Project Administration Manual

Project Number: 47030
September 2015

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

Contents

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Pingxiang municipal government and the local governments of Lianhua County, Luxi County, Shangli County, and Xiangdong District are wholly responsible for the implementation of ADB financed projects, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation, including compliance by the executing and implementing agencies of their obligations and responsibilities for project implementation in accordance with ADB policies and procedures.

At Loan Negotiations the borrower and ADB shall agree to the PAM and ensure consistency with the loan and project agreements. Such agreement shall be reflected in the minutes of the Loan Negotiations. In the event of any discrepancy or contradiction between the PAM and the loan and project agreements, the provisions of the loan and project agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP) changes in implementation arrangements are subject to agreement and approval pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

Abbreviations

ADB	–	Asian Development Bank
CERT	–	community-based environment supervision and roads safety education team
CNY	–	yuan
CSS	–	combined sewer system
C&P	–	consultation and participation
DMF	–	design and monitoring framework
EIA	–	environmental impact assessment
EMC	–	environmental monitoring center
EMP	–	environmental management plan
EIR	–	environmental impact report
FMA	–	financial management assessment
GAP	–	gender action plan
GRM	–	grievance redress mechanism
ICB	–	international competitive bidding
ISA	–	International Standards on Auditing
km	–	kilometer
LA	–	loan agreement
LARP	–	land acquisition and resettlement plan
LIBOR	–	London interbank offered rate
M&E	–	monitoring and evaluation
m^2	–	square meter
m^3/day	–	cubic meter per day
MOF	–	Ministry of Finance
NCB	–	national competitive bidding
PIU	–	project implementation unit
PMG	–	Pingxiang municipal government
PMO	–	project management office
PPMS	–	project performance management system
PRC	–	People's Republic of China
PUCIDC	–	Pingxiang Urban Construction Investment and Development Corporation
RP	–	resettlement plan
SOE	–	statement of expenditure
SAP	–	social action plan
SSS	–	sanitary sewer system
WWTP	–	wastewater treatment plant

I. PROJECT DESCRIPTION

A. Rationale

1. 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.[1] 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.[2] Pingxiang experiences serious floods and environmental pollution, and was chosen to become a pilot city for climate-proof, "sponge" city development.[3] 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. [4]

2. 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.[5] 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.

3. 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.[6] 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.

4. 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

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[1] 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.

[2] 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.

[3] 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.

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

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

[6] 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).

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.[7] 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.[8]

5. 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.

6. 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 dykes—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.

7. **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.[9] 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 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.[10]

8. **Incorporation of lessons**. The project incorporates lessons from similar ADB loan and technical assistance projects in the PRC and in Jiangxi Province.[11] Lessons include (i) planning

[7] 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.

[8] 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.

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

[10] 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.

[11] 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*

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.[12]

9. **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;[13] 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.[14]During project implementation, nonstructural climate adaptation measures (i.e., improved river maintenance, flood monitoring, early warning, and disaster response systems) will be implemented.[15] A water resource management plan will be developed and farmers will be trained in advanced crop production that is more flood-resilient, and will likely increase their incomes.[16]

(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.[17]

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.

[12] 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.

[13] 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.

[14] 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.

[15] 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.

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

[17] 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.

(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.[18]

a. Impacts and Outcome

10. 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.

11. 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.[19] 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.[20] 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 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.

b. Outputs

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

13. **Output 1: Integrated flood risk management and river rehabilitation improved**. 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

[18] Details are in Section VI and in the social development action plan of the Project Administration Manual (accessible from the list of linked documents in Appendix 2).

[19] 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).

[20] 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.

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.[21]

14. **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.[22] A new WWTP and pump station with 5,000 cubic meters (m^3) per day capacity will be built in Xuanfeng Town in Luxi County, and a new WWTP and pump station with 2,500 m^3 per day capacity will be built in Tongmu Town in Shangli County.[23]

15. **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.

16. **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.

[21] 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.

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

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

Table 1: Project Infrastructure Components

Subcomponent	Description
Component 1: Flood risk management and river rehabilitation improved and integrated	
Lianhua County Lianjiang River	Rehabilitation of 16.79 km river length; 28.4 km of new embankment/revetment in total; 28.4 km of toe zone protection in total; 17.2 ha of wetland on Lian River and 30 ha at the confluence of Lian River and Baima River are protected as floodplain, and an ecological restoration park of 19 ha; estimated dredging volume of 503,700 m^3 (includes Baima River) within the total wetland area there is 10.6 ha of revegetation, and additional 9.1 ha for Lian River riparian revegetation; construction of 2 new hydraulic weirs for irrigation; and construction of 1 pedestrian bridge
Lianhua County Baima River	Rehabilitation of 7.72 km river length; 6.44 km of new embankment/revetment in total; 7.7 km of toe zone protection in total; and 5 ha for riparian revegetation
Luxi County Yuan River	Rehabilitation of 7.6 km river length; 15.2 km of new embankment/revetment in total; 43 ha of revegetation area, including 2.4 ha of river wetland, 4 ha of a wetland park at the confluence, and 1.25 ha of artificial island; 15.2 km of toe zone protection in total; estimated dredging volume of 365,287 m^3; reconstruction of 4 hydraulic weirs; construction of 1 pedestrian bridge; 0.8 km of sewer piping relocation/separation; and removal and construction of 20 sewer inspection wells
Luxi County Tankou River	Rehabilitation of 3.27 km river length; 6.5 km of new embankment/revetment in total; 3.4 ha of revegetation, including 0.6 ha of river wetland; 6.5 km of toe zone protection in total; estimated dredging volume of 58,602 m^3; construction/reconstruction of 5 hydraulic weirs for irrigation; 1.21 km of sewer piping relocation/separation; and removal and construction of 35 sewer inspection wells
Luxi County Xinhua River	Rehabilitation of 3.15 km river length; 6.2 km of new embankment/revetment in total; 4.2 ha of revegetation, including 0.6 ha of river wetland; 6.2 km of toe zone protection in total; estimated dredging volume of 94,115 m^3; construction/reconstruction of 3 hydraulic weirs for irrigation; construction of 1 pedestrian/local bridge reconstruction; 2.5 km of sewer piping relocation/separation; and removal and construction of 50 sewer inspection wells
Shangli County Lishui River	Rehabilitation of 10.1 km river length; 20.2 km new embankment/revetment in total; 20.2 km of toe zone protection; 2.7 ha of revegetation on the embankment; estimated dredging volume of 222,200 m^3; and construction/reconstruction of 2 hydraulic weirs for irrigation
Shangli County Jinshan River	Rehabilitation of 16.69 km river length; 33.4 km of new embankment/revetment in total; 1.7 ha of revegetation on the embankment; 33.4 km of toe zone protection in total; estimated dredging volume of 183,433 m^3; and construction/reconstruction of 19 hydraulic weirs for irrigation
Xiangdong District Pingshui River	Rehabilitation of 5.75 km river length; 11.5 km of new embankment/revetment in total; 1.2 ha of revegetation on the embankment; 11.5 km of toe zone protection in total; estimated dredging volume of 750,846 m^3; and 5.5 km of sewer pipe relocation/separation
Component 2: Wastewater collection and treatment improved	
Lianhua County City	Improvement and expansion of 52 km of wastewater mains, and 32 km of secondary main pipes flowing to an existing WWTP
Luxi County, Yinhe, Xuanfeng Towns	Improvement and expansion of 25.7 km wastewater pipes; and construction of 5,000 m^3/day capacity WWTP that serve Xuanfeng and Yinhe town in Luxi County
Shangli County Tongmu Town	Construction of a 2,500 m^3/day WWTP with 20.28 km of wastewater pipes that will cover Tongmu town; and construction of a 2,500 m^3/day pump station
Xiangdong District Urban Area	Improvement and expansion of 35.5 km sewer mains and 18 km of secondary main pipes flowing to a WWTP built by local government
Component 3: Rural–urban linkages improved	
Shangli County, Luxi County, and Anyuan District	Construction of rural-urban class II road with a length of 44 km connecting Shangli and Luxi Counties and passing through Anyuan District; civil works include 1,734,000 m^2 of earth fill and 3,697,000 m^2 of earth cut; 361.7 km^2 of pavement; road width of 10 m; 3 bridges; 135 culverts; 1 tunnel of 482 m in total; and 6 main intersections (including 1 railway crossing) and 42 local intersections Anyuan road section will be financed by the local government.

ha = hectare, km = kilometer, km^2 = square kilometer, m = meter, m^2 = square meter, m^3 = cubic meter, m^3/day = cubic meter per day, WWTP = wastewater treatment plant.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Indicative Activities	2015 May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2016 Jan	Feb	Mar	Responsibility
Recruitment of procurement agency												PMG, PMO
Recruitment of design institutes for DED												PMG, PMO
Recruitment of project implementation startup consultants												PMG, PMO
Approval of FSR												JPDRC
Approval of FCUP												JPDRC, NDRC
ADB management review												ADB
Commencement of DED												Design institutes
Advance contracting actions												ADB, PMG
Recruitment of loan implementation consultant												ADB, PMG
Approval of debt repayment capacity assessment												MOF
Approval to conduct loan negotiations												NDRC
Loan negotiations												ADB, MOF, NDRC, PMG
Include counterpart funding in government budgets												PMG, implementing agencies
ADB Board consideration												ADB
Loan signing												MOF, PMG, ADB
Government legal opinion												PMG, JPG, MOF
Government budget inclusion												PMG
Finalization of on lending agreements												MOF, JPFD, PMFB
Finalization of DED												Implementing agencies, design institutes
Detailed measurement survey completed												PMO, implementing agencies, design institutes
Resettlement plan finalization												PMO, PIUs, Resettlement plan institute
Loan effectiveness												MOF
Imprest accounts opened												MOF, JPFD

ADB = Asian Development Bank, DED = detailed engineering design, FCUP = foreign capital utilization plan, FSR = feasibility study report, JPDRC = Jiangxi Provincial Development and Reform Commission, JPFD = Jiangxi Provincial Finance Department, JPG = Jiangxi Provincial Government, MOF = Ministry of Finance, NDRC = National Development and Reform Commission, PMFB = Pingxiang Municipal Finance Bureau, PMG = Pingxiang Municipal Government, PMO = project management office.
Source: Asian Development Bank.

B. Overall Project Implementation Plan

	2015	2016 (Quarters)				2017 (Quarters)				2018 (Quarters)				2019 (Quarters)				2020 (Quarters)				2021 (Quarters)		
Overall activities	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
Project implementation																								
Project management support and capacity development, training and study tours																								
Detailed engineering design																								
Bidding documents and tendering																								
Civil works construction and equipment installation, commissioning[a]																								
Project completion report																								
Detailed activities																								
Output 1: Flood risk management and river rehabilitation improved and integrated																								
1.1 Detailed design, RP updated, bidding documents																								
1.2 Contracts awarded																								
1.3 Land acquisition and resettlement plan implementation completed																								
1.4 Civil works including river dredging; sewer pipe relocation, where applicable; interceptor pipe installation, where applicable; toe zone protection; embankment and pathway construction; and riparian landscaping and completion of wetlands vegetation																								
Output 2: Wastewater collection and treatment improved																								
2.1 Detailed design, RP updated, bidding documents																								
2.2 Contracts awarded																								
2.3 Land acquisition and resettlement plan implementation completed																								
2.4 Civil works for sewer pipe installation																								
2.5 Civil works and equipment installation commissioning of wastewater treatment plants																								
Output 3. Rural–urban linkages improved																								
3.1 Detailed design completed, resettlement plan finalized, contract awarded, commencement of construction for Anyuan section (government-financed road)																								
3.2 Detailed design, RP updated, bidding documents																								
3.3 Contracts awarded																								
3.4 Land acquisition and resettlement plan implementation completed																								
3.5 Civil works for road construction																								
Output 4. Inclusive capacity in project planning and management and in urban–rural integration developed																								
4.1 Recruitment of project implementation consultant																								
4.2 Recruitment of external resettlement and environment monitoring consultants																								
4.3 Project performance management system established, project management support and monitoring and evaluation, and quarterly progress reporting																								
4.4 Support to implementation of land acquisition and resettlement plan and submit semiannual reports																								
4.5 Support to implementation of environmental management plan and submit semiannual monitoring reports																								
4.6 Carry out training programs, policy dialogue, study tours, and awareness raising campaigns																								
4.7 Submit project completion report by Q2 2021																								

[a] Except works for Anyuan section of the road (output 3) which will commence in 2015.

Source: Asian Development Bank estimates.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations–Roles and Responsibilities

Organizations	Management Roles and Responsibilities
Asian Development Bank (ADB)	• Oversees project implementation, including compliance of executing and implementing agencies on their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures • Disburses ADB loan
Ministry of Finance	• Borrower's representative • Negotiates loan and project agreements • Relends to Jiangxi Provincial Finance Department • Ensures provision of timely counterpart funding • Reviews and approves withdrawal applications • Ensures annual audit of the project accounts
Jiangxi Provincial Finance Department	• Opens, manages imprest account, disburses loan proceeds to PMG • Reviews and approves withdrawal applications • Ensures annual audit of the project accounts
Pingxiang Municipal Government (PMG)	• Executing agency and is responsible for project oversight, financial management, and administration; coordinates with implementing agencies; and liaises with ADB • Submits progress and safeguards monitoring reports to ADB • Accountable and responsible for proper use of imprest accounts' funds • Responsible for procurement of civil works, goods, and consulting services • Disbursement coordination, withdrawal applications, monitors budget allocations, and counterpart funding • Ensures compliance with project covenants • Holds quarterly tripartite meetings with the PMO and PIUs
Project leading group (under PMG, headed by the Vice Mayor, PMG)	• Comprises representatives of Pingxiang Finance Bureau, development and reform commission, construction committee, planning and housing bureau, land resource bureau, water affairs bureau, and Pingxiang Urban Construction and Investment Development Company (PUCIDC), technical experts, and other agencies • Provide strategic guidance and technical advice • Facilitate urban-rural coordination in planning, management, and operation of infrastructure and services • Meet at least once every 6 months until project completion
Project management office (PMO)	• Led and managed by PMG, situated in and supported by PUCIDC • Implements day-to-day activities of the project and provide coordination support for preparation and implementation of project components • Financial management functions (accounting, reporting, auditing, funds flow, disbursement, budgeting) • Provide ADB with quarterly project progress reports, semiannual environmental monitoring reports, project completion report, and annual audit reports • Forward external resettlement monitoring and evaluation reports to ADB • Engages tendering agency, project implementation consultants, external environment, and resettlement and social monitors • Submits withdrawal applications to Jiangxi Provincial Finance Department • Submits bidding documents, bid evaluation reports, and other necessary documents to ADB for prior review • Implements capacity development component of the project with the project implementation units • With support of consultants, maintains project performance management system
Project implementation units (PIUs)	• Project implementation and management and financial management functions • Engage design institutes for detailed design and supervision companies • Secure technical expertise for works prior to bidding and ensures monitoring and quality assurance during construction and installation • Engages construction management/supervision company and environment supervision company • Update and submit final resettlement plan and environmental management plan for ADB approval prior to awarding contracts, implement all required measures • Participate with PMO in procurement of works and equipment • Ensure and implement safeguards monitoring and grievance redress mechanism • Submit and endorse claims by the contractors and suppliers to the PMO

B. Key Persons Involved in Implementation

Executing Agency	
Pingxiang Municipal Government Director, Project management office	Mr. Tang Liping, Pingxiang Municipal Government Secretary Tel.: +1360 799 5828 Fax: +0799-681 6188 E-mail: 12958156@qq.com Address: Government Building Pingxiang, People's Republic of China (PRC)
Implementing Agencies / PIUs	
Lianhua County Government Director, Project implementation unit	Mr. Guo Jianming Tel.: +1507 992 8229 Fax: +0799 722 3304 Address: Government Building Pingxiang, PRC
Luxi County Government Director, Project implementation unit (River works)	Mr. Zhang Mengsheng Tel.: +1397 990 6361 Fax: +0799 755 1520 Address: Government Building Luxi County, Pingxiang, PRC
Shangli County Government Director, Project implementation unit	Mr. He Gangwen Tel.: +1370 799 6216 Fax: +0799 366 2301 Address: Government Building Luxi County, Pingxiang, PRC
Xiangdong District Government Director, Project implementation unit	Ms. Wu Yanxia Tel.: +1880 799 1985 Fax: +0799 337 6789 Address: Government Building Xiangdong District, Pingxiang, PRC
Pingxiang Municipal Transport Bureau Director, Project implementation unit	Mr. Lu Jiangyi Tel.: +1350 799 7582 Fax: +0799 719 1600 Address: Government Building Pingxiang, PRC
Asian Development Bank	
Urban and Social Sectors Division (EASS)	Mr. Sangay Penjor Director, EASS Tel.: +63 2 632 5340 Fax: +63 2 636 2407 E-mail: spenjor@adb.org
Mission leader	Mr. Stefan Rau Urban Development Specialist, EASS Tel.: +63 2 632 5812 Fax: +63 2 636 2407 E-mail: srau@adb.org

C. Project Organization Structure

Figure 1: Overall Implementation Arrangement of the Project

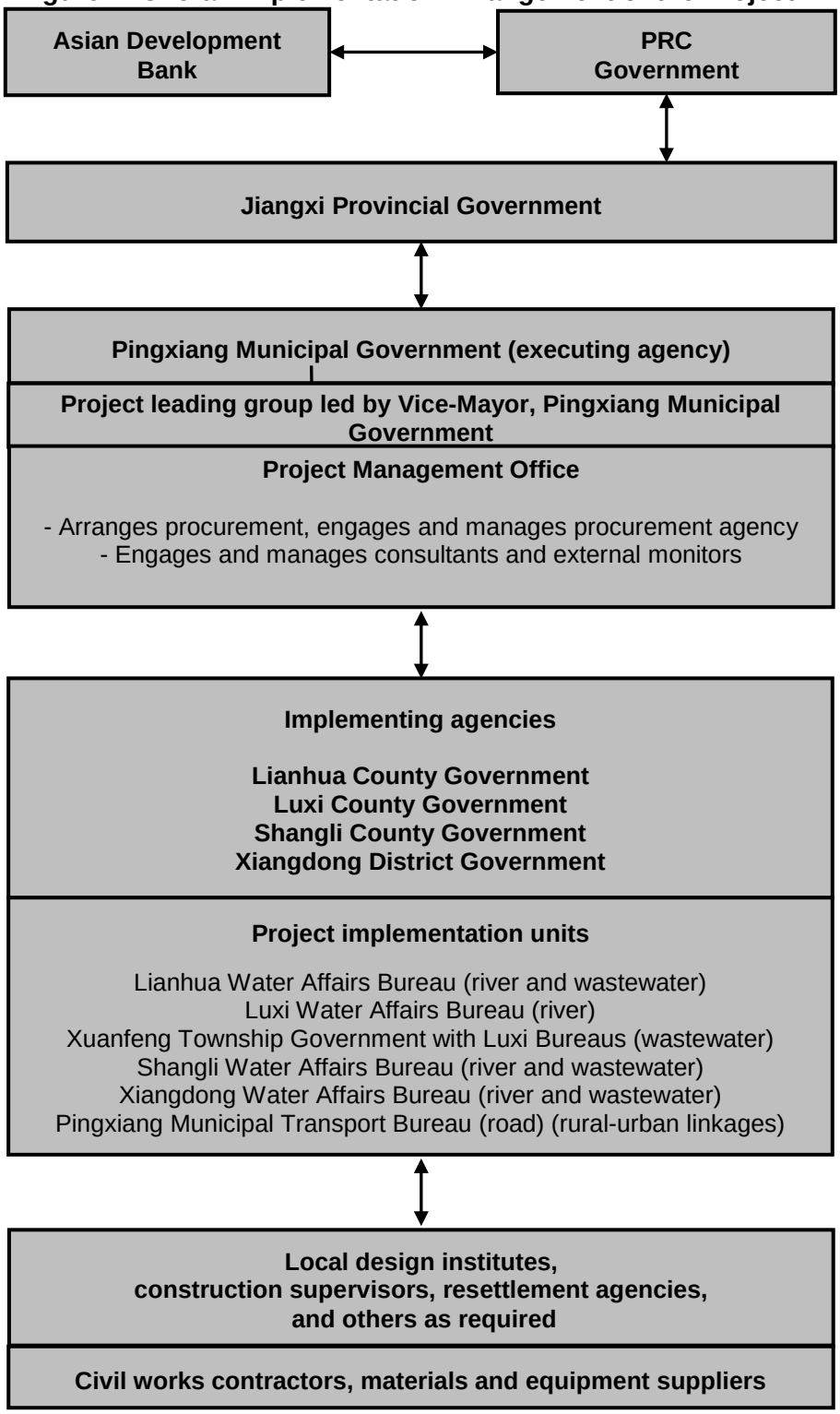
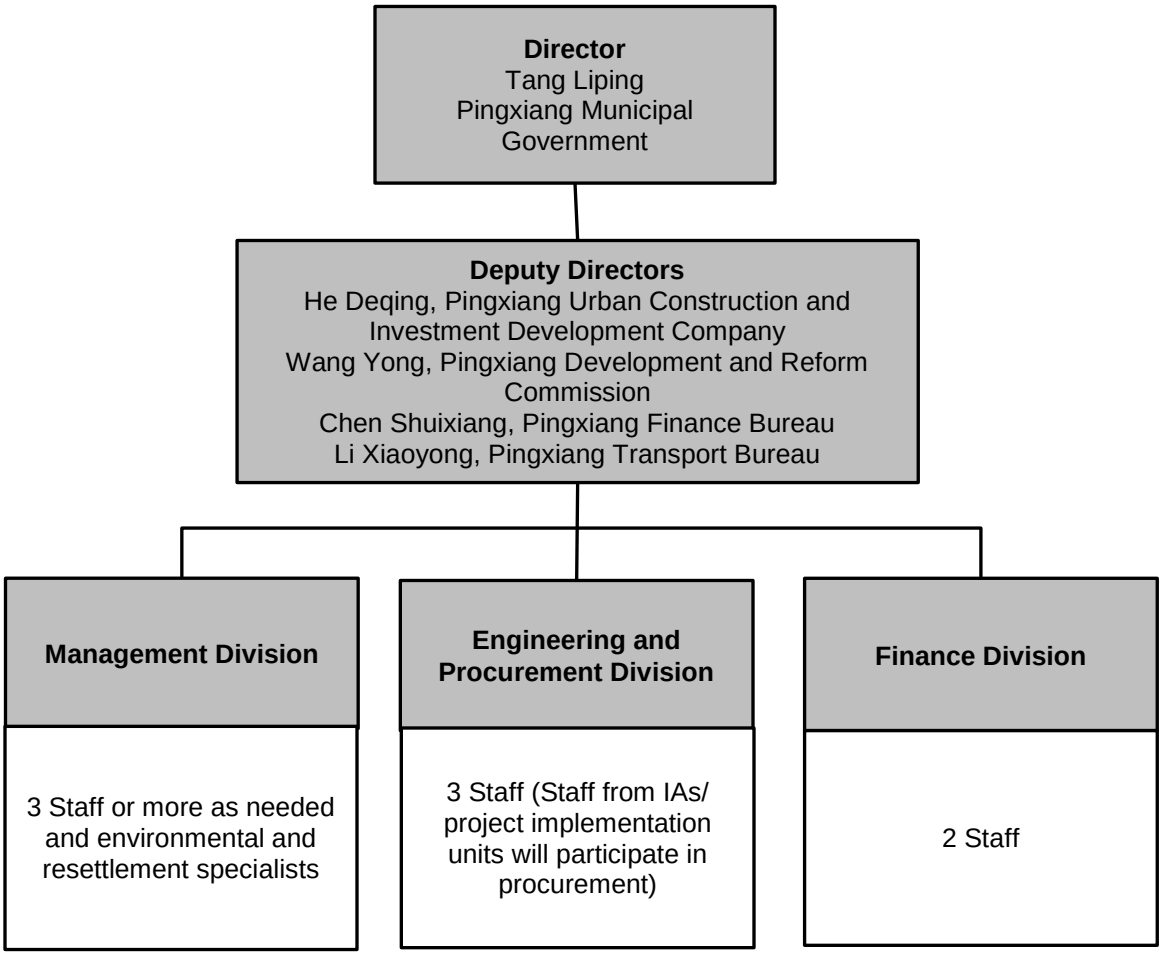


Figure 2: Project Management Office



IV. COSTS AND FINANCING

1. The project is estimated to cost $361.24 million (Table 1). Loan proceeds will be disbursed according to Asian Development Bank (ADB's) *Loan Disbursement Handbook* (2015, as amended from time to time), and subject to the provisions of the Loan Agreement.

Table 1: Project Investment Plan
($ million)

Item		Amount[a]
A.	**Base Cost**[b]	
	1. Output 1: Flood risk management and river rehabilitation improved and	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.

2. 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, will follow the straight-line repayment method, will 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.[1] 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. The loan will be utilized for civil works, the purchase and installation of equipment, project management support and capacity development, financial charges, transportation and insurance costs, and taxes and duties on items financed by ADB. The local governments will finance the balance of costs not financed by ADB, land acquisition and resettlement cost, environmental monitoring cost, supervision management cost, contingencies and financial charges during implementation.

3. The PRC is the borrower of the loan and will relend the entire loan to Jiangxi provincial government, which will onlend the loan proceeds to the Pingxiang municipal government who will onlend to local governments on the same terms and conditions as those for the ADB loan. The county and district governments will bear the foreign exchange and interest rate variation risks in proportion to the loan amount it receives.

[1] The interest includes a maturity premium of 10 basis points. This is based on the above loan terms and the government's choice of repayment option and dates.

4. The summary financing plan is in Table 2.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank	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.

Note: Numbers may not sum exactly due to rounding.

Source: Asian Development Bank estimates.

A. Detailed Cost Estimates by Expenditure Category

Item		(CNY million) Foreign Currency	Local Currency	Total Cost[a]	($ million) Foreign Currency	Local Currency	Total Cost	% of Base Cost	% of Total Cost
A.	**Investment costs[b]**								
	1. Civil works	348.30	1,044.89	1,393.18	56.73	170.18	226.91	75	63
	2. Equipment	29.89	7.47	37.36	4.87	1.22	6.08	2	2
	3. Capacity building	17.19	0.00	17.19	2.80	0.00	2.80	1	1
	4. Land acquisition and resettlement	0.00	223.42	223.42	0.00	36.39	36.39	12	10
	5. Environmental monitoring	0.00	7.97	7.97	0.00	1.30	1.30	0	0
	6. Regulatory fees	0.00	190.57	190.57	0.00	31.04	31.03	10	9
	Subtotal(A)	**395.37**	**1,474.32**	**1,869.70**	**64.39**	**240.12**	**304.51**	100	85
B.	**Contingencies[c]**								
	1. Physical	19.77	73.72	93.49	3.22	12.01	15.23	5	4
	2. Price	16.86	183.10	199.96	2.74	29.82	32.56	11	9
	Subtotal (B)	**36.63**	**256.81**	**293.44**	**5.97**	**41.83**	**47.79**	16	13
C.	**Financing charges during implementation[d]**								
	1. Interest during construction	51.77	0.00	51.77	8.43	0.00	8.43	3	2
	2. Commitment charges	3.13	0.00	3.13	0.51	0.00	0.51	0	0
	Subtotal (C)	**54.90**	**0.00**	**54.90**	**8.94**	**0.00**	**8.94**	3	2
Total (A+B+C)		**486.90**	**1,731.13**	**2,218.03**	**79.30**	**281.95**	**361.24**	**119**	100

[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.

B. Allocation and Withdrawal of Loan Proceeds

No.	Item	Amount Allocated for Asian Development Bank Financing ($)		Percentage and Basis for Withdrawal from the Loan Account
		Category	Subcategory	
1	Civil Works	132,180,000		
1.1	Integrated flood risk management		85,790,000	64% of total expenditure
1.2	Wastewater collection and treatment		21,390,000	64% of total expenditure
1.3	Rural-urban linkages		25,000,000	42% of total expenditure
2	Goods	6,080,000		100% of total expenditure
3	Project management support and capacity development	2,800,000		100% of total expenditure
4	Interest and commitment charges	8,940,000		100% of total amount due
Total		**150,000,000**		

Source: Asian Development Bank estimates.

C. Detailed Cost Estimates by Financier

($ million)

Item	ADB Amount	ADB % of Cost Category	Local Governments Amount	Local Governments % of Cost Category	Total Cost[a]
A. Investment cost[b]					
1. Civil works	132.18	58.3	94.73	41.7	226.91
1.1 Integrated flood risk management	85.79	64.1	48.04	35.9	133.83
1.2 Wastewater collection and treatment	21.39	64.1	11.98	35.9	33.37
1.3 Rural-urban linkages	25.00	41.9	34.71	58.1	59.71
2. Equipment	6.08	100.0	0.00	0.0	6.08
3. Land acquisition and resettlement	0.00	0.0	36.39	100.0	36.39
4. Environmental monitoring	0.00	0.0	1.30	100.0	1.30
5. Site surveys, design, and supervision	0.00	0.0	31.03	100.0	31.03
6. Project management support and capacity building	2.80	100.0	0.00	0.0	2.80
Subtotal (A)	**141.06**	**46.0**	**163.45**	**53.7**	**304.51**
B. Contingencies[c]					
1. Physical	0.00	0.0	15.23	100.0	15.23
2. Price	0.00	0.0	32.56	100.0	32.56
Subtotal (B)	**0.00**	**0.0**	**47.79**	**100.0**	**47.79**
C. Financing charges during implementation[d]					
1. Interest during construction	8.43	100.0	0.00	0.0	8.43
2. Commitment charges	0.51	100.0	0.00	0.0	0.51
Subtotal (C)	**8.94**	100.0	**0.00**	0.0	**8.94**
Total Project Cost (A+B+C)	**150.00**	**41.5**	**211.24**	**58.5**	**361.24**
% of Total Project Cost					

[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.

D. Detailed Cost Estimates by Outputs/Components

($ million)

Item	Total Cost[a]	River component		Wastewater component		Road component		Project management support and capacity development	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment cost[b]									
1. Civil works	226.91	133.83	59.0	33.37	15.0	59.71	26.3	0.00	0.0
2. Equipment	6.08	6.08	100.0	0.00	0.0	0.00	0.0	0.00	0.0
3. Capacity building	2.80	0.00	0.0	0.00	0.0	0.00	0.0	2.80	100.0
4. Land acquisition and resettlement	36.39	24.76	68.0	1.35	4.0	10.28	28.2	0.00	0.0
5. Environmental monitoring	1.30	1.14	87.7	0.07	5.0	0.09	6.9	0.00	0.0
6. Site surveys, design, and supervision	31.03	21.04	67.8	3.64	12.0	6.35	20.5	0.00	0.0
Subtotal (A)	**304.51**	**186.85**	**61.4**	**38.43**	**12.6**	**76.43**	**25.1**	**2.80**	0.9
B. Contingencies[c]									
1. Physical	15.23	9.35	61.4	1.92	12.6	3.82	25.1	0.14	22.8
2. Price	32.56	20.08	61.7	4.10	12.6	8.27	25.4	0.11	17.8
Subtotal (B)	**47.79**	**29.41**	**61.5**	**6.03**	**12.6**	**12.10**	**25.3**	**0.25**	**40.6**
C. Financing charges during implementation[d]									
1. Interest during construction	8.43	5.47	65.0	1.28	15.0	1.50	18.0	0.18	2.0
2. Commitment charges	0.51	0.33	65.0	0.08	15.0	0.09	18.0	0.01	2.0
Subtotal (C)	**8.94**	**5.81**	**65.0**	**1.36**	**15.0**	**1.59**	**18.0**	**0.19**	**2.0**
Total (A+B+C)	**361.24**	**222.06**	**61.0**	**45.81**	**13.0**	**90.12**	**25.0**	**3.24**	**1.0**

[a] Includes $10.43 million in taxes of which the Government assumes $5.03 million and the 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.. Government will finance taxes by cash contribution.

