10	9/30/12																												
River Improvement	7/1/09	9/30/11																												
Area Upgrading	5/1/10	6/30/14																												
Storm-Water Pumping Stations	2/1/10	6/30/12																												
Renmin Bridge	3/1/10	12/31/12																												
Drainage Culverts	2/1/10	6/30/12																												
Kazuo Mongolian Autonomous County	1/1/09	12/31/12																												
Land Acquisition and Resettlement	2/1/09	5/31/11																												
Design and Tender Documentation	1/1/09	5/31/11																												
Tendering	6/1/09	7/31/11																												
Water Intake Works	8/1/09	11/30/11																												
Water Transmission Pipes	12/1/09	12/31/11																												
Intermediate Pumping Station	8/1/09	11/30/11																												
Water Treatment Works	4/1/10	11/30/12																												
Water Distribution Pipes	8/1/10	12/31/12																												
Linghai City	1/1/09	6/30/14																												
Design and Tender Documentation	1/1/09	1/31/12																												
Land Acquisition and Resettlement	2/1/09	1/31/12																												
Tendering	5/1/09	3/31/12																												
Zhongxing Street, Jiankang Road, Qingnian Street, and Services	7/1/09	9/30/12																												
Shangye Road, Jimao Street, Jinling Road, Shenji Road, and Services	4/1/10	3/31/13																												
Bayi Street, Xincun Road, Tiebei Road, Baokang Street and Services	7/1/10	5/30/14																												
Road Maintenance Equipment	3/1/10	2/28/14																												
Reservoir and Pumping Station	4/1/11	6/30/14																												
Other Subprojects	9/1/09	9/30/15																												
Design and Tender Documentation	9/1/09	11/30/13																												
Land Acquisition and Resettlement	10/1/09	12/31/13																												
Tendering	10/1/09	1/31/14																												
Construction Works	11/1/09	9/30/15																												
Institutional Development and Training	9/1/09	9/30/15																												

Source: Asian Development Bank.

SUMMARY AND DETAILED PROCUREMENT PLAN

Project Name: Liaoning Small Cities and Towns Development Demonstration Sector Project Loan Amount \$100 million Date of first Procurement Plan (<i>loan approval date</i>)	Loan Number: P42382 Executing Agency: Liaoning provincial government Date of this Procurement Plan: 4 August 2009
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A. Section 1: Process Thresholds, Review, and 18-Month Procurement Plan

1. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Table A10.1: Procurement of Goods and Works

Method	Threshold
ICB for Works ^a	\$10 million or more
ICB for Goods ^a	\$1 million or more
NCB for Works ^a	More than \$100,000 but less than \$10 million
NCB for Goods ^a	More than \$100,000 but less than \$1 million
Shopping for Works	Below \$100,000
Shopping for Goods	Below \$100,000

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

^a Refer to Asian Development Bank. 2006. *Project Administration Instructions*. PAI 3.04: Local Procurement. Manila (para. 3, national competitive bidding; June, revised April 2008).

2. ADB Prior or Post Review

2. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the Project.

Table A10.2: Procurement of Goods and Works

Procurement Method	Prior or Post	Comments
ICB Works	Prior	
ICB Goods	Prior	
NCB Works	The first NCB procurement documents should be submitted for ADB review and approval; subsequent NCB will be reviewed post Project.	
NCB Goods		
Shopping for Works	Post	
Shopping for Goods	Post	

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

Table A10.3: Recruitment of Consulting Firms and Individual Consultants

Item	Procurement Method	Prior or Post	Comments
Firm	QCBS	Prior	
	QBS	Prior	
	Other selection methods: CQS, LCS, FBS, and SSS	Prior	
Individual Consultants	Individual Consultants	Prior	

CQS = consultants qualification selection, FBS = fixed budget selection, LCS = least-cost selection, QBS = quality-based selection, QCBS = quality- and cost-based selection, SSS = single source selection.

3. Goods and Works Contracts Estimated to Cost More Than \$1 Million

3. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Table A10.4: Goods and Works Contracts Estimated to Cost More Than \$1 Million

Item	General Description	Procurement Method	Pre-qualification of Bidders	Expected Date of Advertisement
Goods				
B-KZ1	Kazuo Mongolian Autonomous County Water transmission (pumping station, chlorination room, electrical works, control, automation and instrumentation), intermediate pumping station (treated water tank, pumping station, electrical works, control and automation equipment), water treatment plant (equipment installation)	ICB	No	April 2010
B-LH1	Road operation and maintenance equipment (bitumen paver, milling machine, road sweeper)	ICB	No	January 2010
Works				
Donggang City				
A-DG2	Yingbin West Street and services	NCB	No	November 2009
A-DG3	Xincheng Road and services	NCB	No	March 2010
A-DG4	Renmin Bridge	NCB	No	January 2010
A-DG5	Drainage culverts (3 roads)	NCB	No	December 2009
A-DG6	Storm-water pumping stations	NCB	No	December 2009
A-DG7	Embankment dikes	NCB	No	November 2009
A-DG8	Landscaping (bridge no. 1 to bridge no. 2)	NCB	No	March 2010
A-DG9	Landscaping (bridge no. 2 to bridge no. 3)	NCB	No	May 2010
A-DG10	Landscaping (bridge no. 3 to bridge no. 4)	NCB	No	July 2010
A-KZ2	Laying of water transmission pipelines: 17.92 km of DN700 ductile iron and steel pipes	NCB	No	October 2009
A-KZ3	Water treatment workshop, 2 pumping stations, comprehensive office building, water recycling pumping station, dewatering workshop, guard room, treated water tank, inlet valve pit	NCB	No	February 2010
A-KZ4	Laying of water distribution pipes: 58.215 km of DN100–DN500 pipes	NCB	No	June 2010

Item	General Description	Procurement Method	Pre- Qualification of Bidders	Expected Date of Advertisement
Linghai City				
A-LH1	Zhongxing Street and services	NCB	No	November 2009
A-LH2	Jiankang Road, Qingnian Street, and services	NCB	No	November 2009
A-LH3	Shangye Road, Jimao Street, Jinling Road, Shenji Road, and services	NCB	No	February 2010
A-LH4	Bayi Street, Xincun Road, Tiebei Road, Baokang Road, and services	NCB	No	May 2010

ICB = international competitive bidding, NCB = national competitive bidding.
First column is Liaoning project management office reference number: A = civil works, B = equipment.

4. Consulting Services Contracts Estimated to Cost More Than \$100,000

4. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Table A10.5: Consulting Services Contracts Estimated to Cost More Than \$100,000

General Description	Recruitment Method ¹	Advertisement Date (quarter/year)	International or National Assignment	Comments
Project Implementation Management Capacity Building	QCBS (80:20)	First/2010	Both	

QCBS = quality- and cost-based selection.

5. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000

5. The following table groups smaller-value goods, works and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Table A10.6: Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000

Item	General Description	Number of Contracts	Procurement/ Recruitment Method
Kazuo Mongolian Autonomous County			
Civil Works	Nanliangzi River (Water intake pumping station, primary settling tank, and chlorine dosing room); intermediate pumping station (intermediate pumping station, treated water tank, power distribution facilities, overhead lines, guard room)	1	NCB
Donggang City			
Equipment	Traffic signal lights, road lighting transformer equipment	2	NCB
Equipment	Traffic signal lights, road lighting transformer equipment	1	NCB
Consulting Services and Capacity Building	Training, study tour, project implementation support, and project equipment	To be determined	To be determined

NCB = national competitive bidding.

B. Section 2: Project Procurement Plan

6. Indicative List of Packages Required Under the Project

6. The following table provides an indicative list of all procurement (goods, works and consulting services) over the life of the Project. Contracts financed by the Borrower and others should also be indicated, with an appropriate notation in the comments section.

Table A10.7: Indicative List of Packages Required Under the Project

General Description	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Goods	3	NCB		
	2	ICB		
Works	19	NCB		
	Estimated Number of Contracts	Recruitment Method	Type of Proposal	Comments
Consulting Services and Capacity Building	Multiple (To be determined)	QCB, CQS and/or S international and national	Simplified & Bio-Data	Includes consulting services, training, study tours, and project implementation equipment

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

C. Section 3: National Competitive Bidding Annex for the People's Republic of China

7. 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 August 30, 1999, are 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 thirty (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 prequalified 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/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.

SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

Country/Project Title: Peoples' Republic of China/Liaoning Small Cities and Towns Development Demonstration Sector Project
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Lending/Financing
Modality:

Sector Loan

Department/
Division:

East Asia Department/ Social Sectors Division
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I. POVERTY ANALYSIS AND STRATEGY

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

Contribution of the sector or subsector to reduce poverty in the People's Republic of China (PRC):

The Project's objectives are to promote balanced and environmentally sustainable urbanization; narrow the urban–rural gap; and improve production, employment, and living conditions in small cities and towns in Liaoning Province. Although the Project will not reduce poverty directly, it will contribute to achieving short- and long-term poverty reduction impacts. The Project is in line with the PRC's national poverty reduction strategy for development of the northeastern region, which aims to decrease the income gap between urban and rural residents, and supports Liaoning's 11th Five-Year Plan (FYP) 2006–2010 to promote sustainable economic development, particularly in small cities and towns, via improvements to environmental and transport infrastructure. All project components are integral components of the 11FYP. The Project is consistent with Asian Development Bank (ADB) policy to increase access to safe and reliable water supplies, and will help the PRC achieve the Millennium Development Goal 7 (environmental sustainability) and target 10 (to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015). The Project adheres to ADB's country partnership strategy in the PRC^a to make markets work more efficiently through (i) urban infrastructure development, (ii) promotion of environmental sustainability, and (iii) pro-poor equitable and inclusive growth.

Small cities and towns in Liaoning have made substantial progress in recent years in facilitating economic growth. However, the government-wide priority on gross domestic product growth has supported industrial development more than service sector growth. This has limited the impact of investments on job creation and ultimately poverty reduction. The Project aims to help promote balanced and environmentally sustainable urbanization, narrow the urban–rural gap, improve production, generate employment, and improve living conditions. The Project will contribute to achieving short- and long-term impacts by removing infrastructure constraints, improving access to and quality of potable water, reducing health risks from waterborne diseases, ensuring environmental sustainability, and promoting sustainable economic growth in seven small cities and towns of Liaoning Province. The Project will benefit 260,000 residents in the three core subproject cities and towns of Donggang, Kazuo, and Linghai; and 660,000 residents in approximately four subsequent subproject cities and towns.

With the infrastructure improvements, Kazuo will be able to attract more industrial investors and promote local employment opportunities. In Linghai, the mobility of people and products will be enhanced through better and safer transportation networks. Donggang's position as an importer–exporter will be strengthened by improved roads and other improvements. The Project will contribute to poverty reduction by reducing the incidence of waterborne diseases and flood risk in small cities and towns, providing employment opportunities during construction and operation of project facilities, with anticipated flow-on effects on social and economic development. Specific anticipated benefits include the following:

- (i) **Job creation.** Construction of works under the three core subprojects will directly generate 580,000 work-days of new employment and indirectly generate an additional 930,000 work-days through a multiplier effect. Seventy percent of construction jobs will be unskilled. Operation of the works created by the three core subprojects is expected to generate about 2,800 full-time jobs directly and 4,520 full-time through multiplier effects each year. The loan assurances specifically address employment of the poor, women, and ethnic minorities, which will contribute to narrowing the income gap and reducing poverty.
- (ii) **Improved public health.** The three core subprojects will reduce the incidence of waterborne diseases arising from contamination of water, associated increases in medical expenses (estimated to be CNY287 per capita annually), and time lost from work leading to a loss of income (estimated to be CNY220 per capita annually). For the detailed health impact analysis, see Supplementary Appendix N.
- (iii) **Environmental protection.** Improvement of sewerage systems and flood control will protect the local environment and promote sustainable growth. Introduction of the public education and awareness program (PEAP) will help ensure the success and sustainability of project improvements and their impact on people's lives.
- (iv) **Improved quality of life.** Road construction will facilitate mobility, access, and affordability of key basic services. Water and sanitation improvements will improve health and significantly reduce time burdens, particularly for women. The PEAP and community monitoring teams will enhance awareness and promote accountability of local basic services.

- (v) **Skills training.** The subprojects will include skills training in collaboration with other stakeholders, and through the resettlement plans. Vulnerable groups are prioritized for skills training in the loan assurances.

Environmental and socioeconomic benefits will accrue to the local populations; benefits will be felt especially by the poor who are most vulnerable to environment-related diseases and poor urban environments. For subsequent subprojects, a poverty reduction and social strategy will be prepared as part of the subproject appraisal report (Supplementary Appendix B).

B. Poverty Analysis

Targeting Classification: Targeted intervention
(Nonincome Millennium Development Goal)

1. Key Issues

Liaoning Province is located in the northeastern part of the PRC. In 2007, 5.6% of the total urban population was living below the official poverty line, compared with 3.8% nationally. Five of 27 cities and counties in Liaoning are classified as poor. The province is identified in the PRC national development strategies as geographically disadvantaged with higher urban poverty than other regions, requiring special efforts through prioritized allocation of resources.

