



Report and Recommendation of the President to the Board of Directors

Project Number: 47030-002
August 2015

Proposed Loan People's Republic of China: Jiangxi Pingxiang Integrated Rural–Urban Infrastructure Development Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 26 August 2015)

Currency unit	–	yuan (CNY)
\$1.00	=	CNY6.4125
CNY1.00	=	\$0.1559

ABBREVIATIONS

ADB	–	Asian Development Bank
CERT	–	community-based environment supervision and roads safety education team
EMP	–	environmental management plan
O&M	–	operation and maintenance
PAM	–	project administration manual
PMG	–	Pingxiang municipal government
PRC	–	People's Republic of China
WWTP	–	wastewater treatment plant

WEIGHTS AND MEASURES

ha	–	hectare
km	–	kilometer
m	–	meter
m ³	–	cubic meter

NOTE

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

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 47030-002	
Project Name	Jiangxi Pingxiang Integrated Rural-Urban Infrastructure Development	Department /Division	EARD/EASS
Country Borrower	China, People's Republic of China, People's Republic of	Executing Agency	Pingxiang Municipal Government
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Water and other urban infrastructure and services	Urban flood protection		100.79
	Urban sewerage		23.71
Transport	Road transport (non-urban)		25.51
		Total	150.00
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Adaptation (\$ million)	6.30
Environmentally sustainable growth (ESG)	Disaster risk management	Climate Change impact on the Project	Medium
	Eco-efficiency		
	Global and regional transboundary environmental concerns		
	Natural resources conservation		
	Urban environmental improvement		
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional development	Effective gender mainstreaming (EGM)	✓
Partnerships (PAR)	Implementation		
	Private Sector		
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	Rural	Medium
		Urban	Medium
6. Risk Categorization:	Complex		
7. Safeguard Categorization	Environment: A Involuntary Resettlement: A Indigenous Peoples: C		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		150.00	
Sovereign Project loan: Ordinary capital resources		150.00	
Cofinancing		0.00	
None		0.00	
Counterpart		211.24	
Government		211.24	
Total		361.24	
9. Effective Development Cooperation			
Use of country procurement systems		Yes	
Use of country public financial management systems		Yes	

JIANGXI PINGXIANG INTEGRATED RURAL-URBAN INFRASTRUCTURE DEVELOPMENT PROJECT

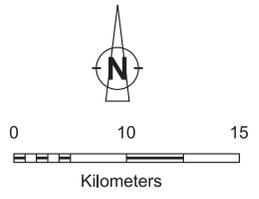
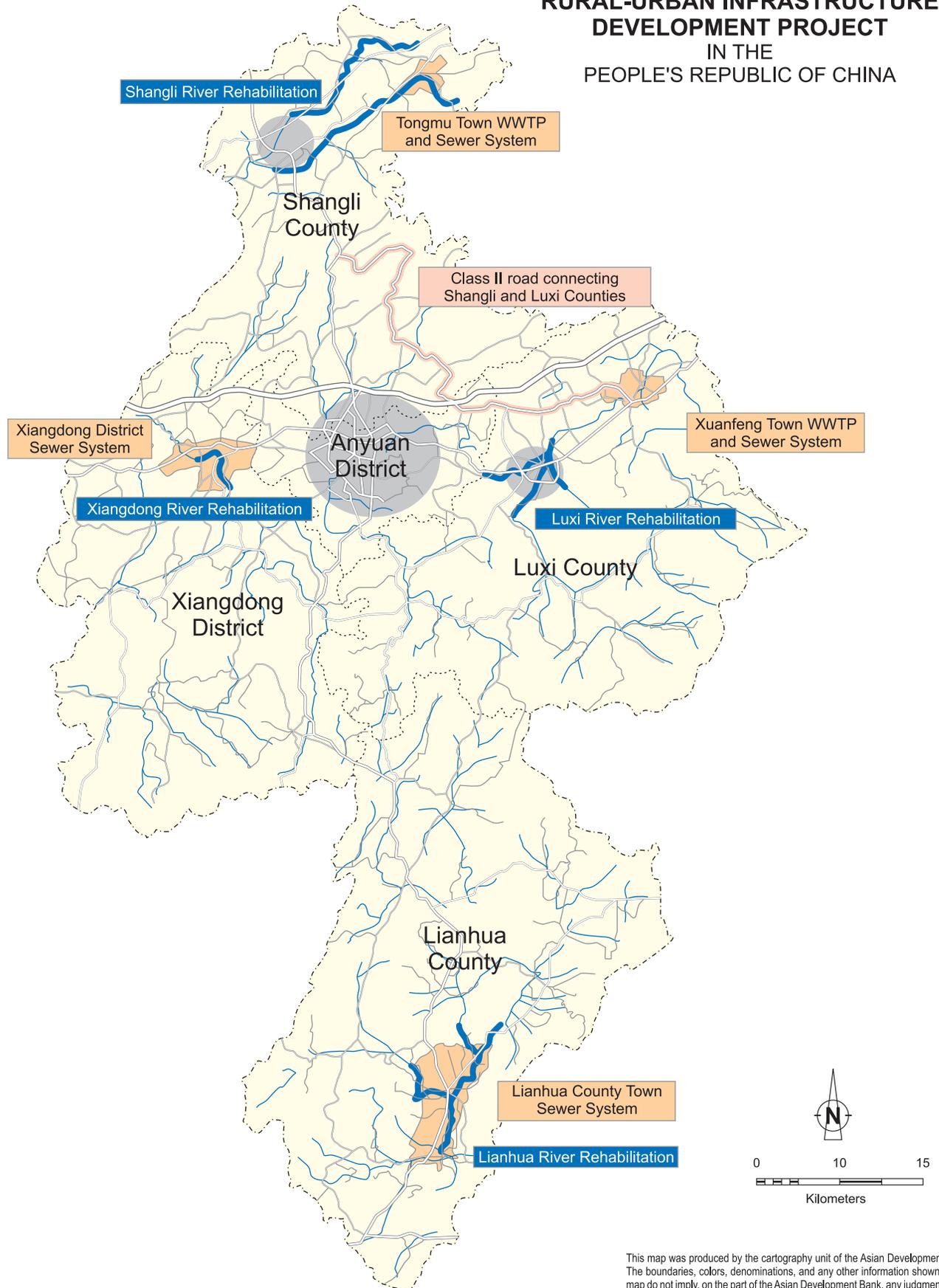
IN THE PEOPLE'S REPUBLIC OF CHINA