[b] In January 2015 prices.

[c] Physical contingencies computed at 5% of 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 the 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.

E. Detailed Cost Estimates by Year

($ million)

Item		Total Cost[a]	Year 1	Year 2	Year 3	Year 4	Year 5
A.	**Investment cost**[b]						
	1. Civil works	226.91	34.04	56.73	56.73	56.72	22.69
	2. Equipment	6.08	0.61	1.22	1.82	1.82	0.61
	3. Project management support and capacity building	2.80	0.56	0.70	0.70	0.56	0.28
	4. Land acquisition and resettlement	36.39	21.83	10.92	3.64	0.00	0.00
	5. Environmental monitoring	1.30	0.26	0.32	0.32	0.27	0.13
	6. Site surveys, design, and supervision	31.03	6.21	7.76	7.75	6.21	3.10
	Subtotal (A)	**304.51**	**63.51**	**77.65**	**70.96**	**65.58**	**26.81**
B.	**Contingencies**[c]						
	1. Physical	15.23	2.45	3.79	3.82	3.64	1.53
	2. Price	32.56	2.51	6.08	8.43	10.24	5.30
	Subtotal (B)	**47.79**	**4.96**	**9.87**	**12.25**	**13.88**	**6.83**
C.	**Financing charges during implementation**[d]						
	1. Interest during construction	8.43	0.24	0.89	1.70	2.52	3.08
	2. Commitment charges	0.51	0.20	0.15	0.10	0.05	0.01
	Subtotal (C)	**8.94**	**0.44**	**1.04**	**1.80**	**2.57**	**3.09**
Total project cost (A+B+C)		**361.24**	**68.91**	**88.56**	**85.01**	**82.03**	**36.73**
% of Total project cost		**100.0%**	**19.1%**	**24.5%**	**23.5%**	**22.7%**	**10.2%**

[a] Includes $10.43 million in taxes of which the Government assumes $5.03 million and the 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. Government will finance taxes by cash contribution.

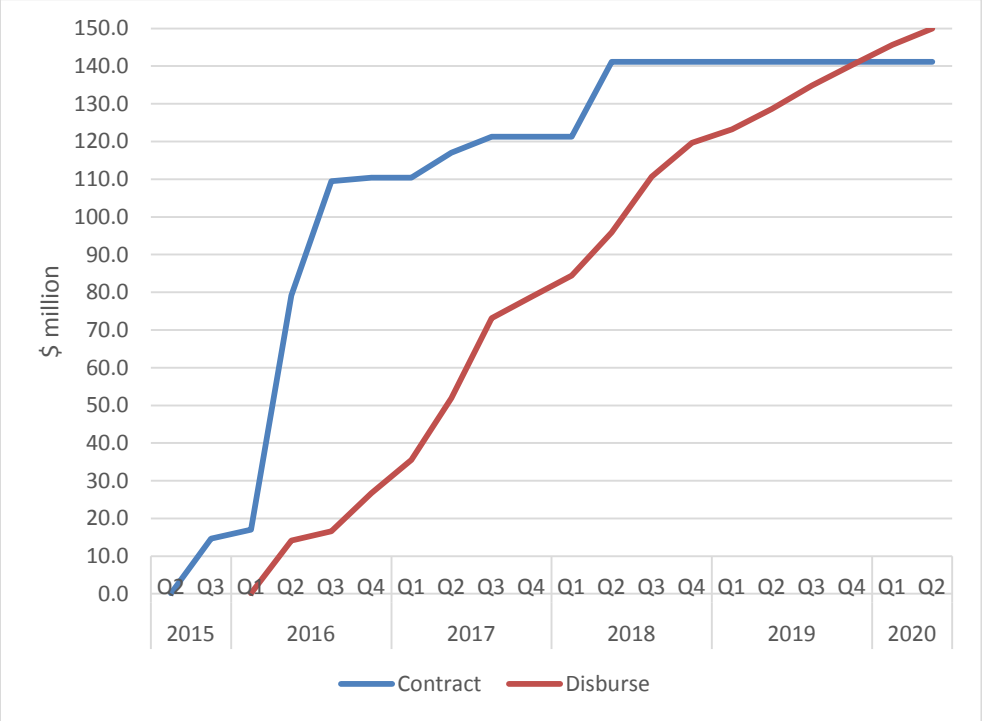
[b] In January 2015 prices.

[c] Physical contingencies computed at 5% of 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 the 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.

F. Contract and Disbursement S-curve



Source: Asian Development Bank estimates.

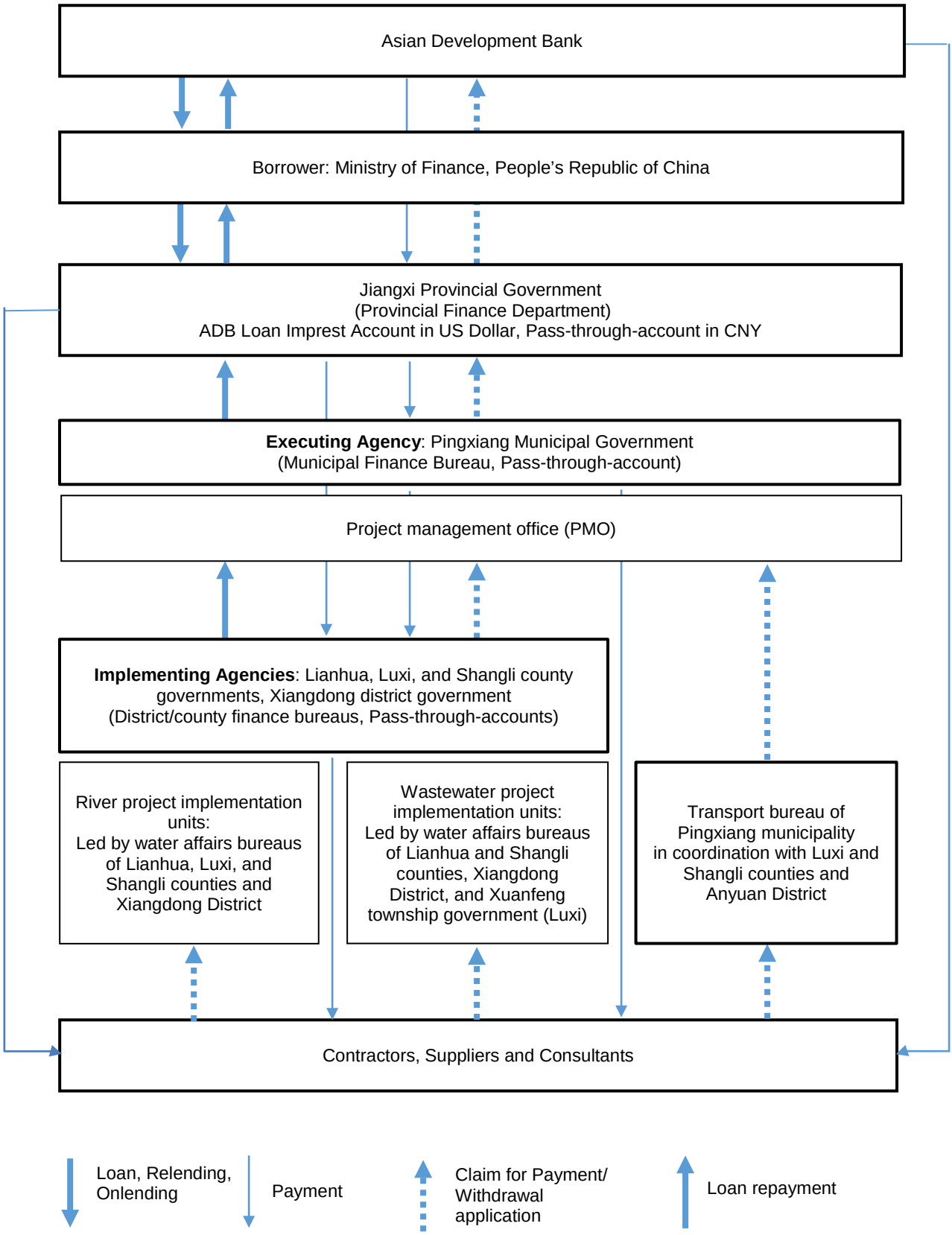
(year/$ million)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Contract awards	14.6	95.8	10.9	28.7	0	0
Disbursement	0	26.7	52.2	40.8	20.6	9.7
Cumulative						
Contract awards	14.6	110.4	121.3	141.1	141.1	141.1
Disbursement	0	26.7	78.9	119.7	140.3	150.0

Source: Asian Development Bank estimates.

(year/quarter/$ million)

2015		**2016**				**2017**				**2018**				**2019**				**2020**	
Q3	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
0.1	14.6	17.0	79.2	109.5	110.4	110.4	117.0	121.3	121.3	121.3	141.1	141.1	141.1	141.1	141.1	141.1	141.1	141.1	141.1
0.0	0.0	0.1	14.1	16.6	26.7	35.5	51.9	73.1	78.8	84.4	95.9	110.7	119.7	123.2	128.7	134.9	140.3	145.6	150.0

G. Fund Flow Diagram



V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

1. The financial management assessment (FMA) was conducted in October 2014 in accordance with the Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: a Methodology Note of the Asian Development Bank (ADB).[1] The FMA considered the capacity of Pingxiang Municipal Government, Pingxiang Urban Construction and Investment Development Company (PUCIDC), Lianhua County Government, Luxi County Government, Shangli County Government, and Xiangdong District Government. The FMA included funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements. These are the financial management activities that the executing agency/implementing agencies will do during project implementation. Results of the questionnaire are in the FMA supplementary document.

2. Based on the assessment, the key financial management risks identified are the lack of knowledge about ADB financial management policies and procedures, lack of standardized procedures, and inadequate budget planning process for project implementation. Given the participation and support from the county and district finance bureaus, it is concluded that the overall pre-mitigation financial management risk of executing agency and implementing agencies is "moderate". Adequate preparatory project training can mitigate the risk and the executing agency and implementing agencies have agreed to implement an action plan to address the deficiencies.

Financial Management Action Plan

Key Risks	Activities to Mitigate Risks	Responsible	Timeline
PMO and PIU staff are not qualified	Develop written job descriptions including knowledge, skills, and ability required for the positions	Project implementation consultant	Prior to loan effectiveness
PMO and PIU staff unfamiliar with ADB policies and procedures for financial management of ADB loans	Conduct training on ADB's payment policy, accounting, and financial reporting requirements		
No standardized procedures	Develop a system of written financial policies and manuals to guide PMO and PIU staff		
Inadequate budget planning for PMO and PIU	PMO and each PIU will prepare a budget for project implementation and update annually		
Changes in PMO/PIU staffing	Hire replacements according to updated job descriptions; provide initial training	Project implementation consultant	During loan implementation
Staff forget proper procedures	Targeted (staff and subject) refresher training		
Financial records are lost	Back-up equipment and procedures for electronic files and paper (hard) documents; computer security procedures (e.g., password, antivirus software)		
Accuracy of financial records	Regular and timely reporting to ADB; periodic external audit		

ADB = Asian Development Bank, PMO = project management office, PIU = project implementation unit.
Notes:
1. Staffing of the project implementation consultant includes a domestic financial specialist. Qualifications for the specialist include familiarity and experience with projects financed by ADB loan. The specialist will update financial documents related to the project; assist in the development of financial management procedures in accordance with ADB policies and procedures; and provide training to PMO and PIU staff. For example, the Financial Specialist will work with PMO and PIU financial staff to develop the step-by-step procedures, forms, and timelines for receiving, reviewing, approving, and paying contactor invoices; properly recording payment; and records storage and retention.

[1] Financial Management Analysis (accessible from the list of linked documents in Appendix 2).

2. The project implementation consultant will assist the PMO and each PIU to prepare 5-year budgets (the length of project implementation). Local governments should provide adequate funding (listed as a loan covenant). Budget should be updated annually based on the previous year experience.
3. County and district finance bureaus will also extend their help and support and they are part of the PIU team.
Source: Asian Development Bank.

3. Through Component 4, Project Management Support and Capacity Development; a loan implementation consultant (LIC) will be hired. The LIC will include financial and accounting and procurement specialists who will provide training on financial management, accounting, auditing and procurement and support during implementation. Training will include (i) financial management and reporting; (ii) budget preparation and oversight; (iii) disbursement procedures; (iv) financial audit process and requirements; (v) proper use and accounting of the imprest accounts and subaccounts; and (vi) other relevant areas as identified by the consultants during implementation. Training will include county and district finance bureaus who are part of the PIU team.

B. Disbursement

4. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time), and detailed arrangements agreed upon between the Government and ADB. Online training for project staff on disbursement policies and procedures is available at: http://wpqr4.adb.org/disbursement_elearning. Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

5. To facilitate project implementation through timely release of loan proceeds, promptly after loan effectiveness the Jiangxi Provincial Finance Department (JPFD) will establish an imprest account and utilize an existing pass-through-account at a commercial bank acceptable to ADB. The total outstanding advances to the imprest account will not exceed the estimated ADB-financed expenditures to be paid from the imprest account for the next 6 months. The imprest account is to be used exclusively for the ADB's share of eligible expenditures. The currency of the imprest account will be US dollar and the currency of the pass-through-account will be local currency (Chinese yuan). The JPFD, who established the imprest account in its name, is accountable and responsible for proper use of advances to the imprest account. JPFD is the signatory on the imprest account. The initial and additional advances to the imprest account may be requested based on 6 months estimated expenditures to be financed through the imprest account. The imprest account will be established, managed, and liquidated in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time) and detailed arrangements agreed by the Government and ADB. ADB's *Loan Disbursement Handbook* describes which supporting documents should be submitted to ADB and which should be retained by the government for liquidation and replenishment of an imprest account.

6. Before the submission of the first withdrawal application, the Government will submit to the ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the Borrower, together with the authenticated specimen signature/s of each authorized person. All withdrawal applications will be consolidated by the Ministry of Finance and submitted to ADB.

7. For efficiency, the minimum value per withdrawal application is $100,000 equivalent. Individual payments below this amount should be paid from the imprest account, or by the executing agency and subsequently claimed to ADB through reimbursement, unless otherwise accepted by ADB.

8. To expedite flow of funds and simplify the documentation process, the ADB statement of expenditures (SOE) procedure will be used for liquidation and replenishment of the imprest account, and for reimbursement of eligible expenditures not exceeding $200,000 equivalent per individual payment. The payments in excess of the SOE ceiling will be reimbursed, liquidated, or replenished based on full supporting documentation. SOE records should be maintained and made readily available for review by ADB's disbursement and review mission or upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

C. Accounting

9. The Pingxiang municipal government will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following cash-based accounting system following the Government's financial regulations. The project management office (PMO) will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing

10. The PMO will cause the detailed consolidated project accounts to be audited in accordance with International Standards on Auditing and in accordance with the Government's audit regulations by an independent auditor acceptable to ADB. The audited accounts will be submitted in the English language to ADB within 6 months of the end of the fiscal year by the executing agency. The annual audit report will include a separate audit opinion on the use of the imprest accounts and the SOE procedures.

11. The annual audit report will include an audit management letter and audit opinions, which cover: (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan and grant proceeds were used only for the purposes of the project or not; (iii) the level of compliance for each financial covenant contained in the legal agreements for the project; (iv) compliance with the imprest fund procedure; and (v) compliance with use of the SOE procedure certifying: (a) the eligibility of those expenditures claimed under SOE procedures, and (b) proper use of the procedure in accordance with ADB's Loan Disbursement Handbook and the project documents.

12. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

13. PMG and PMO have been made aware of ADB's approach and procedures on delayed submission, and the requirements for satisfactory and acceptable quality of the audited accounts. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Public Communications Policy 2011. After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website. The Audit Management Letter will not be disclosed.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

1. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). International competitive bidding (ICB) will be used for civil works contracts estimated to cost $40 million and above. National competitive bidding (NCB) will be used for civil works contracts estimated to cost over $200,000 equivalent up to below $40 million. For goods and equipment, ICB will be used for values $5 million and above, while NCB will be used for goods and equipment from over $100,000 to below $5 million, equivalent. For NCB, the first draft English language of the procurement documents (prequalification, bidding documents, and draft contract) should be submitted for ADB approval regardless of the estimated contract amount. Subsequent procurements are subject to prior review for works contracts with value higher than $10 million[1] and goods/equipment contracts with value higher than $5 million, and to post review for all other goods and works contracts. All ICB contracts are subject to prior review. All contracts under advance contracting are subject to prior review. Prior review and approval of ADB of the procurement documents (prequalification, bidding, contract) is required.

2. A procurement plan indicating threshold and review procedures, goods/equipment, works, and consulting service contract packages and national competitive bidding guidelines is in **Section B**.

3. All consultants financed by ADB will be recruited according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).[2] The terms of reference for project implementation consulting service, startup consulting service, external social monitoring, and external environmental monitoring services are detailed in **Section C**. Estimated 294 person-months (38 international and 256 national) of consulting services are required to (i) facilitate project management and implementation, (ii) capacity development and institutional strengthening, and (iii) conduct external monitoring.

B. Procurement Plan

Table 1: Basic Data

Project Name: Jiangxi Pingxiang Integrated Rural–Urban Infrastructure Development Project	
Country: People's Republic of China	**Executing Agency:** Pingxiang municipal government
Project Procurement Classification: B	**Implementing Agencies**: (i) Lianhua county government, (ii) Luxi county government, (iii) Shangli county government, (iv) Xiandong district government, and (v) Pingxiang municipal transport bureau
Procurement Risk: Medium	
Project Financing Amount: $361,240,000 **ADB Financing:** $150,000,000 **Non-ADB Financing:** $211,240,000	**Project Closing Date:** 30 June 2021
Date of First Procurement Plan: 20 November 2014	**Date of this Procurement Plan:** 3 September 2015

[1] Based on the procurement agent assessment.

[2] Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: http://www.adb.org/documents/handbooks/project-implementation

1. Process Thresholds, Review and 18-Month Procurement Plan

a. Project Procurement Thresholds

4. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Table 2: Project Procurement Thresholds

Method	Threshold ($)
International competitive bidding for works	=> $40,000,000
International competitive bidding for goods	=> $5,000,000
National competitive bidding for works	> $200,000 and < $40,000,000
National competitive bidding for goods	> $100,000 and < $5,000,000
Shopping for works	=< $200,000
Shopping for goods	=< $100,000

b. ADB Prior or Post Review

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

Table 3: Procurement of Goods and Works

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB works	Prior	Invitation for bids, bidding documents, and bid evaluation and recommendation for contract awards will be subject to ADB's prior review.
ICB goods	Prior	Invitation for bids, bidding documents, and bid evaluation and recommendation for contract awards will be subject to ADB's prior review.
NCB works	Post[a]	The first NCB procurement documents and all NCBs with contract value higher than $10 million for works shall be submitted for prior ADB review and approval.
NCB goods	Post[a]	The first NCB procurement documents and all NCBs with contract value higher than $5 million for goods should be submitted for prior ADB review and approval.
Shopping for Works	Post	
Shopping for Goods	Post	
Recruitment of Consulting Firms		
QCBS	Prior	Five submissions: (i) shortlist, (ii) technical evaluation, (iii) financial evaluation and overall ranking, (iv) draft negotiated contract, and (v) signed contract and notice to proceed. Use of this method is subject to Guidelines on the Use of Consultants by ADB and its Borrowers (2013, as amended from time to time), and paragraph 47 of PAI 2.03.
CQS	Prior	Four submissions: (i) shortlisting, (ii) technical evaluation, (iii) draft negotiated contract, and (iv) signed contract and notice to proceed.
ICS	Prior	Three submissions: (i) ranked shortlist and draft contract, (ii) draft negotiated contract, and (iii) signed contract and notice to proceed.

ADB = Asian Development Bank, CQS = consultants' qualifications selection, ICB = international competitive bidding, ICS = individual consultant selection, NCB = national competitive bidding, QCBS = quality- and cost-based selection.

[a] The first batch of NCB documents for works and goods (e.g., information for bidder, bidding documents, and bid evaluation report) should be submitted for ADB's prior review and approval. Subsequent procurements are subject to prior review for works contracts with value higher than $10 million and goods contracts with value higher than $5 million, and to post review for all other goods and works contracts.

Source: Asian Development Bank estimates.

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

6. The following table lists goods and works contracts with contract value exceeding $1 million over the life of the project either ongoing or expected to commence within the next 18 months.

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

Package Number	General Description	Estimated Value ($ million)	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comment
LH-RR-G1	Lianjiang River and Baima River dam supply and installation: supply and installation of 5 dams	2.39	NCB	Post	Single-stage: one-envelope	Q4 2016	
SL-RR-G1	Lishui and Jinshan rivers dam supply and installation: supply and installation of 21 dams	2.80	NCB	Post	Single-stage: one-envelope	Q4 2016	
LH-RR-W1	Lianjiang River rehabilitation	25.46	NCB	Prior[b]	Single-stage: one-envelope	Q3 2016	
LH-RR-W2	Baima River rehabilitation	14.78	NCB	Prior[a]	Single-stage: one-envelope	Q3 2016	
LH-RR-W3	Wetland park	2.09	NCB	Post	Single-stage: one-envelope	Q2 2017	
LX-RR-W1	Yuan River rehabilitation package 1 (Zhepeng Dam to Rijiang Road)	5.92	NCB	Post	Single-stage: one-envelope	Q3 2016	
LX-RR-W2	Yuan River rehabilitation package 2	12.31	NCB	Prior[a]	Single-stage: one-envelope	Q3 2015	Advance contracting and retroactive financing; also first NCB for river works
SL-RR-W1	Lishui River rehabilitation	8.35	NCB	Post	Single-stage: one-envelope	Q2 2016	
SL-RR-W2	Jinshan River rehabilitation	14.22	NCB	Prior[b]	Single-stage: one-envelope	Q2 2016	
XD-RR-W1	Pingshui River rehabilitation	19.20	NCB	Prior[b]	Single-stage: one-envelope	Q2 2016	
LH-WW-W1	Sewer networks for Lianhua Town	8.64	NCB	Post	Single-stage: one-envelope	Q2 2016	
LX-WW-W1	Xuanfeng Town wastewater treatment plant and associated sewer network and pumping stations	10.16	NCB	Prior [a]	Single-stage: one-envelope	Q3 2015	Advance contracting and retroactive financing; also first NCB document for wastewater works
XD-WW-W1	Xiangdong sewer network	7.64	NCB	Post	Single-stage: one-envelope	Q2 2016	
PX-RD-C1	Shangli Road	34.66	NCB	Prior[b]	Single-stage: one-	Q2 2016	

Package Number	General Description	Estimated Value ($ million)	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comment
					envelope		
PX-RD-C2	Luxi Road	19.99	NCB	Prior[b]	Single-stage: one-envelope	Q4 2016	

NCB = national competitive bidding, Q = quarter.
[a] First NCB document for prior review and approval. Subsequent NCB documents for post review.
[b] Subject to assessment of procurement agent.

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

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

Table 5: Consulting Services Contracts Estimated to Cost More Than $100,000 or More

Package Number	General Description	Estimated Value ($ million)[a]	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal
CS1[b,c]	Project implementation consulting services for project management support and capacity development	2.0	QCBS (90:10)	Prior	Q2 2015	FTP
CS2	External social and resettlement monitoring services	0.2	CQS	Prior	Q2 2016	BTP
CS3	External environment monitoring services	0.2	CQS	Prior	Q2 2016	BTP
CS4[b]	Project implementation startup support consulting services includes the following: 1. Procurement specialist 2. Financial management specialist 3. Wastewater specialist 4. River rehabilitation and wetlands specialist 5. Transport and road safety specialist	0.1	ICS	Prior	Q2 2015	N/A

BTP = biodata technical proposal, CQS = consultants' qualifications selection, FTP = full technical proposal, ICS = individual consultant selection, N/A = not applicable, Q = quarter, QCBS = quality- and cost-based selection.
[a] All contract values include physical contingencies.
[b] Request for advance contracting and retroactive financing.
[c] A budget of $300,000 for training will be included as part of loan financing outside of this package but preparation of a training and study tour plan and arranging the trainings and tours is included in the terms of reference of this consulting package.

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

8. The following table groups smaller-value goods, works, and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months. Before tendering, the first NCB documents will be submitted to ADB for prior review and approval. Subsequent NCB documents are sent to ADB for post review.

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

Package Number	General Description	Estimated Value ($ million)	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)
LX-RR-G1	Yuanhe, Tankou, and Xinhua rivers dam supply and installation: supply and installation of 11 dams	0.89	NCB	Prior	Single-stage:one-envelope	Q3 2016

Q = quarter, NCB = national competitive bidding.

f. Indicative List of Packages Required under the Project

9. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the 18 months period).

Table 7: Indicative List of Packages Required under the Project

Package Number	General Description	Estimated Value ($ million)	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
LX-RR-W3	Yuan River Rehabilitation Package 3	16.84	NCB	Prior	Single-stage: one-envelope	Will be advertised in Q4 2017
LX-RR-W4	Tankou and Xinhua River Rehabilitation	13.38	NCB	Prior	Single-stage: one-envelope	Will be advertised in Q4 2017
SL-WW-W1	Tongmu Town WWTP and associated sewer network	6.92	NCB	Post	Single-stage: one-envelope	Will be advertised in Q3 2017

NCB = national competitive bidding, Q = quarter, WWTP = wastewater treatment plant.

g. Non-ADB Financing

Table 8: Non-ADB Financing Package

General Description	Estimated Value ($ million)	Estimated Number of Contract	Procurement Method	Comments
Anyuan Road – (4.56 km Class II road)	5.07	1	NBF	Will be contracted in 2015 and implementation starts in 2015, after RP update and ADB approval

ADB = Asian Development Bank, km = kilometer, NBF = non-bank financing (financed entirely from government resources), RP = resettlement plan.

2. Indicative List of Packages Required by Components Under the Project

10. The following table provides an indicative list of all procurement (goods, works and consulting services) over the life of the project.

Table 9: Summary of Indicative List of All Contracts

General Description	Estimated Cumulative Value[a] ($ million)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Works	0	0	ICB	No	
	220.56	16	NCB		
	5.07	1	NBF		
Goods	0	0	ICB	No	
	6.08	3	NCB		

General Description	Estimated Cumulative Value[a] ($ million)	Estimated Number of Contracts	Recruitment Method	Type of Proposal	Comments
Consulting service	2.00	1	QCBS (90:10)	FTP	
	0.40	2	CQS	BTP	
	0.10	5	ICS	N/A	

BTP = biodata technical proposal, CQS = consultants' qualifications selection, FTP = full technical proposal, ICS = individual consultant selection, ICB = international competitive bidding, N/A = not applicable, NBF = non-bank financing, NCB = national competitive bidding, Q = quarter, QCBS = quality- and cost-based selection.

[a] All contract values include physical contingencies.

3. Advance Contracting

11. The loan effectiveness is scheduled to be in Q1 2016. The following table provides an indicative list of packages for advance contracting.

Table 10: Summary of Indicative List of All Advance Contracts

Contract No.	General Description	Value of Contracts[a] ($ million)	Number of Contracts	Procurement/ Recruitment Method	Advertisement Date (quarter/year)
LX-RR-W2	Yuan River rehabilitation package 2 (Rijiang Road to SR320 Road)	12.31	1	NCB	Q3 2015
LX-WW-W1	Xuanfeng Town WWTP and associated sewer network and pumping stations	10.16	1	NCB	Q3 2015
CS1	Project implementation consulting services for project management support and capacity development	2.00	1	QCBS	Q2 2015
CS4	Project implementation startup support consulting services includes the following: 1. Procurement specialist 2. Financial management specialist 3. Wastewater specialist 4. River rehabilitation and wetlands specialist 5. Transport and road safety specialist	0.1	5	ICS	Q2 2015

ICS = individual consultant selection, NCB = national competitive bidding, Q = quarter, QCBS = quality- and cost-based selection, WWTP = wastewater treatment plant.
[a] All contract values include physical contingencies.

4. National Competitive Bidding

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

(i) All invitations to prequalify or to bid shall be advertised in the national press, or official gazette, or a free and open access website in the Borrower's country. Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of thirty (30) days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.

(ii) Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.

(iii) If bidding is preceded by a prequalification process, all bidders that meet the qualification criteria set out in the prequalification document shall be allowed to bid and there shall be no limit on the number of prequalified bidders.

(iv) All bidders shall be required to provide a performance security in an amount sufficient to protect the Borrower/Project Executing Agency in case of breach of

contract by the contractor, and the bidding documents shall specify the required form and amount of such performance security.

(v) Bidders shall be allowed to submit bids by mail or by hand.

(vi) All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.

(vii) All bid evaluation criteria shall be disclosed in the bidding documents and quantified in monetary terms or expressed in the form of pass/fail requirements.

(viii) No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.

(ix) Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.

(x) Each contract financed with the proceeds of the Loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.

(xi) Government owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law, and (c) are not a dependent agency of the Borrower/Project Executing Agency.

(xii) Rebidding shall not be allowed solely because the number of bids is less than three (3).

5. Implementation of Consulting Services

13. **Objectives**. The objectives of the consulting services are to (i) provide project implementation startup support; (ii) project management and implementation support; (iii) capacity development and training; (iv) site supervision and quality assurance support; (v) project implementation progress monitoring and evaluation support; (vi) social, gender, and resettlement and environment safeguards monitoring and evaluation support; and (vii) institutional development support. Consulting services are organized into four groups that are financed by the loan, (i) package CS1: project implementation consultant (international firm); (ii) external social and resettlement monitoring services (national consulting firms), (iii) external environment monitoring services (national specialist and environmental monitoring stations), and (iv) project implementation startup support consulting services (international and national consultants). The scope and tasks of the consulting arrangements financed by the loan are described in **Section C**. The project management office (PMO) on behalf of Pingxiang municipal

government (PMG) and the county/district governments will be responsible for engaging all four contract packages financed from the loan in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).

14. In addition to the consulting services financed from the loan, domestically funded consulting services will be recruited by the PMO and the project implementation units (PIUs). The PMO in coordination with the PIUs will recruit a tendering agency to arrange the tendering process, prepare bidding documents, invitation for bids, and bid evaluation report. The PIUs will recruit domestic design institutes to carry out preliminary and detailed design and construction supervision engineers to oversee and inspect the site during construction and ensure compliance with national regulations, safety, and ADB requirements. Separate domestic design engineers will be recruited for the separate subcomponents to consider the core competencies for river rehabilitation and flood risk design work, wastewater management system design work, and road design work.

