



Report and Recommendation of the President to the Board of Directors

Project Number: 44021
September 2012

Proposed Loan People's Republic of China: Integrated Development of Key Townships in Central Liaoning

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 24 August 2012)

Currency unit – yuan (CNY)

CNY1.00 = \$0.15736

\$1.00 = CNY6.3545

(Calculations in this report use an exchange rate of \$1.00 = CNY6.3.)

ABBREVIATIONS

ADB	–	Asian Development Bank
CQS	–	consultant qualifications selection
GAP	–	gender action plan
HURCC	–	housing and urban–rural construction commission
ICB	–	international competitive bidding
km	–	kilometer
LIBOR	–	London interbank offered rate
LPG	–	Liaoning provincial government
LPMO	–	Liaoning project management office
LPSO	–	Liaoning provincial statistics office
m ²	–	square meter
m ³	–	cubic meter
NMT	–	nonmotorized transport
NCB	–	national competitive bidding
PAM	–	project administration manual
PCC	–	project completion certificate
PRC	–	People's Republic of China
Q	–	quarter
QCBS	–	quality- and cost-based selection
SDAP	–	social development plan
SSWWC	–	Shenyang Shenbei Water Works Company
WWTP	–	wastewater treatment plant

NOTE

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

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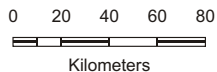
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PROJECT AT A GLANCE

1. Project Name: Integrated Development of Key Townships in Central Liaoning		2. Project Number: 44021	
3. Country: People's Republic of China		4. Department/Division: East Asia Department/Urban and Social Sectors Division	
5. Sector Classification:			
Sectors	Primary	Subsectors	
Multisector		Energy utility services	
		Other municipal services	
	√	Urban transport	
6. Thematic Classification:			
Themes	Primary	Subthemes	
Economic growth	√	Promoting economic efficiency and enabling business environment	
Environmental sustainability		Urban environmental improvement	
Private sector development		Private sector investment	
6a. Climate Change Impact		6b. Gender Mainstreaming	
Climate Change mitigation = low		Effective gender mainstreaming (EGM)	√
		Gender equity theme (GEN)	
		No gender elements (NGE)	
		Some gender benefits (SGB)	
7. Targeting Classification:		8. Location Impact	
General Intervention	Targeted Intervention		
		Urban	High
√			
9. Project Risk Categorization: Complex			
10. Safeguards Categorization:			
Environment	A		
Involuntary resettlement	A		
Indigenous peoples	C		
11. ADB Financing:			
Sovereign /Nonsovereign	Modality	Source	Amount (\$ Million)
Sovereign	Project loan	Ordinary capital resources	150.0
Total			150.0
12. Cofinancing:			
No Co-financing required.			
13. Counterpart Financing:			
Source	Amount (\$ Million)		
Government	245.35		
Total	245.35		
14. Aid Effectiveness:			
Parallel project implementation unit: No			
Program-based approach: No			

INTEGRATED DEVELOPMENT OF KEY TOWNSHIPS IN CENTRAL LIAONING IN THE PEOPLE'S REPUBLIC OF CHINA



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- Phase 2 City or Township (Integrated Development of Key Townships in Central Liaoning)
 - Phase 1 City or Township (Loan 2550-PRC)
 - Provincial Capital
 - City/Town
 - National Road
 - District Boundary
 - Provincial Boundary
- Boundaries are not necessarily authoritative.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of China (PRC) for the Integrated Development of Key Townships in Central Liaoning.¹

2. The project will promote balanced and environmentally sustainable urbanization by supporting the development of seven key townships in central Liaoning Province of the PRC.² The project will support wastewater management, energy-efficient heating supply, urban road and bridge rehabilitation and construction, and related services.

II. THE PROJECT

A. Rationale

3. Located in northeast PRC, Liaoning Province has seen economic growth lag that of other provinces since 1980 due to resource depletion and a painful transition from a state-dominated economy. Moreover, rapid urbanization has left many of Liaoning's cities and towns with poor infrastructure, severe pollution, significant poverty, and rural migrants with mismatched-employment skills. Central Liaoning's current population of 23.6 million is now 65% urban, and planners expect 85% of the population to be urban by 2050, largely through rural–urban migration.³ Consequently, in the coming decades, demand from millions of rural migrants for urban infrastructure, municipal services, and employment must be satisfied. Recent announcements on *hukou* reform are expected to intensify this demand.⁴

4. The Government of Liaoning Province recognizes that urbanization is pressuring Shenyang, the provincial capital, which has a population of 7.4 million. At the same time, it aims to reap the benefits of concentrated urbanization, so it is facilitating the urbanization of key townships by strengthening their infrastructure to support higher populations. Reflecting earlier ADB advice,⁵ Liaoning urbanization strategies⁶ support the Shenyang Economic Zone Integration Strategy.⁷ The project's rationale is to support strategic urbanization in central Liaoning Province through targeted wastewater management, district heating, and urban transport development in key townships. The participating townships were selected through a competitive process eliciting proposals from eligible townships. Considerations included consistency with planning objectives and a balanced representation of the integrated development concept, as Shenbei and Waitoushan are in the core Shenyang metropolitan area; Fuxin, Gaizhou, and Xinmin are located in intercity connection belts outside the core metropolitan area; and Heishan and Huanren are included to demonstrate rural links with more-concentrated urban areas.