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**JIANGXI PINGXIANG INTEGRATED
RURAL-URBAN INFRASTRUCTURE
DEVELOPMENT PROJECT
IN THE
PEOPLE'S REPUBLIC OF CHINA**



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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 Jiangxi Pingxiang Integrated Rural–Urban Infrastructure Development Project.¹

2. The project will contribute to socially inclusive, environmentally sustainable, and competitive urban–rural development in Pingxiang municipality in Jiangxi Province. The project will be a model for integrated rural–urban development, by supporting towns and bringing services closer to people; combining flood risk management and environmentally sustainable river rehabilitation, improved wastewater management, and rural–urban transport; and developing institutional capacity to ensure project sustainability.²

II. THE PROJECT

A. Rationale

3. Pingxiang is a poverty-stricken, resource-depleted, mountainous city with a population of 1.87 million and an area of 3,827 square kilometers. The city is (i) in the western portion of the poor, flood disaster-stricken Jiangxi Province; (ii) 70 kilometers (km) east of the Chang-Zhu-Tan city-cluster; and (iii) connected to national highways and to the high-speed rail network.³ Development in Pingxiang has lagged significantly behind national averages and was chosen as one of 12 cities nationwide to showcase industrial transformation, from an economy based on resource extraction to one that is more diverse.⁴ Pingxiang experiences serious floods and environmental pollution, and was chosen to become a pilot city for climate-proof, “sponge” city development.⁵ Pingxiang's urbanization ratio is low and rural poverty is high, and the city was chosen to implement an innovative approach to rural–urban integration in Jiangxi Province, one that delivers infrastructure and jobs in closer proximity to rural residents.⁶

4. The per capita gross domestic product in Pingxiang's counties is about half that in the urban core, which is in turn about half that of nearby Changsha.⁷ Lianhua is a national poverty county, and there are 113 designated poverty villages in the municipality. The Pingxiang municipal government (PMG) Resource-Depleted Transitional Development Plan (2013–2020) promotes balanced and sustainable urban–rural development and aims to (i) expand and link the centers of Anyuan and Xiangdong districts, with an expected combined population of 800,000 by 2020; and (ii) strengthen county-level cities as subcenters in Lianhua, Luxi, and Shangli counties, with a population of 70,000–120,000 residents in each by 2020.

¹ The design and monitoring framework is in Appendix 1.

² The Asian Development Bank (ADB) provided a project preparatory technical assistance: ADB. 2013. *Technical Assistance to the People's Republic of China for Preparing the Jiangxi Pingxiang Integrated Rural–Urban Infrastructure Development Project*. Manila (TA 8451-PRC).

³ Jiangxi is a key source province of floating migrant worker population to the eastern PRC. Chang-Zhu-Tan is an abbreviation for the Changsha, Zhuzhou, and Xiangtan city cluster. In 2007, the National Development and Reform Commission approved the city cluster as pilot for integration of resource efficient and sustainable development.

⁴ Pingxiang was among 12 cities in the PRC to be classified as resource-depleted city, and is eligible for national government support for industrial transformation. Pingxiang depends on resource-based industries such as coal and iron mining, steel, aluminum, industrial ceramics, chemical, and fireworks. Agriculture remains important, especially in Lianhua County.

⁵ Sponge city is a concept in which greenways, parks, and wetlands maximize ecosystem services, including water resource management and stormwater retention. In April 2015, the Ministry of Housing Urban and Rural Development announced that Pingxiang was selected as one of 16 pilot cities for the sponge city program.

⁶ The urbanization ratio (31.6%) is lower than the national average (53.7%); rural poverty is significant at 18.6%.

⁷ In 2011, Pingxiang's average urban income was CNY18,646, compared with a national average of CNY21,810.

5. Flood risk-reduction is a top priority in Pingxiang. Flood frequency and severity have increased significantly since 1998. Floods in 1998, 2001, 2002, 2010, and 2014 affected more than 496,000 people, caused the collapse of more than 2,600 houses, and resulted in significant economic losses in agriculture. A major flood on 25 May 2014 severely impacted public safety and health, and caused an estimated \$115 million in economic losses.⁸ Most riverbanks in Pingxiang have inadequate flood protection; sediment accumulation from riverbank erosion and mining has raised riverbeds, further reducing the flood discharge capacity of rivers.

6. Pingxiang is a headwater municipality; all its rivers originate in the mountainous areas, and flow into two river systems: (i) the Gan River, which drains northeast into Poyang Lake; and (ii) the Xiang River, which flows northwest into Dongting Lake. Where rivers flow through farmland, settlements, and industrial and mining areas they collect pollutants and sediments. At the end of 2012, the urban wastewater treatment rate in Pingxiang was 75.8%, well below the national average. Many small cities and townships lack or have incomplete sewer systems, and no wastewater treatment plants (WWTPs). Domestic wastewater is discharged untreated into rivers, affecting downstream jurisdictions and Poyang Lake.⁹ Illegal solid waste disposal along rivers is common, particularly in rural areas without regular collection. Some rivers in Pingxiang provide drinking water for local communities, and pollution poses serious risks to public health.¹⁰

7. Pingxiang's rural areas have limited access to markets, jobs, training, education, and services in towns and cities. The lack of adequate roads and public transport limits rural development, jobs, and livelihood opportunities. Except for the main east–west and north–south corridors served by highways and national roads, many existing roads in Pingxiang are narrow and poorly maintained, particularly in the rural and mountainous areas.