Within Liaoning Province, poverty rates vary among the subproject cities and towns. Kazuo Mongolian Autonomous County, one of the provincial key poverty reduction counties, has a high incidence of poverty, with 16.5% of the urban population and 10.4% of the rural poor population living under minimum guaranteed living. In Donggang City the urban poverty rate is 2.6% and the rural rate is 4.1%; in Linghai City the urban poverty rate is 4%, and rural rate 7.3%. The unemployment rate in Kazuo is 33%, in Donggang 4.3%, and in Linghai 4.4%; these are all higher than the national target of "under 4%" called for in the 11FYP.

Unemployment, limited income sources, and subsequently poverty are major issues in all of the subproject areas. The focus group discussions and stakeholder analyses reveal that the major causes of poverty in the subproject areas are lack of employment opportunities, limited skills to create income, inadequate alternative income generation sources, poor infrastructure, and exposure to waterborne diseases. Details are available in Supplementary Appendix P, the poverty and social assessment and social action plan.

2. Design Features

The project design attempts to address social and poverty dimensions of the subprojects by (i) reducing impacts on land acquisition and resettlement; (ii) encouraging employment of local labor, especially the poor and women; and (iii) employing participation strategies such as a community-based PEAP, community monitoring teams during implementation, and community management committees during operation of the new infrastructure. The social action plan outlines strategies for mitigating adverse impacts and promoting positive benefits such as employment, skills training, and awareness-raising.

II. SOCIAL ANALYSIS AND STRATEGY

A. Findings of Social Analysis

A socioeconomic survey was undertaken with a sample of 518 randomly selected households and interviews with 1,689 people. In addition, 17 focus group discussions involving 131 people were conducted. The poverty and social analysis identifies vulnerable groups and opportunities for pro-poor interventions, and recommends social action measures, participation, and mitigation plans to achieve positive social benefits. The analysis indicates that with rapid urbanization, development challenges for the province include inadequate public services, groundwater pollution, and insufficient urban transport networks. The Project aims to address these issues and meet the demands of residents by improving water supply, river management, and roads and associated municipal services. The main findings of the social analysis for three core subprojects are as follows.

The project components meet the beneficiaries' urgent needs. Currently the coverage rate of piped water supply in the Kazuo subproject area is 32% and in Linghai 50%; unconnected households generally use well water. Water from some wells in Kazuo contains bacteria and a high content of fluorine, leading to dental fluorosis, especially among children, and high rates of diarrhea. Water service quality in Linghai is limited by extensive leakage from the distribution network and inadequate pressure to serve multistory apartment buildings. Despite living in apartments, residents spend a lot of time collecting water. Many residents in the Donggang and Linghai subproject areas, lacking access to sewerage or drainage systems, dispose of untreated wastewater directly into their yards or the street, thereby polluting the local living environment and groundwater supplies. Floods occasionally occur in Donggang, causing flood damage to property and undermining local environmental quality. The transport network in Linghai is characterized by insufficient traffic management facilities and measures for pedestrians and nonmotorized transport users.

The components included in each subproject were identified through the household survey and focus group discussions as the top priorities of local residents and stakeholders. The Project will provide tap water for 89,000 people and wastewater collection for 84,000, and improve transport conditions and flood control for 84,000 residents in the core subproject areas.

<p>Ethnic Minorities. A small percentage of ethnic minorities (3%) live scattered throughout the core subproject cities and towns. The social analysis determines that they are socially and economically integrated with the majority population and will not be subject to any adverse impacts as a result of the Project. Land acquisition and resettlement of the core subprojects will affect less than 20 ethnic minority people and specific ethnic minority development measures are included in the resettlement plans. Along with the poor, vulnerable, and women, the minority population will be given prioritized access to jobs created under Project.</p>			
<p>B. Consultation and Participation</p> <p>1. The major stakeholders included were (i) groups directly affected by the Project in a positive or negative way, including men, women, elderly, poor, minorities, schools, businesses, and related organizations; and (ii) government organizations such as the Executing Agency, implementing agencies, Development and Reform Commission, Civil Affairs Bureau, Poverty Alleviation Office, Women's Federation, Minority Affairs Office, Finance Bureau, Health Bureau, Labor and Social Security Bureau, and Environmental Protection Bureau. Several meetings were held with stakeholders, including vulnerable groups such as women, the poor, and ethnic minorities. In addition, a number of key informant interviews were conducted with various bureaus, nongovernment organizations, and Women's Federation; and past and ongoing projects in complementary areas to inform the project design.</p> <p>2. What level of consultation and participation (C&P) is envisaged during the project implementation and monitoring? <input checked="" type="checkbox"/> Information sharing <input checked="" type="checkbox"/> Consultation <input type="checkbox"/> Collaborative decision making <input type="checkbox"/> Empowerment</p> <p>3. Was a consultation and participation plan prepared? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Public disclosure of all subproject documents will be made at the project management office and on the ADB website, including the project information document, design and monitoring framework, resettlement plans, summary environmental impact assessment and environmental management plan, and social and environmental monitoring reports. A project information document was prepared for the Project. Booklets outlining the resettlement plans were distributed to affected households and disclosure meetings held. Copies of the booklet are available at the respective project management office, and each affected village office.</p> <p>PEAP and a training program will be conducted to promote hygiene education and traffic safety education, recycling program, and social acceptance of tariff increases. The following results are expected to be achieved through the PEAP: (i) increased participation and consultation of local population in project implementation and monitoring, (ii) increased awareness of project benefits and acceptance of the Project, (iii) increased hygiene knowledge and reduced incidence of water- and vector-borne diseases, (iv) increased traffic safety knowledge and lower incidence of traffic accidents, (v) increased participation of beneficiaries in garbage recycling as part of the solid waste management program, and (vi) increased environmental awareness on the part of businesses and enterprises. Community and village project management and monitoring groups will be established to help with the selection of labor for construction, environmental protection and road safety awareness, community grievances, and monitoring of implementation of the social action plan.</p>			
<p>C. Gender and Development</p> <p>1. Key Issues. In addition to the economic and employment benefits that will accrue to all beneficiaries, some social impacts of the Project are clearly gender related. Improved drinking water systems, wastewater collection systems, and traffic improvement next to the markets will benefit and reduce time burdens for women in particular. The focus group discussions (FGDs) indicate that women strongly support the Project and anticipate benefits of improved living environment, new employment opportunities, reduced time burdens, and lower incidence of preventable illness.</p> <p>2. Actions. Project assurances prioritize women for employment and skills training. Targets have been set for project employment opportunities for women and the poor during construction and for related training. Women will be actively engaged in the community and village project management groups and the PEAP promoting hygiene education, garbage recycling program, and acceptance of tariff increases. The PEAP will work with the All Chinese Women Association and women's street committees. The project performance monitoring system, resettlement plans, and environmental management plan will include gender disaggregated data, where relevant.</p>			
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	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	Three resettlement plans (a full resettlement plan for Donggang, a short resettlement plan for Kazuo, and a due diligence report for Linghai subproject) were prepared and endorsed by local governments, and will be approved by ADB prior to loan appraisal. For involuntary resettlement in subsequent subprojects, the technical assistance consultant prepared a resettlement framework (Supplementary Appendix R).	<input checked="" type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input checked="" type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action