¹ The design and monitoring framework is in Appendix 1.

² "Township" here includes the cities of Gaizhou and Xinmin, urban districts of Shenbei and Waitoushan, counties of Heishan and Huanren), and township of Sihe in Fuxin.

³ Liaoning Provincial Government. 2009. *Liaoning Yearbook 2009–2010*. Shenyang.

⁴ PRC citizens are assigned a *hukou* registration and location, either a specific rural township and village or a specific urban district. The *hukou* location specifies where one is entitled to receive economic and social benefits. When rural people migrate to cities, they have no social benefits unless their *hukou* status is changed, which is very difficult. Some cities now grant temporary rights for a certain period. In February 2012, the State Council released a circular on *hukou* reform stating that migrant workers and their families should be eligible to apply for permanent residence permits or urban *hukou* in all county- and prefectural-level cities (as are most of the townships participating in the project), while adding that new rules pertaining to *hukou* conversion should not require that people relinquish their claims to rural land.

⁵ ADB. 2004. *Technical Assistance to the People's Republic of China for the Town-Based Urbanization Strategy Study*. Manila (TA 4335-PRC).

⁶ Liaoning Provincial Government. 2007. *Central Liaoning Cluster Development Strategy*. Shenyang.

⁷ Liaoning Provincial Government. 2007. *Shenyang Economic Zone Integration Strategy*. Shenyang.

5. Improving wastewater management is a priority for Liaoning Province as water resources are scarce at merely 800 cubic meters (m³) per capita, one-third of the national average. Poor wastewater treatment facilities in Shenbei new district degrade water quality in the Shenbei branch of the Liao River and impede development; the proposed project will construct wastewater management systems to support urban development. Likewise, poor district heating services affect living quality. By the end of 2010, centralized district heating served 19 million square meters (m²) of the Fuxin urban area, with the rest serviced by small boilers and heating stoves in individual households. During winter, pollutants from these coal-fired boilers and stoves pollute the air. The urban poor and especially women suffer disproportionately from poor service quality, limited heating coverage, and higher exposure to pollutants. With project support, the Fuxin municipal government will commission new distribution capacity and close 15 coal-fired boilers. An existing combined heat-and-power plant will provide hot water to the system. The development will improve energy efficiency and service quality, expand district heating coverage, reduce coal use by 21,500 tons annually, reduce greenhouse gas emissions, and improve air quality.

6. Central Liaoning's urban population is growing rapidly. However, urban road development is slow, facilities for public transport and nonmotorized transport (NMT) are inadequate, and traffic management and safety are poor. The project will facilitate environmentally sustainable urban infrastructure development and improve urban road links and related facilities by rehabilitating and upgrading urban roads and alleys, constructing urban roads and bridges, improving storm-water pipelines and sewer coverage, installing energy-conserving lighting, and expanding public green areas. The project will improve road safety and public transport services by piloting a public transport program and implementing road safety and traffic management initiatives. Finally, in recent years, local governments in Liaoning have, like others in the PRC, relied on debt issuance and sales of land-use rights to finance infrastructure and service expansion. But with increased local government liabilities and emerging downside risks regarding sales of land-use rights, there is pressure to make local government finances more sustainable. The project will help examine financing options and measures for strengthening creditworthiness by providing financial management support and training, as well as programs to enhance leadership.

7. **Strategic fit.** The project will support the Twelfth Five-Year Plan, 2011–2015, which sponsors balanced urbanization and the development of cities that are livable, resource-conserving, and inclusive, emphasizing the fostering of urban clusters. The project is consistent with Liaoning urbanization strategies (see footnotes 6 and 7) and aligns with ADB's country partnership strategy 2011–2015 for the PRC.⁸ It is consistent with ADB's urban sector strategy and its Urban Operational Plan, which fosters competitive, green, and inclusive cities.⁹ It supports ADB's Climate Change Program by reducing vehicle emissions per trip, enhancing water resource management, and reducing greenhouse gas emissions from coal-fired heating boilers.¹⁰ ADB's Sustainable Transport Initiative has informed the design of urban road components and related capacity development assistance, for instance through support for public transport.¹¹ Finally, in keeping with ADB's Strategy 2020, the project's support for urban infrastructure and municipal services will strengthen private sector participation and the competitiveness of central Liaoning.¹²

8. **Sector experience.** This will be the fourth ADB-financed urban development project in Liaoning Province. Project design reflects lessons from previous ADB-financed urban development

⁸ ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011–2015*. Manila.

⁹ ADB. 2011. *Urban Operational Plan*. Manila.