8. Pingxiang is focused on developing its core urban area, with less priority given to the development of rural areas. Continued unbalanced and disconnected development will result in an increasing social, economic, and environmental divide between urban and rural areas. Pingxiang is approaching its challenges with non-integrated engineering, which addresses problems from one dimension, while typically generating new problems in other areas. Non-integrated approaches to flood protection—which typically comprise solid walls and concrete dikes—force stormwater into a channel, potentially causing downstream flash floods and degrading river environments; this harms river ecology, and the lack of natural capacity to absorb rainwater runoff that flows into rivers necessitates increased investment compared with an integrated approach that strategically preserve floodplains.

9. **Strategic fit.** The project supports the PRC's 12th Five-Year Plan (2011–2015) and the PRC's National New-Type Urbanization Plan (2014–2020) by contributing to balanced urbanization with livable, eco-efficient, and inclusive cities; and Pingxiang's development, flood risk management, and transportation plans.¹¹ The project (i) is aligned with the country partnership strategy, 2011–2015 for the PRC of the Asian Development Bank (ADB); (ii) is included in ADB's country operations business plan, 2015–2017 for the PRC; (iii) supports ADB's (a) Strategy 2020 goal of livable and sustainable cities through creation of cleaner and healthier environments; (b) urban operational plan that aims at inclusive, green, and competitive urban development; (c) water operational plan aiming at integrated water resources

⁸ During the rainy season in April–June, flood events have a duration of several days. Water levels rise by up to four meters above normal levels for a 20-year flood (one that is likely to occur once every 20 years).

⁹ The PRC categorizes surface water quality into five classes: from I (best) to V (worst). Classes I–III can be used for drinking water. Most project rivers currently do not meet class III.

¹⁰ Water safety plans have been prepared for the PMG and county and/or district governments, and identify water safety risks. Risks in the project rivers will be addressed by the loan using structural and nonstructural measures.

¹¹ This plan will serve as a blueprint for urbanization policies in the PRC's 13th Five-Year Plan.

management; and (d) sustainable transport initiative operational plan in its objective to support rural roads; and (iv) provides innovative solutions as emphasized in ADB's Midterm Review of Strategy 2020, complementing physical with nonstructural measures in flood risk management.¹²

10. **Incorporation of lessons.** The project incorporates lessons from similar ADB loan and technical assistance projects in the PRC and in Jiangxi Province.¹³ Lessons include (i) planning wastewater facilities that follow rigorous demand analysis, and conducting policy dialogue on cost recovery to support investment sustainability; (ii) reducing adverse impacts on rural roads through road and pedestrian safety, intersection design improvement, and public transport; and (iii) reducing resettlement impact and cost through optimization of project design.¹⁴

11. **Pilot features.** The project includes best practices and pilot demonstration features. Best practices include (i) linking and functionally integrating infrastructure to optimize development impacts, including river, wastewater, and road components; (ii) implementation of national regulations on water and wastewater tariffs (promulgated by the government and prepared with ADB assistance) established an enabling environment for private sector participation (as regulations require full cost recovery), mainly for the water supply sector in Pingxiang;¹⁵ and (iii) road alignment optimization through the study of alternatives to minimize and balance resettlement and environmental impacts. Pilot demonstration features include:

- (i) **Urban–rural flood risk management and climate resilience partnerships.** River embankments, floodplain preservation, and adaptable weirs protect urban and rural settlements, while ensuring the irrigation needs of farmers are met. As recommended in the climate risk and vulnerability assessment, small concrete dams will be reconstructed as adjustable hydraulic tilting gate weirs to enhance climate variability and change adaptation capacity.¹⁶ During project implementation, nonstructural climate adaptation measures (i.e., improved river maintenance, flood monitoring, early warning, and disaster response systems) will be implemented.¹⁷ A water resource management plan will be developed and

¹² ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011–2015*. Manila; ADB. 2015. *Country Operations Business Plan: People's Republic of China, 2015–2017*. Manila; ADB. 2013. *Urban Operational Plan, 2012–2020*. Manila; ADB. 2011. *Water Operational Plan, 2011–2020*. Manila; and ADB. 2010. *Sustainable Transport Initiative Operational Plan*. Manila; and ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

¹³ ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Chongqing Urban–Rural Infrastructure Development Demonstration Project*. Manila; ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Nanjing Qinhuai River Environmental Improvement Project*. Manila; ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Jiangxi Fuzhou Urban Integrated Infrastructure Improvement Project*. Manila; and ADB. 2007. *Technical Assistance to the People's Republic of China for Provincial Development Strategies for Selected Provinces in the Central Region*. Manila.

¹⁴ ADB. 2010. *Special Evaluation Study: Water Policy and Related Operations*. Manila; ADB. 2010. *Special Evaluation Study: Post-Completion Sustainability of Asian Development Bank-Assisted Projects*. Manila; and Y. Kobayashi and J. Porter. 2012. *Flood Risk Management in the People's Republic of China: Learning to Live with Flood Risk*. Manila: ADB.