Table 11: Overview of Consulting Service Packages

No.	Package Name	Details
1. Financed by the ADB loan		
CS1	Project implementation consulting services for project management support and capacity development	International firm with international and national experts, an international team leader and national deputy team leader. Selected by PMO in coordination with the PIUs through ADB's QCBS (90:10) selection method. Expected duration: Full time during first 3 years and intermittent for last 2 years. Financed by the loan.
CS2	External social and resettlement monitoring services	National firm selected by PMO in coordination with the PIUs through ADB's CQS selection method. Expected duration: Intermittent from project start to 2 years after resettlement is completed.
CS3	External environment monitoring services	National firm selected by PMO in coordination with the PIUs through ADB's CQS selection method. Intermittent from project start to end of 4th year
CS4	Project implementation startup support consulting services	Individual consultants: Engineer, project manager, procurement expert Expected duration: about 4 months Selected by PMO in coordination with the PIUs through ADB's ICS selection method
2. Financed by counterpart resources		
A	National design institutes	Each PIU will engage and finance domestic design institutes to carry out preliminary and detailed design. The PIUs will each recruit one design institute for river rehabilitation and one design institute for wastewater subcomponent. A design institute will be engaged by the PMG transport bureau to carry out design of the road component. Domestic procurement regulations will be followed.
B	National tendering agency	The PMO in coordination with the PIUs will engage a domestic tendering agency with experience on ICB and NCB bidding for ADB projects. Domestic procurement regulations will be followed.
C	National construction supervision engineers	The PIUs will engage a domestic consultant one each for each works contract following domestic regulations on supervision engineers and domestic procurement regulations. Expected duration: one month before construction starts to one month after completion

ADB = Asian Development Bank, CQS = consultant's qualifications selection, ICB = international competitive bidding, ICS = individual consultant selection, NCB = national competitive bidding, PIU = project implementation unit, PMG = Pingxiang municipal government, PMO = project management office, QCBS = quality- and cost-based selection.

15. **Cost and financing**. The consulting contract CS1 for the project implementation consultant international firm is estimated to cost $2,000,000 inclusive of taxes and duties. The

consulting contract CS2 for the external social and resettlement monitoring services (national consulting firm) is estimated to cost $200,000. The consulting contract CS3 for external environment monitoring services (national consulting firm) is estimated to cost $200,000. The estimated cost for the individual contracts under CS4 project implementation startup support consulting services (international and national consultants) are estimated at $100,000. The government will provide counterpart support in the form of in-kind contributions including counterpart staff time, office accommodation, office supplies, secretarial assistance, local transportation, and other in-kind contributions. For training and study tours, $300,000 are budgeted to be financed from the loan and liquidated directly by the PMO in coordination with the PIUs. Summary cost estimates for the four contract packages CS1 to CS4 are in tables 12 through 15 below.

Table 12: Cost Estimates for Project Implementation Consulting Services for Project Management Support and Capacity Development (Contract Package CS1)

($'000)

Item	Amount
A. Financed by the ADB loan[a]	
1. Consultants	
Remuneration and per diem (incl. fees, international/domestic travel)	
i. International consultants	500.0
ii. National consultants	950.0
2. Capacity development, training, policy dialogue	
i. Training workshops and consultations[b]	150.0
ii. Community environment supervision and roads safety education	100.0
3. Surveys and data collection	70.0
4. Office administration and operation	30.0
5. Contingencies	200.0
Subtotal (A)	**2,000.0**
B. Counterpart financed through in-kind contribution[c]	
Subtotal (B)	**200.0**
Total (A+B)	**2,200.0**

[a] All cost estimates financed by ADB are inclusive of taxes and duties.

[b] Includes resource persons engaged for the trainings to prepare training materials and carry out the training events and update training materials and prepare a report on training results.

[c] To ensure the satisfactory provision of the consulting services, the PMG will provide the consultant with office space with desks and chairs, local transport for project meetings and site visits; qualified fulltime bilingual counterpart personnel in the PMO to work with the consultants; assistance with visas, and residential and other permits required by the consulting team to enter and work in the PRC; and access to all data, including documents, reports, accounts, drawings and maps, and permissions, as appropriate and necessary to undertake the assignment, free of charge.

Source: Asian Development Bank estimates.

Table 13: Cost Estimates for External Social and Resettlement Monitoring Services (Contract Package CS2)

($'000)

Item	Amount
1. Consultants	
Remuneration and per diem (incl. fees, domestic travel)	
i. National consultants	130.0
2. Surveys and data collection	50.0
3. Contingencies	20.0
Total	**200.0**

[a] All cost estimates financed by ADB are inclusive of taxes and duties.

Source: Asian Development Bank estimates.

Table 14: Cost Estimates for External Environment Monitoring Services (Contract Package CS3)

($'000)

Item		Amount
1.	Consultants	
	Remuneration and per diem of national (incl. fees, domestic travel)	80.0
2.	Surveys and data collection	100.0
3.	Contingencies	20.0
	Total	**200.0**

[a] All cost estimates financed by ADB are inclusive of taxes and duties.
Source: Asian Development Bank estimates.

Table 15: Cost Estimates for Project Implementation Startup Support Consulting Services (Contract Package CS4)

($'000)

Item		Amount
1.	Consultants	
	Remuneration and per diem national consultants (incl. fees, domestic travel)	75.0
2.	Capacity development and training - Training workshops and consultations	5.0
3.	Surveys and data collection	15.0
4.	Contingencies	5.0
	Total	**100.0**

[a] All cost estimates financed by ADB are inclusive of taxes and duties.
Source: Asian Development Bank estimates.

C. Consultant's Terms of Reference

16. **Overall inputs and scope of work.** Execution and implementation of the project will require an estimated 294 person-months (38 international, 256 national) of consulting services. The services are divided into 3 contracts (CS1, CS2, and CS3) and one contract bundle (CS4) to provide support to project design, management, implementation and monitoring support, and capacity development. The CS1 contract package will be awarded to an international consulting firm for 226 person-months, 38 international, 188 national and will be engaged through advanced contracting action by the PMO in coordination with the PIUs. The contract CS2 will be awarded to a national resettlement specialist agency and will require 38 person-months of national expert input. The contract CS3 will be awarded to a national environment specialist agency and will require 20 person-months of national expert input and environmental monitoring stations to be contracted for primary environment monitoring data collection. The contract bundle CS4 will include 5 contracts that will be awarded to individual consultants for a total of 10 person-months to provide project implementation startup support. For the 3 contracts and the contract bundle financed by the loan, expertise is required in the following fields: (i) project management, procurement and contract management, technical supervision and quality control, and financial management and disbursement; (ii) urban-rural flood risk management, flood risk reduction through integrated land use planning, structural and non-structural measures, climate resilience, flood early warning, disaster preparedness, and flood resilient farming; (iii) urban-rural river ecology and pollution reduction, solid waste management and awareness raising, water safety plan implementation, agriculture non-point source pollution reduction and management, river ecology, wetland design and maintenance, and biodiversity; (iv) wastewater management system design, construction, management, operation, services and tariff reform, rural wastewater, and sanitation and septage management; (v) rural-urban road and traffic safety, rural-urban transport management, rural urban public and semi-public transport, and intelligent information and communication technology rural-urban transport; (vi) urban and rural economic development planning, urban-rural supply chain integration, economy, finance,

governance, land use, transportation and settlement planning, urban-rural environmental protection, urban-rural institutional coordination, urban-rural water, food, environment management, agriculture crop growing, agriculture economics, and agri-tourism; (vii) environment safeguards and external environment monitoring; and (viii) resettlement safeguards and external resettlement and social monitoring, social development, gender and community participation. Some of the expertise will be engaged as short-term consultancy for specific training modules.

1. Project implementation consulting services for project management support and capacity development (CS1)

17. The consulting services package CS1 will include:

(i) **Project management support** that focus on directly supporting the PMO and PIUs on all aspects related to project management, implementation, monitoring, reporting, procurement, contract management and financial management; and

(ii) **Capacity development** including institutional development, practical training and policy dialogue with PMO, PIUs, and concerned PMG and local government agencies to improve knowledge and management skills to enable smooth implementation and sustainable operation and maintenance of the project facilities and enhancing the benefits and synergies from the investments and ensuring the sustainability of the investment project. It includes the following capacity development modules (CDM):

a. **CDM 1:** Capacity development for PMO and PIU staff on ADB policies, procedures and technical requirements on procurement, contract management, technical supervision and quality control, financial management, environmental and social safeguards, monitoring and evaluation and reporting to enable them to efficiently fulfil tasks effectively and efficiently; and

b. **CDM 2–6:** Institutional capacity development and policy dialogue for the concerned PMG and county and district government agencies on comprehensive urban-rural partnership development including (not limited to) on (i) CDM 2: urban-rural flood risk management and climate resilience partnership; (ii) CDM 3: Ecological river management supporting sustainable urban-rural *sponge city* development; (iii) CDM 4: wastewater management system design, construction, management, operation, services and tariff reform, rural wastewater and sanitation; (iv) CDM 5: rural-urban road and traffic safety, sustainable rural-urban transport and public transport management; and (v) CDM 6: urban-rural development and governance partnership development.

(i) Project Management Support

18. This part of the consulting services will focus on the support to PMO and PIUs on all aspects related to project management and implementation including (i) developing a project performance management system (PPMS) for the project, (ii) assistance with procurement including support to advance contracting, retroactive financing, and contract management; (iii) construction monitoring; (iv) funds withdrawal, reimbursement, and financial management; (v)

monitoring the implementation of environmental and social safeguards; (vi) daily liaison and communication with ADB; (vii) assisting with organization and coordination for ADB loan review missions; (viii) preparing required reports under the loan agreement; and (ix) monitoring compliance with loan covenants and assurances. These services will be provided by a team of international and national specialists led by an international and a national project management specialist and team leader/deputy team leader and comprising project management specialist / deputy team leader; and national environmental safeguard specialist; resettlement safeguards specialist; social development, gender and community participation specialist; procurement and contract management specialist; financial management and disbursement specialist; economic specialist; and financial specialist; and international technical engineers for river rehabilitation and traffic.

19. Detailed tasks include but are not limited to the following.

(i) Set up of organizational structure, operational procedures, reporting and filing system, and formulate work plans.

(ii) Establish PPMS, including defining baseline data, data collection and analysis, reporting mechanism, and regular updates of PPMS in line with ADB's requirements.

(iii) Provide technical support for advance procurement, and support the tendering agency, including review for procedural compliance, review of bidding documents, review of bid evaluation results, review of contracting documents and contract negotiations, so as to ensure that the advance contract packages are in compliance with ADB's policies and procedures.

(iv) Provide support for procurement, and support the National Tendering Agency, including review for procedural compliance, review of bidding documents, review of bid evaluation results, review of contracting documents and contract negotiations, so as to ensure that the tendering complies with ADB's policies and procedures.

(v) Assist the PMO in preparing contract variations, including revisions, reviews and confirmations, and prepare, submit and update the contract variation documents in accordance with PRC and ADB requirements, covering the contents of variations, rationales, environmental due diligence and revisions to the environmental management plan, and reviews and revisions of the resettlement plan.

(vi) On behalf of the PMO, coordinate with the National Construction Supervision Company to review construction quality and progress, and provide recommendations and advice to rectify problems that may occur.

(vii) Establish a project financial management system in conformity with ADB's policies and procedures, and assist with fund withdrawals and reimbursement, including forecasts and applications for replenishment of the imprest account, review of fund withdrawal application reimbursement documents, periodic compilation of ADB disbursements, and review and completion of provision and utilization of counterpart funds.

(viii) Regularly update project financial information, including the investment plan and financing plan.

(ix) Assist PMO in reviewing annual audits of the project account, and coordinating the submission of the annual audit reports and responses to ADB comments.

(x) Review and revise as needed the Environmental Management Plan (EMP), Resettlement Plan (RP), Gender Action Plan (GAP), and Social Development Action Plan (SDAP). In accordance with covenants of the loan agreement, inspect the implementation of EMP and RP, including public consultations, and preparing, submitting and updating related periodic monitoring reports.

(xi) Assist PMO in daily communication with ADB, including drafting communication documents and responses to ADB's information requests.

(xii) Provide necessary assistance to PMO for ADB loan review missions, including liaison, mission schedule and data collection, as well as coordinating relevant matters related to signing of the MOU.

(xiii) Assist PMO to prepare and submit project progress reports, environmental monitoring reports, resettlement monitoring reports in conformity with the covenants of the loan agreement, and revise the reports in response to comments from ADB.

(xiv) Monitor and report on compliance with Loan covenants.

(xv) Assist PMO to organize the loan midterm review, including pre-mission preparation and coordination. Prepare all required documents ---- tendering process, procurement progress, engineering progress, fund withdrawal and disbursement progress, financial reevaluation, economic reevaluation, environmental reevaluation, resettlement reevaluation, project scope adjustment and justifications, environmental and resettlement due diligence, and updating the procurement plan, and revise post-mission documents. All major experts will participate in the entire process.

(xvi) Assist PMO to complete the Project Completion Report (PCR) and all related work, including advance preparation and coordination for the ADB review mission, prepare and revise all required reports for the PCR, covering tendering documents, procurement, construction, fund withdrawal and disbursement, financial reevaluation, economic reevaluation, environmental reevaluation, resettlement reevaluation. Major Team specialist will participate in the entire ADB mission.

(xvii) Complete other tasks that may be assigned by PMO from time to time.

(ii) Capacity development

(a) Capacity development for PMO and PIU staff (CDM 1)

20. The purpose of this CDM is to provide adequate knowledge and skills to PMO and PIU staff to ensure timely and smooth on ADB policies and procedures and project management-

related aspects (PPMS, procurement, financial management, contract management, fund withdrawal, disbursement, EMP and environmental safeguard monitoring, and social safeguard monitoring including RP, GAP, and SAP. The project management support team of specialists will be providing these services.

21. Detailed tasks include but are not limited to the following.

(i) During inception period, under the leadership of PMO, prepare a detailed training needs assessment and training plan that will cover training objectives, trainees, contents, location, time, training modality and budget.

(ii) Organize and provide training on but not limited to: ADB's policies and procedures, PPMS, procurement, financial management, contract management, fund withdrawal and disbursement, reimbursement, EMP and environment monitoring, safeguard policy including the implementation and monitoring of resettlement plan, SDAP, GAP, and other related trainings as required by PMO.

(iii) Organize on-the-job training, local training events like seminars and workshops, and in-province training on technical matters related to the project.

(iv) Draft a program of domestic and overseas training and study tours according to PRC guidelines and budget to locations with good practices for flood risk management, ecological river management, rural town wastewater management, and rural road safety management and public transport.

(b) Institutional capacity development and policy dialogue

22. The institutional capacity development and policy dialogue services consists of several modules that will be prepared and provided by the Project Management Consultant Team or through short term technical assistance from specialists recruited and guided by the Team Leader and Deputy Team Leader. The capacity development modules (CDM) include the following.

(i) CDM 2: Urban-rural flood risk management and climate resilience partnership capacity development on flood risk reduction through integrated land use planning, structural and non-structural measures, climate resilience, flood early warning, and disaster preparedness, flood resilient farming.

(ii) CDM 3: Urban-rural river environment and water pollution reduction partnership capacity development on community environment supervision and roads safety education, solid waste management and awareness raising, water safety plan implementation, managing and reducing pollution from mining and industries, mining and industrial wastewater pre-treatment and capturing and sustainably treat and dispose toxic materials, agriculture non-point source pollution reduction and management, river ecology, wetland design and maintenance, biodiversity enhancement.

(iii) CDM 4: Wastewater management capacity development on system design, construction, management, operation, services and tariff reform, rural wastewater, sanitation and septage management solutions and management.

(iv) CDM 5: Rural-urban road and traffic management and safety capacity development on road and traffic safety, sustainable rural-urban transport management, rural urban public and semi-public transport, intelligent transport management and ICT rural-urban transport application.

(v) CDM 6: Urban-rural development and governance partnership capacity development on: urban and rural economic development planning, urban-rural supply chain enhancement, land use, transportation and settlement planning, urban-rural environmental protection and management partnership development, urban-rural institutional coordination, infrastructure and utility services management coordination, urban-rural water, food, and environment management partnership development, improved agriculture crop growing, agriculture economics, supply chain integration and value added business development, urban-rural tourism and agri-tourism partnership development.

(c) Urban-rural flood risk management and climate resilience partnership capacity development (CDM 2)

23. The purpose of this capacity development module is to improve capacity for the PMO and PIUs and concerned agencies on flood risk reduction through improved flood risk management; integrated land use planning; improved structural measures for flood defense such as river embankments (financed by the loan), separate drainage systems and sewer systems (financed by the loan) and non-structural measures such as improved solid waste management to avoid illegal dumping into the river, river embankments, and on the streets where it would clog up the drainage system; flood early warning systems, disaster preparedness and disaster response plans. Additional training on improvement of climate resilience, and flood resilient farming will be provided. Below is an outline of sub-modules and key activities.

24. **Capacity development for flood early warning systems and disaster preparedness.** The national River Rehabilitation and Flood Control Specialist will prepare and carry out this capacity development module. Flood risk management planning including analysis of current practices and technologies used and the development and implementation of adequate flood early warning systems for the counties and communities of the project rivers. In coordination and consultation with the county/district governments a disaster response plan should be developed by the team and the community and community disaster and climate resilience action plans should be prepared and training and test drills will be carried out to measure its effectiveness.

25. **Capacity development for flood protection and river rehabilitation.** This capacity development sub-module will be developed and provided by the International Technical Engineer for River Rehabilitation and the national River Rehabilitation and Flood Control Specialist. The training will focus on enabling local agencies and engineers in planning, design and implementation of physical measures for flood protection. Detailed tasks include but are not limited to the following.

(i) Provide guidance and recommendations on the detailed engineering design for the river embankment and flood protection facilities by incorporating international and national good practice wherever feasible to achieve ecological and environmental benefits.

(ii) Provide support and review on the bidding documents, bill of quantities, technical specifications, and other contract documents. Provide assistance to the procurement and bidding process including bid review and bid evaluation.

(iii) Conduct site inspections to review construction progress, provide technical support to construction planning and construction method, carry out the quality assurance and/or quality control, and verify the completion and compliance with the contract documents including the design drawing.

(iv) Coordinate with the team leader and other team specialist to develop capacity development and training program for river rehabilitation, flood control, river and river basin protection, river ecological protection and restoration, and provide training for district heating improvement.

26. **Capacity development increasing flood resilience of farming practices.** Specialists in the field of Agriculture such as, Agro-Forestry, Agronomy and Agri-tourism will be engaged. This team will work with local government Agricultural Bureaus to develop and assist implementation of non-structural measures for soil and water pollution reduction of the Pingxiang rivers that will support the project's structural components of river rehabilitation and wastewater management improvements. There are three sub-modules for this capacity development as outlined below. With agricultural land anticipated to serve as flood plain during severe flood events, technical assistance is needed to mitigate the impact of flooding on communities, while a mechanism for urban-rural compensation needs to be established in this urban-rural flood protection partnership. Farmers need to consider adopting more flood resistant or resilient farming practices as well as apply risk management measures to facilitate recovery after a flood event. Detailed tasks include but are not limited to the following.

(i) **Improve farming resilience to flooding** that explores new opportunities for involving rural land use, in particular agriculture, in flood risk management. Agriculture is highly vulnerable to natural hazards such as severe storms, drought and flooding which can significantly reduce and or destroy crop yields causing significant financial losses to farmers and enormous impact to the local economy. With agricultural land often being the receptor of flooding as a means to mitigating the impact of flooding on communities and with flood events and intensities increasing the impact of flooding on agriculture is high. Farmers need to respond and adopt more flood resistant or resilient measures as well as apply risk management measures to facilitate recovery after a flood event. Tasks include: (a) assessment of impact of flooding on agriculture cropping systems in the project area to identify constraints and challenges facing farmers; and (b) development of alternative cropping systems that are more flood resilient, consider aspect of marketing and landscape for agri-tourism, promote reduced use of chemical fertilizers and pesticides, and consider direct marketing and supply chains of added value within the concerned county and Pingxiang.

(ii) **Develop an integrated disaster risk management (IDRM)** approach that increases awareness about disaster risks and how they can be managed. This sub-module will link to flood early warning systems and disaster preparedness module by using the information and systems to integrate into community-based IDRM plans that will guide local farmers with new approaches. This will allow farmers and the community to plan for and manage flood risks to their cropping systems as well as introduce risk management strategies and risk sharing

mechanisms, such as agriculture insurance, that can be used to minimize flood risk.

(iii) **Establish ecological shelter belts and provide training** for agriculture areas and farmers. This activity will review the environment of agriculture production fields and surrounding areas to make plans for agro-forestry plantings that can be incorporated into the ecosystem. Shelterbelts consist of trees and/or shrubs planted as a barrier to protect crops, livestock, buildings, work areas and roads from wind and other weather events like floods as well as enhance biodiversity. Shelterbelts can be located around community buildings, adjacent to roadsides, waterways, on field boundaries or within fields and around livestock facilities. The benefits of agroforestry shelter belts can include increased crop and livestock protection and production resulting in economic gains, soil conservation and improved soil quality, sequestration of atmospheric carbon and increased biodiversity. Key activities will include (a) assessment for planning and design of agroforestry shelter belts, (b) establishment of agroforestry shelter belts, and (c) training in establishment and management of agroforestry shelter belts.

27. **Capacity development for climate-resilient urban-rural development planning and infrastructure development**. This capacity development sub-module will be coordinated and provided by an international and a national climate change adaptation specialist and an urban-rural planner. Detailed tasks include but are not limited to the following.

(i) Design and deliver at least one training course for PMO and relevant bureaus of the PMG and IAs (including DRC, environmental protection bureaus, water resources bureaus, etc.) on climate change projections, rand elated climate risks.

(ii) Provide training to PMG and LGs concerned bureaus in joint interdepartmental workshops on strategies for climate-proofing urban development, urban-rural land use planning, and environmental protection towards flood resilient environmental infrastructure development, i.e., significant green space along rivers and low-lying areas and integrating green space with flood risk reduction functions and amenities for residents.

(iii) Review findings of the climate risk and vulnerability assessment (CRVA) conducted for the project, assess feasibility and economic viability of proposed measures, identify to incorporate climate-resilience building recommendations into project design.

(iv) Review preliminary and detailed design for river rehabilitation works and the urban-rural road and their auxiliary facilities (including bridges, culverts, drainage outfalls etc.), and support IAs and DIs to incorporate climate-proofing measures into detailed engineering design.

(v) Support participating IAs to identify urban waterlogging risk reduction measures (e.g., local stormwater retention, conservation of natural infiltration areas, and provision of high capacity drainage systems in critical areas, etc.).

(vi) Assist IAs review and strengthen their flood monitoring.

(d) Ecological river management supporting sustainable urban-rural sponge city development (CDM 3)

28. The purpose of this capacity development module is to improve capacity on community-based environment supervision and roads safety education, improved solid waste management and awareness raising especially to maintain a clean river environment, implement the water safety plans developed during project preparation implementation, improve agriculture non-point source pollution reduction and management, training on river ecology principles and wetland design and maintenance, and biodiversity enhancement. This module includes but is not limited to the following sub-modules.

29. **Community-based environment supervision and roads safety education team (CERT).** This sub-module will engage the community in supervision activities and the Social Development, Gender and Community Participation Specialist will be responsible for design and implementation. CERT are planned to be established to (a) develop and implement community environment management rules to promote changes of public behavior toward the environment; and (b) make community residents aware of road safety. The CERT consists of at least three community representatives (one is a village committee member), including at least one woman and one low-income person. It will be established as a trial for three years in three typical urban communities and three rural communities (administrative villages) that are located close to one of the Project rivers or the Project road. Community-based groups in each pilot community will be organized to assist the CERT to implement the social and environmental protection measures identified by SDAP and EMP. There should be one community-based group in each pilot community and it should have at least 5 members, including 40% female and 30% low income people.

30. Each CERT member would be paid CNY600 per month (about $100 at 2014 exchange rate) and each team would be granted a public welfare activity fund of CNY5,000. Team members are selected for terms of 3 years.

31. The CERT will be the lead for developing the Community Participation Manual. Written in Chinese language it is intended to provide guidelines for community residents to meet together to discuss the issues facing their communities, incentive measures, and priorities for short-term improvements to submit to the local government planning department, i.e. bottom-up planning approach.

32. Detailed tasks of the capacity development under the guidance by the Social Development, Gender and Community Participation specialist include but are not limited to the following.

(i) Prepare a community development plan and participation strategy, based on project documents and interviews with PMO and Local Government leaders.

(ii) Assist PMO to select pilot communities.

(iii) Assist PMO to establish CERT in each pilot community.

(iv) Assist PMO organize community-based groups in each pilot community.

(v) Design and assist in delivering the training programs on community development and participation.

(vi) Assist CERT to develop its Community Participation Manual to guide the social and gender, environment protection measures.

(vii) Assist CERT to set up a community-based complaint handling mechanism for environmental and road matters.

33. Main tasks of the CERT include the following.

(i) Work with local residents to (a) develop and implement community environment management rules to promote changes of public behavior toward the environment, the river environment and ecology; and (b) make community residents aware of the road safety.

(ii) Develop its community participation manual.

(iii) Establish community base groups consisting of at least five members, and at least 40% woman and 30% low-income.

(iv) Provide training on implementation of the SDAP, GAP and community participation manual.

(v) Assist, guide, and monitor the implementation of social and environment protection.

34. **Capacity development for riparian wetland design and maintenance.** This capacity development sub-module will be provided by an international and national Wetland Ecologist and Wetland Management Specialist. The training will be enhancing the capacity to maintain the project river environments and ecology of riparian landscapes and wetland protection sub-components to enhance project benefits and sustainability. Detailed tasks include but are not limited to the following.

(i) Introduce international and domestic innovative concepts and good practice of riparian wetland management.

(ii) Review available relevant third party data, and undertake a field visit with the design team to familiarize with existing conditions, and proposed improvement works.

(iii) Design and deliver at least one training course for PMO and relevant bureaus of the PMG and IAs (including DRC, Planning Bureau, Water Affairs Bureau, Environmental Protection Bureau, etc.).

(iv) Work with the detailed design team to optimize the design of riparian wetlands, considering options for creation of wetland habitat features of value for nesting, sheltering and feeding birds and animals; and opportunities to enable public interaction, such as viewing platforms and information systems.

(v) Consult with relevant stakeholders, such as the IAs, Environmental Protection Departments and Water Resources Bureaus to agree measures to be adopted.

(vi) Provide guidance to IAs to the preparation of wetland management plans; organize on-the-job, local, in-province, and out-of-province training and study tours.

(vii) Provide any other support to ensure the successful implementation, operation and maintenance of the wetland subcomponents under the river rehabilitation components.

35. **Agriculture non-point source pollution reduction and management.** This capacity development sub-module will be provided by an agriculture or agronomy specialist and aims at capacity development and training for farmers to enable and promote significant reduction in non-point source pollution from farm fields to of rivers, soil and groundwater. Improve cropping practices that minimize use of synthetic fertilizers, pesticides and herbicides and instead promote organic options and improved crop management practices. This module has close linkage and collaboration with activities from the capacity development increasing flood resilience of farming practices module. This activity will introduce (i) improved cropping techniques such as Integrated Crop Management (ICM), (ii) Integrated Pest Management (IPM), and (iii) climate resilient cropping techniques and promote the use of organic fertilizer and low toxicity pesticides to make cropping systems efficient and reduce pollution. Key activities will include (i) training and services to disseminate improved production techniques for the major crops which are rice, rapeseed, and lotus; (ii) promote balanced plant nutrition through soil testing and fertilizer recommendations; and (iii) promote the use of and training in the making of organic fertilizers and how to use low toxicity pesticides.

(e) Wastewater management capacity development (CDM 4)

36. The purpose of this CDM is to improve capacity on wastewater operation, maintenance, and service provision, and to carry out policy dialogue and public consultations on tariff reform. This module will also provide training on rural wastewater management solutions, sanitation and septage management solutions and management. Three modules are anticipated and a national Wastewater Operation, Maintenance, and Service Specialist will be taking the lead in preparing and carrying out sub-module 1. The target audience is focused on the county level towns of Xuanfeng and Tongmu in which WWTPs will be constructed under the project but it will also include Xiangdong District and Lianhua County. A rural wastewater specialist qualified in village treatment schemes and construction and maintenance of septic tanks and septage management will be responsible for sub-modules 2 and 3 and provide training to PMO, PIUs and village communities. Detailed tasks include but are not limited to the following three sub-modules.

37. **Centralized wastewater collection and treatment operation and maintenance and service delivery improvement** (sub-module 1). This includes the following tasks.

(i) Training on operations and maintenance of new wastewater collection systems, pump station, and treatment plants.

(ii) Institutional capacity development on customer service procedures, customer data base, billing and collection system, tariffs.

(iii) Prepare and carry out wastewater and sanitation awareness raising programs.

(iv) Review and public consultations on wastewater tariff reform.

(v) Coordinate with the CERT to raise awareness of the usefulness of wastewater systems to protect public health and prevent pollution and the costs to operate and maintain these system.

(vi) Tariff reform policy dialogue with the PMG and the LGs with the objective of tariff structure that will reach cost recovery and ensures affordability of poor and low income households.

38. **Rural village and township wastewater treatment improvement** (sub-module 2). This includes the following tasks.

(i) Evaluate feasibility of small scale village level wastewater treatment technologies (e.g. reed-bed treatment)taking into consideration land requirements, climate, and capacity of village to operate and maintain.

(ii) Organize and conduct public meetings to explain village level wastewater treatment and typical costs.

(iii) Develop action plan to implement village scale treatment systems for interested communities.

39. **Household septic tanks and septage management improvement** (sub-module 3). This includes the following tasks.

(i) Review current construction of septic tanks.

(ii) Propose improved septic tank design.

(iii) Propose septic management and improvement actions including cleaning and disposal (septage management).

(iv) Discuss feasibility of septage disposal at existing or planned wastewater treatment plants effectively promoting urban-rural wastewater and septage management partnerships.

(f) Rural-urban road and traffic management and safety capacity development (CDM 5)

40. The purpose of this capacity development module is to improve capacity on road and traffic safety, sustainable rural-urban transport management, rural urban public and semi-public transport, intelligent transport management and ICT rural-urban transport application. The capacity development will be developed and training will be provided by the transport and safety specialists and include the following sub-modules.

41. **Capacity development in road and traffic safety.** An international traffic planner and a national road safety specialist will be responsible for the preparation and implementation of this capacity development and training sub-module. Detailed tasks include but are not limited to the following.

(i) Provide technical and management support to Pingxiang Municipal Transport Bureau for road safety improvement.

(ii) Review preliminary and detailed design for the Shangli-Luxi urban-rural road, evaluate road safety concerns and develop road safety improvement plan, covering pedestrian and bicycle traffic, non-motorized traffic, and public transport.

(iii) Conduct road safety audit along Shangli-Luxi urban-rural road to assess existing road safety situation, considering safety of vehicular and non-motorized transport.

(iv) Prepare and submit urban traffic safety auditing report.

(v) Assist EA/IAs to develop public education and public awareness campaign program to promote traffic safety.