¹⁰ ADB. 2008. *ADB's Climate Change Program*. Manila.

¹¹ ADB. 2010. *Sustainable Transport Initiative: Operational Plan*. Manila.

¹² ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

projects in the PRC,¹³ including the need for early support on ADB policies and procedures, as interventions have been particularly effective when they were part of well-conceived urban development approaches and when such support was accompanied by capacity building to strengthen urban management.

9. **Innovative features.** The project has the following demonstration features: (i) strategic urbanization supporting a model of concentrated urbanization, which evidence suggests yields higher per capita incomes, more efficient energy use, reduced loss of arable land, and lower greenhouse gas emissions than less-concentrated alternatives;¹⁴ (ii) strengthened financial management, in recognition of mounting pressures that threaten fiscal sustainability, that is developed to gauge and strengthen participating townships' creditworthiness and identify alternative financing approaches; (iii) heightened leadership, focusing on a leadership development program that promotes social inclusion; and (iv) people-centric urban infrastructure and public transportation promotion, including holistic road designs, road safety features such as traffic-calming measures and separate NMT lanes, and bus priority lanes.

B. Impact and Outcome

10. The project's impact will be more competitive, green, and inclusive urbanization in key townships in central Liaoning. The project outcome will be improved sanitation, heating, and transport services in key townships in Liaoning.

C. Outputs

11. The project has four outputs:

- (i) **Wastewater management improvements.** The Qingshuitai town wastewater treatment plant (WWTP) will be constructed in Shenbei new district with a capacity of 10,000 m³ per day and 18.7 kilometers (km) of sewer pipelines.
- (ii) **Fuxin (Sihe town) district heating network.** To upgrade Sihe town's central heating network, the project will build a primary and secondary heat transmission network extending for 31.7 km and 12 heat-exchange stations, increasing district heating coverage by 3 million m². The heat source will be an existing combined heat and power plant.
- (iii) **Environmentally sustainable urban infrastructure development.** The project will improve urban road links and related facilities in six key townships in central Liaoning by rehabilitating and upgrading 73.4 km of urban roads; constructing 51.2 km of urban roads; constructing 18 bridges; and developing related services such as 187.2 km of storm-water pipelines and sewers, energy-saving lighting, public green areas, road-safety features, public transportation support, and NMT lanes.
- (iv) **Capacity development and institutional strengthening.** The project will support (a) the Liaoning project management office (LPMO)¹⁵ and implementing agencies to ensure efficient and effective project implementation in compliance with PRC and ADB requirements, introduce credit appraisal and credit-rating approaches, and identify alternative financing options; (b) a leadership-enhancement program for

¹³ Notably ADB. 2009. *Report and Recommendation of the Board of Directors: Proposed Loan to the People's Republic of China for the Liaoning Small Cities and Towns Development Demonstration Sector Project*. Manila (Loan 2550-PRC).

¹⁴ A recent study of the PRC's urban development options found that more concentrated urbanization, as is supported by this project, has, vis-à-vis less-concentrated urbanization, the potential over 20 years to (i) improve urban GDP per capita by 20% and (ii) improve energy productivity by about 20% (McKinsey Global Institute. 2009. *Preparing for China's Urban Billion*. Shanghai.).

¹⁵ The Liaoning Urban Construction and Renewal Project Office is the official name of the LPMO.

senior officials to strengthen capacity for the strategic and holistic management of their jurisdictions, including initiatives to promote social inclusion; and (c) an urban transport capacity-development program.

D. Investment and Financing Plans

12. The project investment cost is estimated at \$395.3 million (Table 1).

Table 1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Wastewater management improvements	6.99
2. Fuxin (Sihe town) district heating network	21.08
3. Environmentally sustainable urban infrastructure development	298.71
4. Capacity development and institutional strengthening	2.00
Subtotal (A)	328.78
B. Contingencies^c	57.91
C. Financing Charges During Implementation^d	8.66
Total (A+B+C)	395.35

Note: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$19.24 million to be financed from government and ADB loan resources. The following principles were followed in determining the amount of taxes and duties to be financed by ADB: (i) The amount does not represent an excessive share of the project investment plan. (ii) Taxes and duties apply only to ADB-financed expenditures. (iii) The financing of the taxes and duties is material and relevant to the success of the project.

^b In December 2011 prices.

^c Physical contingencies are computed at 10% of base costs except those for land acquisition and resettlement and for project management. Price contingencies are computed at an average of 0.3% on foreign exchange costs and an average of 3.8% on local currency costs, and they include provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year forward London interbank offered rate plus a spread of 0.40% and a maturity premium of 0.10%. Commitment charges for the ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

13. The government has requested a loan of \$150 million from ADB's ordinary capital resources to help finance the project. The loan will have a 26-year term, including a 5-year grace period, straight-line repayment, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility,¹⁶ a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan and project agreements. Based on this, the average loan maturity is 15.75 years, and the maturity premium payable to ADB is 0.10% per annum. The loan will finance 38% of the project cost, including civil works, equipment and materials, and institutional strengthening and training. The loan will also finance taxes and duties for eligible ADB-financed expenditures, bank charges, and transportation and insurance costs. The government has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility based on 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 government will finance \$245.35 million, or 62% of the project cost. The government will finance financing charges during implementation, design, project management, environment and social monitoring, and contingencies. The project financing plan is summarized in Table 2 and detailed in the project administration manual (PAM).¹⁷

¹⁶ The interest includes a maturity premium of 0.10%, in line with the loan terms and the government's choice of repayment option and dates.