¹⁵ ADB. 1997/1999. *Technical Assistance to the People's Republic of China for the Water Supply Tariff Study I/II*. Manila; and ADB. 2001. *Technical Assistance to the People's Republic of China for Preparing the National Guidelines for Urban Wastewater Tariffs and Management Study*. Manila.

¹⁶ Initial climate risk screening determined that the project is at medium risk from climate change effects. A project-level climate risk and vulnerability assessment confirmed that design assumptions for flood control works were adequate. River embankments have a safety buffer freeboard of 0.5–0.7 meters that can accommodate projected increases in precipitation resulting from climate change until at least 2050.

¹⁷ Counties and districts have fairly effective flood information systems. In Luxi County, short messages are sent to all residents' mobile phones to warn of flood events.

farmers will be trained in advanced crop production that is more flood-resilient, and will likely increase their incomes.¹⁸

- (ii) **Ecological river management supporting sustainable urban–rural sponge city development.** Replanted riparian embankments, rural agricultural shelterbelts, protection of wetland floodplains, and public green space along the river will accommodate seasonal water level fluctuations and increase stormwater retention capacity. The ecologically designed greenways will enhance habitat biodiversity and water quality through filtration by green buffer zones. Implementation of water safety plans through capacity building and policy dialogue on pollution reduction will further enhance sustainability.¹⁹
- (iii) **Community-based environment supervision and roads safety education teams (CERTs).** They will develop and implement community environment management rules to foster environmentally sustainable behavior, including orderly solid waste disposal. CERTs will also facilitate community-awareness on road safety and maintenance and discuss public transportation and bus stop locations with the government in the areas adjacent to the rural–urban road.²⁰

B. Impacts and Outcome

12. The impacts will be improved integrated and green urban–rural development; and improved socioeconomic wellbeing of residents in cities, townships, and villages in Pingxiang municipality and Jiangxi Province. The outcome will be improved living conditions of rural and urban residents using integrated infrastructure in Pingxiang.

13. Responding to the need of an integrated approach, the project will address key challenges of flooding, river pollution, untreated wastewater, and lack of rural–urban linkages in a connected and holistic manner. It will contribute to more sustainable and inclusive urban–rural development in Pingxiang by strategically focusing investments on four subcenters in Lianhua, Luxi, and Shangli counties, and Xiangdong District; and on two key townships in Luxi and Shangli counties. It will promote a more distributed urban–rural system to support government plans and recent growth of these cities.²¹ The strengthened subcenters will bring jobs, goods, assets, and public and private services within the commuting distance of more villages and townships, enabling more inclusive growth.²² The project will increase flood resilience, enhance the river environment, and improve wastewater management. A total of about 308,000 farmers and rural and urban residents will benefit directly from reduced flood risk. The improved river environment will include recreational and public health benefits of accessible, continuous, and environmentally sustainable greenways linking urban and rural areas in the four subcenters, and serving about 400,000 residents by 2020. About 175,000 residents will benefit directly from expanded and improved wastewater management services. Additional benefits include improved quality of life, increased real estate values, and reduced expenses and risks from floods and waterborne diseases. Also, the project will reduce pollutants entering the Xiang and Gan river systems. The rural–urban road will support inclusive development by connecting villages, townships, subcenters, schools, and industrial areas in the two fastest-growing

¹⁸ Additional income for farmers will be promoted through value-added activities in food processing and agri-tourism.

¹⁹ Water safety plans were developed during project preparation for Lianhua and Shangli counties, where project rivers serve as drinking water sources. The project will implement measures to reduce water safety risks.

²⁰ Details are in the procurement and consulting services section and in the social development action plan of the Project Administration Manual (accessible from the list of linked documents in Appendix 2).

²¹ Average annual urban growth rates were very high in Lianhua (9.7%), Luxi (7.8%), and Shangli (15.8%), but lower in Anyuan and Xiangdong districts (2.7% combined).

²² One challenge of urban–rural integration (including in Pingxiang) is the separation of families. Elderly people and children remain in villages, while working-age people live and work in urban areas.

counties of Luxi and Shangli, directly benefitting about 247,000 residents. The subcomponents are spatially and functionally linked to maximize mutual benefits and development impact.

C. Outputs

14. The project takes a strategic and holistic approach, with four key outputs covering all rural counties and urban districts within Pingxiang municipality.

15. **Output 1: Flood risk management and river rehabilitation improved and integrated.** This component comprises works on 71 km of eight rural–urban rivers in Lianhua, Luxi, and Shangli counties; and Xiangdong District including (i) river widening and removal of sediments, (ii) new and rehabilitated embankments, (iii) about 90 hectares (ha) of riparian revegetation, (iv) about 46 ha of wetland protection and rehabilitation, (v) construction or reconstruction of 35 small adaptable weirs for farmland irrigation, and (vi) construction of two new pedestrian bridges (Lianhua and Luxi) and reconstruction of one local bridge (Luxi). Nonstructural measures included in output 4 enhance the effectiveness of the flood protection infrastructure.²³

16. **Output 2: Wastewater collection and treatment improved.** This component includes improvement and expansion of sewer pipe networks in subcenters of Lianhua County and Xiangdong District and construction of two sewer networks and WWTPs in two townships. A total of about 184 km of new sewer mains, secondary sewers, and interceptors will be installed.²⁴ A new WWTP and pump station with 5,000 cubic meters (m³) per day capacity will be built in Xuanfeng Town in Luxi County, and a new WWTP and pump station with 2,500 m³ per day capacity will be built in Tongmu Town in Shangli County.²⁵

17. **Output 3: Rural–urban linkages improved.** This component includes a 44 km rural–urban class II road with a width of 10 meters (m), six bridges with a total length of 953 m, and a 482 m tunnel. The road is one of the four bypass roads in the Pingxiang Integrated Transport Plan (2012). The road will link towns and villages to urban and industrial areas in Luxi and Shangli counties, and Anyuan District; and expand the existing road network in the project area to improve traffic capacity, and reduce transport costs and travel time for people and goods.