Issue	Significant/Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Indigenous Peoples	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	<p>Sixteen percent of the population of Liaoning Province belongs to ethnic minorities; most live in rural areas. In the core subproject areas of Donggang, Kazuo, and Linghai, ethnic minorities comprise 3% of the population. Land acquisition and resettlement of the core subprojects will affect less than 20 ethnic minority people; ethnic minority development measures are included in the resettlement plans.</p> <p>Due to requirements of the sector loan modality and according to ADB's OM F3 on indigenous peoples, an ethnic minority development framework was prepared for subsequent subprojects (Supplementary Appendix Q).</p>	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input checked="" type="checkbox"/> Ethnic People Development Framework <input type="checkbox"/> No Action
Labor <input checked="" type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input type="checkbox"/> Core labor standards	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	<p>The Project will create many jobs during construction and operation of the facilities. Project assurances will prioritize local labor, especially vulnerable groups and women, in job opportunities, and ensure employment will comply with the core labor standards of the PRC and ADB.</p> <p>A labor reemployment assessment was prepared (Supplementary Appendix O) for subsequent subprojects that have an impact on labor.</p>	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action
Affordability	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	<p>The affordability analysis for public service charges for water supply and wastewater treatment was assessed, and no affordability issue was identified for the non-poor. Preferential policies or subsidies will be provided to poor households to ensure they benefit from the public service improvements.</p> <p>For subsequent subprojects, affordability will be analyzed as a part of subproject appraisal.</p>	<input type="checkbox"/> Action <input checked="" 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	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	<p>Health and safety training will be provided to construction workers. Project assurances will ensure that contractors involved in project implementation disseminate information through public awareness campaigns on the risk of socially transmitted infections, including HIV/AIDS, to workers they employ under the Project.</p>	<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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

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

SUMMARY RESETTLEMENT PLAN

1. The Project is a sector loan project comprising a series of subprojects in Liaoning Province, all of which will require some land acquisition and population resettlement. Based on the nature of the subprojects, some will need full resettlement plans, some will need short resettlement plans, and others will require due diligence reports for cases where the land needed for subproject construction has already been requisitioned. The resettlement planning and implementation is designed to ensure that those affected will be better-off or at least not worse-off as a result of the Project. In general, the land acquisition and resettlement impacts of the Project vary from subproject to subproject. For the three core subprojects, a full resettlement plan was prepared for the Donggang subproject, a short resettlement plan for the Kazuo subproject, and a due diligence report for the Linghai subproject. Similar subprojects can follow any of the three resettlement documents, as relevant.

2. The impacts of the Project are summarized in Table A12. In total, the Project will acquire about 27.15 hectares (ha) of land, of which a little more than 16 ha is classified as cultivated land. The Project will also require the temporary acquisition of 7.6 ha of land, of which 1.8 ha is farmland. A total of 11,174 square meters (m²) of residential houses has been or will be demolished. The total number of affected persons is 1,103. The budget of the Donggang and Kazuo core subprojects is estimated at \$8.7 million.

Table A12: Summary of Land Acquisition and Resettlement Impacts

Project Components (subprojects)	Resettlement Plan Document	Permanent Land Acquisition (ha)	Of which Cultivated (ha)	Temporary Land Occupation (ha)	House Relocation (m ²)	Number of Affected People
Donggang Urban Infrastructure Construction	Full resettlement plan	25.69	16.31	0.0	11,174.00 ^a	1,051
Kazuo Water Supply	Short resettlement plan	1.46	1.46	7.6	0.00	52 (permanent land loss)
Linghai Urban Road Construction ^b	Due diligence	50.73	37.67	0.0	1,607.18	943
Total^c		27.15	17.77	7.6	11,174.00	1,103

ha = hectare, m² = square meter.

^a For Donggang, of the 11,174 m² to be demolished, 7,645 m² are residential structures affecting 91 households and 336 people; and 3,529 m² are nonresidential structures, affecting eight enterprises and 61 shops.

^b For Linghai, the required land was acquired in 2007 and the affected amount is not included in the total impacts.

^c The total does not include the due diligence information for Linghai.

3. To avoid or minimize land acquisition and resettlement, local officials, village committees, and street committees were closely consulted during the feasibility study stage.

4. Compensation for permanent land loss is based on the Land Administration Law of the PRC (2004) and the State Council Decision to Deepen Reform and Strictly Enforce Land Administration (Document 28, November 2004). House demolition is based on the Provincial and Municipal Urban Housing Demolishment Administration Regulations. The prepared resettlement plans comply with the PRC laws and regulation of resettlement and ADB's *Involuntary Resettlement Policy* (1995). Based on consultations with local governments and those affected, and general practice in the subproject cities and county, the respective city and county project management offices (PMOs) and implementing agencies adopted a set of compensation standards. The resettlement principles established for the Project are (i) land

acquisition and involuntary resettlement should be avoided or minimized where feasible by developing and comparing a series of design alternatives; (ii) compensation and entitlements provided are based on market or replacement value, and must be adequate to allow those affected to at least maintain their pre-project standard of living, with the prospect of improvement; (iii) the land temporarily occupied and the period for disruption are to be kept to a minimum; (iv) all affected people, legal and illegal, are to be taken into consideration and accounted for; (v) the per capita landholding after land acquisition will be sufficient to maintain the previous livelihood standards; (vi) where land allocation per capita is not sufficient to maintain the previous livelihood standards, other income-generating activities will be provided; (vii) a preferential policy will be provided to vulnerable groups in such things as compensation, payment of special fund, minimum living guarantee, and employment; (viii) all those affected will be adequately informed about eligibility, compensation rates and standards, livelihood and income restoration plans, and project timing; and (ix) close monitoring and timely actions will be carried out to identify and resolve any problems.

5. Those affected will be notified about the key elements of the resettlement plans prior to ADB loan appraisal. On various occasions during meetings, interviews, focus group discussions, public consultation workshops, and community consultation meetings, local representatives have participated in the planning; concerns were integrated into the resettlement plans. The resettlement information booklet of each subproject will be distributed to affected villages and households. The resettlement plans will be provided to village offices and resident committees, and posted on the ADB website. The respective subproject implementing agencies will establish project resettlement units for supervision of implementation, continued public consultation, monitoring of progress, and response to grievances. Procedures to address grievances will be established and explanations included in the resettlement information booklets.