(vi) Prepare and submit rural-urban transport improvement report outlining improvements on rural-urban transport, public transportation, public education, and awareness campaign program for road safety.

(vii) Coordinate with the nine CERTs to plan and implement road safety signals, signs, road markings, and training.

42. **Capacity development rural-urban transport management.** An international and a national Rural-urban Sustainable Transport Management Specialist will be preparing and implementing this training to the PMG and county/district transport bureaus. Detailed tasks include but are not limited to the following.

(i) Develop in consultation with the transport bureaus, stakeholders and the communities a rural-urban public transport plan including bus routing, locating bus stations and optimizing schedule.

(ii) Integrate and enable semi-public transport options and service providers through demand assessments and incentive mechanisms for less served areas to be served.

(iii) Assist CERT with road safety planning, community awareness campaigns and training.

(iv) Promote intelligent application of ICT and adaptation of apps for local use.

(g) Urban-rural development and governance partnership capacity development (CDM 6)

43. The purpose of this capacity development module is support the PMG and LGs in strengthening urban-rural development and supporting the recent trends of a balanced development among the core urban area, Xiangdong urban area, the three county cities, county towns and townships, as well as village upgrading programs. The capacity development is designed to ensure and enhance project benefits and sustainability by improving institutional capacity and carry out policy dialogue on various topics related to the infrastructure investments

under the project through strengthening the government's capacity in rural-urban integrated infrastructure development and promoting urban-rural partnerships for development and governance. Anticipated outcomes are improved urban and rural economic development planning, urban-rural supply chain enhancement, improved integration of urban-rural land use planning, transportation and settlement planning, and urban-rural environmental protection planning. The trainings and consultations aim at facilitating urban-rural institutional partnership and coordination in infrastructure and utility services management, urban-rural water, food, and environment management partnership development, development of urban-rural tourism and agri-tourism partnership development, improved agriculture crop growing, agriculture economy and supply chain integration and value added business development. The capacity development will be developed and implemented by all team members and additional resource persons will be engaged by the consultants for specific trainings and consultations. The following modules are suggested for reference and will need to be decided and further developed by the consultants in coordination with the PMG and LGs.[3]

44. **Capacity development in urban-rural integrated and balanced development.** An Urban-Rural Development Specialist and the Social Development and Community Participation Specialist will be leading the development and implementation of this capacity development sub-module. The aim will be to enhance institutional capacity and the coordination among the PMG and LGs for economic and urban-rural development and infrastructure planning. One of the key objectives is to enhance the benefits of the project investments from current and the future land uses and activities associated with the project infrastructure components. Detailed tasks include but are not limited to:

(i) carry out consultations and training on urban-rural economic development planning and economic and social development generating more benefits and synergies from the project;

(ii) strengthen capacity on assessment of endogenous development potentials for adding production and services in the primary, secondary and tertiary sectors;

(iii) assess and develop further opportunities for urban rural synergies through supply chain integration and completion, generating additional benefits and synergies from the project;

(iv) promote and facilitate urban-rural economic development partnership initiatives;

(v) provide training on intelligent Information and communications technology (ICT) systems and adaption of mobile apps to enhance market information in rural-urban Pingxiang;

(vi) provide training on assessment and inventory of abandoned mining and industrial sites and facilitate development of web-based database for reuse and marketing;

(vii) provide training on further spatial and institutional integration of urban planning of the core urban area, the Xiangdong urban area, Luxi city, Shangli City, and Lianhua City and the townships, towns and villages through structural and non-structural measures;

[3] Budget limitations of the consulting service package financed by loan will require prioritization and selection of capacity development sub-modules and the government will decide on which sub-module will be further developed and implemented in depth.

review development master plans of all cities and counties/districts master plans and identify missing urban functions and possible facilities that may be invested in and benefited together, and identify oversupply of residential, commercial and industrial land is applicable and promote coordinated development;

(viii) further strengthen the capacity on town and village upgrading and development; and

(ix) carry out policy dialogue on potentials for structural improvements and planning of key facilities and services that would promote urban-rural economic development including in the education and training sectors, research and development sectors, small and medium sized enterprise enabling environment sector, health and elderly care sector and others, and promote the development of an investment plan.

45. **Capacity development for urban-rural environmental master plan (UREMP) preparation for Pingxiang.** This capacity development module will be implemented by a team of international and national specialists in environmental protection, landscape planning, land use and urban master planning. The objective is to protect Pingxiang's valuable green spaces, mountains, forests, river watersheds, wetlands, ecologically sensitive areas and also farmland to maintain and enhance the open space system, its climate resilience and protect the image as a green city benefitting from its healthy environment both as natural resource, environmental infrastructure and as asset for residents, tourism and investments. The UREMP will guide further land use planning and urban master planning. Detailed tasks include but are not limited to:

(i) develop a UREMP for Pingxiang during loan implementation using the technical guidebook prepared by the Ministry of Environmental Protection;

(ii) institutionalize inter-departmental and cross-jurisdictional coordination and partnerships for environmental protection;

(iii) provide capacity development for planning, implementation, monitoring, evaluation and enforcement of UREMP and develop and fund an institution and research that provide technical support;

(iv) develop environmental management, monitoring, governance and enforcement systems, and incentives and eco-compensation mechanisms promoting urban-rural environmental protection partnerships;

(v) integrate UREMP with the PMG and its larger scale regional planning and urban-rural good practices planning for green, inclusive and competitive development; and

(vi) engage in public outreach, conduct awareness campaigns, and stakeholder consultations and participation during planning, operation and monitoring.

46. **Improved farming productivity and local market access and supply chain integration.** Identify potential high economic value crops and training in the establishment and management of such crop systems and value chain development. This activity will help to increase the productivity and economic gain from agricultural land from the cropping of high

value crops with good market opportunities. Apart from crop establishment and value chain development consideration should also be given to institutional arrangements at the production level with establishment of and capacity building for cooperatives and agri-enterprises as well as way to enhance farmer participation. This may include establishing cooperation contracts between farmers and cooperatives and/or enterprises to provide the production base for these new agri-businesses, or land transfer from farmers and/or village collectives to agro-enterprises under circumstances which ensure equitable benefits and legal transfer for all parties. Key activities will include: (i) agronomic assessment of the current production systems and agronomic conditions; (ii) recommendations for potential new and/or high economic value crops and their market potential; (iii) establish production bases for these high economic value crops; (iv) training and capacity building for farmers, cooperatives and agri-enterprises in crop establishment and management, including best practices for fertilizer and pesticide use; and (v) training in value chain promotion through development of agribusiness and market opportunities.

47. **Urban-rural tourism and agri-tourism partnership development.** An agri-tourism specialist will be develop and provide this training and strengthen the governments' activities and coordination in the sector. Activities will include (i) assessment of agri-tourism strengths and weaknesses; (ii) place branding and marketing; (iii) activities and benefits to farmers, i.e., direct marketing of produce, farmer bed-and-breakfast, farmer restaurants, self-pick fruit fields and orchards, supply contracts of local farmers and hotels, etc.; (iv) possibilities of integration with flood resilient farming practices, i.e., landscape attractiveness and flower festivals; (v) local and regional product identity development and marketing and sales chains integration with agri-tourism and value added locally through enhanced food and farming produce processing and local production; and (vi) support preparation of an agri-tourism masterplan.

Table 16: Indicative list of Training Program and Study Tours for Project Management, Monitoring, and Reporting[a]

Training Program	Scope of Training	Trainer	Participants
ADB disbursement procedures and financial management	• ADB loan disbursement procedures • Roles and responsibilities of stakeholders • Flow of funds and utilization of loan proceeds • Risks of disbursement delays	LIC	PMO, PIU, PMG and LG FB
Project financial management system and financial audits	• Basic financial management of project by implementing agencies. • Annual financial audit requirements of ADB and PRC.	LIC	PMO, PIU, PMG FB, LG FB
Procurement and contract management	• ADB procurement policy • ADB procurement procedures • Tender document preparation • ADB tender evaluation guidelines, bid evaluation report preparation • Risks and implications of improper tendering and corrective measures • Variation orders and contract management	LIC	PMO, PIU, PMG FB, LG FB,
Corruption risks and anticorruption measures	• Definition, nature and types of corruption • Risks of corruption in project implementation • What to do in case that corruption is identified and mitigation measures • Case studies and international best practices	LIC	PMO, PIU
Project management, scheduling, and budgeting	• Basic principles of project management • Project scheduling using computer software (Excel, MS project) • Project budgeting, forecasting, monitoring	LIC	PMO, PIU, LG staff
Report preparation	• Templates of recurring reports[b]	LIC	PMO, PIU, LG

Training Program	Scope of Training	Trainer	Participants
and record keeping	• Schedule for report preparation • Records storage and retention • Organization of electronic files • Security of documents (hard copy and electronic)		agencies and staff involved in the project
Environmental monitoring	• ADB environmental requirements • Project EMP • Monitoring and reporting	LIC	PMO, PIU, PMG and LG EPB
Land acquisition and resettlement	• ADB and government social, resettlement and compensation requirements • Project RPs • Monitoring and reporting • Grievance procedures and corrective actions	LIC	PMO, PIU, LG agencies
Implementation of GAP, SDAP, and other ADB requirements	• Establishing effective monitoring and information flow mechanism • Key indicators and methodology of data collection • GAP and SDAP update, implementation, monitoring and reporting • Community development and participation • Prevention and control of transmissible diseases and HIV/AIDS	LIC	PMO, PIU, LG agencies
Project benefit monitoring and evaluation	• PPMS • Roles and responsibilities for implementation of PPMS • Mechanisms for measurement of project outputs and outcomes • Beneficiary surveys on public perceptions of infrastructure and service delivery	LIC	PMO, PIU, other PMG and LG bureaus and agencies
Workshops on key project issues	• As needed, workshops on project progress and execution and implementation issues	LIC	PMO, PIU, others as needed
Study tours	• Study tours to PRC locations to observe and discuss ADB Loan implementation, scheduling reporting, record keeping • Domestic and overseas training and study tours according to PRC guidelines and budget to locations with good practices for flood risk management, ecological river management, rural town wastewater management, and rural road safety management and public transport.	LIC	To be determined

ADB = Asian Development Bank, DMF = design and monitoring framework, EMP = environmental management plan, EPB = environmental protection bureau, FB = finance bureau, GAP = gender action plan, RP = resettlement plan, LG = local government, LIC = loan implementation consultants engaged under CS1, PIU = project implementation unit, PMG = Pingxiang municipal government, PMO = project management office, PPMS = project performance monitoring system, PRC = People's Republic of China, SDAP = social development action plan.

[a] Training listed in this table is only indicative and not in chronological order. LIC will develop details based on needs assessment.

[b] Examples: project progress reports, environmental monitoring reports, resettlement monitoring reports; compliance with loan covenants, financial reports, procurement reports, etc.

Source: Asian Development Bank.

2. Capacity Development Indicative Training Program and Study Tours

48. The capacity development technical assistance will include workshops, field visits, and training activities including lectures, demonstration, and hands-on practice demonstrations. Each specialist responsible for a capacity development module will develop a relevant training program as part of their work plan. These capacity development activities as well as the study tours will be coordinated by the Project Management Support Consultant (i.e., loan implementation consultants "LIC") under the guidance of PMG, LGs, PMO and PIUs. In the below table the trainer is the Capacity Development Specialist and the Participants are the IA, PIU, and operating agency for the infrastructure funded by the loan.

Table 17: Indicative List of Training for Capacity Development[a]

Training Program	Scope of Training	Trainer	Participants
Urban-rural flood risk management	• Integrated land use planning, structural and non-structural measures, climate resilience, flood early warning, and disaster preparedness, flood resilient farming • Flood risk management community-based plan	LIC	PMO, PIU, PMG WABs, EPBs, ABs, and others concerned
Urban-rural river environment and pollution reduction	• Community environment supervision solid waste management and awareness raising, water safety plan implementation, agriculture non-point source pollution reduction, river ecology, wetland design and maintenance, biodiversity enhancement	LIC	PMO, PIU, PMG WABs, EPBs, ABs, and others concerned
Riparian wetland Design and management	• Purpose, planning, composition of riparian wetlands • Design and plant selection • Maintenance of riparian wetlands • Monitoring wetlands	LIC	PMO, PIU, PMG WABs, EPBs, ABs, and others concerned
Wastewater management capacity	• O&M of wastewater collection system (pipes and pump stations) • O&M of WWTP • Monitoring and recording of system performance and using the data for budgeting and asset replacement planning • Service delivery objectives • Customer relations • Resolving problems with customers	LIC	PMO, PIU, PMG WABs, EPBs, HURCBs
Village scale wastewater systems and home septic tanks	• Wastewater technologies suitable for rural villages • Facility sizing and location • Design and construction of environmentally sturdy home septic tank; maintenance • Planning septage disposal	LIC	PMO, PIU, PMG WABs, EPBs, HURCBs, ABs
Rural-urban road and traffic management and safety	• Principles of road safety and data collection to monitor it • Planning and implementing corrective action • Involving the community in road safety	LIC	PMO, PIU, PMG TBs, PBs, and others concerned
Facilitating public transportation on rural-urban roads	• Rural urban public and semi-public transport, • Community involvement in selecting passenger pick-up and drop-off points • Intelligent ICT rural-urban transport application	LIC	PMO, PIU, PMG TBs, PBs, and others concerned
Urban-rural development	• Land use, economic development, transportation and settlement planning, environmental protection, urban-rural institutional coordination for infrastructure and utility services, agriculture crop growing, urban-rural tourism, and agri-tourism • Urban-rural master planning	LIC	PMO, PIU, PMG DRCs, PBs, ABs, and others concerned
Ecological shelter belts for agriculture areas	• Types of agro-forestry shelter belts • Planning shelter belts • Maintenance of shelter belts	LIC	PMO, PIU, PMG WABs, EPBs, ABs, and others concerned
Community environment supervision and roads safety education team	• This is a requirement of the project GAP and SDAP • Purpose, organization, staffing • Implement social and environment protection • Community participation manual	LIC	PMO, PIU, PMG WABs, EPBs, ABs, and others concerned
Climate-resilient infrastructure and urban development	• Climate change projections and related climate risks • Climate-proofing strategies for urban and rural development;	LIC	PMO, PIU, PMG PBs, WABs, EPBs, ABs, and others concerned

AB = agriculture bureau, DRC = development reform commission, EPB = environmental protection bureau, GAP = gender action plan, HURCB = housing and urban-rural consolidation bureau, ICT = information and communication

technology, LIC = loan implementation consultant, O&M = operation and maintenance, PIU = project implementation unit, PMG = Pingxiang municipal government, PMU = project management unit, SDAP = social development action plan, WAB = water affairs bureau, WWTP = wastewater treatment plant.

[a] Training listed in this table is only indicative and not in chronological order. LIC will develop details based on needs assessment.

49. **Team of specialists required**. To carry out the scope of work and tasks outlined above, the consulting firm will provide a total of 30 specialists (11 international, 19 national) for a total of 226 person-months (38 international, 188 national). All consultants will be duly qualified with respective relevant academic degrees equivalent to masters degrees or higher. All international experts will have at least 15 years and all national experts will have at least 8 years of experience in their respective fields relevant to the project's requirements. Specialists required are in Table 18.

Table 18: Summary of Project Implementation Consulting Services Inputs

	Area of Expertise[a]	International (person-months)	National (person-months)
1	Team leader/deputy team leader: civil engineers/project management specialists	10	40
2	River rehabilitation and flood control specialist	7	8
3	River wetland ecologist and design specialist	4	10
4	Wastewater engineering and rural sanitation specialist		10
5	Wastewater operation, maintenance, and service specialist	2	10
6	Road engineers	2	10
7	Traffic safety specialist	3	10
8	Rural transportation management specialist	3	8
9	Procurement and contract management specialist		12
10	Financial management and disbursement specialist		18
11	Financial specialist		3
12	Economist		3
13	Social development, gender and community participation specialist	3	12
14	Resettlement safeguards specialist		9
15	Environmental safeguard specialist		9
16	Climate change adaptation specialist	2	4
17	Urban-rural development specialist	1	5
18	Environmental protection and landscape specialist	1	4
19	Agriculture agronomy specialist		3
	Total person-months	38	188

[a] In addition, some specialists will be engaged as resource persons to carry out specific training programs and events.

Source: Asian Development Bank estimates.

2. External social and resettlement monitoring services (Contract Package CS2)

50. A national resettlement and social development consulting firm will be engaged for the whole duration of project implementation to act as external social and resettlement monitor (ESRM). The institute with estimated total input of 38 person-months of national consultants will be engaged by CQS method. The ESRM will provide technical and management support to ensure compliance during project implementation with the resettlement plans. The ESRM will be responsible for land acquisition and resettlement management training. Specific tasks include:

(i) assist the PMO, IAs and PIUs to establish a project-level resettlement and social development management system, consisting of relevant staffing, inspection, monitoring, grievance redress mechanism, and reporting on the project safeguards and social issues based on the RPs, GAP and SDAP, and provide support for their implementation;

(ii) assess the project components' resettlement readiness prior to implementation;

(iii) assist PIUs in contracting of environment supervision consultants (ESC) for each civil works contract;

(iv) assist the PMO and PIUs to ensure the implementation of GAP and SDAP requirements through consultations, workshops and group discussions;

(v) assist the PMO and PIUs to establish a Grievance Redress Mechanism (GRM), and provide training for the GRM access points;

(vi) prepare semiannual resettlement and social monitoring and progress reports to ADB;

(vii) prior to midterm review mission, provide support to PMO and PIUs in organizing public meetings in the project city/towns to present and discuss RP implementation progress, solicit community opinions and concerns, and agree on required corrective actions;

(viii) prior to project completion, organize surveys in the project city/town to assess community satisfaction with project implementation, project outputs, and RP implementation performance, and document the results in the project completion report (PCR);

(ix) provide input on resettlement plan implementation, gender and social development action plan to progress report, midterm report, project completion report, and other project required documents.

51. **Team of specialists required**. To carry out the scope of work and tasks outlined above, the consulting firm will provide a total of 4 national specialists for a total of 38 person-months. All consultants will be duly qualified with respective relevant academic degrees equivalent to Masters Degrees or higher and have at least 8 years of experience in their respective fields relevant to the project's requirements. Specialists required are in Table 19.

Table 19: Summary External Social and Resettlement Monitoring Services Inputs

	Area of Expertise	**National** (person-months)
1	Team leader: resettlement monitoring senior specialist	6
2	Deputy Team Leader: social and resettlement monitoring specialist	12
3	Resettlement monitoring assistant	12
4	Social monitoring assistant	8
	Total	**38**

Source: Asian Development Bank estimates.

3. External environment monitoring services (Contract Package CS3)

52. A national environment consulting firm will be engaged for the whole duration of project implementation to act as external environment monitor (EEM). The institute with estimated total input of 20 person-months of national consultants will be engaged by CQS method. The EEM will provide technical and management support to ensure compliance during project implementation with the environmental impact assessment (EIA) and environmental

management plan (EMP). The EEM will be responsible for environmental management training, independent environmental verification, and appointment and management of licensed environmental quality monitoring institute(s) to conduct periodic environment quality monitoring. Specific tasks include:

(i) assist the PMO, IAs and PIUs to establish a project-level environmental management system, consisting of relevant staffing, inspection, monitoring, grievance redress mechanism, and reporting;

(ii) assess the project components' environmental readiness prior to implementation based on the readiness indicators defined in Table EMP-6 in the EMP;

(iii) assist PMO to update the EMP including the mitigation measures and environmental monitoring program therein, based on the detailed engineering design and submit for executing agency and ADB's clearance and disclosure;

(iv) assist PIUs in contracting of environment supervision consultants (ESC) for each civil works contract;

(v) review and clear site EMPs;

(vi) assist the PMO and PIUs to establish a grievance redress mechanism (GRM), and provide training for the GRM access points;

(vii) conduct independent verification of the project's environmental management performance, undertake site visits as required, identify any environment-related implementation issues, propose necessary corrective actions, reflect these in a corrective action plan;

(viii) contract local environmental monitoring stations (EMS) or other licensed institutes to conduct environmental impact monitoring according to requirements specified in the EMP during construction (Table EMP-6); coordinate the external environmental impact monitoring (excluding fish monitoring); compare the predicted with the actual environmental impacts, assessing the effectiveness of the mitigation measures, and suggesting enhancement measures, as required;

(ix) prepare semiannual environmental monitoring and progress reports to ADB;

(x) prior to midterm review mission, provide support to PMO and PIUs in organizing public meetings in the project city/towns to present and discuss EMP implementation progress, solicit community opinions and concerns, and agree on required corrective actions;

(xi) prior to project completion, organize surveys in the project city/town to assess community satisfaction with project implementation, project outputs, and EMP implementation performance, and document the results in the project completion report (PCR);

(xii) provide input of environmental protection to progress report, midterm report, project completion report, and other project required documents; and

(xiii) service completion report.

53. **Team of specialists required**. To carry out the scope of work and tasks outlined above, the consulting firm will provide a total of 2 national specialists for a total of 20 person-months. The consultants will be duly qualified with respective relevant academic degrees equivalent to Masters Degrees or higher and have at least 8 and 4 years of experience in their respective fields relevant to the project's requirements. Specialists required are in Table 20.

Table 20: Summary External Environmental Monitoring Services Inputs

Area of Expertise	National (person-months)
1 Team leader: environment senior specialist	8
2 Deputy team leader: environment specialist	12
Total	**20**

Source: Asian Development Bank estimates.

4. Project implementation startup support consulting services (Contract Bundle CS4)

54. Contract bundle CS4 consists of five individual contracts for a total of 10 person-months of national consultants engaged as experts working for the PMO and the PIUs. The individual experts will be engaged in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The consultants will be selected and engaged following the individual consultant selection (ICS) method and will work on an intermittent basis with a schedule and field time agreed with the PMO. The experts to be recruited are (i) Procurement Specialist/Team Leader, (ii) Project Management Specialist, (iii) Financial and Accounting Specialist, (iv) River Rehabilitation and Wetland Specialist, and (v) Road Construction and Traffic Safety Specialist.

Table 21: Summary of Individual Consultants

Area of Expertise	Duration (person-months)
National	
Procurement specialist/team leader	3
Project management specialist	2
Financial and accounting specialist	1
River rehabilitation and wetland specialist	2
Road construction and traffic safety specialist	2
Total	**10**

Source: Asian Development Bank estimates.

5. Objective of the consulting services

55. The purpose of the project implementation start-up support consulting services is to assist the PMO to organize for project implementation; assist the PMO and PIUs to (i) procure national companies for design, tendering, and construction supervision; (ii) procure an international company for project support and capacity development; (iii) assist the PMO to prepare and award contracts for construction of civil works and procurement of goods; (iv) advise and review the preliminary engineering of river and road sub-components to assure compliance with ADB loan covenants and assurances and alignment with the FSRs and the recommendations by the PPTA consultants; and (v) establish a document reporting, tracking, and retention system.

6. Scope and Tasks of Consulting Services

56. Below are the specific tasks of the consulting services:

(i) assist the PMO in procuring the (a) National Tendering Agency; (b) National Construction Supervision Company (1 per construction work); and the International Project Implementation Consultant Firm, i.e., finalize TORs and requests for proposals, prepare a shortlist of firms, assist in the evaluation of CVs, technical and financial proposals, and document the selection;

(ii) provide support for advance contracting including assistance reviewing bidding documents for procurement of civil works and goods; prepare documents to comply with ADB Guidelines for procurement;

(iii) set up financial record keeping system to document costs that can be submitted to ADB for retroactive financing (i.e. costs for Advanced Contracting);

(iv) consult with Design Institutes preparing Preliminary Engineering Designs for the river and road sub-components;

(v) assist PMO and the Implementing Agencies (IA) to (a) update the Land Acquisition and Resettlement Plan (LARP); (b) start land acquisition; and (c) establish an internal (i.e. within PMO) resettlement monitoring system;

(vi) provide advice and assistance to PMO and the IA to make sure compliance with requirements for documentation and record keeping as specified in the loan agreement and project agreement; and

(vii) provide PMO and the IA) with management and technical assistance to make sure all the activities are planned and prepared in accordance with relevant ADB policies, procedures and guidelines.

7. Implementation Arrangements

57. The consulting services will be carried out over a 4-month period and will require domestic inputs. Consultants will work directly for the PMO. Individual consultants will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) and other arrangements satisfactory to ADB on the recruitment of domestic consultants. Previous experience in the PRC on ADB loan implementation is preferred.

8. Outline Terms of Reference for Consultants

(i) Procurement Specialist/Team Leader

58. The Procurement Specialist will have as a minimum a university degree in management, accounting, or related field with demonstrated knowledge of procurement systems and processes. He/she will have at least 10 years of experience in procurement of civil works, goods and services in the PRC including international competitive bidding and preferably on ADB projects or other international donor agencies. Knowledge of ADB or other international donor organization procurement guidelines and procedures will be required. This position requires English language proficiency. The Procurement Specialist will also serve as Team Leader and

will report directly to the PMO. Tasks and responsibilities of the Procurement Specialist include but are not limited to the following:

(i) provide assistance for procurement packages designated for advanced contracting;

(ii) organize the procurement process and prepare the documentation including bidding documents, employer's requirements, bid evaluation report, etc., for procurement packages tendered for advanced contracting;

(iii) provide assistance to the PMO and to the tender evaluation committee in the tendering process for the procurement under the project in accordance with ADB procurement guidelines, including: (a) preparation of terms of reference, (b) preparation and publication of invitations to bid, (c) coordination of answers to bidders' queries, (d) evaluation of tenders, and (e) preparation of bid evaluation reports;

(iv) work with the project management specialist to prepare the TOR for the National Tendering Agency and the National Construction Supervision Company (1 per construction works) and assist the PMO to review company submittals and selection;

(v) coordinate the processes of non-objection by the ADB during the procedures of evaluations of tenders and consultant's proposals;

(vi) support the PMO in preparing the necessary documentation for contract signing and consultant and contractor mobilization;

(vii) as team leader review the work plans (tasks, schedule, and resources) prepared by team members and at end of their assignment, receive from each team member a project completion report describing their work; and

(viii) provide a written report and presentation to the project implementation consultant firm about startup activities and status of procurement.

(ii) Project Management Specialist

59. The Project Management (PM) Specialist will have a master's degree in management or a technical field relevant to the project and with a minimum of 10 years of relevant experience including with ADB loan implementation. The Specialist will report directly to the head of the PMO. His/her tasks will include but not be limited to the following activities:

(i) assist the PMO to update the TOR for the International Project Implementation Consultant Firm. Under guidance from the Procurement Specialist issue requests for proposals, prepare a shortlist of firms, assist in the evaluation of proposals, and document the selection;

(ii) organize and maintain a project filing system according to specifications by the PMO and ADB. This filing system is for both hard copy and electronic files and will be used by all startup consultants and the PMO office;

(iii) provide administrative and operational assistance for the PMO; and

(iv) handover documents and files to the Project Implementation Consultant Firm and provide a report and presentation on current status, methods and procedures, outstanding issues.

(iii) Financial and Accounting Specialist

60. The Financial and Accounting Specialist will have a university degree in finance, economics, or related field, or be a chartered accountant. He/she will have at least 10 years of relevant experience working in project finance, accounting and financial reporting under ADB or other comparable international environment. He/she will report to the PMO and will work closely with the financial and accounting specialists of the PMO and the PIUs. Tasks and responsibilities of the specialist will include but is not limited to the following:

(i) set up the project financial management system to document costs incurred during Advanced Contracting for which the PMO will apply to ADB for retroactive financing;

(ii) prepare application for retroactive financing;

(iii) work with PMO and PIUs to prepare request for funds to submit to ADB; and

(iv) provide a written report for the Project Implementation Consultant Firm about work accomplished

(iv) River Rehabilitation and Wetland Specialist

61. The expert will have a university degree in civil engineering or related field and a minimum of 10 years of experience with planning, design, construction of river infrastructure or wetland protection in the PRC. He/She will report to the PMO. Tasks and responsibilities will include but are not limited to the following:

(i) review ADB project documents, PPTA reports and FSRs, to familiarize with the design concept;

(ii) meet with staff of the design institutes in charge of the preliminary and detailed engineering design to discuss the design concept and requirements and try to resolve any issues the design engineers have in complying;

(iii) coordinate between the resettlement institute and the design institute to minimize acquisition of land and buildings and assist the resettlement institute obtain the design details they need to update the resettlement plan, e.g. detailed measurement survey after preliminary design; and

(iv) review design documents and advise design institutes on the recommendations made by the PPTA consultants and the assurances and covenants of the loan documents on environmentally sustainable river embankment design and riparian wetland protection and rehabilitation.

(v) Civil Engineer - Road Construction and Traffic Safety Specialist

62. The expert will have a university degree in civil engineering or related field and a minimum of 10 years of experience with planning, design, construction of road infrastructure in the PRC. He/She will report to the PMO. Tasks and responsibilities will include but are not limited to the following:

(i) review ADB project documents, PPTA reports and FSRs, to familiarize with the design concept;

(ii) meet with staff of the design institutes in charge of the preliminary and detailed engineering design to discuss the design concept and requirements and try to resolve any issues the design engineers have in complying;

(iii) coordinate between the resettlement institute and the design institute to minimize acquisition of land and buildings; and assist the resettlement institute obtain the design details they need to update the resettlement plan, e.g., detailed measurement survey after preliminary design;

(iv) review design documents and advise design institutes on the recommendations made by the PPTA consultants and the assurances and covenants of the loan documents;

(v) review the design for the road and advise the design institute on road and traffic safety, intersection design, road marking, pedestrian crossings, signage, signals and lighting; and

(vi) assist the design institute with locating the bus stops and ensure safe design with bus-laybys and pedestrian crossings and signage.

(vi) Social Development, Gender and Community Development Specialists (international - 3 months, national – 14 months)

63. The specialists shall have basic qualification in social science, gender and participation studies, or related fields; and have at least of 8 years of experience in social development, gender and participation, particularly for community participation and self-management in the field of environment, flood risk management and road safety. The specialists will:

(i) review and update the gender action plan (GAP) and social action plan (SDAP), if necessary;

(ii) assist Pingxiang project management office (PMO) to establish social and resettlement management mechanisms for implementation, monitoring and reporting of the project GAP and SDAP and provide support for their implementation;

(iii) conduct regular monitoring of GAP and SDAP, and assist Pingxiang PMO to gather sex- disaggregated data for the PPMS, where relevant; and prepare social development, gender and community participation section in the semi-annual monitoring reports;

(iv) based on the review of all the community development and participation-related

documents of the project, prepare a community development plan and participation strategy;

(v) assist PMOs to select pilot communities and to establish Community Environment Supervision and Roads Safety Education Team (CERT) in each pilot community;

(vi) design and assist in delivering the training programs on GAP, SDAP and community development and participation;

(vii) assist the CERT to develop Community Participation Manual to guide implementation of the social, gender and environment protection measures;

(viii) assist the PMO and implementing agencies in supervising contractors to ensure compliance with requirements of the GAP, and SDAP; and applicable laws and regulations;

(ix) monitor compliance with GAP, and SDAP; assess the degree of impacts and key implementation issues; explain key issues to the PMO and implementing agencies; and assist them in conducting follow-up actions to address the key issues; and

(x) undertake any other necessary work assigned by the team leader.