18. **Output 4: Inclusive capacity in project planning and management and in urban–rural integration developed.** Loan implementation consultants will support project management, monitoring, and evaluation. They will carry out capacity development programs, study tours, policy dialogue, and stakeholder consultation on (i) procurement and financial management; (ii) urban–rural flood risk management and climate resilience partnership (i.e., development of flood early warning systems, disaster response plans, and guidance on water resource management plans); (iii) ecological river management supporting sustainable urban–rural sponge city development; (iv) wastewater management system design, construction, management, operation, and service and tariff reform; and rural wastewater and sanitation; (v) rural road and traffic safety, sustainable rural–urban transport, and public transport management; and (vi) urban–rural development and governance partnership development.

D. Investment and Financing Plans

19. The project is estimated to cost \$361.24 million (Table 1).

²³ It will meet government requirements for flood protection for (i) urban areas for 20-year flood events (occurring once every 20 years), (ii) rural villages for 10-year flood events, and (iii) farmland for 5-year flood events.

²⁴ Sewer connections of titled properties will be installed by property owners or developers. For all other households, connections will be installed under the project.

²⁵ The Xuanfeng Town WWTP will also serve Yinhe Town. The two towns have combined water supply systems with 8,000 m³ per day total capacity. Tongmu town has water supply capacity of 3,000 m³ per day.

Table 1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Output 1: Flood risk management and river rehabilitation improved and integrated	186.85
2. Output 2: Wastewater collection and treatment improved	38.43
3. Output 3: Rural–urban linkages improved	76.43
4. Output 4: Inclusive capacity in project planning and management and in urban–rural integration developed	2.80
Subtotal (A)	304.51
B. Contingencies^c	47.79
C. Financing Charges During Implementation^d	8.94
Total (A+B+C)	361.24

^a Includes \$10.43 million in taxes, of which the government assumes \$5.03 million and the Asian Development Bank (ADB) \$5.4 million. The following principles were followed in determining the amount of taxes and duties to be financed by ADB: (i) the amount is within reasonable country thresholds, (ii) the amount does not represent an excessive share of the project investment plan, (iii) taxes and duties apply only to ADB-financed expenditures, and (iv) the financing of the taxes and duties is relevant to the success of the project.

^b In January 2015 prices.

^c Physical contingencies computed at 5% of the base cost. Price contingencies computed at 4.16% on foreign exchange costs and 9.37% on local currency costs.

^d Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year US dollar fixed swap rate plus a spread of 0.50% and maturity premium of 0.10%. Commitment charge for the ADB loan is 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

20. 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 25-year term, including a grace period of 5 years; follow the straight-line repayment method; and have an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions set forth in the draft loan and project agreements.²⁶ The loan will finance civil works (94%), equipment (4%), capacity development (2%), and other eligible expenditures. The local governments will finance the balance of costs not financed by ADB, including land acquisition and resettlement cost, design, site supervision, and management cost. The PRC Ministry of Finance will relend the entire loan to Jiangxi provincial government, which will onlend the loan proceeds to the PMG, which will onlend to the county and district governments on the same terms and conditions as the ADB loan. The county and district governments will bear the foreign exchange and interest rate variation risks in proportion to the loan amount they receive. The indicative flow of funds and the lending arrangements are provided in the project administration manual (PAM).²⁷

21. The summary financing plan is in Table 2.

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank ordinary capital resources (loan)	150.00	42
Pingxiang municipal government, county, and district governments ^a	211.24	58
Total	361.24	100

^a Lianhua: \$36.57 million; Luxi: \$51.68 million; Shangli: \$33.65 million; Xiangdong: \$25.57 million; Pingxiang: \$63.53 million for road and \$0.24 million for capacity development.

Source: Asian Development Bank estimates.

²⁶ Based on the above choice of loan terms, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per annum.

²⁷ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

E. Implementation Arrangements

22. The implementation arrangements are summarized in Table 3 and described in detail in the PAM (footnote 27).

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	December 2015–December 2020		
Estimated completion date	Completion date: 31 December 2020; Loan closing date: 30 June 2021		
Management			
(i) Oversight body	Jiangxi provincial government, led by director general, JPDRC; with senior officials from JPAD, JPDRC, JPEPB, JPFD, JPTD, and JPWRD		
(ii) Executing agency	Pingxiang municipal government		
(iii) Implementing agencies	County governments of (i) Lianhua, (ii) Luxi, and (iii) Shangli; (iv) Xiangdong district government; and (v) Pingxiang municipal transport bureau		
(iv) Implementation units	(i) Lianhua water affairs bureau (river and wastewater components), (ii) Luxi water affairs bureau (river component), (iii) Luxi housing and construction bureau (wastewater component), (iv) Shangli water affairs bureau (river and wastewater components), (v) Xiangdong water affairs bureau (river and wastewater components), and (vi) Pingxiang municipal transport bureau (rural–urban road)		
Procurement	National competitive bidding	19 contracts	\$226.7 million
	Quality- and cost-based selection (90:10)	226 person-months	\$2.0 million
Consulting services	Consultants' qualification selection	58 person-months	\$0.4 million
	Individual consultant selection	10 person-months	\$0.1 million
Advance contracting and retroactive financing	Advance contracting and retroactive financing will be used for (i) six consulting services contracts, (ii) civil works contract for Anyuan section of the road, (iii) Luxi Yuan River rehabilitation (package 2), and (iv) Xuanfeng Town (Luxi County) WWTP.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2015, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank, JPAD = Jiangxi provincial agriculture department, JPDRC = Jiangxi provincial development and reform commission, JPEPB = Jiangxi provincial environmental protection bureau, JPFD = Jiangxi provincial finance department, JPTD = Jiangxi provincial transport department, JPWRD = Jiangxi provincial water resources department, WWTP = wastewater treatment plant.