6. For land acquisition, at least 80% of land compensation, and 100% of the resettlement subsidy for standing crops will be paid to the affected people. For residential houses and nonresidential structures (enterprises and shops) to be demolished, compensation will be paid to owners, including those without house certificates. The payment will be made in cash according to the appraised value of the property. Households that have to relocate will receive a relocation allowance (CNY16.9 million or \$2.5 million equivalent). Compensation for standing crops, auxiliaries, and other assets will be paid directly to those affected. Income losses resulting from reduced production and sales and wages caused by the Project will be compensated in cash.

7. The resettlement strategy encompasses (i) replacement of housing, and (ii) restoration of livelihoods and income. For people losing housing in rural areas, two resettlement options are available: receive cash compensation or cash compensation plus provision of house plots for house construction by affected people themselves. Assistance will be provided to construct new houses or find available housing close to the original home, if that is their preference. The respective city and county PMOs, implementing agencies, and local town and street-level governments will provide necessary assistance for house construction and relocation during resettlement implementation.

8. Measures for economic rehabilitation include (i) provision of employment opportunities during project construction and operation, (ii) provision of basic social insurance to those affected whose land is newly acquired, (iii) deposit of land compensation and resettlement subsidy in banks for income earnings from interest, (iv) development of economic crops with higher economic value, (v) promotion and development of new enterprises and self-employed secondary and tertiary businesses, and (vi) provision of technical training to those affected to increase their skills.

9. Each PMO and implementing agency will have at least one full-time staff member responsible for land acquisition and another for resettlement. The staff from each subproject resettlement unit will take the lead responsibility for coordinating the planning, implementation, financing, and monitoring of land acquisition and resettlement. They will work closely with relevant village officials, land administration bureaus, and house demolition offices; and be responsible for supervising and monitoring resettlement (e.g., delivery of entitlements, selection of new housing sites, restoration of incomes, provision of replacement land, and other economic measures). A training program will be organized for the resettlement officers.

10. The cost estimate for land acquisition and resettlement for the Donggang and Kazuo subprojects is equivalent to CNY59.2 million or \$8.7 million in 2008 prices, including contingencies. Resettlement implementation will be scheduled to precede the subproject construction schedules, and be completed prior to subproject construction. Detailed measurement surveys will be conducted in each village, neighborhood, and enterprise and shop; and the compensation contracts will be negotiated and signed with village committees, households, and enterprises. Based on these surveys, the resettlement plans will be updated and submitted to ADB for review and approval.

11. Internal and external monitoring of resettlement plan implementation will be conducted. Monitoring methodologies are specified in the plans. Each implementing agency will carry out internal supervision and monitoring to ensure compliance with the provisions of the resettlement plan. The PMO and implementing agencies have agreed to a set of supervision milestones with ADB, to ensure timely and effective implementation of resettlement activities. An independent agency under contract to the PMO or implementing agencies will carry out external monitoring and evaluation. External monitoring reports will be forwarded directly to the PMO and ADB.

12. To assess resettlement aspects of subsequent subprojects, a resettlement framework (Supplementary Appendix R) was prepared. Each subproject that involves land acquisition and involuntary resettlement will have to comply with the principles of the resettlement framework and ADB's *Involuntary Resettlement Policy* (1995). Once specific land acquisition and resettlement impacts are confirmed, a short or full resettlement plan must be developed based on the policies and procedures set forth in the resettlement framework, and in line with the PRC laws and regulations on resettlement and ADB's *Involuntary Resettlement Policy* have also been adopted. The objective of the resettlement framework is to ensure that all the affected persons (permanent and temporary) whose business or employment places or farmland are acquired; or whose houses are demolished; or whose production operations are affected; or whose crops, trees, and property are affected, whether in part or in full, will be compensated for their losses at replacement costs and/or all necessary assistance so that they may improve or at least keep or reattain their original production facilities or capacity and their living standards.

FINANCIAL ANALYSIS

1. The financial analysis was prepared in accordance with the *Financial Management and Analysis of Projects* of the Asian Development Bank (ADB).¹ An assessment of financial performance was completed for Donggang city government (DCG), Kazuo Mongolian Autonomous county government (KMACG), and Linghai city government (LCG). The financial analysis was undertaken for the revenue-generating component, i.e., the water supply scheme in Gongyingzi Town within KMACG. A financial sustainability analysis was undertaken for the non-revenue-generating components: roads and river upgrading in Donggang and road development in Linghai.

A. Revenue-Generating Component: Kazuo Water Supply

2. **Methodology.** The financial analysis measured the ability of the Kazuo subproject to generate sufficient revenues from operations to meet all costs, including operation and maintenance (O&M), debt servicing, depreciation, and a reasonable rate of return on investment. The analysis incorporates the required tariff increases into the financial model and compares these with the affordability of households. The base case financial internal rate of return (FIRR) is compared with the weighted average cost of capital (WACC). Sensitivity analysis was conducted to assess the impact of changes in costs and revenues.

3. Financial projections (balance sheet, and income and cash flow statements) were developed for the water supply company, Gongyingzi District Potable Water Company, based on the projected operating performance of the Project. The financial analysis is based on incremental cash flow effects from the Project.

4. **Assumptions.** All analysis was conducted in constant July 2008 prices. The FIRR was calculated using incremental annual cash flows over 25 years with no residual value. Project capital expenditures are estimated based on the proposed implementation schedule and include physical contingencies. O&M costs include only incremental costs incurred under the Project. Revenues are calculated based on generated volume, tariff rate, and tariff collection efficiency.

5. **Weighted Average Cost of Capital.** The WACC is calculated in real terms. Funding sources are the ADB loan, contributing 42%, and counterpart funds from KMACG, contributing 58%. Assumed nominal costs of funds are 4.5% for the ADB loan and 0.8% for government funds. Long-term inflation is estimated at 1.7% for foreign costs and 5.1% for local costs. Allowing for taxes at 25.0% on both loan and equity, the WACC is estimated at 1.2%.

6. **Tariffs and Affordability.** The tariff is expected to be increased gradually to full cost recovery for O&M, depreciation, and debt service on the basis that the Project will help improve service delivery, effective tariff mechanisms, efficiencies in fee collection, and education and awareness of tariff increases. The Government agrees with the gradual tariff increase. During project implementation, water tariffs will cover all O&M where the weighted average water tariff is about CNY2.47/m³ and cost recovery² is 69%. In 2016, after 3 years of operations, full cost recovery will be achieved.

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

² Cost recovery refers to recouping operating costs and debt service costs through the tariff. Full cost recovery (100% and above) occurs when all costs (including operating costs, debt service and depreciation) are recouped.

Table A13.1: Projected Tariffs and Cost Recovery (percent)

Item	2013	2015	2016	2017	2018	2019	2020	2021	2022
Weighted average water supply tariff, CNY/m ³	2.47	2.65	2.81	2.81	2.98	2.98	3.03	3.03	3.09
Cost recovery (%)	69	93	103	107	118	121	135	135	138

Source: Asian Development Bank estimates.