9. Reporting requirements

64. All reports required for the consulting services contracts under the project must be prepared in both English and Chinese language. The PMO will decide on the number of copies of reports to be provided by the consultants to the PMO and will distribute reports to relevant PMG and Local Government agencies and an electronic copy of all reports in English language will be submitted to ADB.

Table 22: Consulting Services Reporting Requirements

Category	Schedule	Target Audiences
Inception report	Within one month after PMG PMO issues the notice to proceed of Consulting service	PMO, ADB
Semiannual progress reports	During implementation period, semiannual (end of Jan and Jul)	PMO, ADB
Midterm report	Middle point of implementation	PMO/ADB
Project completion report	One month before ADB PCR mission	PMO/ADB
Annual environment monitoring reports	Annual (end of Jan)	PMO/ADB
Annual resettlement monitoring report	Annual (end of Jan)	PMO/ADB
Semiannual external resettlement and social reports	Semiannual	PMO/ADB
Revisions to environmental monitoring plan	After preparation of the Detailed Engineering Design	PMO/ADB
Revisions to resettlement plans	After preparation of the Detailed Engineering Design	PMG/PMO/ADB
Draft program for domestic and international study tours[a]	End of the first year	PMO/ADB
Reports for each capacity development activity	Two months after completion of activity	PMO/ADB
All training materials	After each lecture	PMO
All public education materials	After preparation	PMO

[a] International study tours must comply with PRC regulations and guidelines.

D. Procurement Guidelines and Resources

http://www.adb.org/Documents/Guidelines/Procurement/default.asp
Procurement Guidelines (in Chinese)
http://www.adb.org/Documents/Translations/Chinese/Guidelines-Procurement-CN.pdf

Guidelines on Use of Consultants by ADB and Its Borrowers
http://www.adb.org/Documents/Guidelines/Consulting/default.asp

Consulting Services Recruitment Notice:
http://csrn.adb.org
http://csrn.adb.org:8080/csrn/login.jsp

Templates for engagement of consultants: (including submission templates)
http://www.adb.org/Consulting/loan-rfp.asp

Harmonized RFP (Loans)
http://www.adb.org/Consulting/all-methods-loan.asp

Sample Individual consultant contract
http://www.adb.org/Consulting/ICS-Contract-Loan.pdf

Consulting Services Operations Manual
http://www.adb.org/Documents/Manuals/Consulting-Services-Operations-Manual/CSOM.pdf

Toolkits and Templates for Consultants:
http://www.adb.org/Consulting/toolkit-template.asp

Procurement Documents:
http://www.adb.org/Procurement/prequalification-bid-documents.asp

User's Guide (Procurement of Goods)
http://www.adb.org/Documents/Manuals/Bidding_Documents/Goods/SBD-Goods-Users-Guide.pdf

User's Guide (Small Civil Works – below10 Million USD)
http://www.adb.org/Documents/Manuals/bidding_documents/prequalification/SBDWorks-sml-UserGuide.pdf

Guide on Bid Evaluation
www.adb.org/Procurement/guide-bid-apr06.pdf

Procurement Plans
http://www.adb.org/Projects/reports.asp?key=reps&val=PP

Electronic Procurement
http://www.mdbegp.org/www/eGPInteractiveus/tabid/69/language/en-US/Default.aspx

E-GP (Electronic Government Procurement) Toolkit
http://www.mdbegp.org/www/eGPToolkitus/tabid/67/language/en-US/Default.aspx

Project Administration Instructions
http://www.adb.org/Documents/Manuals/PAI/default.asp

E-Handbook on Project Implementation
http://www.adb.org/documents/handbooks/project-implementation

Anticorruption and Integrity
http://www.adb.org/Integrity/default.asp

How to report fraud and corruption
http://www.adb.org/Integrity/howto.asp

VII. SAFEGUARDS

1. Pursuant to ADB's Safeguard Policy Statement (2009) (SPS), ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS.

A. Environment

2. **Environment safeguard categorization, due diligence.** The project was classified by ADB as Category A for environment. A project environmental impact assessment (EIA) including environmental management plan (EMP) was drafted and disclosed in May 2015 in compliance with ADB's policies and requirements including ADB's Safeguard Policy Statement (SPS, 2009).[1] The EIA consolidates findings of five environmental impact reports (EIR) and six environmental impact tables (EIT) for all project components by a licensed institute,[2] and five soil erosion protection plans (SEPP) prepared for the river rehabilitation and rural-urban road components by five licensed institutes.[3] The domestic safeguards documents were prepared in compliance with the PRC Law on Environmental Impact Assessment (2003), the Technical Guidelines for Environmental Impact Assessment (HJ/T2-93) and other relevant PRC regulations and guidelines. All domestic EIRs, EITs and SEPPs have been approved by relevant environment protection and water resources management authorities. The EIA also incorporated findings of special studies prepared for the project, including (i) a climate risk and vulnerability assessment (CRVA) supported by ADB;[4] (ii) a fishery resource impact assessment for Pingshui River[5] (national-level aquatic products protection zone), approved by the Ministry of Agriculture in 2013; and (iii) a fishery resource impact assessment for Yuan River (provincial-level protection zone for the Pingxiang Red Transparent Crucian Carp, approved in April 2015 by Jiangxi Province Agriculture Department.

3. **Environment benefits.** The project will have significant environment, health, and safety benefits. Key benefits relate to flood risk mitigation and point-source pollution reduction. The Project will construct and rehabilitate unstable river embankments, significantly improving the cities' and towns' ability for flood control and protection. Consequently, damages of floods to houses, facilities and goods, as well as farm lands and crops, will be prevented and/or mitigated. The most direct benefit of the Project will be that the flooding of an estimated 29-km^2 area will be avoided should a 1-in-20-year or 1-in-10 year flood occur. The project will also expand the service area of urban wastewater collection and treatment. Pollution reduction as a result of improved wastewater collection and treatment systems are estimated at 657 tons per year (t/a) of COD, 402 t/a of BOD, 64 t/a of TN, and 13 t/a of TP. This will improve the water quality in the Lishui and Yuan rivers, benefiting domestic, industrial, agricultural, and recreational water users, as well as river ecology and aesthetics.

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[1] ADB. 2009. *Safeguard Policy Statement*. Manila.

[2] Jiangxi Provincial Environmental Protection Science Research Institute (JPEPSRI).

[3] Xinyu City Hauda Engineering Consulting Company, Nanchang City Water Resource Planning & Design Institute, Fengcheng City Hong'an Engineering Design Consulting Company, Pingxiang City Water Resource and Hydropower Survey and Design Institute, and Shaoxing City Water Resource and Hydropower Survey and Design Company.

[4] The CRVA allowed the review of design assumption for the flood risk management components, and specific design adaptations to be incorporated with the flood management and roads subprojects - targeting landslide and stability dangers from increased rain events and implementing non-engineering approaches to flood management.

[5] In accordance with Interim Measures for the Management of Aquatic Germplasm Resources Conservation Zone (2011, MoA) and Guideline for the preparation of the Impact Assessment Report of Construction Project relating to National Aquatic Germplasm Resources Conservation Zone (2014, MoA).

4. **Anticipated impacts and mitigation measures during construction.** Potential impacts of the planned river rehabilitation works include significant earthwork and sediment dredging, and damage to in-channel habitats and aquatic fauna with potential impacts on fish protection zones Pingshui River National Aquatic Germplasm Resources Conservation Zone) and the Yuan River provincial-level protection zone for the Pingxiang Red Transparent Crucian Carp). Approximately 3.55 million m^3 of soil will be excavated during rehabilitation of the eight Project Rivers. Back fill materials would total approximately 1.44 million m^3, consisting of re-using approximately 1.22 million m^3 of earth cut materials and obtaining approximately 0.22 million m^3 from borrow areas. The remaining 2.33 million m^3 of earth cut material would require disposal. This mainly includes the 2.07 million sediments to be dredged from river beds. Dredging works could result in elevated levels of sediments within and downstream of the dredge sites, and the release of pollutants in the channel sediments. Heavy metals (Cadmium) and persistent organic pollutants (Lindane, or benzene hexachloride) have been identified in some river sediments, which will require adequate treatment and handling. Dredging, as well as the construction of extensive riverside embankments for flood control and bank remediation, will impact in-channel habitats and areas of modified habitat. For the in-channel habitats, long term impacts on aquatic fauna are anticipated to be minimal, with organisms re-establishing soon after project completion.

5. The following mitigation measures defined in the EMP will be taken during construction to minimize impacts to water quality and in-channel habitats: (i) operating in short river sections to minimize the extent of disturbance at any one time; (ii) for dredging in the small rivers (Yuan, Xinhua, Tankou, Lishui, Jinshan), using coffer dams to divert flow, so that spoil removal is “dry”; (iii) for dredging in the larger rivers (Lianjiang, Biama, Pingshui), employing special underwater suction dredge cutter heads which are designed to limit suspended solids dispersion to 15 m; (iv) drying of dredge spoil prior to disposal, which will reduce the spoil volume from 2.07 million m^3 to less than 1.0 million m^3 (~53% reduction); (v) compliance with quality of in-channel sediment with the PRC standard for re-use (confirmed by sampling and leaching test); and (vi) dredging in the Pingshui and Yuan rivers will not be conducted from April to June and March to June respectively in compliance with the relevant fish protection zone management plans to minimize the impact on these zones. A range of embankment designs were reviewed during project preparation. Designs which maximize the re-establishment of native vegetation and rocks were selected. From the toe zone to the top of the embankments will be planted with grasses, shrubs and trees, as well as submerged, floating and emergent aquatic plants to enhance ecological and biodiversity values. Some 90 ha of riparian areas along the Project Rivers in Lianhua and Luxi Counties will be re-vegetated. Small wetlands will be enhanced and/or established, with a total area of some 46 ha.

6. The proposed road (44-km, class II secondary highway) connecting Shangli County with Luxi County, will require significant cut (1.73 million m^3) and fill (3.70 million m^3) along the road corridor, which will likely induce soil erosion, construction noise and vibration, fugitive dust, and community and occupational health and safety risks. These impacts will be localized, short term, and can be effectively mitigated through the application of good construction and housekeeping practices and implementation of construction phase community and occupational health and safety plans. The road alignment accounted for landform, avoiding farmland and houses as much as possible. The Yangqishan Scenic Area Management Committee confirmed that the road will not encroach on the special zone of the municipal-level Yangqishan Scenic Area, classified as International Union for the Conservation of Nature Category V reserve (protected landscape) and classified for natural monument protection under the PRC’s nature reserves classification system.

The construction of two wastewater treatment facilities in Tongmu (2,500 m^3/d) and Xuanfeng (5,000 m^3/d), and 184-km of sewage collection pipes in Lianhua, Luxi, Shangli and Xiangdong will occur along streets in the built-up areas. Dust and noise are the main concerns due to the proximity of residences. Mitigation measures and construction management prescriptions have been identified to address this.

7. **Impacts and mitigation measures during operation.** Potential impacts from road operations mainly relate to traffic safety caused by over speed. Traffic noise during operation of the rural-urban road will exceed relevant standard and require noise mitigation measures. Air quality predictions indicate that they will have minimal impact, even in the long term. The control of wastewater effluent quality and air emissions from the two WWTPs; and poor maintenance of project facilities, including the river embankments are other potentially significant impacts during operation. Safe distances from WWTP to residents under the PRC standard were established in the EITs. The Xuanfeng WWTP will have no impacts, but the Tongmu WWTP required an amended plant layout and the resettlement of two households to comply. The WWTPs will treat wastewater to Class 1B standard of the PRC's *Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant* (GB18918-2002) before discharging to the Yuan River (Xuanfeng WWTP) and the Lishui River (Tongmu WWTP). Effluent and surface water quality monitoring will be conducted regularly by the local EPBs. River works will be maintained by the river course management stations of the county/district water affairs bureaus (WAB). The project will include capacity building in (i) flood risk management planning (covering development and implementation of flood early warning systems for the counties; and disaster response plans and community disaster and climate resilience action plans); and (ii) rural-urban transport management, public transport, and road safety including community awareness campaigns and training on road safety.

8. **EMP implementation arrangements.** The responsibilities for environmental management and supervision during the various stages of implementation of the project are defined in the EMP.[6] The EMP is included in this Project Administration Manual (PAM) as Appendix 1 and will be updated at the end of the detailed design. The EMP will also be included as a separate annex in all bidding and contract documents. The contractors will be made aware of their obligations to implement the EMP and to budget EMP implementation costs in their proposals. PMG (through the PMO) and the implementing agencies (through the PIUs) will assume overall responsibility for implementing, supervising, monitoring and reporting on the EMP. Their capacity to implement the EMP, as well as the capacity of the PIUs to manage project facilities, will be strengthened through capacity building and training activities defined in the EMP. PMO and the PIUs will appoint qualified staff to coordinate and monitor EMP implementation. These will be supported by environment management and sector specialists contracted by the PMO.

9. The **PMO**, located within the Pingxiang Urban Construction Investment and Development Corporation (PUCIDC), will have the overall responsibility delegated by the Pingxiang Municipal Government for supervising the implementation of the EMP, coordinating the environment grievance redress mechanism (GRM) and reporting to ADB. The PMO will assign one of its fulltime staff environment specialist to coordinate EMP implementation. The EMP Coordinator will be within the Comprehensive Office that will be set up within the PMO. S(he) will take charge of: (i) ensuring that environmental management, monitoring, and mitigation measures are incorporated into bidding documents, construction contracts and operation management plans; (ii) on behalf of PMO, hiring an external environment monitor (EEM, see below); (iii) coordinating the project level grievance redress mechanism (GRM, see

[6] Any revisions of the EMP will be disclosed in compliance with Public Communications Policy (2011).

below); (iv) preparing and submitting semiannual environment monitoring reports to ADB; and (v) coordinating implementation of the training and consultation plans defined in the EMP.

10. Each **PIU** will assign one staff to coordinate EMP implementation at local level, which will take charge of (i) coordinating the implementation of the EMP; (ii) supervising the implementation of mitigation measures during project construction and operation (the PIU will hire construction supervision companies, CSCs, and environment supervision companies, ESCs); act as local entry points to the GRM; (iii) report to PMO on EMP implementation progress; and (vii) responding to any unforeseen adverse impact beyond those mentioned in the domestic EIRs and EITs, the project EIA and the EMP.

11. An **external environment monitor (EEM)** will be contracted by the PMO to oversee EMP implementation and monitoring. The EEM will advise the PMO, PIUs, contractors, CSCs and ESCs on all aspects of environmental management and monitoring for the project. The EEM will (i) assist in updating the EMP and environmental monitoring program, as needed; (ii) review and confirm project readiness in accordance with indicators defined in the EMP; (iii) supervise the implementation of the mitigation measures specified in the EMP through regular site visits and review of EMP implementation reports of the ESCs; (iv) coordinate environmental monitoring in accordance with the monitoring plan;[7] (v) prepare semi-annual environment monitoring reports in English and submit them to ADB; (vi) provide training to the PMO, PIUs, and contractors on ADB SPS 2009, World Bank Environmental, Health and Safety (EHS) Guideline, EMP implementation, and GRM in accordance with the training plan defined in the EMP; (vii) identify any environment-related implementation issues, and propose necessary corrective actions; (viii) provide support to PMO and PIUs in organizing public meetings in the project city/towns prior to mid-term mission to present and discuss EMP implementation progress, solicit community opinions and concerns, and agree on required corrective actions; and (viii) prior to project completion report, organize surveys to assess community satisfaction with project implementation, project outputs, and EMP implementation performance, and draft the project completion report (PCR).

12. **Construction Contractors, Construction Supervision Companies (CSCs), Environment Supervision Engineers (ESEs).** Construction contractors will be responsible for implementing relevant mitigation measures during construction under the supervision of the CSCs and PIUs. Contractors will develop site-specific EMPs based on the project EMP. CSCs and ESCs will be contracted by the PIUs. The CSCs will be responsible for supervising construction progress and quality, and the ESEs will be responsible for EMP implementation on construction sites. The ESEs will (i) supervise the contractor's EMP implementation performance; (ii) conduct ad-hoc environment quality monitoring if needed, and (ii) submit EMP implementation reports to the PIUs.

13. Contractor environmental specifications will be included in all civil works contracts. The Contractor Environmental Specifications (see Appendix 2 to EMP) are standard environmental clauses and sub clauses that are applicable to all general infrastructure construction. The objective of these clauses is to reduce and manage all potential environmental impacts caused by the construction activities. These specifications should be included into the standard Contractor Specifications included in the Contract between the IA and the Contractor.

[7] The EEM may contract local environment monitoring stations at project city/county level or other licensed monitoring agencies.

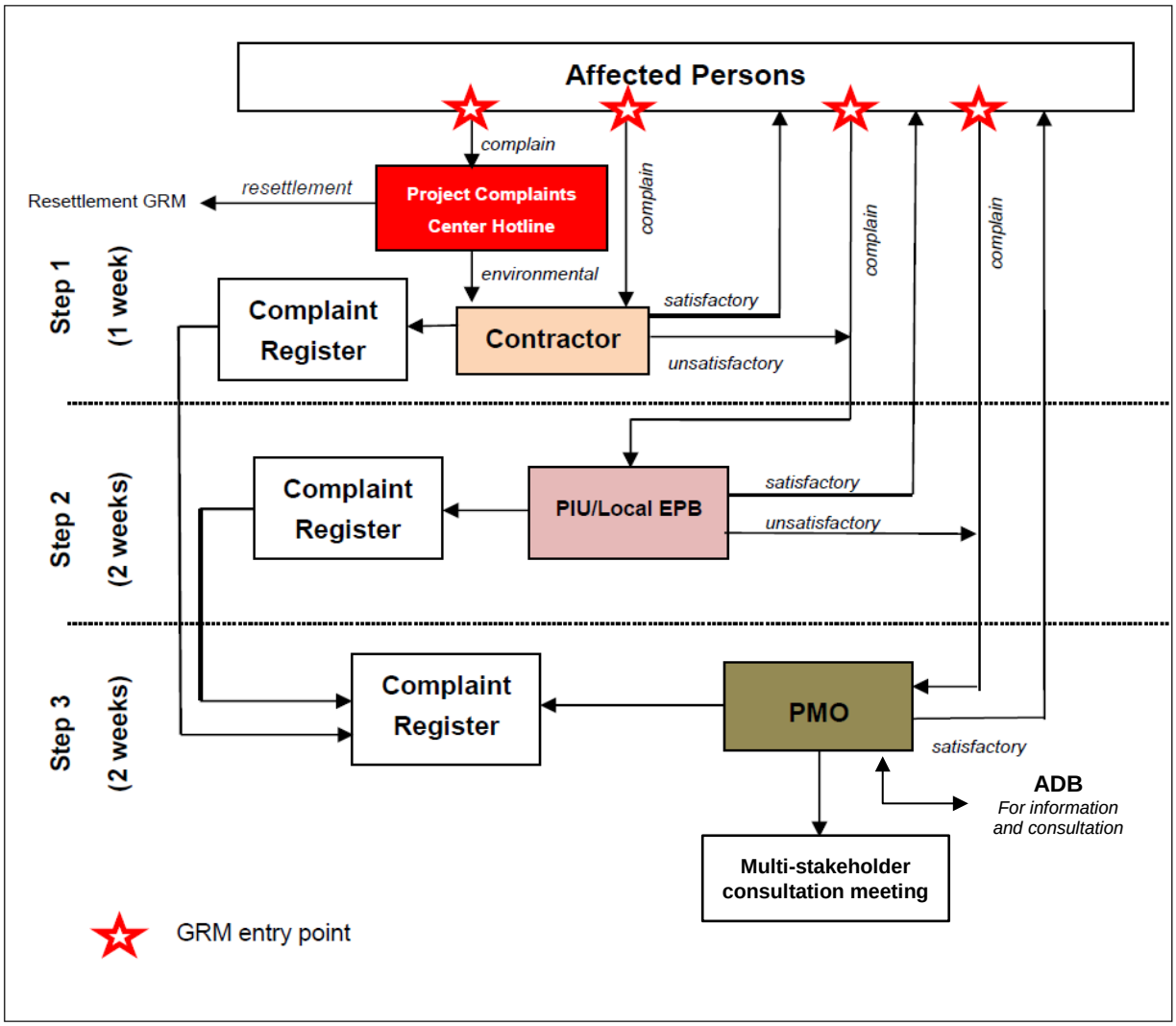
14. **Grievance redress mechanism (GRM)**. Environment safeguards related grievances may occur during construction and operation of the project. The PMO will establish an environmental GRM including GRM hotline, coordinated by the EMP Coordinator. Local GRM access points will include the contractors, PIUs, and the local EPBs. The GRM will follow the procedure and timeframe defined below. The EEM will provide training on the GRM to ensure that responsibilities and procedures are clear. The steps are described below:

(i) **Step 1.** For environmental problems during the construction stage, affected persons can register their complaints directly with contractors. Affected persons may also file their complaints through a project complaint hotline to be established by the PMO, with a designated person in charge of handling complaints, and advertised at the main entrance to each construction site. Each contractor is required to document all complaints and to respond to complainants in writing within 1 week about their proposed solutions and how they will be implemented. If a problem is resolved and the complainant (i.e. the impacted person making the complaint) is satisfied with the solution, the grievance handling ends here. Contractors are required to report complaints received, handled, resolved, and unresolved to the CSC, ESC and PIU monthly (through the monthly progress reports).

(ii) **Step 2.** For environmental problems that could not be resolved at the contractor level, the affected person can take the grievance to the PIU. On receiving complaints, the PIU will (i) document the complaint into a complaints register; (ii) send a copy of the complaint to the environmental staff of the PMO; and (iii) reply in writing within 14 calendar days describing the proposed solution and how it will be implemented. The results (the complainant is satisfied or unsatisfied) is documented in the complaint register and reported to the PMO quarterly.

(iii) **Step 3.** If the affected person is not satisfied with the solutions proposed in the step 2, he or she can, upon receiving the reply, take the grievance directly to the PMO. The PMO must immediately inform ADB of the complaint. After discussing the complaint and potential solutions in a multi-stakeholder consultation meeting among PMO, the EEM, the loan implementation consultant, relevant agencies and EPB, the affected person, and the contractor, the PMO must provide the complainant with a clear and understandable reply within 14 calendar days, and record it into the complaint register.

Figure 3: Environmental Grievance Redress Mechanism



ADB = Asian Development Bank, EPB = Environmental Protection Bureau, PMO = project management office.

B. Involuntary Resettlement

15. The project is classified as category A for involuntary resettlement according to ADB's Safeguard Policy Statement (SPS, 2009).

16. Hohai University Resettlement Center was contracted by the PMO to prepare five Resettlement Plans: one for each sub-project (river and wastewater components) and one for the Shangli-Luxi Road. The resettlement plans have been prepared in line with ADB's SPS and related laws and regulations of Pingxiang Municipality, Jiangxi Province, and the PRC.

17. The resettlement plans and their implementation are designed to ensure that the APs will be better-off, or at least not worse-off, as a result of the project. The PMG and the concerned county and district governments have endorsed the resettlement plans and disclosed the relevant information to the affected persons in early May 2015.

Resettlement Impacts

18. 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.

19. Land acquisition and resettlement costs of CNY245.81 million will be financed by PMG. Costs for semiannual external resettlement monitoring and evaluation will be financed by the ADB loan.

Implementation arrangements

20. The PMO will be responsible for the implementation of the project, reporting overall progress, and communications between ADB and PMG. The land acquisition, house demolition, and resettlement will be implemented by IA and the local governments. A grievance procedure has been established for the affected persons (APs). The PMO will submit an internal monitoring report semiannually to ADB reporting the progress of resettlement implementation. Further, the PMO will engage an external monitoring institute who will submit external semiannual monitoring reports to ADB during resettlement implementation and annually for two years after completion of resettlement.

21. For people unavoidably affected, the resettlement objective is to achieve equal or better income and living standards in line with not only the PRC laws and regulations, but also ADB's involuntary resettlement policy requirements as set out in ADB's Safeguard Policy Statement 2009. Table 1 lists the relevant national, provincial, and local resettlement policies and regulations.

Table 1: Resettlement Policies and Regulations in the People's Republic of China

Policies	Effective Date
National policies	
Law of Land Administration of the People's Republic of China	August 28, 2004
Decision on Reinforcing Reform in Land Administration by the State Council (State Council [2004] No. 28)	October 21, 2004
Ministry of Land Resources (MLR) Guidelines on Improving Land Acquisition and Relocation Regulations (MLR Document No. 238)	November 3, 2004
Guidelines on Provisions for cultivated land occupation tax(issued by the State Council of PRC No. 511)	January 1, 2008

Policies	Effective Date
Guidelines on improving the work of employment training and social security for affected persons by Land Acquisition (Ministry of Labor Security)	April 10, 2006
Provincial and local policies	
Measures of Jiangxi Province for the Implementation of the Land Administration Law of the PRC (Amended)	April 29, 2000
Notice of the Uniform AAOV Rates and Location-based Integrated Land Prices for Land Compensation of Jiangxi Province (GPG [2010] No.126)	December 6, 2010
Notice of the Jiangxi Provincial Government on Issuing the Measures of Jiangxi Province for the Dispute coordination decision of Land requisition compensation and resettlement standards (JPG [2007] No.23)	September, 14, 2007
Notice of the Jiangxi Provincial Government on forwarding the further improvement of the primary endowment insurance for land expropriated farmers issued by JXHRSS and other departments. (JPG [2014] No.12)	April 9, 2014
Pingxiang Municipal People's Government Office on the issuance of City, landless farmers social security guidance notice (Lian Gov. [2011] No. 3)	January 14, 2011

22. Based on consultations with EA, PMO, IAs, local governments, and affected persons, and general practices in the project area, a set of resettlement principles was agreed upon. These include:

(i) avoid or minimize resettlement wherever feasible;

(ii) the compensation and titles gained by the APs shall at least enable them to maintain the same living standards as “without project” or even better;

(iii) APs should derive some direct benefits from the project;

(iv) all APs, regardless of the legal titles, shall be entitled to get compensation and demolition assistance;

(v) the resettlement compensation shall ensure all APs to at least maintain the living standards as before;

(vi) if the remaining land after land acquisition fails to safeguard the livelihood of the APs, compensation in forms of cash or land replacement, plus other necessary profit-earning activities shall be provided for the APs;

(vii) the APs shall have good understanding of the qualification, means and standards of compensation, livelihood and restoration plan as well as project construction arrangement etc., and participate in the implementation of the resettlement plan;

(viii) no land acquisition shall be proceeded with before the APs are satisfied with schemes for compensation and resettlement;

(ix) the compensation and resettlement operations shall be monitored by the EA and an independent organization;

(x) vulnerable groups (including women) shall receive special assistance and treatment so that they can live better; and

(xi) the resettlement budget shall be enough to cover all aspects that are caused by the project construction and operation.

Compensation Standard

23. Based on the policies, guidelines and principals listed above, the entitlement matrix for the Project has been formulated and confirmed by the IAs. For land acquisition, compensation fees include a land compensation fee and a resettlement subsidy. The land acquisition compensation is determined based on Notice of the Uniform AAOV Rates and Location-based Integrated Land Prices for Land Compensation of Jiangxi Province (GPG [2010] No.126).

24. For house demolition, compensation will be paid to owners. The compensations are comprised of the house location price, replacement costs, compensation for auxiliary facilities and decorations, and other subsidies including transition subsidy, movement subsidy, etc.

25. Compensation for young crops, trees, other facilities, and temporary impacts will be paid directly to APs. Income losses resulting from reduced production/sales and wages caused by the Project will also be assessed and compensated. In addition, both men and women are entitled to sign the land acquisition and house demolition contract and obtain the payments.

26. Detailed measurement surveys will be conducted in each village group, and the compensation contracts will be negotiated and signed with affected village groups, households, and property owners. On this basis, the final costs will be adjusted. There is a physical and price contingency of 10% to manage such changes.

Resettlement Implementation, Schedule, Monitoring and Evaluation

27 PMG will entrust the PMO to assume the overall responsibility for resettlement management and supervision. A social, environment and resettlement office within PMO will coordinate the planning, implementation, financing and reporting of land acquisition and resettlement. The pertinent and county and district governments have established PIUs which be responsible for the resettlement management and supervision. To ensure smooth implementation of the RPs, a training program will be organized for EA, PMO, IA, PIU, and relevant local government resettlement officers by PPMO before land acquisition and resettlement.

28. The resettlement implementation schedules for the Project have been prepared based on the project preparation and construction timetable. No land acquisition or demolition shall start until RPs are updated based on detailed designs and approved by ADB.

29. Internal and external resettlement monitoring mechanisms are agreed to be established during the project implementation. A TOR for monitoring and evaluation including monitoring methodologies has been drafted and attached to each RP. Internal resettlement progress supervision and monitoring will be done by PMO and Sub-Project PMOs to ensure compliance with the provisions of the RP. An independent agency will be entrusted to conduct semi-annual monitoring and annual evaluation of overall project LAR activity until two years after the completion of LAR. External monitoring reports will be forwarded directly to both the PMO and ADB.

Table 9: Summary of Resettlement Impacts by Subcomponent

Subproject		Unit	Xiangdong	Luxi	Lianhua	Shangli	Road	Total
Affected county /district		Numbers	1	1	1	1	3	5
Affected town/street		Numbers	2	3	3	3	7	18
Affected village/community		Numbers	8	13	23	18	26	88
Affected group		Numbers	22	40	39	158	153	412
Permanent collective land acquisition	Collective land	*mu*	285.9	696.63	101.95	738.37	742.53	2,565.39
	Including: cultivated land	*mu*	219.76	542.51	101.95	609.11	260.85	1,734.18
Temporary land occupation		*mu*	156.89	257.41	232	689	502.6	1,837.9
Demolition of residential house		m^2	12,518	7,334.7	1,726.87	17,105	12,952	51,636.57
Demolition of non-residential house		m^2	497	1,570	0	300	942	3,309
Directly affected persons	Affected by LA	Household	325	525	53	621	1,855	3,379
		Person	1,294	2,123	194	2,642	7,419	13,672
	Affected by HD	Household	63	61	24	78	36	262
		Person	239	253	83	282	165	1,022
	Affected both by LA and HD	Household	32	21	0	4	0	57
		Person	117	87	0	18	0	222
	Affected by non-dwelling house demolition	Household	4	5	0	0	2	11
		Person	30	15	0	0	25	70
	Affected by temporary land occupation	Household	75	18	17	228	274	612
		Person	327	60	58	960	1,098	2,503
	Total	**Household**	**435**	**588**	**94**	**923**	**2,167**	**4,207**
		Person	**1,773**	**2,364**	**335**	**3,866**	**8,707**	**17,045**
	Vulnerable groups	Household	30	61	4	34	196	325
		Affected person	39	69	11	34	242	395
		Female	921	1,179	46	1,560	3,698	7,404
		Minority households	2	0	0	0	11	13
		Minority population	3	0	0	0	15	18
	Seriously affected	Household	176	179	24	215	465	1,059
		Person	616	727	106	985	1,893	4,327

LA = land acquisition, HD=house demolition; m = meter; *mu* = a Chinese unit of measurement equivalent to 1/15 of a hectare.