Source: Asian Development Bank.

III. DUE DILIGENCE

A. Technical

23. All project components were prepared by licensed domestic design institutes taking into account consultant recommendations during project preparation, local conditions, topography, and climate in accordance with relevant PRC design guidelines and local regulations. WWTP processes have been selected considering the limited capacity for operation and maintenance (O&M). Sensitivity analysis of flood control components shows that design assumptions and proposed structures are adequate to accommodate increased precipitation (based on climate change forecasting).

B. Economic and Financial

24. **Economic analysis.** The economic analysis indicates the project is economically viable, with an overall economic internal rate of return of 17.8% and an economic net present value of CNY704 million. The rates of return for the individual outputs are 18.6% for the river component, 12.4% for improved wastewater collection and treatment, and 18.8% for the rural–urban road. The wastewater subcomponent in Lianhua County, a designated national poverty county, has an economic internal rate of return of 9.7%, lower than the economic opportunity cost of capital

of 12%. Actual benefits are likely larger as several were not quantified (e.g., public health, ecosystems services, and others). Sensitivity analysis shows that project viability can withstand potential variations in costs and benefits. The project remains economically viable even with a combination of a benefit decline of 20.0% and a capital cost increase of 20.0%.

25. **Financial analysis.** The financial sustainability assessment for the project indicated that the local governments have sufficient funds to finance the counterpart contributions and to finance debt service and O&M costs during operation. Average annual counterpart funding accounts for 1.1% of projected local government revenues during implementation. Annual debt service ranges from 1.0% to 3.2% of projected revenues in 2021. Annual funds required for facility O&M averages less than 1% of projected revenues during the operational period. Financial evaluation of the two WWTPs determined that full cost recovery is not possible at reasonable tariff assumptions, given the small scale of the WWTPs. However, the wastewater tariff can provide full recovery of O&M costs. The operating margin (estimated based on current tariff levels and full O&M cost recovery) is 16% for Tongmu WWTP and 22% for Xuanfeng WWTP. This component will generate a positive operating margin even under a stress scenario (10% reduction in tariff revenue and 5% increase in O&M cost).

C. Governance

26. Based on the financial management assessment, key financial management risks identified are lack of knowledge of ADB financial management policies and procedures, lack of standardized procedures, and inadequate budget planning processes for project implementation. Given the participation of counties and districts, it is concluded that the overall pre-mitigation financial management risk of executing and implementing agencies is moderate. To address the risks, key mitigating measures include training of relevant staff on procurement, disbursement, and financial reporting requirements prior to loan effectiveness; and development of manuals. With these measures, financial management arrangements are deemed adequate. A procurement risk assessment of PMG and the project management office confirmed that capacity is adequate given assistance by a procurement agency to prepare and arrange all procurement activities according to the PRC's domestic rules, ADB's Procurement Guidelines (2015, as amended from time to time), and Guidelines on the Use of Consultants (2013, as amended from time to time). ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with PMG and county and district governments. The specific policy requirements and supplementary measures are described in the PAM.

D. Poverty and Social

27. The project will (i) contribute to poverty reduction by reducing flood risk for a population of about 308,000, including about 37,000 poor people; (ii) provide improved wastewater services for 175,000 residents; and (iii) directly benefit 247,000 people residing within 2 km of the rural–urban road. It is estimated that a total of more than 4,600 jobs will be created by the project during construction, with 200 jobs during operation. The PMG and project implementation units will ensure that all PRC labor laws and core labor standards are followed.

28. A social development action plan was prepared for the project to ensure participation of communities in project design, implementation, and monitoring and evaluation. Actions include (i) participation in public awareness campaigns on the disaster preparedness system and environmental and public health education; (ii) consultation and information disclosure on WWTPs, sludge disposal, and transportation; (iii) participation in public hearings on wastewater tariffs; (iv) targets for employment of local labor, women, and the poor during construction and

operation; and (v) establishment of CERTs to design and implement awareness-raising campaigns and education programs. Social and gender indicators will be included in the project performance management system, and adequate consultant inputs for implementation and monitoring are included in the loan implementation consultant package.

29. The project is categorized as effective gender mainstreaming. Women strongly support the project and expect improvement of the environment, their quality of life, and employment and income opportunities. A gender action plan was prepared, including specific targets for women in employment, participation, and decision-making.²⁸ The plan will help to ensure (i) increased opportunities for female employment (at least 30%), (ii) participation and gender-sensitive awareness campaigns and education programs on disaster preparedness system and public road safety with up to 50% female participation, (iii) participation in decision-making and capacity-building activities through the establishment of CERTs (30% female members) and community-based groups (50% female members), (iv) sex-disaggregated data collection, and (v) implementation and monitoring of the gender action plan indicators.

E. Safeguards

30. **Environment (category A).** A project environmental impact assessment, including an environmental management plan (EMP), was prepared and disclosed in May 2015 in compliance with ADB's policies and requirements, including ADB's Safeguard Policy Statement (2009). The environmental impact assessment incorporates findings from a biodiversity and habitat survey and fishery resource impact assessments in the Pingshui and Yuan rivers. Potential impacts of the planned river rehabilitation include significant earthwork and sediment dredging, and damage to in-channel habitats potentially impacting the two fish protection zones.²⁹ The proposed rural–urban road will involve cut and fill along the road corridor, which will likely cause soil erosion, dust, construction noise and vibration, and community and occupational health and safety risks. Most impacts will be localized, short-term, and can be effectively mitigated through the application of good construction and housekeeping practices defined in the EMP. An institutional strengthening and capacity building program is defined in the EMP to ensure PMG's capacity to manage and monitor environmental impacts and risks.