¹⁷ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank	150.00	38.00
Government	245.35	62.00
Total	395.35	100.00

Source: Asian Development Bank estimates.

14. The PRC is the borrower of the loan. The PRC will relend the entire loan to the Liaoning provincial government, which will onlend the loan proceeds to participating township governments on the same terms and conditions as those for the ADB loan. Participating township governments will assume, as end-borrowers, the foreign exchange and interest rate variation risks for the ADB loan. The PAM shows the relending and onlending arrangements and the indicative flow of funds.

E. Implementation Arrangements

15. The implementation arrangements are summarized in Table 3 and detailed in the PAM.

Table 3: Implementation Arrangements

Aspects	Arrangement		
Implementation period	October 2012–December 2017		
Estimated completion date	31 December 2017 (loan closing date 30 June 2018)		
Management			
(i) Oversight body	Provincial project coordination group. Headed by an LPG vice-governor, the group includes senior officials of the provincial Development and Reform Commission, Finance Department, Housing and Urban–Rural Development Department, Land and Resources Department, and Environment Protection Department. It provides overall guidance, supervision, and support to project preparation and implementation.		
(ii) Executing agency	LPG through the LPMO. The LPG is primarily responsible for project implementation, including finance and administration, technical and procurement matters, monitoring and evaluation, and safeguards compliance.		
(iii) Key implementing agencies	The eight implementing agencies, which will liaise with the LPMO and will implement the relevant project components, are the Shenyang Shenbei Water Works Company; Fuxin City Heating Power Corporation; Xinmin City Urban Rural Construction and Rehabilitation Project Management Office; Shenbei New District International Financial Institutions Loaned Project Management Office; Heishan County Municipal Construction Management Department; Beichen Road Construction Project Management Office; Huanren County Hunjiang Street, Zhongxin Street, and Street Alleys Rehabilitation Project headquarters; and Liaoning Yaodu Investment (Group).		
(iv) Implementation unit	LPMO, 25 staff		
Procurement ^a	ICB	11 contracts	\$52.7 million
	NCB	32 contracts	\$177.3 million
Consulting services	QCBS	133 person-months	\$1.4 million
	CQS	46 person-months	\$0.6 million
Retroactive financing and/or advance contracting	Two consulting services contracts will be procured through advance contracting. Retroactive financing will finance eligible expenditures up to 20% of the ADB loan incurred for consulting services before loan effectiveness, but not earlier than 12 months before the loan agreement is signed.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank, CQS = consultant qualifications selection, ICB = international competitive bidding, LPG = Liaoning provincial government, LPMO = Liaoning project management office, NCB = national competitive bidding, QCBS = quality- and cost-based selection.

^a A tendering agent will be engaged for procurement.

Source: Asian Development Bank estimates.

III. DUE DILIGENCE

16. The project will directly benefit 1,540,000 people in central Liaoning by 2020 by improving living conditions, wastewater management, district heating services, and urban transport connectivity.¹⁸

A. Technical

17. All project components will be designed taking into account local circumstances; topography; and a climate that is predominantly arid and has long, harsh winters—and in accordance with relevant PRC design guidelines and local regulations. The processes selected for wastewater treatment as presented in the local feasibility study report are relatively easy to operate and maintain, making them appropriate for townships with limited technical capacity. Urban transport subcomponents incorporate a people-centric design concept with special emphasis on pedestrian and bicycle traffic planning and facilities, public transportation, and pedestrian safety. A detailed description of components is in the PAM.

B. Economic and Financial

18. **Economic analysis.** The economic analysis evaluated technical options and confirmed that the project components are the least-cost options that support central Liaoning's long-term development plans. Economic internal rates of return were computed at 19.6% for the district heating component and 18.6% for the urban infrastructure development components, all of which exceed the economic opportunity cost of capital of 12.0%. The results are robust under the normal range of sensitivity analyses. Economic costs include (i) capital costs such as land acquisition and resettlement, and environmental mitigation; (ii) project management and institutional strengthening; (iii) physical contingencies; and (iv) operation and maintenance. Economic benefits include (i) energy efficiency savings through reduced coal consumption, (ii) lower environmental costs from reduced pollutant emissions, and (iii) incremental economic benefits computed as the difference between the centralized district heating system proposed for the project and the existing small heating boilers, (iv) savings in vehicle operating costs, (v) time savings, (vi) accident cost reductions, and (vii) savings in fuel cost. Not readily quantifiable benefits such as better health and increased employment were not included.¹⁹