Note: Affected person is the same as displaced person. ADB Safeguard Policy Statement (2009) trigger for involuntary resettlement changed the terminology of "affected person" to "displaced person", which is defined as a person who is physically or economically displaced as a result of involuntary acquisition of land or involuntary restrictions on land use or on access to legally designated parks and protected areas. In the PRC, the resettlement plans maintain the original terminology of "affected person" and the definition is equivalent to ADB's definition of "displaced person". Since this project is in the PRC, this report uses the term affected person.

Table 3: Estimated Resettlement Costs

(CNY 1,000)

Category		Luxi County Cost	Xiangdong County Cost	Road subproject Cost	Lianhua County Cost	Shangli County Cost	Total cost
1	**Basic resettlement cost**	**25,215**	**19,864**	**23,707**	**5,307**	**32,231**	**106,325**
1.1	Rural land acquisition	19,845	9,788	13,262	3,958	21,312	68,164
1.2	Temporary land occupation	367	345	2,010	196	713	3,631
1.3	Rural dwelling house demolition	3,373	8,001	7,688	1,134	9,912	30,108
1.4	Urban dwelling house demolition	571	155	0	0	0	726
1.5	Non-dwelling house demolition	1,019	1,276	707	0	261	3,262
1.6	Attachments	42	299	40	20	33	433
2	**Assistance fund for vulnerable groups**	**252**	**199**	**237**	**53**	**322**	**1,063**
3	**Management fee for land acquisition**	**504**	**397**	**474**	**212**	**1,289**	**2,877**
4	**Resettlement plan preparation and monitoring**	**252**	**199**	**237**	**103**	**322**	**1,113**
4.1	Resettlement plan preparation	126	99	119	37	161	542
4.2	Resettlement monitoring	126	99	119	67	161	572
5	**Training cost**	**126**	**99**	**119**	**27**	**161**	**532**
6	**Taxes and fees**	**28,744**	**15,441**	**38,331**	**3,897**	**25,095**	**111,509**
6.1	Reclamation fee for cultivated land	7,068	2,859	7,425	1,014	6,091	24,457
6.2	New construction land use fees	9,424	4,574	9,901	1,352	9,850	35,101
6.3	Cultivated land occupation tax	12,099	7,589	19,762	1,520	9,132	50,102
6.4	Vegetation recovery	153	418	1,243	10	23	1,848
	Sum of 1–6	55,095	36,199	63,105	9,599	59,421	223,419
7	Contingency	5,509	3,620	6,311	1,005	5,942	22,387
8	**Total**	**60,604**	**39,819**	**69,416**	**10,604**	**65,363**	**245,806**

Involuntary resettlement grievance redresses mechanism

30. Resettlement safeguards related complaints or disputes will be handled in accordance with joint GRM established for the project. The basic grievance redress system is as follows:

Stage 1: If any right of an AP is infringed on in respect of LA or resettlement, he/she may report to the village committee, and either the AP or the village committee may solve the appeal in consultation with the township government within 2 weeks. Stage 2: If the grievant is dissatisfied with the reply of Stage 1, he/she may file an appeal with LPMOs within one month of receipt of the above reply, which shall make a disposition within two weeks. Stage 3: If the grievant is still dissatisfied with the disposition of Stage 2, he/she may file an appeal with the Pingxiang PMO within one month of receipt of the above disposition, which shall give a reply within two weeks. At any time, he/she may file an action in a civil court in accordance with the Civil Procedure Law.

31. APs can also submit complaints to ADB which will be handled by the Project Team. If an AP is still not satisfied and believes they have been harmed due to non-compliance with ADB policy, they may submit a complaint to ADB's Office of Special Project Facility or Office of Compliance Review in accordance with ADB's Accountability Mechanism (http://www.adb.org/Accountability-Mechanism/default.asp).

32. All grievances, oral or written, will be reported to ADB in internal and external resettlement monitoring reports.

33. All agencies will accept grievances and appeals from the APs for free, and costs so reasonably incurred will be disbursed from the contingencies. At the whole construction stage, the above procedure will remain effective so that the APs can use it to solve relevant issues. The above appeal channel will be disclosed to the APs via the RIB and mass media.

VIII. GENDER AND SOCIAL DIMENSIONS

1. A poverty and social assessment (PSA) was undertaken during project preparation in accordance with Asian Development Bank (ADB) guidelines. The PSA included a desk review of secondary data, a household survey and focus group discussions, and key informant interviews. The collected information and analysis assisted in the design of the project by identifying the poor and economically vulnerable population, examining causes of poverty and recommending poverty reduction measures within the scope of the project.

A. Summary Poverty Reduction and Social Strategy

2. **Key issues.** Pingxiang municipality is located in western Jiangxi province, People's Republic of China (PRC) with a land area of 3,827 square kilometers and a total population of 1.87 million (4.16% of Jiangxi), in which Shangli County, Anyuan District, Xiangdong District, Luxi County, and Lianhua County account for 25.4%, 23.9%, 21.3%, 15.5% and 13.9% respectively. The overall poverty incidence of Pingxiang is 13.88%, which is higher than that of Jiangxi (9.41%) and national (7.59%). Pingxiang is an important resource-based city in southern PRC, with coal, iron ore, and limestone as its main minerals. Currently, it is faced with mineral resource depletion, serious environmental destruction, and deformed industry mix. Poor infrastructure, services and environment were identified as critical constraints for economic and social development. The project will contribute to poverty reduction through improving integrated river rehabilitation, waste water collection and treatment, road network construction, ecological restoration and rehabilitation, and community services in many ways in order to improve the overall environmental condition, and infrastructure development.

3. The project will reduce flood risk for a population of about 308,000, including about 37,000 poor people; provide improved wastewater services for 175,000 residents; and the rural-urban road will directly benefit 247,000 people residing within 2 kilometer of the road. It is estimated that a total of more than 4,600 jobs will be created by the project during construction and 200 jobs during operation. The PMO and implementing agencies will ensure that all PRC labor laws and core labor standards are followed. Details on specific measures to ensure the poverty and social benefits are in the social development action plan included in the PAM.

4. **Design features**. The project will implement the following.

(i) **Gender action plan**. The gender action plan (GAP) will promote gender inclusion in the project activities and monitoring system. It will address gender mainstreaming in all project components and under training and capacity building. Implementation and monitoring of GAP is included in the loan assurances.

(ii) **Social development action plan**. The social development action plan (SDAP) includes targets for employment for the poor and women on project works and subsequent operation and maintenance, protection of labor that will be employed on project works, mitigation of HIV/AIDS and construction disturbances, and consultation with and participation of community members throughout project implementation. In addition, it ensures that more than 30% of new jobs will target the poor. Implementation and monitoring of the SDAP is included in the loan assurances.

B. Gender Issues/Analysis

5. The project is categorized as effective gender mainstreaming and a GAP has been prepared with agreed activities, indicators and targets. The PSA indicates that women are a very important stakeholder and beneficiary in the project. Despite sharing similar social resources and job opportunities, there are still large gender differences in public participation and decision- making. For example, not more than 15% of leaders of governments and functional departments at or above the township level are women, and this percentage is less than 10% at the village level. In general, there is no statistically significant difference between the male and female respondents' opinion regarding the project. However, since women play a more important role in housework, they are more likely to access and/or use public infrastructure; and the lack of adequate/reliable public transport, wastewater collection and treatment systems, and flood control systems have a disproportionately negative impact on women, especially in rural places. The poverty and social analysis reveals that women are interested in gaining skills through training that will provide them with better non-farming employment opportunities, and the women consulted consider the improvements in traffic safety and access to transport facilities to be provided under the project as important benefits.

6. A GAP (Table 1) has been prepared for the project and gender specific parameters have been included in the project's design and monitoring framework to ensure that targets are met, women fully participate in the project and enjoy project benefits, and adverse effects upon women are avoided or mitigated. Pingxiang Municipal Government (PMG) will work with the All China Women's Federation, municipal and county government agencies, contractors, and communities to facilitate the participation of women in paid work opportunities for physical works, and ensures that all labor laws of the People's Republic of China and core labor standards are respected. Project assurances include that (i) contractors be required to employ women with specific targets, (ii) implementation of GAP is ensured; and (iii) GAP targets and implementation will be monitored.

7. The project will ensure that: (i) priority will be given to women for employment, including a 30% target for project employment opportunities during the project construction phase, and 30% target for the project operation phase; (ii) women will not be discriminated on the basis of age or sex with respect to any job that they are capable of carrying out; (iii) sex disaggregated baseline and survey data will be collected; and (iv) the GAP measures are implemented. Pingxiang project management office with the assistance of the project management consulting firm are responsible for the implementation of the GAP, and reporting on progress and achievements of the project. PMG agreed to provide necessary costs for implementation of the GAP (Table 1) and SDAP (Table 2). All activities in GAP and SDAP are part of the capacity building component (e.g., training, consultation, awareness raising activities). Therefore, no additional cost is required specifically for the implementation of GAP.

C. Social Development Action Plan

8. 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 campaign on disaster preparedness system and environmental and public health knowledge education programs; (ii) consultation and information disclosure on WWTP, sludge disposal, and transportation; (iii) participation in public hearing process for wastewater tariffs; (iv) targets for employment of local labor, women, and the poor during construction and operation; and (v) establishment of CERT and community–based groups to design, implement, and monitor all awareness raising campaigns and education programs. Its implementation will be monitored through the PPMS, semi-annual

monitoring reports and ADB supervision missions. The Social development action plan is included in Table 2.

D. Other Social Issues

9. To address the risk of spread of HIV/AIDS, the project requires (i) inclusion of clauses on HIV/AIDS and other communicable disease into contract bidding documents; (ii) conduct of public health and HIV/AIDS prevention education to the civil works contractors; (iii) establishment of health measures for construction workers (e.g., setting up a temporary infirmary, using local medical resources); and (iv) conduct of diverse publicity activities on HIV/ AIDS (e.g., brochures, posters and picture albums).

10. **Labor issues**. Core labor standards will be implemented. Civil works contracts will stipulate priorities to (i) employ local people for works; (ii) ensure equal opportunities for women and men; (iii) pay equal wages for work of equal value; (iv) pay women's wages directly to them; (v) not employ children or forced labor; and (vi) ensure that all contracted labor have written contracts. Specific targets for employment have been included in the GAP and SDAP. PMG is responsible for the implementation of the GAP and SDAP. The detailed SDAP is provided in Table 2. PMG will monitor contractors' compliance with these project assurances in conjunction with the Departments of Labor and Social Security Bureau, and Civil Affairs of Pingixang Municipality.

11. Under the project management consulting service, a social development, gender and community participation specialist will be engaged to support Pingxiang PMO to implement, monitor, and report on progress of the GAP, SDAP, and other social aspects. They will be monitored and reported semiannually.

Table 1: Gender Action Plan

Proposed Actions	Target and Indicators	Responsible Agencies	Timeline	Budget and Cost
Output 1: Flood risk management and river rehabilitation improved and integrated				
• Conduct public awareness campaign and information disclosure on (i) DPS (flood risks) and (ii) environmental health in the communities and schools • Conduct public cleaning of rivers' neighborhood areas twice a year with involvement of communities and schools • Identify location of safety warnings, isolation facilities and garbage bins along the river in consultation with residents	• Number and % of participants with 50% female participation • Gender sensitivity awareness materials for DPS available • Number and % of people participating in the cleaning of the river with 50% female participation • No and % of people participating in the consultation meeting with 50% female participation	PMOs, design institute, water resources bureau, health bureau, EPB, ACWF, PAO	2015–2019	Financial budget of the local government Project DED cost
Output 2: Wastewater collection and treatment improved				
• Optimize location of newly constructed WWTP • Hold public hearings on wastewater tariff	• Information disclosure to and consultation with residents in Xuanfeng Town and Xichun Town with 50% female participation • Number and % of participants in the public hearings with 50% female participation	PMO, planning bureau, design institute, construction bureau, price bureau, health bureau, EPB, ACWF, PAO	2015–2019	Financial budget of the local government Project DED cost
Output 3: Rural–urban linkages improved				
• Improve design and identify locations of bus stops, crosswalks, traffic signals, and other traffic facilities on roads, and set up warning signs or isolation facilities on dangerous segments • Conduct traffic safety awareness education program for residents in Luxi and Shangli counties • Integrate gender-responsive physical design features in road rehabilitation	• Consultation with community residents on identification of bus stops, traffic signs, etc. with 50% female participation • Public traffic safety awareness and education program for residents and schools in counties, including 50% female participants • Number and type of completed gender-responsive design features that address safety risks and increase access for female users and children	PMO, municipal traffic police department, mass media, ACWF, communities	2015–2019	Project DED cost
Output 4: Inclusive capacity in project planning and management, and urban–rural integration developed				
• Recruit a SDGCP specialist as part of the loan implementation consultant • The PMO and implementing agencies assign at least one SDS to be responsible for the implementation and reporting of GAP and SDAP • PMO and implementing agencies' staff are	• A SDGCP specialist (national) with 14 person-months input will be recruited • One SDS from PMO and each implementing agency to manage and coordinate GAP and SDAP activities • 100% staff of PMO and implementing agencies receives training on GAP and	PMO, local implementing agencies, SDGCP specialist	2015–2019	Budget of the capacity building component CNY50,000/ year * 5 years = CNY250,000

Proposed Actions	Target and Indicators	Responsible Agencies	Timeline	Budget and Cost
trained to ensure effective implementation of the project, particularly GAP and SDAP • Sex-disaggregated data will be collected in the management information system to ensure the monitoring, evaluation, and reporting of the GAP and SDAP	SDAP (at least 30% women representatives in all trainings) (Baseline is 10%) • Semiannual monitoring reports on GAP and SDAP			
For all outputs: Generating job opportunities				
• Generate 3,610 skilled and 1,020 unskilled jobs at the construction stage • Generate 151 skilled and 46 unskilled jobs (maintenance, cleaners, landscaping workers, etc.) at the operation stage • Develop project related job skills of women through training and workshop • Formulate outreach/advertisement program to contractors to recruit women	• 30% of which are first made available to women (Baseline is 10%) • 30% of which are first made available to women (Baseline is 20%) • Numbers of female laborers receiving training (40% female participants) • Number and contents of advertisement programs	PMO, implementing agencies, contractor, labor and social security bureau, PAO, civil affairs bureau, ACWF	2015–2018	Project construction and operation funds
For all outputs: Establishing a public consultation and participation mechanism				
• Establish CERT for public awareness and education programs on community disaster preparedness, environment management rules and roads safety to promote improved public behavior • Establish community-based groups in each pilot community to assist the CERT to implement the social and environmental protection measure identified by SDAP and EMP	• 80% women in 3 urban and 3 rural communities have basic knowledge of community disaster preparedness, environment management rules • CERT is composed of 3 members in 3 urban and 3 rural communities with 30% women participation • CERT is active in at least 12 communities including 30% women participation by 2019 • One community-based group in each pilot community with at least 5 members of which 50% are female	PMOs, implementing agencies, selected township, village/community committees, ACWF, contractor, PAO, design institute, civil affairs bureau, planning bureau, health bureau, environmental sanitation bureau	2015–2019	Project budget of CNY159,600/ year x 3 years = CNY478,800

ACWF = All China Women's Federation, CERT = community environment supervision and roads safety education team, CNY = yuan, DED = detailed engineering design, DPS = disaster preparedness system, EMP = environmental management plan, EPB = environmental protection bureau, GAP = gender action plan, PAO = poverty alleviation office, PMO = project management office, SDAP = social development action plan, SDGCP = social development, gender, and community participation, SDS = social development specialist, WWTP = wastewater treatment plant.
Source: Asian Development Bank.

Table 2: Social Development Action Plan

Actions or Activities	Target and Indicators	Responsible Agencies	Timeline	Budget and Cost
Output 1: Flood risk management and river rehabilitation improved and integrated				
• Public awareness campaign and information disclosure on DPS in the communities and schools • Environmental awareness and public health knowledge education for communities and schools. • Public cleaning of rivers' neighborhood areas twice a year with involvement of communities and schools • Identifying the location of safety warnings, isolation facilities and garbage bins along the river in consultation with residents • Improving the solid waste collection by providing garbage bins along the rivers Lianhua, Shangli Luxi Counties and Xiangdong district	• Number, type, and frequency of awareness activities provided. • Number and % of participants (disaggregated by sex and target groups – schools, communities) Gender sensitive awareness materials for DPS prepared • No and % of people participating in the cleaning of the river (disaggregated by sex and target groups – schools, communities) • No and % of people participating in the consultation meeting (sex disaggregated) • 50% female and 30% poor people participation in all awareness, education programs and consultations. • Number of bins provided	PMOs, Design agency, Water Resources Bureau, Health Bureau, Environmental Protection Bureau, All China Women's Federation, Poverty Alleviation Office	2015-2019	Financial budget of the local governments The project's DED cost
Output 2: Wastewater collection and treatment improved				
• Optimizing locations for newly constructed WWTP • Selecting suitable locations for sludge disposal and transportation to minimize negative impacts on residents • Public hearings will be held for wastewater tariff • Ensure provision of subsidies to Minimum Living Security (MLS) people for wastewater tariff	• Information disclosure to and consultation with residents in Xuanfeng township and Xichun township with 50% female and 30% poor participation • Community committees collect comments from residents with 50% female and 30% low income participation • Number and % of participants in the public hearings with 50% female and 40% low income people participation • Number and % of MLS people subsidized, (sex-disaggregated)	PMO, Planning bureau, Design Agency, Construction Bureau, Price Bureau, HB, ESB, ACWF, PAO	2015-2019	Financial budget of the local government The project's DED cost
Output 3: Rural–urban linkages improved				
• Improving design and location of bus stops, crosswalks, traffic signals, and other traffic facilities on roads, and setting up warning signs or isolation facilities on dangerous segments. • Traffic safety awareness education program for residents in Shangli and Luxi Counties	• Consultation with community residents on identification of bus stops, traffic signs, etc. • Public traffic safety awareness and education program for residents and	PMO, Municipal Traffic Police Department, mass media, ACWF	2015-2019	The project's DED cost

Actions or Activities	Target and Indicators	Responsible Agencies	Timeline	Budget and Cost
	schools in counties • 50% female and 30% poor people participation in consultations, awareness and education.			
Output 4: Inclusive capacity in project planning and management and in urban–rural integration developed				
• Recruitment of Social Development, Gender and Community Participation (SDGCP) specialist as part of the loan implementation consultant • The PMO and IAs assign at least one social development specialist to be responsible for the implementation and reporting of the SDAP and GAP • PMO and implementing agencies' staff are trained to ensure effective implementation of the project, particularly SDAP and GAP • Sex-disaggregated data will be collected by the PPMS to ensure the monitoring, evaluation and reporting of the SDAP and GAP.	• A SDGCP with 12 person-months input during project loan stage will be recruited • One SDS from PMO and each IA for managing and coordinating GAP and SDAP work • 100% staff of PMO and implementing agencies receive the training on SDAP and GAP (at least 30% women representatives in all trainings) – baseline is 10 %. • Indicators involving social development and gender in PPMS • Semiannual monitoring reports on SDAP and GAP implementations	PMO, local PMOs , IAs, SDGCP	2015-2019	Budget of the capacity building component CNY50,000/year x 5 years = CNY250,000
Outputs 1–3: Generating job opportunities				
• Generate 3610 skilled and 1020 unskilled jobs at the construction stage. • Generate 151 skilled and 46 unskilled jobs (maintenance, cleaners, landscaping workers etc.) at the operation stage.	• 30% of which are first made available to the poor and 30% to women; (Baseline for female construction workers 10 %) • 30% of which are first made available to the low income and 30% to women.	**Agencies responsible**: PMO, IAs, Contractor **Assisting agencies**: Labor and Social Security Bureau, Poverty Alleviation Office, Civil affairs bureau, Women's Federation	2015-2018	Project construction and operation funds
Outputs 1–3: Measures to reduce potential risks				
• Include HIV/AIDS and other communicable disease clauses into contract bidding documents • Public health and HIV/AIDS/STIs and sexual harassment prevention education program conducted to contractors and community residents • Health measures for construction workers (e.g., setting up a temporary infirmary, using local medical resources) are	• Terms of construction contract and implementation • Public health and HIV/AIDS/STIs and sexual harassment prevention training courses and number of trainees (disaggregated by sex and target groups)	Industry and Enterprises Bureau Contractor, Centre for Disease Control, PMO, ACWF	2015-2017	Funds under the construction contract, (CNY50,000 per year) and and administrative cost of CDC

Actions or Activities	Target and Indicators	Responsible Agencies	Timeline	Budget and Cost
established • Conduct publicity activities on HIV/AIDS, sexual harassment, e.g., brochures, posters and picture albums	• Number and type of health measures • Forms of publicity on HIV/AIDS and sexual harassment prevention at the construction stage, e.g., number of brochures, posters, and picture albums distributed			
All Outputs: Establishing a public consultation and participation mechanism				
• Establishment of Community Environment Supervision and Road Safety Education team (CERT) as a pilot for three years to (a) develop and implement public awareness and education programs on community disaster preparedness, environment management, and rules and roads safety to promote changes of public behavior • Establishment of community-based groups (CBG) in each pilot community to assist the CERT to implement the social and environmental protection measure identified by SDAP and EMP • Training of CERT and CBG on disaster preparedness, environmental sanitation, public health, community participation, roads safety and other social development skills related to the project. • Development of Community Participation Manual by SDGCP specialist together with CERT to guide the implementation of social, gender, and environmental protection measures • Development of action plan and implementation manual for roll out of the CERT mechanism in all project related communities	• Number and percentage of community residents in 3 urban and 3 rural communities have the basic knowledge of community disaster preparedness, environment management rules. 80% women residents have relevant knowledge. • Three members in three urban and three rural communities with 30% of poor people and 30% - women participation. • One community-based group in each pilot community with at least 5 members where 50% are female and 30% poor people • Number, type, and frequency of training provided to the CERT and community-based groups • The community participation manual is available. • Action plan and implementation manual on CERT model roll-out are available • Number and % of community committees' members trained for establishment of CERT, at least 30 % female participation	PMOs , IAs , selected town/ township ,village / community committees, ACWF, Contractor, PAO, Design Agency, Civil Affairs Bureau ,PMO, Planning Bureau, HB, ESB	2015-2019	Cost for the recruitment training, and payment to the members of the CERT will be included in the Project Management Consultancy budget that is funded by the ADB loan. CNY159,600/year x 3 years = CNY478,800

ACWF= All China Women's Federation; CERT = community environment supervision and roads safety education team; CBG=community-based groups; CNY = yuan; DED = detailed engineering design; DPS= disaster (flood risks) preparedness system; EMP = environmental monitoring plan; EPB= environmental protection bureau; GAP = gender action plan; HB= health bureau; IA = implementing agency; IP = industrial park; LAR = land acquisition and resettlement; M&E = monitoring and evaluation; MLS = minimum living security; PAO=poverty alleviation office; PMG=Pingxiang Municipal Government; PPMO = Pingxiang project management dffice; PPMS = project performance management system; RP = resettlement plan; SDAP = social development action plan; SDGCP= social development, gender and community participation.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project 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 cause 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%	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
	are first made available for women (output 1) (2013 baseline: 0)		
2. Wastewater collection and treatment improved	By 2020 2a. Lianhua County sewer installed (length of about 52 km for sewer mains and 32 km for secondary sewer pipes) (2013 baseline: 0) 2b. WWTP and pump station in Xuanfeng Town (Luxi County) constructed (5,000 m^3/d capacity); sewer pipes in Xuanfeng and Yinhe towns installed (total length of 25.7 km) (2013 baseline: 0) 2c. WWTP and pump station in Tongmu Town (Shangli County) constructed (2,500 m^3/d capacity); sewer pipes installed (total length of 20.3 km) (2013 baseline: 0) 2d. Xiangdong District new sewer pipes installed (total length of 54.5 km) (2013 baseline: 0)	2a.Annual reports by agencies of PMG and local governments concerned 2b.Project completion report and progress reports 2c.Site inspection reports 2d. ADB mission MOUs	
3. Rural–urban linkages improved	By 2020 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)	Annual reports by PMG and local government agencies Project completion report and progress reports	
4. Inclusive capacity in project planning and management and in urban–rural integration developed	By 2019 4a. Project management office and four project implementation units with improved scores in financial and procurement management assessments (2013 baseline: N.A.) 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) 4c. At least 5 awareness-raising campaigns and stakeholder participation and training sessions —on flood risk, environment, water pollution reduction, improved farming, sanitation, road	4a.Project completion report and progress reports 4b.ADB mission MOUs 4c.Social and environmental monitoring reports	

Project Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	safety, and policy dialogue on wastewater tariffs—implemented, with up to 50% of participants 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 2019
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, m^3/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.

B. Monitoring

1. **Project performance monitoring.** Within the first three months of loan effectiveness a project performance management system (PPMS) including key indicators will be discussed and established with the PMG. The PPMS will be established with the support from the loan implementation consultants. Disaggregated baseline data for output and outcome indicators gathered during project processing will be updated and reported quarterly through the quarterly project progress reports and after each ADB review mission. These quarterly reports will provide information necessary to update the PPMS.[1] By collecting data from the sources identified in the Design and Monitoring Framework and also the EMP, RPs, GAP, SDAP, the PMO and the PIU will be able to report on an annual basis the performance of the project. Specific reporting requirements are described in the project agreement between ADB and the Government.

2. The PMO and PIU will collect the data, calculate the indicators, analyze the results, and prepare a brief report describing the extent to which the project is generating the intended outputs and outcomes. On the government side, the PMO and PIU are overseen by a project leading group (PLG) that will meet at least once in every 6 months until project completion and will review the progress and performance of the project during and after implementation. PMO and PIU will frequently perform site inspections to monitor performance, impacts and benefits during implementation and closely monitor risks and mitigation measure effectiveness.

3. **Safeguards monitoring.** The PMG will ensure that laws and regulations of the PRC governing safeguards, as well as ADB's Safeguard Policy Statement (2009) are followed. The PMG will ensure that all works contracts under the Project incorporate provisions and budgets for safeguards plans implementation. The PMO will include full-time social and environment staff members responsible for social and environmental aspects of the project, respectively.

4. **Resettlement plan monitoring.** Monitoring for resettlement plan implementation will be carried out semi-annually during the implementation of resettlement plans. The PMO resettlement/social specialist with assistance of External Monitoring Consultant will be responsible for monitoring compliance during implementation and reporting the progress to the PMG and ADB. In addition to the semi-annual monitoring reports, the PMO will include the results of LAR internal monitoring in its quarterly progress reports to the PMG and ADB. The Project mid-term review will include a separate section on the results of RP implementation. The PMO is responsible for updating and managing resettlement plan implementation and taking actions to handle the day-to-day issues. At the end of the project, the PMO, with assistance from the Project Implementation Consulting Firm, will prepare a resettlement completion report and submit to PMG and ADB. Internal monitoring and evaluation methodology is specified in the resettlement plan.

5. **Environment safeguards monitoring** will include (i) project readiness monitoring, to be conducted by the external environment monitor (EEM); (ii) environment management plan (EMP) monitoring, to be conducted by the environment supervision engineers (ESEs); (iii) external environment monitoring and EMP compliance monitoring during project implementation and the first year of project operation (or up to the date as further to be agreed with the ADB mission), to be conducted by the EEM; and (iv) regular monitoring by PIUs or O&M units during operation of the project facilities under their responsibility. Monitoring and reporting arrangements defined for this project are described below.

[1] ADB's project performance reporting system is available at: http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool

(i) **Assessment of project readiness**. Before construction, the EEM will assess the project's readiness in terms of environmental management based on a set of indicators and report it to the ADB and PMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met.

(ii) **Environmental impact monitoring.** During construction, regular (monthly or quarterly) environmental impact monitoring will be conducted by licensed monitoring institutes, contracted by the EEM. In addition, ESEs hired by the PIUs might conduct internal noise and air quality monitoring around construction sites; monitoring results will be documented in quarterly progress reports of the PIUs to the PMO.

(iii) **EMP compliance verification and reporting.** The EMP compliance monitoring will be undertaken by the EEM. The EEM, contracted by PMO, will report to ADB the project's adherence to the EMP, information on project implementation, environmental performance of the contactors, and environmental compliance through semi-annual environment monitoring reports (EMRs).

(iv) **Environmental acceptance monitoring and reporting.** Within 3 months after each component completion, or no later than 1 year with permission of the relevant EPB, environmental acceptance monitoring and audit reports of completion of each subcomponent shall be (i) prepared by a licensed environmental monitoring institute in accordance with the PRC Regulation on Project Completion Environmental Audit (Ministry of Environmental Protection, 2001), (ii) reviewed for approval of the official commencement of individual component operation by environmental authorities, and (iii) included in the EMR submitted to ADB. The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.

6. **Gender and social dimensions monitoring**. Monitoring of the Gender action plan (GAP) and Social development action plan (SDAP) will be incorporated into the PPMS. Clear targets and indicators have been established for monitoring purposes and some indicators are also in the DMF. Assistance will be provided to the PMO and Local Government PIU by the Social Development, Gender and Community Participation (SDGCP) Specialist who will set up an effective monitoring system and work with focal points in the PMO and PIU to ensure timely and quality implementation of GAP and SDAP. The GAP and SDAP will be monitored semi-annually and reported via the periodic project progress reports and during ADB review missions. Progress and results will be reported in semi-annual monitoring and annual reports, midterm report, and project completion report.

C. Evaluation

7. ADB and the government will jointly review the implementation of the Project once a year, covering a detailed evaluation of the scope, implementation arrangements, institutional, administrative, technical, economic, financial, achievement of scheduled targets, and other relevant aspects that may have an impact on the performance of the Project. The review will examine the implementation progress and compliance with assurances in the loan agreement.

Feedback from the PPMS activities will be analyzed. Within three (3) months of physical completion of the Project the PMG will submit a project completion report to ADB.[3]

D. Reporting

8. The PMG will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan and (d) updated implementation plan for next 12 months; and (iii) a project completion report within 6 months of physical completion of the Project. To ensure projects continue to be both viable and sustainable, project accounts and the executing agency AFSs, together with the associated auditor's report, should be adequately reviewed.

9. **Environmental safeguards reporting**. Environmental monitoring and inspection activities and findings shall be documented for purposes of reporting, recording, verifying, referring on and evaluating the environmental performance of the Project. The documentation shall also be used as basis in correcting and enhancing further environmental mitigation and monitoring. Semiannual Environmental monitoring reports (EMRs) will be reviewed and cleared by ADB and disclosed on the ADB website. Environment safeguards reporting requirements are defined below, and listed in Table 1.

(i) **Monthly internal progress reports by the Contractors** during construction, submitted to the PIU. These monthly reports will include; (i) physical construction progress; (ii) mitigation measures implemented; (iii) grievances received, resolved, closed and/or directed to other mechanisms; (iv) emergencies responded to; (v) internal monitoring conducted by ESEs, and (vi) corrective actions taken.

(ii) **Quarterly environmental impact monitoring reports by licensed monitoring institutes/laboratories** to report on the results of environmental quality monitoring as specified in the EMP. The reports will include the analysis results and assessment of compliance/non-compliance with PRC and international standards.