31. **Involuntary resettlement (category A).** The project will acquire 171.02 ha of land, of which 115.61 ha is farmland, affecting 3,379 households with 13,672 persons. There will be temporary occupation of 122.53 ha of land. About 262 households and 1,022 persons will lose 51,636.57 square meters of residential housing and 3,309 square meters of small shops. A total of 4,207 households with 17,045 persons will be affected by the project, out of which 1,059 households with 4,327 persons will lose more than 10% of their productive assets and/or will be physically displaced. Nearly 325 households with 395 persons are vulnerable and 13 belong to ethnic groups. Five resettlement plans consistent with ADB's Safeguard Policy Statement were prepared and disclosed on the ADB website. Compensation for lost assets and allowances will be at replacement costs and will be paid to affected persons prior to displacement. Resettlement information booklets were disclosed to the community, village offices, and to affected persons in the local language in April 2015. Each project implementation unit will have at least one fulltime resettlement staff member to carry out internal monitoring and supervision. The implementing agencies possess good capacity to implement land acquisition and resettlement. Training on ADB's involuntary resettlement policy and procedures will be provided to ensure proper implementation. A grievance redress mechanism will be established and an independent agency will be engaged to conduct semiannual external monitoring and evaluation.

²⁸ Gender Action Plan (accessible from the list of linked documents in Appendix 2).

²⁹ Approximately 3.55 million m³ of soil will be excavated during rehabilitation of the project rivers.

32. **Indigenous peoples (category C).** There is no specific ethnic minority community or group that lives separately and no adverse impact is expected that would trigger ADB policy.

F. Risks and Mitigating Measures

33. Major risks and mitigating measures are detailed in the risk assessment and risk management plan and summarized in Table 4.³⁰ The integrated benefits and impacts are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Lack of knowledge about ADB financial management policies and procedures	Training for PMO and PIU staff on ADB payment policy, accounting, and financial reporting requirements will be provided prior to loan effectiveness; a system of written financial policies and manuals to guide PMO and PIU staff will be developed.
The improved rivers under the project deteriorate due to illegal solid waste dumping	Waste bins are included as part of the investment; local governments will ensure solid waste is properly collected in rural and urban areas and transported to adequate transfer and final disposal sites. Community-based environment supervision and roads safety education teams will work with local residents to develop and implement community environment management rules that promote behavior change.
Buildings and communities fail to connect to the project sanitary sewers	Sewer connections will be installed by building and community owners with legal title, in accordance with the Urban Wastewater Discharge Permit Management Method issued by the Ministry of Construction (Order No. 152)—an assurance is included in the project agreement. All other households and communities will be connected under the project and financed by the ADB loan.
Failure to regularly inspect and maintain the road	Through a loan covenant, ADB will require the county traffic bureaus to complete periodic written inspection reports and submit these to ADB as part of loan reporting.

ADB = Asian Development Bank, PIU = project implementation unit, PMO = project management office.

Source: Asian Development Bank.

IV. ASSURANCES

34. The government and Pingxiang municipal government have 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 PAM and loan documents. The government and Pingxiang municipal government have agreed with ADB on certain covenants for the project, which are set forth in the loan agreement and project agreement.

V. RECOMMENDATION

35. 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 Jiangxi Pingxiang Integrated Rural–Urban Infrastructure Development 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; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

26 August 2015

³⁰ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Impacts the project is aligned with:

Integrated and green urban–rural development in Pingxiang municipality and Jiangxi Province improved (PRC National New-Type Urbanization Plan, 2014–2020)

Socioeconomic wellbeing of residents in cities, townships, and villages in Pingxiang municipality and Jiangxi Province improved (project derived)

Project Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Living conditions of rural and urban residents using integrated infrastructure in Pingxiang improved	By 2020 a. Land protected from 20-year floods (occurring once in 20 years) increased to 2,860 ha, benefitting 308,000 people (2013 baseline: 630 ha) b. New public river greenways benefitting about 400,000 residents in four subcenters (2013 baseline: 0) c. Wastewater collection and treatment in counties and district increased to 80.0%, benefitting a total of about 175,000 residents (2013 baseline: 75.8%, N.A.) d. Travel on the new rural roads reaches 6,900 pcu/day, benefitting 247,000 rural residents (2013 baseline: 0)	a. Annual reports by PMG and local government agencies b. PMG and local government statistical yearbooks c. Project completion report and progress reports d. Social and environmental monitoring reports	New pollution sources and pollutants increase surface water pollution
Outputs 1. Flood risk management and river rehabilitation improved and integrated	By 2020 1a. 71 km of river works, widening and sediment removal; construction of 128 km of flood protection embankments, revetments and toe zone protection; construction of 35 small adaptable weirs for farmland irrigation; revegetation of 90 ha of riparian landscape; rehabilitation of 46 ha of wetland; and construction and/or reconstruction of 3 pedestrian or local bridges completed (2013 baseline: 0) 1b. 3,300 jobs provided during project construction and 90 jobs during operations, of which 30% are first made available for women (output 1) (2013 baseline: 0)	1a. Annual reports by PMG and local government agencies, project completion report and progress reports, and site inspection reports 1b. Social and environmental monitoring reports	Unexpected labor and materials price escalations Implementation of land acquisition and resettlement plans faces unforeseen delays and cost escalation