7. **Affordability.** The response from the household survey indicates that the average annual household income is CNY20,964. Assuming a daily water consumption of 120 liters per capita per day and average household size of three, the daily requirement for water will be about 360 liters per household and the annual water bill about CNY370. This accounts for about 1.0%–1.2% of average household income. A standard international assumption is that 5% is affordable.

Table A13.2: Affordability of Projected Tariffs

Item	2013	2015	2016	2017	2018	2019	2020	2021	2022
Average annual income of households, CNY	25,482	28,094	29,498	30,973	32,522	34,148	35,856	37,648	39,531
Annual expenditure on water, CNY	302	320	339	339	359	359	366	366	374
Expenditure on water as a percentage of income (%)	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0

Source: Asian Development Bank estimates.

8. **Financial Results.** The base case FIRR (Table A13.3) is 6.1% and compares favorably with the WACC of 1.2%. Sensitivity analysis was conducted where the costs are increased by 10%, revenue decreased by 10%, and both costs and revenues changed adversely by 10%. The FIRR is above the WACC threshold in all sensitivity cases.

Table A13.3: FIRR and Sensitivity Analysis

Scenario	FIRR (%)	NPV (CNY million)
Case 1: Base case	6.1	64.9
Case 2: 10% increase in costs	3.9	36.7
Case 3: 10% decrease in revenues	3.7	30.2
Case 4: 10% increase in costs and 10% decrease in revenues	1.3	1.9

FIRR = financial internal rate of return, NPV = net present value.

Source: Asian Development Bank estimates.

9. **Gongyingzi District Potable Water Company.** The company will operate the Kazuo water supply component. The financial projections (Table A13.4) indicate that the company will be financially sustainable. The operating ratio and debt service coverage ratio, which will not be satisfactory at project implementation, will improve to satisfactory levels by 2015 and continue to improve thereafter.

Table A13.4: Gongyingzi District Potable Water Company Performance Ratios

Item	2013	2015	2020	2025
Operating Ratio (%) ^a	69.0	47.0	28.0	27.0
Debt Service Coverage Ratio ^b	0.0	1.0	3.0	3.5
Current Ratio ^c	20.9	9.2	25.8	52.8

^a Operating ratio = total operating expenses including depreciation, over the operating revenue.

^b DSCR = estimated cash revenues less cash expenses over debt service requirements.

^c Current ratio = total current assets over total current liability.

Source: Asian Development Bank estimates.

B. Non-revenue-Generating Components

10. **Methodology.** Fiscal sustainability was determined by comparing annual revenue of DCG, KMACG, and LCG from identified 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 non-revenue-generating subcomponents during operation. Interest and principal repayments for the ADB loan are estimated based on a grace period of 6 years and a maturity of 19 years.

11. **DCG, KMACG, and LCG Financial Performance.** The city and county governments receive income from taxation, nontax income, shared revenues with the central Government, and transfers and subsidies from the central Government. Although income from taxation increased during 2003–2007 in all governments, its share of total revenue s decreased, while the share of financial transfers noticeably increased. City and county expenditure increased on average by 25%–30% annually, and DCG and LCG reported a fiscal surplus. The fiscal deficit in KMACG is negligible.

Table A13.5: Summary of Financial Performance of Subproject Governments, 2007

Item	Donggang City Government		Kazuo Mongolian Autonomous County Government		Linghai City Government	
	CNY million	AAGR (%)	CNY million	AAGR (%)	CNY million	AAGR (%)
Tax Income	323.0	15	134.0	37	276.8	15
Nontax Income	286.8	17	55.7	16	243.9	12
Financial Transfers	481.7	34	492.4	29	456.8	44
Total Income	1,091.5	22	682.1	27	977.5	24
Total Expenditure	1,077.1	25	682.8	30	970.9	24
Fiscal Surplus for Year	14.4	–0	(0.7)		6.7	

() = negative value, AAGR = average annual growth rate for 2003–2007.

Source: Asian Development Bank estimates

12. **Revenue and Expenditure Projections for DCG.** The average annual growth rates of revenue and expenditure are used for the projections (Table A13.6).

Table A13.6: Donggang City Government Fiscal Sustainability

Year Ending 31 December	2010	2011	2012	2013	2015	2020
Revenue (CNY million)	2,132	2,665	3,330	4,163	6,505	19,854
Expenditure (CNY million)	2,054	2,546	3,157	3,915	6,020	17,649
Fiscal Surplus/(Deficit) (CNY million)	78	118	173	248	485	2,204
Counterpart Funds for Implementation (CNY million)		101	101	135	—	—
Counterpart Funds as a % of Revenue (%)		4.0	3.0	3.0	—	—
O&M Cost (CNY million)	—	—			4	4
Debt Service Cost (CNY million)					18	16
O&M and Debt Service as a % of Revenue (%)					0.1	0.1

— = not available, O&M=operation and maintenance.

Source: Asian Development Bank estimates.

13. DCG has allocated counterpart funds for project implementation. The counterpart fund requirement is less than 5% of DCG's annual revenue. DCG is likely to receive the counterpart funds in the form of financial transfers. Furthermore, DCG had cash reserves of CNY64 million at the end of 2007. O&M and debt service cost is less than 1% of revenue, which indicates acceptable fiscal risk since fiscal revenues of the local governments are expected to grow in line with economic development.

14. **Revenue and Expenditure Projections for KMACG.** The average annual growth rates of revenue and expenditure were used for the projections (Table A13.7).

Table A13.7: Kazuo Mongolian Autonomous County Government Fiscal Sustainability

Year ending 31 December	2009	2010	2011	2015	2020
Revenue (CNY million)	1,153	1,499	1,948	5,564	20,658
Expenditure (CNY million)	1,136	1,466	1,891	5,235	18,704
Fiscal Surplus (Deficit) (CNY million)	15	33	57	328	1,954
Counterpart Funds for Implementation (CNY million)			15	36	
Counterpart Funds as a % of Revenue (%)			1.0	1.0	—
Debt Service Cost (CNY million)				5	4
O&M and Debt Service as a % of Revenue (%)			—	0.1	0.1

— = not available, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

15. KMACG has allocated counterpart funds for project implementation. The counterpart fund requirement is 1% of KMACG's annual revenue. KMACG is likely to receive the counterpart funds in the form of financial transfers. O&M and debt service cost is less than 1% of revenue, which indicates acceptable fiscal risk since fiscal revenues of the local governments are expected to grow in line with economic development.

16. **Revenue and Expenditure Projections for LCG.** The average annual growth rates of revenue and expenditure were used for the projections (Table A13.8).