(iii) **Semi-annual environment monitoring reports (EMRs) by the EEM** to be submitted to the EA and ADB to comply with environmental agreement in the loan and PRC Law on EIA. The semi-annual EMRs will not only report on the progress and results of environmental monitoring and compliance of EMP implementation but will also briefly: (i) assess the effectiveness of instituted measures; (ii) point out violation/s, if any; (iii) assess/recommend corrective actions; and (iv) cite any coordination made for corrective actions and, if applicable, certifications for having instituted them effectively. It shall also feature possible innovative mitigation measures applied by the Contractor, Operator or affected residents themselves, and other lessons learned in EMP implementation. These will be useful in adjusting the EMP to adapt to real ground situations. Proposed adjustments/enhancement of the EMP must have prior ADB approval.

[3] Project completion report format is available at: http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar

10. **Resettlement reporting.** Land acquisition and resettlement activities and results shall be recorded and reported semi-annually during land acquisition and resettlement activities and any key issues or milestones will be included in the quarterly progress reports. The reporting shall also be used as basis for corrective measures as needed. Semiannual resettlement monitoring and evaluation reports will be disclosed on the ADB website after review by the PMG and ADB.

11. **Other social reporting**. Reporting of implementation of the GAP and SDAP shall be prepared semi-annually and be included in the periodic project progress reports. Progress and results will be reported in annual reports, midterm report, and project completion report.

Table 1: Summary of Key Project Reporting Requirements

Report	Reference	Frequency and Timing
Project Performance Reporting		
• Project performance management system reports (PPMS)	LA, PA, PPMS including baseline and progress data	Established no later than 3 months after loan effectiveness; used for all monitoring reports
Progress Reporting		
• Quarterly progress reports by PIUs to PMO	LA, PA, PPMS	Quarterly, within two weeks after the end of each quarter
• Consolidated quarterly progress reports by PMO to ADB		Quarterly, within one month after the end of each quarter
Financial Performance Reporting		
• Audited project accounts and financial statements auditor's report	LA, PA, PPMS, incl. auditor's opinion on use of imprest fund and statement of expenditures	Not later than six months after the closure of fiscal year (30 June)
Environmental Safeguards Reporting		
• Monthly internal progress reports by the Contractors and ESEs to PIUs	LA, PA, PPMS, EMP, EIA, contract covenants	Monthly during construction
• Quarterly EMP progress reporting by PIUs to PMO		Incorporated into quarterly project progress reports
• Quarterly environmental impact monitoring reports by licensed monitoring institutes/laboratories		Quarterly during construction period until project completion report is issued
• Environment monitoring reports by EEM		Semi-annually during project construction, annual during project operation until project completion report is issued.
Resettlement Safeguards Reporting		
• Semiannual RP monitoring reports	LA, PA, PPMS, RPs	Semiannual, and key issues and milestones included in quarterly project progress reports
• Resettlement completion report		Within six months LAR project completion
Social Reporting (other)		
• GAP and SDAP implementation report	LA, PA,PPMS, SDAP	Semiannual, included the periodic project progress reports
Project Completion Reporting		
• Project completion report	LA, PA, PPMS, RRP, all above reports, review mission MOUs, statistics and surveys	No later than six months after project completion

EEM = external environment monitor, EIA = environmental impact assessment, EMP = environmental monitoring plan, GAP = gender action plan, LA = loan agreement; RP = resettlement plan, MOU = memorandum of understanding, PA = project agreement; PPMS = project performance management system, SDAP = social development action plan.

E. Stakeholder Communication Strategy

12. The PMO and PIUs, with support of consultants and external monitors, will undertake consultations with key stakeholders. The PMO will ensure local stakeholders are consulted, that information on the project is disseminated, and that questions and complaints are addressed quickly and effectively.

13. **Environment**. Section VII of the project environmental impact assessment (EIA) report has described the meaningful public participation and consultation implemented during project preparation. Plans for public involvement during construction and operation stages have been developed during project preparation. PMO is responsible for public participation during project implementation. Affected communities will be involved and consulted through site visits, investigation of specific issues, interviews, and public hearings.

Table 2: Environment Consultation and Communication Plan

Organizer	Format	Frequency	Subject	Attendees
		Construction Stage		
PMO, PIUs, EEM	Public consultation & site visits	4 times: once before construction commences and once each year during construction	Adjusting of mitigation measures, if necessary; construction impact; comments and suggestions	Residents in DPA
PMO, EEM	Expert workshop	As needed, based on public consultation	Comments and suggestions on mitigation measures, public opinion	Experts of various sectors, county/ district EPBs
EEM, PIUs, PMO	Public opinion survey	Once at MTR stage	Public satisfaction with EMP implementation	Residents in DPA
		Operational Stage		
PMO, PIUs EEM	Public consultation and site visits	Once in the first year	Effectiveness of mitigation measures, impacts of operation, comments and suggestions	Residents in DPA
EEM, PMO	Public satisfaction survey	Once at PCR stage	Public satisfaction with EMP implementation Comments and suggestions	Residents in DPA

EPB = environmental protection bureau, PMO = project management office, DPA = direct project area, EEM = external environment monitor, MTR = midterm review, PCR = project completion review.

14. Information disclosure relating to environment safeguards will continue throughout project implementation. The project's environmental information will be disclosed as follows:

(i) full domestic EIRs and EITs (in Chinese) were disclosed prior to approval by relevant municipal/county/district environmental protection authorities;

(ii) copies of the domestic EIRs and EITs (in Chinese) are available on request in the PMO

(iii) The draft EIA is disclosed on the project website at www.adb.org

(iv) All semiannual environmental monitoring reports during project implementation will be available at www.adb.org.

15. **Land acquisition and resettlement plan**. All affected persons (AP) and local governments have been involved in the project preparation and social-economic survey.

Through meetings, interviews, focus group discussions, public consultation workshops, and community consultation meetings, local representatives have participated in the planning and concerns have been integrated into the resettlement plan. Before implementation, local governments will further discuss and consult with the representatives of the affected persons the impacts and detailed compensation plan to ensure affected persons' interests are protected. Project PMO and PIU have disclosed the draft resettlement plans in offices and to affected persons. The resettlement plans are posted on the ADB website. Resettlement information booklets have been distributed to affected households. This booklet contains information such as the affected project area, proposed land acquisition and rehabilitation measures, grievance redress procedure, compensation standards, and other entitlements. The implementing agency will be responsible for supervision of implementation, continued public consultation, monitoring of progress, and response to grievances. The environment and social safeguards grievance redress mechanisms will be established prior to detailed engineering.

16. **GAP and SDAP**. Consultations with communities have taken place and will continue at different points in the implementation of the GAP and SDAP, and will be designed not only to inform people about the project specific activities related to its implementation, but also to enable people in the community to ask questions, make suggestions, state preferences, and express concerns. Special attention will be paid to the participation of women and any other vulnerable groups, such as the poor. A Community Environment Supervision and roads Safety Education Team will be established in the frame of this project to (a) develop and implement community environment management rules to promote changes of public behavior toward the environment; and (b) make community residents aware of road safety. Community-based groups in each pilot community will be organized to assist the CERT to implement the social and environmental protection measures identified by SDAP and EMP. Public awareness program on wastewater sanitation and public health issues, and public hearing on wastewater tariff increase will be conducted as part of the SDAP. Implementation and progress of the GAP ad SDAP will be monitored and reported semiannually.

17. **Public disclosure**. Public disclosure of all project documents will be undertaken through the implementing agencies and on the ADB website including the project data sheet, design and monitoring framework, IEE, resettlement plans, and the report and recommendation of the President. Disclosure of external resettlement and social and environmental monitoring reports will be undertaken during project implementation.

X. ANTICORRUPTION POLICY

1. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the Project. All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all Project contractors, suppliers, consultants and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the Project.

2. To support these efforts, relevant provisions are included in the loan agreement and the bidding documents for the Project. In particular, all contracts financed by ADB in connection with the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project. In relation to the Project, the executing and implementing agencies will ensure that (i) a supervisory body is established for prevention of undue interference in business practices, and adequate resources are made available for its effective operation; (ii) a leading group of officials from the supervision division of the executing and implementing agencies is located in offices involved in bidding, installation, and other operational activities under the Project; and (iii) periodic inspections on the contractor's activities related to fund withdrawals and settlements are carried out. The executing and implementing agencies shall also initiate liaison meetings with the Prosecutor's Office, as needed, to discuss any warnings about, or information on, alleged corrupt, fraudulent, collusive, or coercive practices relating to the investment program.

3. The executing and implementing agencies will disclose to the public, and update annually the current status of the Project and how the proceeds of the Project are used. For each contract financed under the Project, the executing and implementing agencies will disclose on their respective websites information on, among others, the (i) list of participating bidders; (ii) name of the winning bidder; (iii) basic details on bidding procedures and procurement methods adopted; (iv) amount of contract awarded; (v) list of goods/services, including consulting services procured; and (vi) intended and actual utilization of the facility proceeds.

XI. ACCOUNTABILITY MECHANISM

1. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.

XII. RECORD OF PAM CHANGES

1. All revisions/updates during course of implementation are retained in this Section to provide a chronological history of changes to implemented arrangements recorded in the PAM.

No.	PAM changes/updates	Date	Remarks
1	Initial Draft	26 March 2015	First draft provided to executing agency during loan fact-finding mission

APPENDIX: ENVIRONMENTAL MANAGEMENT PLAN

1. Introduction

3. This Environmental Management Plan (EMP) is developed for the Jiangxi Pingxiang Integrated Rural-Urban Infrastructure Development Project (the project) and defines all potential impacts of the project components and the mitigation and protection measures with the objective of avoiding or reducing these impacts to acceptable levels. The EMP also defines the institutional arrangements and mechanisms, the roles and responsibilities of different institutions, procedures and budgets for implementation of the EMP. The EMP seeks to ensure continuously improving environmental protection activities during preconstruction, construction, and operation in order to prevent, reduce, or mitigate adverse impacts and risks. The EMP draws on the findings of the project environmental impact assessment (EIA) report, the domestic environmental impact reports (EIR) and environmental impact tables (EIT), the soil and water conservation report (SWCR), technical studies and analyses by the project preparation technical assistance (PPTA) consultants, and ADB review mission discussions and agreements with the relevant government agencies.

4. The EMP will be reviewed and updated, as needed, at the end of the detailed design in order to be consistent with the final technical design. The final EMP, if updated, will be disclosed on the ADB project website and included in the Project Administration Manual (PAM). The EMP provides a list of environmental contract clauses that shall be included in all bidding and contract documents (Appendix 2). The whole EMP will also be included as a separate annex in all bidding and contract documents. The contractors will be made aware of their obligations to implement the EMP and to budget EMP implementation and monitoring costs in their proposals.

2. Institutional Responsibilities related to EMP implementation

5. As **Executing Agency** (EA), the Pingxiang Municipal Government (PMG) will be responsible for the overall implementation and compliance with loan assurances and all the requirements specified in the EMP.

6. **Project Leading Group (PLG).** A PLG has been established at the Pingxiang municipal level for the project comprising of senior officials from relevant government agencies at municipal, county and district levels, to facilitate inter-agency coordination, and to resolve any institutional problems affecting project implementation at municipal, county and district levels.

7. PMG (through the PMO) and the implementing agencies (through the PIUs) will assume overall responsibility for implementing, supervising, monitoring and reporting on the EMP. Their capacity to implement the EMP, as well as the capacity of the PIUs to manage project facilities, will be strengthened through capacity building and training activities defined in the EMP. PMO and the PIUs will appoint qualified staff to coordinate and monitor EMP implementation. These will be supported by environment management and sector specialists contracted by the PMO.

8. The **PMO**, located within the Pingxiang Urban Construction Investment and Development Corporation (PUCIDC), will have the overall responsibility delegated by the Pingxiang Municipal Government for supervising the implementation of the EMP, coordinating the environment grievance redress mechanism (GRM) and reporting to ADB. In compliance with SPS 2009 requirements for category *A* projects, the PMO will assign one of its full staff environment specialist to coordinate EMP implementation. The EMP Coordinator will be within the Comprehensive Office that will be set up within the PMO. S(he) will take charge of: (i) ensuring that environmental management, monitoring, and mitigation measures are

incorporated into bidding documents, construction contracts and operation management plans; (ii) on behalf of PMO, hiring an external environment monitor (EEM, see below); (iii) coordinating the project level grievance redress mechanism (GRM, see below); (iv) preparing and submitting semi-annual environment monitoring reports to ADB; and (v) coordinating implementation of the training and consultation plans defined in the EMP.

9. **Project implementing units (PIUs).** The local-level Project Implementation Units (PIU), under the county or district governments (the implementing agencies, IAs), are shown in **Table EMP-1**.

Table EMP-1: Details of Project Implementation Units

Administrative Unit	Sub-components	Project Implementation Unit
Lianhua County	Lianjiang and Baima Rivers integrated rehabilitation and flood risk management	Lianhua Water Affairs Bureau
	Wastewater collection	
Luxi County	Yuan, Xinhua and Tankou Rivers integrated rehabilitation and flood risk management	Luxi Water Affairs Bureau
	Wastewater collection and treatment	Luxi Housing, Urban & Rural Development Bureau
Shangli County	Lishui and Jinshan Rivers integrated rehabilitation and flood risk management	Shangli Water Affairs Bureau
	Wastewater collection and treatment	
Xiangdong District	Pingshui River integrated rehabilitation and flood risk management	Xiangdong Water Affairs Bureau
	Wastewater collection	
Pingxiang Municipality	Rural–urban Transport	Pingxiang Municipal Transport Bureau

10. Each **PIU** will assign one staff to coordinate EMP implementation at local level, which will take charge of (i) coordinating the implementation of the EMP; (ii) supervising the implementation of mitigation measures during project construction and operation (the PIU will hire construction supervision companies, CSCs, and environment supervision engineers, ESEs); act as local entry points to the GRM; (iii) report to PMO on EMP implementation progress; and (vii) responding to any unforeseen adverse impact beyond those mentioned in the domestic EIRs and EITs, the project EIA and the EMP.

11. An **external environment monitor (EEM)** will be contracted by the PMO through CQS to oversee EMP implementation and monitoring. The EEM will advise the PMO, PIUs, contractors, CSCs and ESCs on all aspects of environmental management and monitoring for the project. The EEM will (i) assist in updating the EMP and environmental monitoring program, as needed; (ii) review and confirm project readiness in accordance with indicators defined in the EMP; (iii) supervise the implementation of the mitigation measures specified in the EMP through regular site visits and review of EMP implementation reports of the ESCs; (iv) coordinate environmental monitoring in accordance with the monitoring plan;[1] (v) prepare semi-annual environment monitoring reports in English and submit them to ADB; (vi) provide training to the PMO, PIUs, and contractors on ADB SPS 2009, World Bank Environmental, Health and Safety (EHS) Guideline, EMP implementation, and GRM in accordance with the training plan defined in

[1] The EEM may contract local environment monitoring stations at project city/county level or other licensed monitoring agencies.

the EMP; (vii) identify any environment-related implementation issues, and propose necessary corrective actions; (viii) provide support to PMO and PIUs in organizing public meetings in the project city/towns prior to mid-term mission to present and discuss EMP implementation progress, solicit community opinions and concerns, and agree on required corrective actions; and (viii) prior to project completion report, organize surveys to assess community satisfaction with project implementation, project outputs, and EMP implementation performance, and draft the project completion report (PCR).

12. **Construction Contractors.** Construction contractors will be responsible for implementing relevant mitigation measures during construction under the supervision of the CSCs and PIUs. Contractors will develop site-specific EMPs based on the project EMP. Contractor environmental specifications will be included in all civil works contracts. The Contractor Environmental Specifications (see Appendix 2) are standard environmental clauses and sub clauses that are applicable to all general infrastructure construction. The objective of these clauses is to reduce and manage all potential environmental impacts caused by the construction activities. These specifications should be included into the standard Contractor Specifications included in the Contract between the IA and the Contractor. After project completion, environmental management responsibilities will be handed over to O&M units.

13. **Environmental Supervision Engineers (ESE).** Each PIU will contract an independent ESE to supervise and verify environmental performance during construction and whether the implementation of EMP items complies with the plan. The ESE will review EMP implementation, monitoring activities and results, assess EMP implementation performance, visit the project sites and consult potentially affected people, discuss assessment with PMO and the respective PIU; and suggest corrective actions. The ESE will prepare monthly reports for submission to the PIU which will be submitted to and reviewed by PMO during the preparation of the quarterly project progress reports for ADB and by the EEM during the preparation of the semi-annual environment monitoring reports for ADB.

14. **O&M Units.** During the operational phase, PMO and the Pingxiang EPB will periodically verify and monitor (through a licensed monitoring entity) the environmental management and implementation of mitigation measures by the operators (O&M Units) of the project components. These O&M units are listed in **Table EMP-2**. The cost of mitigation measures in this phase will be borne by the relevant O&M Units.

Table EMP-2: Details of Operation and Maintenance Units

Administrative Unit	Sub-components	Project Implementation Unit
Lianhua County	Lianjiang and Baima Rivers integrated rehabilitation and flood risk management	Lianhua Water Affairs Bureau
	Wastewater collection	
Luxi County	Yuan, Xinhua and Tankou Rivers integrated rehabilitation and flood risk management	Luxi Water Affairs Bureau
	Wastewater collection	Luxi Housing, Urban & Rural Development Bureau
	Wastewater treatment	Jiangxi Hongcheng Waterworks Co. Ltd.
Shangli County	Lishui and Jinshan Rivers integrated rehabilitation and flood risk management	Shangli Water Affairs Bureau
	Wastewater treatment	
	Wastewater collection	Shangli Housing, Urban & Rural Development Bureau

Administrative Unit	Sub-components	Project Implementation Unit
Xiangdong District	Pingshui River integrated rehabilitation and flood risk management	Xiangdong Water Affairs Bureau
	Wastewater collection	
Pingxiang Municipality	Rural–urban Transport	Pingxiang Highway Management Bureau (Anyuan and Shangli Branches) Luxi Transport Bureau (Luxi Rural Road Maintenance Ltd. Company)

15. Overall environmental responsibilities are outlined in **Table EMP-3.**

Table EMP-3: Environmental Responsibility

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
PMG	The Executing Agency (EA) for the project responsible for overall implementation and compliance with loan assurances and the EMP.				
PMO	Established by the EA to be responsible for the day-to-day management of the project. Has overall responsibility delegated by the EA for supervising the implementation of environment mitigation measures, coordinating the project level GRM and reporting to ADB				
	● Engage LDI to prepare FSR, EIR, EIT, RP and SWCR	● Engage LDI ● Review updated EMP ● Confirm that mitigation measures have been included in engineering detail design	● Appoint at least one environmental specialist on staff ● Incorporate EIA/EMP clauses in tender documents and contracts ● Manage the procurement process ● Establish the project complaint center with hot-line ● Engage LIEC as the EEM	● Supervise EMP implementation to ensure effectiveness ● Inspect implementation of mitigation measures. ● Operate the project complaint center and coordinate the project environment GRM. ● Prepare quarterly project progress reports and semi-annual environment monitoring reports and submit them to ADB ● Conduct information disclosure and public consultation	● Instruct the O&M units on environmental management and monitoring requirements ● Prepare quarterly project progress reports and semi-annual environmental monitoring reports until a PCR is issued
PIUs (see Table EMP-1)	The Implementing Agencies (IA) for the Project to implement project components, administer and monitor contractors and suppliers, and take responsibility for construction supervision and quality control. Will ensure that the EMP is implemented proactively and will respond to any adverse impact beyond those foreseen in the EIA and ensure that if there are any changes in scope the EIA/EMP will be updated, as needed. Will also attend to requests from relevant agencies and ADB regarding the mitigation measures and environmental monitoring program.				
			● Incorporate EIA/EMP clauses in tender documents and contracts ● Appoint at least one environmental specialist on staff ● Engage ESE for independent compliance monitoring of EMP implementation	● Supervise contractors and ensure compliance with the EMP ● Coordinate construction supervision and quality control ● Coordinate environmental monitoring according to the environmental monitoring program in the approved EMP ● Act as a local entry point for the project GRM ● Submit monthly monitoring results to PMO	● Coordinate environmental monitoring according to the approved EMP until a PCR is issued
LDIs	● Prepare project FSRs, EIRs, RPs, SWCRs ● Conduct public consultation	● Incorporate mitigation measures defined in the approved EIRs and this EMP into engineering detailed designs ● Update the EMP in cooperation with the LIEC			
Pingxiang EPB	● Review and			● Review project environmental	● Review and approve project

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
	approve the project EIRs and EITs			quality monitoring results ● Conduct mandated inspection and monitoring	completion environment audits.
PPTA consultant	● Provide technical assistance ● Review EIRs, EITs and other relevant documents ● Prepare EIA report and EMP				
EEM		● Review updated EMP, confirm that mitigation measures have been included in engineering detailed design	● Review bidding documents to ensure that the EIA/EMP clauses are incorporated ● Confirm project's readiness in respect of environmental management. ● Engage local EMS in conducting environmental impact monitoring	● Advise on mitigation measures ● Provide technical support to PMO and PIUs for environmental management ● Conduct environmental training ● Review and approve contractors' SEMP ● Conduct semi-annual EMP compliance review ● Support PMO in preparing quarterly project progress reports and semi-annual environmental monitoring reports. ● Review domestic environmental acceptance reports ● Prepare environmental completion report.	● Conduct EMP compliance review ● Support PMO in instructing O&M units on environmental management requirements ● Support PMO in preparing quarterly project progress reports and semi-annual environmental monitoring report until a PCR is issued ● Coordinate environmental monitoring until a PCR is issued
Contractors			● Ensure sufficient funding and human resources for proper and timely implementation of required mitigation and monitoring measures in the EMP throughout the construction phase	● Appoint an environment, health and safety (EHS) officer to oversee EMP implementation related to environmental, occupational health and safety on construction site ● Ensure health and safety ● Implement mitigation measures ● Prepare site-specific EMP (SEMP) containing method statements on the implementation of pollution control and mitigation measures	

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
				listed in Table EMP-4, and submit to LIEC and ESE for review and approval ● Act as a local entry point for the project GRM	
EMS				● Undertake environmental impact monitoring according to the environmental monitoring program in the approved EMP (*contracted by EEM*) ● Report monitoring data to ESE, LIEC and PIU monthly	● Undertake environmental monitoring until a PCR is issued (*contracted by the O&M units*) ● Submit monitoring results to the O&M units
ESE				● Conduct independent verification of project's environment performance and compliance with the EMP (*contracted by PIU*) ● Review and approve contractors' SEMP ● Review monthly monitoring data submitted by EMS, and conduct compliance checking against applicable environmental standards ● Provide advice to contractors for resolving on-site environmental problems when monitoring data shows non-compliance. ● Submit quarterly compliance monitoring results to PIU	
O&M units (see Table EMP-2)					● Ensure proper operation of component facilities according to design standards ● Conduct follow up medium term (2024) noise monitoring for the rural-urban road to determine need for mitigation ● Implement mitigation measures (e.g. fish monitoring and stocking in the two fish germplasm protection zones, installation of double-glazed windows).

Responsible Entity	Project Stage and Environmental Responsibility				
	Project Preparation	Engineering Detailed Design	Tendering & Pre-construction	Construction	Operation
ADB	• Review and approve the EIA and EMP and disclose on ADB website 120 days before Board consideration.	• Approve updated EMP and disclose on ADB website	• Review bidding documents • Confirm project's readiness	• Review quarterly project progress reports, semi-annual environmental monitoring reports • Undertake review missions • Advise on compliance issues, as required • Disclose semi-annual environmental monitoring reports on ADB website.	• Review and approve environmental monitoring reports and disclose on ADB website • Undertake project completion review mission and prepare PCR for approval by Board and disclosure on ADB website.

Notes:
ADB = Asian Development Bank; EEM = external environmental monitor; EHS = environment, health & safety; EIA = environmental impact assessment; EIR = environmental impact report; EIT = environmental impact table; EMP = environmental management plan; EMS = Environmental Monitoring Station; EPB = Environmental Protection Bureau; ESE = environmental supervision engineer; FSR = feasibility study report; GRM = grievance redress mechanism; LDI = local LDI; LIEC = loan implementation environmental consultant; O&M = operation & maintenance; PCR = project completion report; PMG = Pingxiang Municipal Government; PMO = Pingxiang Project Management Office; PPTA = project preparation technical assistance; RP = resettlement plan; SEMP = site-specific environmental management plan; SWCR = soil and water conservation report;

1. Summary of Potential Impacts and Mitigation Measures

16. Potential environmental issues and impacts during the pre-construction, construction and operation phases, as identified in the EIA as well as corresponding mitigation measures designed to minimize the impacts are summarized in **Table EMP-4**. Mitigation or safeguard includes two types of environmental measures:

17. Those that will permanently become part of the infrastructure such as noise reduction materials and odor removal facilities for the wastewater treatment plants, and sedimentation tanks on the rural-urban road for retaining road runoff from entering the Category II rivers of Pingshui River and Yuanbei River during storm events. These will need to be included in the design of the facility by the LDIs, otherwise they won't be built. The costs of building and maintaining these systems have already been included in the infrastructure construction and operating costs and therefore will not be double-counted as part of the EMP costs.

18. Those that are temporary measures particularly during the construction stage, such as dust suppression by watering and wheel washing, the use of quiet / low noise powered mechanical equipment and temporary noise barriers, flocculants used to facilitate sedimentation of suspended solids in construction site runoff, etc. These will need to be included in the tender documents, otherwise they are not budgeted by the contractor and they won't be done. The costs for implementing these measures are included in the EMP. The budgets for implementing these measures in this project add up to the amount of **$1,890,000**. This budget is made up of $1,540,000 for the construction stage and $350,000 for the operation stage. The budget for construction stage represents the estimated amount above the business as usual scenario, which the contractors would put into their bid packages to satisfy the environmental contract clauses for implementing the mitigation measures in the EMP. This amount therefore will already be included in the construction contracts. The amount for operation stage would come out of the budgets of the O&M units. This amount however does not include the costs for implementing and monitoring soil erosion as described in the SWCRs, and the costs for fish stocking on the Pingshui River and Yuan River.

19. The mitigation measures defined in the EMP will be (i) checked and where necessary re-designed by the LDIs; (ii) incorporated into tender documents (where appropriate), construction contracts, and operational management plans; and (iii) implemented by contractors, PIUs or PMO, as relevant. The effectiveness of these measures will be evaluated based on the site supervisions by the ESEs, the results of the environmental monitoring conducted by the EMS, and through EMP compliance verification conducted by the PMO, PIUs, and LIEC.

Table EMP-4: Summary of Potential Impacts and Mitigation Measures

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
Detailed Design Stage						
Design of the rural-urban road	Health and safety	Safety of pedestrians and cyclists	Design must ensure public health and safety with clearly marked and separate lanes for pedestrians and cyclists, and ensure barrier-free design for disabled people.	LDI, LIC	PMO, EEM	Included in design contract
	Road runoff and water quality	Protection of Category II water bodies	Technical design of road bridges crossing the Pingshui River and Yuanbei River that are Category II water bodies shall include sedimentation tanks sized adequately to retain all road runoff during storm events.	LDI, LIC	PMO, EEM	Included in design contract
	Ecology	Protection of protected trees	Technical design of the alignment of the rural-urban road shall avoid the protected Camphor Trees and Happy Trees at locations shown in the EIRs and Table V.3 of this EIA.	LDI, LIC	PMO, EEM	Included in design contract
	Climate change	Road drainage	Technical design of the rural-urban road drainage system shall be adequate to prevent the road from being flooded, and shall take into consideration potential extreme weather events due to climate change, such as more frequent and intense torrential rains and extreme temperature.	LDI, LIC	PMO, ADB	Included in design contract
Design of river rehabilitation and flood risk management	Embankment	Withstand strong storm water flow with eco-friendly design	Technical design of embankments shall be adequate and stable enough to withstand the strong force of heavy storm water flow but at the same time maximize the adoption of eco-friendly embankment designs	LDI, LIC	PMO, EEM	Included in design contract
	Ecology	Protection of protected trees	Technical design of the alignments of the Baima River and Lianjiang River shall avoid the protected Camphor Trees and Happy Trees at locations shown in the EIRs and Table V.3 of this EIA.	LDI, LIC	PMO, EEM	Included in design contract
	Solid waste	Disposal of dredged sediment	Technical design of the dredged sediment disposal site shall include double lining with impervious liner on the bottom of each disposal cell, and perimeter drainage ditches to intercept and divert runoff from the site during storm events.	LDI	PMO, EEM	Included in design contract
	Climate change	Extreme storm events	Technical design of the flood control function of the river channels shall take into consideration extreme storm events due to climate change.	LDI, LIC	PMO, ADB	Included in design contract
Design of wastewater collection pipeline	Environmental pollution	Pipe burst	The design and construction method of the wastewater collection pipelines must be adequate to prevent pipe burst.	LDI	PMO	Included in design contract
Design of wastewater treatment plant	Air quality	Odor removal	Technical design of the WWTPs shall include facility and equipment to remove odor generated during plant operation	LDI	PMO	Included in design contract
		Odor buffer	Technical design of the wastewater treatment plants shall	LDI	PMO, EEM	Included in

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
		distance - general	include an environmental buffer distance of 200 m from the boundary of the wastewater treatment plant to the nearest environmental protection target for potential odor impact.			design contract
		Odor buffer distance – Tongmu Town WWTP	The nearest environmental protection target for the Tongmu Town WWTP in Shangli County is Xiashan Village which is only 108 m from the WWTP site boundary. Resettlement plan for two households in Xiashan Village is required.	LDI	PMO, EEM	Included in design contract
	Noise	Operational noise	Technical design of the WWTPs shall (1) contain the operational noises from pumps, blowers and other noisy equipment with proper acoustic design of these facilities	LDI	PMO	Included in design contract
	Water quality	Effluent standard	Technical design of the WWTPs shall achieve the desired treatment to meet Class 1B discharge standard and safety of plant operation, with dual power supply to avoid interruption to plant operation due to power failure.	LDI	PMO	Included in design contract
	Solid waste	Sludge disposal	Technical design of the WWTPs shall include temporary sludge drying beds to produce sludge with water content of lower than 60%	LDI	PMO	Included in design contract
Pre-construction Stage						
Institutional strengthening	-	Lack of environment management capacities within PMO	-PMO to appoint qualified environment specialist on its staff. -PMO to contract loan implementation consultant (LIC) -LIEC to conduct environment management training	PMO, LIEC	ADB	PMG, LI-TA
	-	Lack of environment management capacities within the PIUs	-Each PIU to appoint qualified environment specialist on its staff -LIC to conduct environment management training	PMO, PIU, LIC	PMO , ADB	PIU, LI-TA
		External environment monitor (EEM)	-PMO to contract EEM to conduct independent verification of the project's environment performance and compliance with the approved EMP	PMO	ADB	LI-TA
		Lack of environment management capacities within the O&M units	-LIC and EEM to conduct environment management training	PMO, O&M units, LIC	PMO, ADB	PMO, LI-TA
EMP update	-	EMP does not reflect final project design	-Review mitigation measures defined in this EMP, update as required to reflect detailed design, disclose updated EMP on project website, and include updated EMP in all bid documents.	PMO, assisted by EEM	PMO, ADB	PIU, LI-TA