Project Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
2. Wastewater collection and treatment improved	<p>By 2020</p> <p>2a. Lianhua County sewer installed (length of about 52 km for sewer mains and 32 km for secondary sewer pipes) (2013 baseline: 0)</p> <p>2b. WWTP and pump station in Xuanfeng Town (Luxi County) constructed (5,000 m³/d capacity); sewer pipes in Xuanfeng and Yinhe towns installed (total length of 25.7 km) (2013 baseline: 0)</p> <p>2c. WWTP and pump station in Tongmu Town (Shangli County) constructed (2,500 m³/d capacity); sewer pipes installed (total length of 20.3 km) (2013 baseline: 0)</p> <p>2d. Xiangdong District new sewer pipes installed (total length of 54.5 km) (2013 baseline: 0)</p>	<p>2a. Annual reports by agencies of PMG and local governments concerned</p> <p>2b. Project completion report and progress reports</p> <p>2c. Site inspection reports</p> <p>2d. ADB mission MOUs</p>	
3. Rural–urban linkages improved	<p>By 2020</p> <p>3. 44-km class II rural–urban road constructed and operational, with 6 bridges (total length of about 953 m), and 1 tunnel (length of about 482 m) (2013 baseline: 0)</p>	<p>Annual reports by PMG and local government agencies</p> <p>Project completion report and progress reports</p>	
4. Inclusive capacity in project planning and management and in urban–rural integration developed	<p>By 2019</p> <p>4a. Project management office and four project implementation units with improved scores in financial and procurement management assessments (2013 baseline: N.A.)</p> <p>4b. At least 5 training programs with at least 50 participants and 5 study tours with at least 50 participants carried out (2013 baseline: 0)</p> <p>4c. At least 5 awareness-raising campaigns and stakeholder participation and training sessions—on flood risk, environment, water pollution reduction, improved farming, sanitation, road safety, and policy dialogue on wastewater tariffs—implemented, with up to 50% of participants</p>	<p>4a. Project completion report and progress reports</p> <p>4b. ADB mission MOUs</p> <p>4c. Social and environmental monitoring reports</p>	

Project Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	women (2013 baseline: 0) 4d. Community-based environment supervision and road safety education teams active in at least 12 communities, with 30% of participants women (2013 baseline: 0)	4d.Social and environmental monitoring reports	

Key Activities with Milestones

Output 1. Flood risk management and river rehabilitation improved and integrated

- 1.1 Complete detailed design and bidding documents by Q3 2016
- 1.2 Award contracts by Q4 2016 and Q4 2017
- 1.3 Complete land acquisition and resettlement plan implementation by Q4 2016 and Q4 2017
- 1.4 Complete civil works including river dredging; sewer pipe relocation, where applicable; interceptor pipe installation, where applicable; toe zone protection; embankment and pathway construction; and landscaping and planting of riparian and wetlands vegetation by Q1 2020

Output 2. Wastewater collection and treatment improved

- 2.1 Complete detailed design and bidding documents by Q3 2016
- 2.2 Award contracts by Q4 2016
- 2.3 Complete land acquisition and resettlement plan implementation by Q4 2017
- 2.4 Complete civil works for sewer pipe installation by Q4 2019
- 2.5 Complete civil works and equipment installation commissioning of WWTPs by Q4 2019

Output 3. Rural–urban linkages improved

- 3.1 Complete detailed design and bidding documents by Q3 2016
- 3.2 Award contracts by Q4 2016
- 3.3 Complete land acquisition and resettlement plan implementation by Q4 2017
- 3.4 Complete civil works for road construction by Q4 2019

Output 4. Inclusive capacity in project planning and management and in urban–rural integration developed

- 4.1 Recruit loan implementation consultant by Q4 2015
- 4.2 Recruit external resettlement monitoring and evaluation consultant by Q2 2016
- 4.3 Establish project performance management system, project management support, and monitoring and evaluation and quarterly progress reporting from Q1 2016 to Q4 2020
- 4.4 Support implementation of land acquisition and resettlement plan and submit semiannual reports from Q1 2016 to Q2 2020
- 4.5 Support implementation of environmental management plan, social development action plan, and gender action plan and submit semiannual monitoring reports from Q1 2016 to Q4 2020
- 4.6 Carry out training programs, policy dialogue, study tours, and awareness-raising campaigns from Q1 2016 to Q4 2020
- 4.7 Submit project completion report by Q2 2021

Inputs

ADB:	\$150,000,000
Government:	\$211,240,000

Assumptions for Partner Financing

Not applicable.

ADB = Asian Development Bank, PRC = People's Republic of China, ha = hectare, km = kilometer, m = meter, m³/day = cubic meter per day, MOU = memorandum of understanding, N.A. = not applicable, pcu/day = passenger car unit per day, PMG = Pingxiang municipal government, Q = quarter, WWTP = wastewater treatment plant.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=47030-002-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Urban Development¹
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: Lianhua Integrated Urban and Rural Infrastructure Development Subproject
14. Resettlement Plan: Luxi County Rivers Comprehensive Environment Improvement and Xuanfeng Town Wastewater Treatment Subproject
15. Resettlement Plan: Urban–Rural Road from Shangli County to Xuanfeng Town of Luxi County Subproject
16. Resettlement Plan: Lishui River and Jinshan River Integrated River Rehabilitation and Tongmu Wastewater Treatment Plant Subproject
17. Resettlement Plan: Pingshui River Integrated Improvement and Xiangdong District Wastewater Network Subproject
18. Risk Assessment and Risk Management Plan

Supplementary Documents

19. Financial Management Assessment
20. Project Procurement Risk Assessment

¹ ADB. 2010. *People's Republic of China: Country Partnership Strategy (2011–2015)*. Manila. This covers the following sectors: Transport; Water and Other Urban Infrastructure and Services; and Agriculture, Natural Resources and Rural Development.