19. **Financial analysis.** Financial cost-benefit analyses of revenue-generating components confirmed financial viability by concluding that the components' financial internal rates of return—4.4% for the wastewater management component and 13.1% for the district heating component—exceeded the respective weighted average costs of capital of 2.4% and 2.8%. Wastewater tariffs currently equal 0.18%–0.27% of an average household's income, and heating tariffs currently equal 1.8%–2.3% of an average household's income and, after the government subsidy, 1.0%–1.1% of a poor household's income.²⁰ The subsidies for the poor will be maintained. These tariffs are considered acceptable in view of better services and related health benefits. Moreover, affordability is expected to improve as household incomes increase more quickly than tariffs. As sensitivity and risk analysis revealed that the revenue-earning components' financial internal rates

¹⁸ Project beneficiaries include an estimated 810,000 current residents and 730,000 future residents. Current beneficiaries include an estimated 160,000 rural residents and 650,000 urban residents, of whom 64,000, or 9.9%, are poor. Wastewater management will benefit 60,000 people, district heating 40,000 people, and urban roads 1,443,000 people. There will be 60,000 common beneficiaries of wastewater treatment and roads.

¹⁹ Economic Analysis (accessible from the list of linked documents in Appendix 2).

²⁰ Minimum living standard security program recipients (i.e., poor households) are eligible for an annual heating subsidy (tariff of CNY5 for up to 14 m² per person, while the standard tariff is CNY26 per m²), which is paid by the Fuxin municipal government. Pre-subsidy heating tariffs equal 3.5% of a poor household's annual income.

of return are most sensitive to changes in revenues (which come mainly from tariffs) and operating costs, maintaining tariffs and controlling costs will be crucial to ensuring the components' financial viability.

20. A financial analysis of the revenue-earning companies, namely the Fuxin City Heating Power Corporation and the Shenbei Shenyang Water Works Company (SSWWC), evaluated existing tariff and cost-recovery arrangements and concluded that tariffs should be increased gradually to achieve full cost recovery. Financial projections showed that in the first year of operation, SSWWC will incur financial deficits with operating losses of CNY5.09 million. During this period of shortfall, township governments will provide subsidies to ensure the continued provision of wastewater services. SSWWC's financial status will improve as tariffs increase. Projections showed that SSWWC's debt-service-coverage ratio is projected to improve to 1.1 by 2019, while that of Fuxin City Heating Power Corporation will be 1.2 by 2015.

21. Fiscal analysis revealed that participating townships have the funds necessary to finance equity, operation, and maintenance of the completed facilities and debt servicing. Projections of average annual counterpart funding requirements for participating townships ranged from 0.20% to 1.60% of projected revenues during implementation, and projections of annual debt service ranged from 0.01% to 0.10% of projected annual revenues in 2018.²¹

C. Governance

22. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the Liaoning provincial government, LPMO, and implementing agencies. A financial management assessment concluded that, while the LPMO and most of the implementing agencies have experience in managing foreign-financed projects, including ADB-financed projects, significant training and support provided through the capacity-development component will be required on ADB policies and procedures including procurement, disbursement, and project management. Specific policy requirements and supplementary measures are described in the PAM, including providing support and training on ADB policies and procedures, and engaging a tendering agent to strengthen procurement (footnote 17).

D. Poverty and Social

23. **Poverty and social benefits.** Liaoning Province's economic growth in recent decades has been slower than that of other provinces because of resource depletion and an economic transition from mostly heavy industry to light industry and services. Consequently, urban unemployment rates in central Liaoning cities have remained at over 4%. Moreover, official poverty rates for the urban poor²² in resource-depleted cities are high (e.g., 18.5% in Fuxin, 16.5% in Tieling, and 10.2% in Fushun in 2009) compared with the national average of about 4% in 2010.²³

24. A poverty and social assessment that included a household survey, community and focus group discussions, and key informant interviews was conducted during project preparation. By improving living conditions, public health standards, and the urban environment, the project will by 2020 directly benefit 1.54 million urban residents, of whom 0.81 million currently live in participating townships and 0.73 million are future residents, including rural migrants. Among the current 0.81 million beneficiaries, 75.3% are urban residents and 24.7% rural. Some 9.9% of the urban residents and 4.7% of the rural residents received support in 2010 from minimum living standard

²¹ Financial Analysis (accessible from the list of linked documents in Appendix 2).

²² Defined as those under the minimum living standard security program.