Table A13.8: Linghai City Government Fiscal Sustainability

Year ending 31 December	2010	2011	2012	2013	2015	2020
Revenue (CNY million)	1,864	2,311	2,865	3,553	5,464	16,017
Expenditure (CNY million)	1,851	2,295	2,846	3,529	5,426	15,908
Fiscal Surplus (Deficit) (CNY million)	13	16	20	24	37	109
Counterpart Funds for Implementation (CNY million)	—	35	35	47	—	—
Counterpart Funds as a % of Revenue (%)	—	2.0	1.0	1.0	—	—
O&M Cost (CNY million)					1	1
Debt Service Cost (CNY million)					10	9
O&M and Debt Service as a % of Revenue (%)					0.1	0.1

— = not available, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

17. LCG has allocated counterpart funds for project implementation. The counterpart fund requirement is less than 5% of LCG's annual revenue. LCG is likely to receive the counterpart funds in the form of financial transfers. LCG had CNY102 million in cash reserves at the end of 2007. O&M and debt service cost is less than 1% of revenue, indicating acceptable fiscal risk as fiscal revenues of the local governments are expected to grow in line with economic development.

C. Financial Management Assessment

18. The financial management assessment was carried out in accordance with *Guidelines for the Financial Governance and Management of Investment Projects Financed by ADB* using the financial management assessment questionnaire. The assessment included the Liaoning provincial government (LPG) and the implementing agencies.

19. The financial management capability of LPG as the Executing Agency was found to be adequate for implementation of the Project. LPG has previous experience with the World Bank

in executing projects of this nature. Some training in ADB financial management and reporting procedures will, however, be required.

20. All implementing agencies have prescribed financial procedures that define duties of key finance staff and procedures for record keeping and cash management. These procedures are generally followed, and internal controls such as proper authorization of transactions, payroll controls, and regular bank reconciliations, are generally adhered to. Since this is the first ADB project that the implementing agencies are undertaking, training in ADB financial management and reporting procedures will be required.

21. Accounting and financial management systems for financial reporting and accounting are developed and adequate for the purpose of loan implementation, although improvements to internal control might be required in the area of segregation of duties. To address this, additional staff should be recruited during project implementation. Audit arrangements are generally adequate and the implementing agencies will be required to submit independently audited annual financial statements and project accounts to ADB as a loan covenant. Each implementing agency will be helped to establish a reliable financial management system at the beginning of project implementation. The Kazuo water utility will keep accounts in accordance with commercial accounting principles and be subject to an independent external audit by a suitably qualified firm of commercial auditors. Accounting will be in accordance with relevant PRC standards. A capacity-building component to strengthen financial management is included in the Project.

ECONOMIC ANALYSIS

1. The economic analysis covers both the Project as a whole and the three individual core subproject components. For the Project as a whole, the analysis covers the economic rationale for public intervention, goals of the investment plan, and general design of the plan including selection criteria for subprojects. The economic analysis also evaluates the individual core subproject components for least-cost and benefit–cost analysis. Economic analysis was conducted in accordance with the *Guidelines for the Economic Analysis of Projects*¹ (1997) and *Economic Analysis Retrospective 2005: Strengthening Quality—at Entry of ADB’s Operations*² (2006) of the Asian Development Bank (ADB). The detailed economic analysis and least-cost analysis are in Supplementary Appendix U.

A. Analysis of the Overall Project

2. **Rationale for Public Intervention.** The primary motivation for the Project results from increasing concern over the inability of infrastructure provision to keep pace with population and economic growth in small cities and towns in Liaoning Province. Due to continuing urbanization and strong growth of the industrial and commercial sectors across the province, many cities and towns are experiencing high economic growth rates, rising household incomes, increased use of private cars, changes in living style that create a more diversified range of travel demands, and changes in urban land use patterns that are increasingly dependent on motorized transport. At the same time, local governments have not been able to provide the basic urban infrastructure needed to support this growth and to mitigate negative environmental impacts of industrialization and urbanization. Furthermore, these small cities and towns face environmental threats from pollution of surface and subsurface waters from untreated garbage, water pollution in rivers and streams, poor drainage and flooding, and poor sewerage. Local residents, including the poor and other vulnerable groups, are bearing the cost of these deteriorating urban environments.

3. The Project involves government intervention at several different levels. The Liaoning provincial government is promoting development of small cities and towns in a more coordinated and cost-effective manner by bringing about more sustainable investments in physical and environmental protection infrastructure that aims to improve the quality of life. Involvement of the Liaoning provincial government is justified since the development program spans several small cities, counties, and towns. The city, county, and town governments are coordinating and implementing the elements of the urban transport master plans and making individual investments in roads; water supply; heating; and environmental improvement including garbage and solid waste, proper drainage, and connection of households to the wastewater network. They will be involved in owning and managing the completed facilities.

4. **Goals of the Investment Plan.** The Project is a direct response to Liaoning’s 11th Five-Year Plan (11FYP) to promote sustainable economic development, particularly in its small cities and towns, via construction and upgrading of road infrastructure, water supply, and environmental improvement. The 11FYP recognizes that achievement of these goals will require improvement of basic municipal services and environment quality in these areas. All project components are integral components of the 11FYP. City and county governments are required to make investments in roads, water supply, heating, and environmental improvement. The small city and town government master plans are reasonably sound, and are integrated with the overall planning process.

¹ ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila.

² ADB. 2006. *Economic Analysis Retrospective 2005. Strengthening Quality at Entry of ADB Operations*. Manila.

5. **Selection of Subprojects and Core Components.** The selection of the three core subprojects was based on socioeconomic indicators and preparedness to undertake investments in municipal infrastructure. The core subprojects are Donggang City, Kazuo Mongolian Autonomous County, and Linghai City. The availability of viable investment projects directly supporting approved development master plans and programs, and the potential to serve as models in the preparation of subsequent components during sector loan implementation are some of the considerations in selecting subprojects. Targeting and selection of subsequent subproject cities and towns will be based, among other factors, on their potential to grow economically and provide jobs to in-migrants from rural areas. Employment growth is deemed to contribute more to the Government's goal of closing the rural–urban income gap than the growth of production. The core subprojects focus on development of citywide primary and secondary infrastructure, with emphasis on environmental infrastructure.

6. Key urbanization issues are (i) inadequate availability of infrastructure such as water supply, heat supply, and wastewater and solid waste treatment; (ii) severe air, river, and groundwater pollution; (iii) significant share of the urban population living below the poverty line; and (iv) lack of holistic and integrated management of urban development. The Project aims to address these issues in the participating cities and towns to help promote balanced and environmentally sustainable urbanization; narrow the rural–urban gap; and improve production, employment, and living conditions.

7. The criteria for identifying and selecting subprojects and components are (i) confirmation by the participating local government of its ability and willingness to arrange for counterpart funding, (ii) confirmation by the participating local government of its willingness to comply with ADB safeguard policies and other requirements, (iii) implementation of the component from 2009 to 2015, (iv) eligibility of the components (the sectors must be included in the list of eligible infrastructure and municipal services, (v) anticipated positive impact on the urban environment, (vi) anticipated positive impact on employment generation and/or economic growth, and (vii) anticipated positive impact on the coverage or service level of infrastructure and municipal services.