²³ According to a study conducted by the Academy of Social Sciences of China using data from the Ministry of Civil Affairs (<http://finance.hsw.cn/system/2011/08/04/051063127.shtml>).

security programs;²⁴ 18.3% are ethnic minority people of Manchu, Xibo, Chaoxian, Hui, and other nationality; and 49.1% are females. The project will create 25,000 person-months of jobs for unskilled laborers during construction, and 160 direct jobs and 840 indirect jobs during operations. Employment targets for vulnerable groups and women are included in the design and monitoring framework, gender action plan (GAP), social development action plan, and loan assurances. Air and water quality and traffic improvements through the provision of wastewater management and district heating services, development of the urban road network and improvements in NMT, and road safety and transport planning will enhance public health and safety. Improving the urban road and bridge network will boost public access and mobility and reduce time burdens. The heating component will improve air quality and district heating access. The closure of 15 small heating boilers will not cause job losses. The GAP and social development action plan will be implemented by the LPMO and implementing agencies during project construction. The leadership-enhancement program for senior officials will enhance capacity for socially inclusive urban planning.

25. **Gender benefits.** The project has been designed for classification as effective gender mainstreaming, and a GAP has been prepared and activities and indicators agreed. Survey results and focus group discussions indicate that, in addition to their employment, women in the project-influenced area are primarily responsible for housekeeping and caring for the sick and the elderly. Improved sanitation through wastewater management will enable women and children to be healthier and more productive. Meanwhile, more efficient heating systems will ease the time and cost burdens of respiratory illnesses. This is particularly significant as women are largely responsible for managing household budgets. Improving the urban transport network and including women's needs in the planning of public transport routes, pedestrian and NMT access, and road safety programs will reduce time burdens and increase access, mobility, and safety. The GAP includes specific targets for women in employment, participation, and capacity-building opportunities, and is supported by loan assurances and consultant support for implementation and monitoring.

E. Safeguards

26. **Environment.** The project is environment category A. An environmental impact assessment including an environment management plan was prepared in compliance with ADB's Safeguard Policy Statement (2009) and was posted on the ADB website and circulated to ADB's Board of Directors on 21 May 2012. Major environmental impacts and risks include soil erosion and the sedimentation of watercourses during road and bridge construction, as well as occupational and community health and safety risks at construction sites. Impacts during operation include traffic noise and the risk of surface water pollution if the WWTP malfunctions. Mitigation measures defined in the environment management plan will reduce adverse environmental impacts to acceptable levels. During construction, the focus will be on protecting surface water quality, occupational and community health and safety, and adequate disposal of construction waste. During operation, special attention will be paid to traffic noise, the operation of wastewater and sewage sludge treatment in compliance with relevant standards, and the occupational healthiness and safety of project facilities in compliance with worker safety laws and regulations. The project's environmental performance will be monitored during project construction and operation and verified by external experts. The borrower is committed to managing identified environmental risks and has agreed to a comprehensive set of environment-related loan covenants and a 4-year training program from 2013 to 2017 with a strong focus on environment safeguards.

²⁴ The standards for classifying the urban poor in subproject areas are CNY225–CNY285 per person per month in 2009 and CNY250–CNY310 in 2010. The standards for rural people in subproject areas are CNY1,250–CNY1,600 per person per year in 2009 and CNY1,300–CNY2,600 in 2010.

The executing agency disclosed environment information to affected people, and the results and findings from consultation were used to modify the environmental impact assessment and project design. Consultation and public participation will continue throughout project implementation, and any environmental complaints or disputes will be handled in accordance with the grievance-redress mechanism established for the project.

27. The project will have substantial environmental benefits. Improved and extended road systems will reduce traffic congestion and improve road safety by rationalizing the interaction of pedestrians, NMT, and motorized traffic. Improved wastewater collection and treatment will leave a cleaner and healthier living environment for town residents and reduce the contamination of rivers and waterways. Savings in carbon dioxide emissions will accrue from the rationalization of urban road transport and road connectivity, as well as from the modernization of central heating.

28. **Resettlement.** The project is resettlement category A, as construction will require significant land acquisition and resettlement. In total, the project will affect 12 neighborhoods in 6 subdistricts and 19 villages in 6 townships. A total of 1,208 *mu* of land will be permanently acquired, comprising 1,057 *mu* of village collective land and 151 *mu* of state-owned land.²⁵ Land loss is mainly to construct roads, WWTPs, and pumping stations. The acquisition of 807 *mu* of farmland will affect 500 rural households with 1,770 members, including 59 households whose houses will be demolished. A total of 100,263 m² of rural and urban houses will be demolished, adversely affecting 326 rural and 309 urban households with 2,229 members. In total, 1,076 households with 3,762 members, and 29 small enterprises and shops with 339 staffers and employees, will be affected.

29. Affected people will benefit from the project through improved air quality and transport access. The LPMO and implementing agencies will be responsible for planning, implementing, financing, and reporting on land acquisition and resettlement. Six draft resettlement plans and a due diligence report have been prepared for the project, endorsed by the executing agency and implementing agencies, disclosed to affected people, and uploaded to ADB's website. During project implementation, the resettlement plans will be finalized based on the final design and detailed measurement survey, disclosed to affected people in their local language, and submitted to ADB for review and approval, before any civil works contracts are awarded. A grievance-redress procedure has been established for affected people. The LPMO will submit a semiannual internal monitoring report to ADB on the progress of resettlement. The LPMO will employ an external monitoring institute or firm that will submit semiannual monitoring reports to ADB during resettlement implementation and annually for 2 years after resettlement completion.

30. **Indigenous peoples.** The project is indigenous peoples category C. Ethnic minorities make up 18.3% of the population in project townships, but the poverty and social assessment revealed that they live as socially and economically integrated residents in urban areas. These groups are not vulnerable, and the only adverse impact is land acquisition and house demolition, which has been addressed by resettlement plans.

F. Risks and Mitigating Measures

31. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.²⁶ The project has no unusual technical risks, but implementation arrangements are complicated by their multiple components, in response to which

²⁵ A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 m²).

²⁶ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

project oversight and coordination mechanisms have been carefully designed. The project's integrated benefits and impacts are expected to outweigh costs and risks.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Delayed land acquisition approval and implementation	(i) Prompt implementation of detailed measurement surveys and finalization of resettlement plans (ii) Early availability of compensation funding for affected people (iii) Strict operational compliance with resettlement plans
Delayed project coordination and synchronization among agencies	(i) Coordination support from project implementation consultants (ii) Close project monitoring, frequent site inspections, and regular coordination meetings
Lack of sustainable O&M of infrastructure components	(i) Long-term capacity building at the wastewater and heating companies and implementation of road maintenance improvements (ii) Assurances regarding budget provisions for O&M
Difficulties in complying with ADB procedures	Early mobilization of tendering agent and implementation consultants to provide technical support, combined with ongoing training

ADB = Asian Development Bank, O&M = operation and maintenance.

Source: ADB.

IV. ASSURANCES

32. The government has assured ADB that implementation of the project shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the project administration manual and loan documents. The government has agreed with ADB on certain covenants for the proposed project, which are set forth in the loan and project agreements.

V. RECOMMENDATION

33. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$150,000,000 to the People's Republic of China for the Integrated Development of Key Townships in Central Liaoning, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 26 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Haruhiko Kuroda
President

4 September 2012

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact More competitive, green, and inclusive urbanization in key townships in central Liaoning</p>	<p>By 2020 (baseline year 2011), the participating key townships in central Liaoning are</p> <ul style="list-style-type: none"> (i) more competitive, with an average annual per capita disposable income for urban households increased by 140% from CNY20,467; (ii) more green, as the number of days with air quality meeting or exceeding grade 2 quality increased from 265 to 300 per year; and (iii) more inclusive, as unemployment reduced by 0.5 percentage points from 5.5% and is maintained at no more than 5%. 	<p>Statistics published annually by LPSO</p> <p>Statistics published by the Liaoning Environment Protection Department</p> <p>Statistics published annually by LPSO</p>	<p>Assumption The Shenyang Economic Zone Master Plan accelerates socioeconomic gains in central Liaoning.</p> <p>Risk Development pressures outpace planned infrastructure developments.</p>
<p>Outcome Improved sanitation, heating, and transport services in key townships in central Liaoning</p>	<p>By 2018 (baseline year 2011), in the participating key townships in central Liaoning</p> <ul style="list-style-type: none"> (i) the wastewater collection rate increased on average from 43% to 83%; (ii) wastewater treatment capacity increased from 5,000 m³/day to 10,000 m³/day; (iii) heating-related carbon dioxide emissions reduced by 53,690 tons per annum in Fuxin; (iv) district heating coverage increased in Fuxin from 18.9 million m² to 21.9 million m²; (v) road network density increased on average from 393.5 km to 460.2 km of road per 100 km² of land area; (vi) the operational length of bus lines increased from 391 km to 563 km; (vii) traffic fatality rates for every 10,000 vehicles decreased by 15% on average from 4.26 to 3.62;^a and (viii) 2,520 jobs are created during project implementation, and 161 jobs during operation, with 20% targeted for women and 15% for the poor. 	<p>Liaoning Province environment statistics annual report</p> <p>PCC issued by the Liaoning HURCC</p> <p>PCC issued by the Fuxin HURCC</p> <p>PCC issued by the Fuxin HURCC</p> <p>PCC issued by the Liaoning HURCC</p> <p>PCC issued by the Liaoning HURCC</p> <p>Statistics issued by Public Security Bureau</p> <p>PCC issued by the Liaoning HURCC</p>	<p>Assumptions Government commitment and support for infrastructure development continues.</p> <p>Project facilities are properly operated and maintained.</p> <p>Risks Actual economic growth and population increases turn out to be far from estimates.</p> <p>Actual sanitation, heating, and transport demand turns out to be far from estimates.</p> <p>Costs are much higher than foreseen.</p>
<p>Outputs 1. Improved wastewater management</p>	<p>By 2018 (baseline year 2011)</p> <ul style="list-style-type: none"> (i) Qingshuitai town has 10,000 m³/day of WWTP capacity and 18.74 km of wastewater pipes operating; (ii) the existing WWTP in Qingshuitai 	<p>PCC issued by the Shenbei HURCC</p> <p>PCC issued by the</p>	<p>Assumption Project financing is provided on time.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
facilities operating	town is closed and the site rehabilitated; (iii) at least 30% of participants in public hearings on wastewater treatment interventions are women;	Shenbei HURCC PCC issued by the Shenbei HURCC	Risks Project coordination or synchronization is lacking among agencies.
2. Upgraded district heating network operating in Fuxin (Sihe town)	(iv) 31.7 km of heating transmission pipe and 12 heat exchange stations are operating; (v) standard coal inputs are reduced from 72,440 to 50,904 tons per annum, with coal savings of 21,536 tons per annum; (vi) at least 30% of participants in consultative workshops are women;	PCC issued by the Fuxin HURCC PCC issued by the Fuxin HURCC Semiannual progress reports	Land acquisition approval and implementation are delayed. Difficulties are experienced in complying with ADB procedures.
3. Urban roads and bridges opened to traffic, and related services operating	(vii) improved urban road links and related facilities are operating, including 73.4 km of rehabilitated or upgraded urban roads, 51.2 km of new urban roads, and 18 bridges opened to traffic; related services along the roads operating, including 129.8 km of storm-water pipes and drains and 57.4 km of sewers; (viii) at least 20% of drivers on new bus routes are women; (ix) at least 30% of beneficiaries in road safety training are women;	PCC issued by the Liaoning HURCC Semiannual progress reports Semiannual progress reports	The recruitment of the loan implementation consultant or the tendering agent is delayed.
4. Capacity developed and institutions strengthened	(x) a 4-year training plan is developed and implemented from 2012 to 2017, with a target of 30% women beneficiaries, which, together with project implementation support, enables outputs 1–3 to be delivered on time, within budget, in a sustainable manner, and to prescribed quality standards and policies; and (xi) training programs on leadership, financial management and sustainability, and transport planning and safety designed and implemented.	PCC issued by the Liaoning HURCC PCC issued by the Liaoning HURCC	