B. Demand Analysis

8. **Donggang City Roads and Associated Municipal Services and Bridge, and Linghai City Roads and Associated Municipal Services.** The demand analysis was performed in terms of (i) selection and definition of the representative vehicle types; (ii) assessment of annual average daily traffic (AADT); and (iii) forecast of demand. A vehicle fleet consists of a mix of several vehicle types that use a road network (cars, trucks, buses, motorcycles, and nonmotorized transport). Traffic counts were conducted on each of the proposed road components. The traffic survey implemented in April 2008 serves as the basis for determining AADT. To establish the AADT from the average daily traffic, seasonal variations are assessed taking into account the main factors driving changes in traffic patterns, such as the weather (rainy season, winter, etc.), agricultural cycles, holiday periods, and tourist season. The traffic forecast comprises growth of (i) normal traffic, which corresponds to the growth that would occur even without improving the road network; and (ii) generated traffic, which occurs only if the road network is improved significantly and/or new roads are constructed. Forecasts for normal traffic growth is based mainly on official gross domestic product (GDP) growth rates. Traffic forecast flows are subsequently based on an assumed income elasticity of demand relative to GDP growth.³ The forecast GDP growth rates were applied to the calibrated base year matrices to produce passenger and freight vehicle flows.

³ Elasticity coefficients are based on the previous studies and are assumed to be 1.4 for passengers and 1.1 for freight.

9. **Kazuo (Gongyingzi) Water Supply.** The Project will mainly address the water supply shortage in the new district, but it will also improve water quality and provide safe water for domestic use in the urban area of the town. Water demand is estimated to reach 32,670 cubic meters (m³)/day by 2020. Of this amount, the demand for recycled water (for urban landscaping, street cleaning, and partially for industrial purposes) is 5,640 m³/day; the existing capacity is 4,000 m³/day. The net water requirement is therefore about 23,000 m³ per day, which is the capacity that will be provided by the Project. This will benefit close to 260,000 people or 80,000 households. The Project will supply drinking water according to national standards 24 hours a day at 120 liters per capita per day. Water pressure will reach at least the 6th floor of apartment buildings; special measures will be taken for high-rise buildings.

10. **Evaluation of Individual Components.** The methods of economic analysis adopted are benefit–cost analysis and least-cost analysis. Benefit–cost analysis is mainly applied to the water supply and roads components, while least-cost analysis is applied to the river improvement, area upgrading, and drainage and wastewater network components. For the water supply component, the estimates of economic benefits are based on the results of the contingent valuation survey conducted for the Kazuo water supply. The survey aims to elicit beneficiary willingness to pay for improved services as a result of the Project. The survey is conducted at the household level and has three parts: (i) a discussion of the existing situation in terms of service levels as well as direct and indirect impacts on the well-being of the residents and the community; (ii) a discussion on the expected improvements in service, living conditions, and the impact on employment as a result of expected increases in investments in industries, including the consequence on increasing incomes for the households and the city, county, and town; and (iii) eliciting willingness to pay for the expected improvements and benefits from the Project. Least-cost analysis will involve cost-effectiveness analysis of the least-cost option recommended for the component.

11. In addition to being part of the 11FYP, each component is economically justified on its own. Economic internal rates of return (EIRRs) were estimated for each road component. The EIRRs are compared with the economic opportunity cost of capital, which is assumed to be 12%. Major benefits quantified for the roads include (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, (v) generated traffic resulting from reduced transportation costs, and (vi) road safety benefits.

12. An economic analysis of the project component was conducted over 25 years, inclusive of project construction. Economic benefits and costs are denominated in terms of the domestic price numeraire and expressed in constant mid-2008 prices. International costs were converted to local currency costs using an exchange rate of CNY6.8 per \$1. Tradable components were adjusted to economic prices using a shadow exchange rate factor of 1.08 for the effects of foreign exchange, and nontraded components valued at domestic market prices. A shadow price is used to put an economic value on the wages paid to unskilled labor but not on the wages paid to skilled labor, because there is no surplus of skilled workers. A shadow wage rate factor of 0.50 was used to convert the financial wage rate to an economic opportunity cost of labor.

13. The economic costs of the core components include (i) capital costs including land acquisition and resettlement costs, and environmental mitigation and monitoring costs; and (ii) costs of operation and maintenance (O&M) including cost of replacement of depreciated equipment. The land acquisition and resettlement costs are estimated based on their opportunity costs, that is, the agricultural output foregone and the re-siting of displaced

activities.⁴ Transfer payments, including taxes and interests, are excluded from the economic costs, while physical contingencies are included.

14. For the overall economic analysis, a discounted cash flow analysis utilizing economic costs is utilized with the feasibility indicators expressed in the following measures of viability: net present value and economic internal rate of return (EIRR). The economic viability of each component was determined using the EIRR as the principal quantitative measuring tool. The EIRR is estimated by comparing the with-component and without-component scenarios. A core subproject component is considered economically viable if the calculated EIRR is higher than 12%, the social discount rate prescribed by ADB. The project component's financial cash flows are tested for responsiveness to changes in the values of key project variables with the use of sensitivity analysis. The following variables are evaluated for their impact on the Project: (i) 10% increase in construction cost, (ii) 20% increase in O&M cost, (iii) 20% decrease in benefits, and (iv) combination of (i) and (iii); and (v) delay of benefits by 1 year.

C. Results of Economic Analysis of Individual Components

15. The economic analysis indicates that the three components are economically viable and that they stand up to sensitivity tests where costs increase and benefits decrease. The cost of institutional development was incorporated into each component road's economic analysis. The EIRRs of the individual components are shown in Table A14. The economic analysis demonstrates the economic viability of the three components. The results of the sensitivity analysis confirm the robustness of the components' economic viability: changes in key variables, 20% increase in construction costs and O&M costs, delay of benefits by 1 year, decrease in benefits and simultaneous increase in costs and decrease in benefits.

Table A14: Summary of Results for All Components

Component	Method of Economic Analysis	Results of Analysis	
		EIRR (%)	NPV (CNY million)
Donggang Roads and Associated Municipal Services and Bridge	BCA	18.0	25.5
Kazuo (Gongyingzi) Water Supply	CV, BCA	16.7	36.6
Linghai City Roads and Associated Municipal Services	BCA	18.4	40.5
Overall Project		17.7	102.6

BCA = benefit-cost analysis, CV = contingent valuation, EIRR = economic internal rate of return, NPV = net present value.

Source: Asian Development Bank estimates.

⁴ The economic opportunity cost of land will be assumed to be equal to the replacement value of farmland calculated for land compensation.