Activities with Milestones	Inputs															
<p>1. Wastewater management improvements</p> <p>1.1. Design facilities, acquire land, and procure the works by Q1 2014.</p> <p>1.2. Construct and commission facilities by Q3 2015.</p> <p>1.3. Decommission existing WWTP by Q4 2017.</p> <p>2. Fuxin (Sihe town) district heating network</p> <p>2.1. Design facilities, acquire land, and procure the works by Q2 2013.</p> <p>2.2. Construct and commission facilities by Q1 2015.</p> <p>3. Environmentally sustainable urban infrastructure development</p> <p>3.1. Design facilities, acquire land, and procure the works by Q1 2016.</p> <p>3.2. Construct roads and bridges by Q3 2017.</p> <p>4. Capacity development and institutional strengthening</p> <p>4.1. Complete necessary organizational arrangements for implementing agencies (hiring staff; setting up accounting systems; and improving financial, administrative, and human resource policies and procedures) by Q4 2012.</p> <p>4.2. Recruit and mobilize implementation support consultants by Q1 2013.</p> <p>4.3. Develop 4-year training plan by Q2 2013.</p> <p>4.4. Undertake training and provide project implementation support to implementing agencies by Q4 2017 (including on ADB procedures, procurement, disbursement, operations and maintenance, financing options, credit appraisal, traffic management, road maintenance, environmental monitoring, and financial management).</p> <p>4.5. Strengthen financial management and corporate governance in wastewater and heating agencies and/or companies in subproject cities and towns with the wastewater or heating component by Q4 2017.</p> <p>4.6. Implement the environmental monitoring plan and resettlement plans, and conduct internal and external safeguard monitoring until Q4 2017.</p> <p>4.7. Implement the GAP and SDAP by Q4 2017.</p> <p>4.8. Conduct project-specific surveys to measure results for the midterm review mission in Q3 2015 and project completion mission in Q2 2018.</p>	<p>Loan ADB: \$150.0 million</p>															
	<table border="1"> <thead> <tr> <th data-bbox="1019 327 1295 359">Item</th> <th data-bbox="1320 327 1451 380">Amount (\$ million)</th> </tr> </thead> </table>	Item	Amount (\$ million)													
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ADB = Asian Development Bank, GAP = gender action plan, HURCC = housing and urban-rural construction commission, km = kilometer, km² = square kilometer, LPSO = Liaoning provincial statistics office, m² = square meter, m³ = cubic meter, PCC = project completion certificate, Q = quarter, SDAP = social development action plan, WWTP = wastewater treatment plant.

^a For Gaizhou, Heishan, Huanren, and Xinmin only. Shenbei and Waitoushan are excluded because data are unavailable.

Source: ADB.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=44021-013-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Multisector (Energy Utility Services, Other Municipal Services, and Urban Transport)
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Gender Action Plan
12. Environmental Impact Assessment
13. Resettlement Plan
14. Risk Assessment and Risk Management Plan