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
Land-take confirmation	Land acquisition and resettlement	Resettlement Plan update	Update the Resettlement Plan with final inventory.	LDI, PIU	PMO, ADB	PIU
Grievance redress mechanisms	-	Handling and resolving complaints	-Establish a GRM with complaint hotline, appoint a GRM coordinator within PMO -Brief and provide training to GRM access points -Disclose GRM to affected people before construction begins at the main entrance to each construction site -Maintain and update a Complaint Register to document all complaints.	PMO, PIU, EEM	ADB	PMO, LI-TA
Tender documents and works contracts		Environmental clauses for all tender documents and contracts	Put into tender documents and works contracts the respective environmental clauses listed in Section J of this EMP	PIU, Tender Agent	PMO, LIC, EEM	Included in tendering agent's contract
Construction traffic	Traffic	Construction vehicles causing traffic congestion	Plan transport routes for construction vehicles and specify in tender documents to forbid vehicles from using other roads and during peak traffic hours.	PIU, Tender Agent, Local traffic police	PMO, LIC, EEM	Included in tendering agency contract
Estimated cost for Design and Pre-construction stage: costs are included in the detail design fee and tendering agency contracts						
Construction Stage						
Impact on Physical Resources	Air quality	Dust (TSP, PM_{10}) and odor during construction	-Provide dust masks to construction workers, especially those involved in the Taohua Tunnel construction. -Build access and hauling roads at sufficient distances from residential areas, particular, from local schools and hospitals. -Assign haulage routes and schedules to avoid transport occurring in the central areas, traffic intensive areas or residential areas. -Spray water regularly on unpaved haul roads and access roads (at least once a day) to suppress dust; and erect hoarding around dusty activities. -Cover material stockpiles with dust shrouds or tarpaulin. For the earthwork management for backfill, measures will include surface press and periodical spraying and covering. The extra earth or dreg should be cleared from the project	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			site in time to avoid long term stockpiling. -Minimize the storage time of construction and demolition wastes on site by regularly removing them off site. -Site asphalt mixing and concrete batching stations at least 300 m downwind of the nearest air quality protection target. -Equip asphalt, hot mix and batching plants with fabric filters and/or wet scrubbers to reduce the level of dust emissions. -Install wheel washing equipment or conduct wheel washing manually at each exit of the works area to prevent trucks from carrying muddy or dusty substance onto public roads. -Keep construction vehicles and machinery in good working order, regularly service and turn off engines when not in use. -Vehicles with an open load-carrying case, which transport potentially dust-producing materials, shall have proper fitting sides and tail boards. Dust-prone materials shall not be loaded to a level higher than the side and tail boards, and shall always be covered with a strong tarpaulin. -In periods of high wind, dust-generating operations shall not be permitted within 200 m of residential areas. Special precautions need to be applied in the vicinity of sensitive receptors such as schools, kindergartens and hospitals. -Site all dredged sediment temporary storage or disposal facilities at least 50 m from the nearest air quality protection target. -To avoid odor impacts caused by sediment dredging, transport dredged sediment in closed tank wagons to contain odor and prevent scattering along the way. -Unauthorized burning of construction and demolition waste material and refuse shall be subject to penalties for the			

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			Contractor, and withholding of payment.			
	Noise	Noise from PME and vehicles	- Noise levels from equipment and machinery shall conform to the PRC standard for Noise Limits for Construction Sites (GB12523-2011) and the WBG EHS Standards, and properly maintain machinery to minimize noise. -Equipment with high noise and high vibration shall not be used near village or township areas and only low noise machinery or the equipment with sound insulation is employed. -Sites for concrete-mixing plants and similar activities will be located at least 300 m away from the nearest noise protection target. -Temporary noise barriers or hoardings shall be installed around the equipment to shield residences when there are residences within 20 m of the noise source. -No construction shall be allowed between the night time hours of 22:00 to 06:00. -Regularly monitor noise levels at construction site boundaries. If noise standards are exceeded by more than 3 dB, equipment and construction conditions shall be checked, and mitigation measures shall be implemented to rectify the situation. -Provide the construction workers with suitable hearing protection (ear muffs) according to the worker health protection law of the PRC. -Control the speed of bulldozer, excavator, crusher and other transport vehicles travelling on site, adopt noise reduction measures on equipment, step up equipment repair and maintenance to keep them in good working condition. -Limit the speed of vehicles travelling on site (less than 8	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			km/h). -Maintain continual communication with the villages and communities near the construction sites.			
	Surface water	Uncontrolled wastewater and muddy runoff from construction sites and work camps.	-Portable toilets and small package wastewater treatment plants shall be provided on construction sites and construction camps for the workers and canteens; If there are nearby public sewers, interim storage tanks and pipelines will be installed to convey wastewater to those sewers. -Sedimentation tanks shall be installed on construction sites to treat process water (e.g. concrete batching for bridge construction) and muddy runoff with high concentrations of suspended solids. If necessary, flocculants such as polyacryl amide (PAM) will be used to facilitate sedimentation. -Construction machinery shall be repaired and washed at special repairing shops. No onsite machine repair and washing shall be allowed. -Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces, and provided with bunds and cleanup kits. -The contractors' fuel suppliers must be properly licensed, follow proper protocol for transferring fuel, and must be in compliance with Transportation, Loading and Unloading of Dangerous or Harmful Goods (JT 3145-88). -Material stockpiles will be protected against wind and runoff waters which might transport them to surface waters. -Spills shall be cleaned up according to PRC norms and codes within 24 hours of the occurrence, with contaminated soils and water treated according to PRC norms and codes. Records must be handed over without delay to the PMO and	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			Pingxiang EPB. -No treated wastewater from construction sites shall be discharged to Category II water bodies, which include the Class 1 drinking water protection zones listed above and at the road bridges crossing the Pingshui River and Yuanbei River.			
		Disturbance of river sediments and increase SS concentrations during construction works in rivers and bridge and weir construction	-For river dredging works and bridge and weir construction, water quality monitoring shall be conducted at each dredging location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, a silt curtain 100 m downstream of the location shall be deployed, or the dredging rate shall be reduced until the down current SS level is less than 130% of the upstream SS level. -During dredging works within the Class 1 protection zones for the drinking water intakes (from 1,000 m upstream of the intake to 100 m downstream of the intake) of the Lianhua County Water Treatment Plant (WTP) intake on the Baima River, the Luxi County WTP intake on the Yuan River, and the Lengtanwan WTP on the Pingshui River in Xiangdong District, a silt curtain shall be deployed in front of these intakes for protection of intake water quality. -All supernatant water from dredged sediment storage or disposal sites shall be treated to GB 8978-1996 Class I standard before discharging.	Contractor, ESE	PIU, EEM	Included in construction contract
	Solid waste, earthwork, soil erosion protection	C&D waste, municipal solid waste, soil erosion, inadequate spoil storage, disposal	-Establish enclosed waste collection points on site, with separation of domestic waste and construction & demolition (C&D) waste. -Set up centralized domestic waste collection point and	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
		and borrow site operation	transport offsite for disposal regularly by sanitation department. -Maximize the reuse of earth cut materials and C&D waste for filling and foundations of other construction works specified by the municipal and planning departments, or transport in enclosed containers to designated C&D landfill site. -Confirm location of the borrow pit and temporary spoil storage and final disposal sites - Develop borrow pit and spoil disposal site management and restoration plan, to be approved by responsible authority; obtain permit for the clearance of excavated earthworks -Construct intercepting ditches and drains to prevent runoff entering construction sites, and diverting runoff from sites to existing drainage. -Construct hoardings and sedimentation ponds to contain soil loss and runoff from the construction sites. -Limit construction and material handling during periods of rains and high winds -Stabilize all cut slopes, embankments, and other erosion-prone working areas while works are going on. -Stockpiles shall be short-termed, placed in sheltered and guarded areas near the actual construction sites, covered with clean tarpaulins, and sprayed with water during dry and windy weather conditions. -All earthwork disturbance areas shall be stabilized with thatch cover within 30 days after earthworks have ceased at the sites.			

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			-Immediately restore, level and plant landscape on temporary occupied land upon completion of construction works. -Implement all soil erosion protection measures as defined in the soil and water conservation reports.			
Impact on ecological resources	Impacts on fauna, flora and protected areas	Destruction of habitats and wildlife, protection of fish germplasm protection zones and scenic area	-Remove trees or shrubs only as the last resort if they impinge directly on the permanent works or necessary temporary works -Prior to commencement of construction, tag and conspicuously mark all the identified protected Camphor Trees along the Baima River, the Lianjiang River and the rural-urban road, and the Happy Trees along the rural-urban road as identified in the EIRs and Table V.3 of this EIA, to prevent damage to these trees by construction workers. -Construction workers are prohibited from capturing any wildlife in the project areas. -There shall be no construction works on the Yuan River, Xinhua River and Tankou River (including the rural-urban road section crossing the Yuen River) from March to June each year. -There will be no construction works on the Pingshui River (including the rural-urban road section crossing the Pingshui River) from April to June each year. - - During construction of the road section through the Yangqi Mountain Scenic Area in Luxi County: (1) no asphalt mixing or concrete batching station is allowed within the scenic area; (2) no material stockpile is allowed within the scenic area; (3) no borrow area and spoil disposal site is allowed within the scenic area; (4) water unpaved areas within the scenic area every two hours during dry weather to suppress dust and to reduce visual impact; (5) erect	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			hoardings around the construction area within the scenic area to shield off noise and visual impact from construction machinery.			
Impact on socio-economic resources	Occupational health and safety	Construction site sanitation, pest control	-Each contractor shall provide adequate and functional systems for sanitary conditions, toilet facilities, waste management, labor dormitories and cooking facilities. -Effectively clean and disinfect the site. During site formation, spray with phenolated water for disinfection. Disinfect toilets and refuse piles and timely remove solid waste. -Exterminate rodents on site at least once every 3 months, and exterminate mosquitoes and flies at least twice each year. -Provide public toilets in accordance with the requirements of labor management and sanitation departments in the living areas on construction site, and appoint designated staff responsible for cleaning and disinfection. -Work camp wastewater shall be discharged into the municipal sewer system or treated on-site with portable system.	Contractor	PIU, ESE, EEM	Included in construction contract
		Personal Protective Equipment	- Provide safety hats and shoes to all construction workers and enforce their use by the workers. - Provide goggles and respiratory masks to workers doing asphalt road paving and tunnel blasting. - Provide ear plugs to workers working near noisy PME.	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
		Food safety	-Inspect and supervise food hygiene in canteen on site regularly. -Canteen workers must have valid health permits. -If food poisoning is discovered, implement effective control measures immediately to prevent it from spreading.	Contractor	PIU, ESE, EEM	Included in construction contract
		Disease prevention and safety awareness	-All contracted labor shall undergo a medical examination which should form the basis of an (obligatory) health/accident insurance and welfare provisions to be included in the work contracts; -The contractors shall maintain records of health and welfare conditions for each person contractually engaged; - Establish health clinic at location where workers are concentrated, which should be equipped with common medical supplies and medication for simple treatment and emergency treatment for accidents; -Specify (by the PIUs and contractors) the person responsible for health and epidemic prevention responsible for the education and propaganda on food hygiene and disease prevention to raise the awareness of workers.	Contractor	PIU, ESE	Included in construction contract
		Social conflicts	-Civil works contracts shall stipulate priorities to (i) employ local people for works, (ii) ensure equal opportunities for women and men, (iii) pay equal wages for work of equal value, and to pay women's wages directly to them; and (iv) not employ child or forced labor.	Contractor	PIU, ESE, EEM	Included in construction contract
	Community health and safety	Temporary traffic management	-A traffic control and operation plan will be prepared together with the local traffic management authority prior to any construction. -The plan shall include provisions for diverting or scheduling construction traffic to avoid morning and afternoon peak	Contractor	PIU, ESE, EEM	Included in construction contract

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			traffic hours, regulating traffic at road crossings with an emphasis on ensuring public safety through clear signs, controls and planning in advance.			
		Information disclosure	-Inform residents and businesses in advance through media of the construction activities, given the dates and duration of expected disruption.	Contractor	PIU, ESE, EEM	Included in construction contract
		Access to construction sites	-Place clear signs at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations etc. and raising awareness on safety issues. All sites will be made secure, discouraging access by members of the public through appropriate fencing whenever appropriate.	Contractor	PIU, ESE, EEM	Included in construction contract
		Utility services interruptions	-Assess construction locations in advance for potential disruption to services and identify risks before starting construction; -If temporary disruption is unavoidable, develop a plan to minimize the disruption in collaboration with relevant local authorities such as power company, water supply company and communication company, and communicate the dates and duration in advance to all affected people.	Contractor, local service providers	PIU, ESE, EEM	Included in construction contract
	Physical cultural resources	Destruction of cultural relics in stream bed and soil	-Contractor shall comply with PRC's *Cultural Relics Protection Law* and *Cultural Relics Protection Law Implementation Regulations* if such relics are discovered, stop work immediately and notify the relevant authorities, adopt protection measures and notify the Security Bureau to protect the site.	Contractor	PIU, ESE, EEM	Included in construction contract
Estimated cost for the Construction Stage: $1,540,000, which should have been allowed for in the contractors' bid documents and included in the construction contracts						
Operational Stage						
River rehabilitation and flood control works	Ecology	Compensatory fish stocking	Pingshui River: 1 million fish [including the David's Yellowfin (*Xenocypris davidi*), Smallscale Yellowfin (*Xenocypris microlepis*), and the Yellow Catfish (*Pelteobagrus fulvidraco*)] per year for 5 years after completion of construction	O&M unit	PMO, EEM	$360,000 for Pingshui River and $280,000 for Yuan River (to be borne by

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			Yuan River: 800,000 fish [including Pingxiang Red Transparent Crucian Carp (*Carassius auratus* var.*pingxiangnensis*), David's Yellowfin (*Xenocypris davidi*), Smallscale Yellowfin (*Xenocypris microlepis*), and the Yellow Catfish (*Pelteobagrus fulvidraco*)] per year for five years			O&M units and not included in this EMP)
	Vegetation	Maintenance of vegetation and landscape	-Daily maintenance: manage the vegetation including pruning, weeding and replacement of dead or dying trees and shrubs -Pest control: The guiding principle will be prevention first followed by integrated treatment, no pesticide to avoid water pollution -Fire prevention: Measures for prevention of fire will be put in place.	O&M unit	IAs, PMG	O&M unit budget
	Water quality and solid waste	Pollution from storm water and solid waste	-Routinely collect and properly dispose litter and debris from sidewalks, driveways, and parking lots near rivers and channels. -Install litter traps along waterways (small floating mesh traps attached to one bank) and regularly empty these. -Clean the roadside catch basins before rainy season to avoid surface water pollution by storm water runoff flushing debris and silt. -Regularly empty garbage bins and containers placed along the river channels; - Maintain storm-water retention facilities along the roads nearby the rivers.	O&M unit	IAs, PMG	O&M unit budget
	Embankment	Embankment stability	-Inspect all river embankment stabilization works for physical integrity. If signs of failure are discovered, a repair program will be implemented immediately	O&M unit	IAs, PMG	O&M unit budget

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
	Flood monitoring and early warning	Flood protection above flood design levels	-Critically review, update and maintain flood monitoring and early warning system including a coordination center, rainfall monitoring stations, and flood warning broadcasting stations;	AIs, LIC	PMG, EEM	AI and LI-TA budget
Wastewater treatment plants	Air quality	Odor impact and buffer distance	-The WWTP shall maintain a buffer distance of 200 m from site boundary within which no development shall be allowed.	O&M unit, IA	County EPB, EEM	O&M unit budget
	Noise	Equipment noise	-Operational noise at the WWTP boundaries shall meet Grade II noise requirements of 60 dB(A) during day time and 50 dB(A) at night under PRC's *Noise Standards at the Boundary of Industries and Enterprises* (GB 12348-2008).			
	Water quality	Effluent discharge standard	-Effluent shall be treated to meet *Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant* (GB 18918-2002) Class 1B standard prior to discharging.			
	Solid waste	Sludge water content	- Sludge shall be dried to <60% moisture content to meet *Disposal of Sludge from Municipal Wastewater Treatment Plant – Quality of Sludge for Co-landfilling* (GB/T 23485-2009) standard prior to landfill disposal			
Rural-urban road	Noise	Traffic noise	-Install double-glazed windows or other adequate mitigation measures at affected protection targets as shown in the EIR and Table V.5 of this EIA. -Conduct follow up noise monitoring according to the EIR and this EMP (see Table EMP-6); If required, install additional double-glazed windows at affected protection targets.	Contractor, PIU, IA	PMG, EEM	Civil works contract (during construction), O&M unit & PMG budget
	Air quality	Vehicle emissions	-Conduct periodic examination of emission of vehicle exhaust pollutants for each vehicle, including public buses, in accordance with PRC regulation (such as GB18352.3-2005); -Refuse registration to vehicles with excessive emissions;	EPB and traffic police	IA PMG	IA budget
	Ecology	Vegetation	- Routinely inspect and properly maintain all roadside trees, slope stabilization sites, and landscaping vegetation. Keep at least 98% of survival rate.	O&M unit	IA's forestry bureau	O&M unit budget
	Soil	Soil erosion	- Inspect and properly maintain erosion protection measures including seeded or stabilized slopes, drainage structures	O&M unit	PMG	O&M unit budget

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity	Source of funds
			and retaining walls at least twice during the first year of the roads' operation to ensure that they are maintained properly and are functioning as designed.			
	Health and safety	Road safety	Implement road safety and transport planning assessment and training: a) conduct traffic safety audit for the project counties/ district; b) identify safety concerns in traffic safety feature implementation, traffic safety education and enforcement needs; and c) develop program for public safety education and safety awareness.	O&M unit, LIC	PMG, IAs	O&M unit and LI-TA budget
		Spills of dangerous goods	-Ensure that all trucks carrying hazardous materials are marked according to PRC norms. -Enforce traffic controls, and set speed limits for trucks carrying hazardous material. -Prepare a rapid spill response and clean up protocol so that in the event of a spill the appropriate people and equipment are quickly notified and action can be taken.	O&M unit	PMG	O&M unit budget
	Natural hazard	Reduced flood discharge capacity as result of accumulation of debris.	Clean culverts, bridge piers, and drainage pipes before high runoff season.	O&M unit	PMG	O&M unit budget
Estimated cost for the Operational Stage: $350,000, which does not include costs for fish stocking and installation of double-glazed windowns						

Notes: ADB = Asian Development Bank; EEM = external environment monitor; EIA = environmental impact assessment; EIR = environmental impact report; EPB = Environment Protection Bureau; LIC = loan implementation consultant; O&M = operation and maintenance; PIU = project implementation unit; PMG = Pingxiang Municipal Government; PMO = Pingxiang Project Management Office; TA = technical assistance; LI-TA = Loan Implementation TA.

3. Monitoring and Reporting

20. Monitoring will include **project readiness monitoring** (to be conducted by the PMO with support of the EEM), **environmental impact monitoring** (to be conducted by the local Environmental Monitoring Stations (EMS); as well as by the contractors who will be required to conduct frequent noise and air quality monitoring around construction sites), and **EMP compliance monitoring** to verify EMP compliance during project implementation (to be conducted by ESE and EEM). Monitoring and reporting arrangements defined for this project are described below.

21. **Assessment of project readiness.** Before construction, the EEM will assess the project's readiness in terms of environmental management based on a set of indicators (**Table EMP-5**) and report it to ADB and the PMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met.

Table EMP-5: Project Readiness Assessment Indicators

Indicator	Criteria	Assessment
EMP update	• The EMP was updated after technical detail design as needed, approved by ADB, and disclosed on the project website	Yes No
Compliance with loan covenants	• The borrower complies with loan covenants related to project design and environmental management planning	Yes No
Public involvement effectiveness	• Meaningful consultation completed	Yes No
	• GRM established with entry points	Yes No
Environmental Supervision in place	• Environment specialist appointed by PMO	Yes No
	• Environment specialists appointed by PIUs	Yes No
	• EEM contracted by PMO	Yes No
	• Contractors have site-specific EMPs	Yes No
	• ESEs contracted by PIUs	Yes No
	• EMS contracted by EEM	Yes No
Bidding documents and contracts with environmental safeguards	• Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances	Yes No
	• Bidding documents and contracts incorporating the impact mitigation and environmental management and monitoring provisions of the EMP	Yes No
	• Environmental requirements of EMP included in contract documents	Yes No
EMP financial support	• The required funds have been set aside by PMO, PIUs, contractors and the O&M units to support the EMP implementation	Yes No

22. **Environmental impact monitoring. Table EMP-6** shows the environmental impact monitoring program specifically designed for this project, defining the requirements, including, scope, location, parameter, duration and frequency of monitoring during the construction and operational stages. Environmental impact monitoring will include monitoring of air quality, noise, water quality and ecology.

23. Environmental monitoring of air quality, noise and water quality during construction and operation will be conducted by the local Environment Monitoring Stations (EMS) to be contracted by the EEM. Ecological monitoring is based on the requirements in the topical reports prepared by the Pingxiang Municipal Station for Promotion of Aquatic Product Technology (PMSPAPT) (2013, 2015)[1] for the national and provincial fish protection zones on the Pingshui River and Yuan River respectively. Ecologists will be engaged by the PIUs responsible for rehabilitation of these two rivers. Soil erosion monitoring entities will be contracted by the PIUs and monitoring requirements are specified in the soil and water conservation reports (SWCR). The EEM will be hired by PMO to verify monitoring results. The budget for environmental impact monitoring has been estimated at **$180,000**, which includes approximately $60,000 estimated by PMSPAPT for ecological monitoring on the two rivers. This estimate does not include soil erosion monitoring, which is provided in the SWCRs. This monitoring program will be included in the project tendering documents, as well as the construction and operation contracts.

24. The environmental monitoring results will be compared with relevant PRC performance standards (**Table EMP-7**), and non-compliance with these standards will be highlighted in the monitoring reports. Monitoring results will be submitted by the PIUs to PMO quarterly, and will be reported in the semi-annual environmental monitoring reports by the EEM, see reporting plan in **Table EMP-8**).

25. **Environmental impact monitoring. Table EMP-6** shows the environmental impact monitoring program specifically designed for this project, defining the requirements, including, scope, location, parameter, duration and frequency of monitoring during the construction and operational stages. Environmental impact monitoring will include monitoring of air quality, noise, water quality and ecology.

Table EMP-6: Environmental Impact Monitoring Program

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP, PM10 (SO_2 & NO_x only if there is asphalt mixing within 500 m of monitoring locations)	Lianhua County: ● Huangjiali 黄家里 ● Xietian Village 斜田村 ● Baima Village 白马村 ● Maojia Village毛家村 ● Manfang Village 漫坊村 ● Meizhou Village 梅洲村 ● Xiafang Village下坊村 ● Jinjia Village 金家村 ● Panke Village 攀科村 ● Huangshazhou Village 黄沙洲村 ● Lianhua Village莲花村 ● Jiuwuli 旧屋里 ● Shengfang Village 升坊村 ● Xhengfang Town Clinic升坊镇卫 ● Mazhi Village 麻石村 ● Huatang Village 花塘村	1 day (24-hr continuous sampling) per month during construction period when there is construction activity within 300 m	EMS (contracted through EEM)	ESE, EEM

[11] Pingxiang Municipal Station for Promotional of Aquatic Product Technology. 2013. Topical report for the environmental impact assessment of Jiangxi Province five river rehabilitation and flood protection projects (Pingxiang Municipality urban flood protection project). 86 pp.
Pingxiang Municipal Station for Promotional of Aquatic Product Technology. 2015. Impact of Asian Development Bank project on the Provincial Protection Zone for Pingxiang Red Transpartent Crucian Carp Germplasm. 77 pp.

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
		● Yang Village 杨村 ● Huangtianlong 黄天垅 ● Xidongwu 四栋屋 <u>Luxi County:</u> ● Xiadantang 下淡塘 ● Tantian Village 潭田村 ● Shawanli 沙湾里 ● Zhepeng Village 蔗棚村 ● Goumaochong 狗毛冲 ● Applied Engineering Vocational School 应用工程职业学院 ● Bishuihuating Estate 碧水华庭小区 ● Shiziyan 狮子岩 ● Gengtian Village 更田村 ● Tianxin Village 田心村 ● Luxi Middle School 芦溪中学 ● Luxi Foreign Language School 芦溪外国语学校 ● Hejiazhen 何家圳 ● Xisheng Village 西圣村 ● Hexia Village 河下村 ● Caochangli 操场里 ● Hongqiao Village 虹桥村 ● Pantian Village 盘田村 ● Shanyuanli 山园里 <u>Shangli County:</u> ● Tongmu Central Clinic 桐木中心卫生院 ● Yaxi Village Clinic 雅溪村卫生所 ● Yaxi Village Kindergarten 雅溪村幼儿园 ● Shishanxia 石山下 ● Liantang 莲塘 ● Tongmu Town center 桐木镇区 ● Mopanshan 磨盘山 ● Tongmu Central Primary School 桐木中心小学 ● Sanqi Village 三漆村 ● Huangjiachong 黄家冲 ● Qishuwan 漆树湾 ● Xiapeng 下棚 <u>Xiangdong District</u> ● Gunzidang 滚子凼 ● Dajiangbian Primary School 大江边小学 ● Xiashankou Street 峡山口街道 ● Binjianghuayuan Estate 滨江花园小区 ● Yantian Village 砚田村 ● Pingxiang Power Plant dormitory 萍乡电厂居民区 ● Wuxi Village 五四村 ● Xiangdong Middle School 湘东中学 ● Changsheng Village 昌盛村			

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
		● Xiangdong Middle School 湘东中学 ● Xiangdong Yuncheng Experimental School 湘东云程实验学校 ● Tiantian Kindergarten天天幼儿园 ● Xiangdong Experimental Primary School湘东区实验小学 ● Jinsetongnian Kindergarten 金色童年幼儿园 ● Xinjian village 新建村 ● Ganxi Hospital 赣西医院 ● Pinggang Middle School 萍钢中学 ● Xiangdong District People's Hospital 湘东区人民医院 ● Chuanxing Estate 船形小区 ● Pinggang Primary School萍钢小学 ● Zhangli Village 樟里村 ● Xiangdong Central Kindergarten 湘东中心幼儿园 ● Chunfeng Estate 春风小区 ● Dada School 达达学校 ● Xiangdong Old Street湘东老街 <u>Rural-urban road</u> ● Aoshang 坳上 ● Yanzhutang 烟猪塘 ● Shiyuan 石源 ● Zhizishi 狮子石 ● Baishuxia 柏树下 ● Shapixia 沙陂下 ● Doujialing 斗家岭 ● Changmuling 长睦岭 ● Xinwuchang 新屋场 ● Shangtongmukeng 上桐木坑 ● Yuanxi Village 源溪村 ● Zhangjiapi 章家陂 ● Hejiazhen 何家圳 ● Pailou Village 排楼村			
Noise	L_{Aeq}	Locations same as those for air quality	2 times per day (day time and night time); 1 day per month during construction period when there is construction activity within 300 m	EMS (contracted through EEM)	ESE, EEM
Water quality	SS	<u>Set up 2 monitoring stations at each of the following locations during construction</u>: ● Bridge construction ● Pipeline crossing construction ● Weir construction ● Coffer dam construction and water pumping ● Cutter suction dredger <u>Station 1</u>: 50 m upstream of the location <u>Station 2</u>: 100 m downstream of the location	1 time per day; 1 day per month during construction period when there is construction activity	EMS (contracted through EEM)	ESE, EEM
Sediment	pH, moisture	At each dredged sediment disposal or	1 time per day, 1 day every 3	EMS (contracted	ESE, EEM

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
quality	content, Cu, Pb, Hg, Cd, As, Ni, BHC, DDT	storage area	months	through EEM)	
Ecology	Fish monitoring	2 rivers: ● Pingshui River (required by PMSPAPT 2013)[2] ● Yuan River (required by PMSPAPT 2015)[3]	1 time every 3 months during construction period.	Qualified ichthyologist(s) (contracted through PIUs)	ESE, EEM
Occup. Health & Safety	Audit of occupational health & safety of workers on construction sites	Construction sites	Daily during construction period Once per month during construction period	ESE PIU	EEM, PMO
Operational Stage (first three year)					
Air Quality	Odor	At 4 site boundaries of: ● Xuanfeng Town WWTP ● Tongmu Town WWTP	1 time per day, 1 day every three months for 3 years	EMS (contracted by O&M unit)	PMO
Noise	L_{Aeq}	At 4 site boundaries of: ● Xuanfeng Town WWTP ● Tongmu Town WWTP	1 time per day, 1 day every t months for 3 years (terminate monitoring when compliance with GB12348-2008 is achieved on 3 consecutive times)	EMS (contracted by O&M unit)	PMO
Noise	L_{Aeq}	At following locations along rural-urban road: ● Aoshang 坦上 ● Yanzhutang 烟猪塘 ● Shiyuan 石源 ● Zhizishi 狮子石 ● Baishuxia 柏树下 ● Shapixia 沙陂下 ● Doujialing 斗家岭 ● Changmuling 长睦岭 ● Xinwuchang 新屋场 ● Shangtongmukeng 上桐木坑 ● Yuanxi Village 源溪村 ● Zhangjiapi 章家陂 ● Hejiazhen 何家圳 ● Pailou Village 排楼村	2 times per day (day time and night time), 2 consecutive days every 3 months for 1 year starting at road commissioning	EMS (contracted by O&M unit)	PMO
Water quality	COD, BOD_5, SS, TN, TP	At 2 locations: ●Tongmu WWTP effluent outfall ●Xuanfeng WWTP effluent outfall	1 time per day, 3 consecutive days every 3 months for 1 year (monitoring may be extended if Class 1B standard is not met after 1 year)	EMS (contracted by O&M units)	PMO
Ecology	Fish monitoring	2 rivers: ● Pingshui River (required by PMSPAPT 2013) ● Yuan River (required by PMSPAPT 2015)	1 time every 6 months for 3 years	Qualified ichthyologist(s) (contracted through O&M unit)	PMO
Total estimated cost: $180,000 ($120,000 from the EEM contract; $60,000 from PMSPAPT for fish monitoring will be borne by PIU)					
Notes: EEM = External Environment Monitor; EMS = Environmental Monitoring Station; ESE = environmental supervision engineer; O&M = operation & maintenance; PIU = Project Implementation Unit; PMSPAPT = Pingxiang Municipal Station for Promotional of Aquatic Product Technology; PMO =					

[2] Pingxiang Municipal Station for Promotional of Aquatic Product Technology. 2013. Topical report for the environmental impact assessment of Jiangxi Province five river rehabilitation and flood protection projects (Pingxiang Municipality urban flood protection project). 86 pp.

[3] Pingxiang Municipal Station for Promotional of Aquatic Product Technology. 2015. Impact of Asian Development Bank project on the Provincial Protection Zone for Pingxiang Red Transpartent Crucian Carp Germplasm. 77 pp.

Item	Monitoring Parameter	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Pingxiang Project Management Office; WWTP = wastewater treatment plant					

Table EMP-7: Monitoring Indicators and Applicable PRC Standards[4]

Period	Indicator	Standard
Construction	TSP	Class II Ambient Air Quality Standard (GB 3095-2012)
	Fume from asphalt mixing plant (SO_2, NOx)	Air Pollutant Integrated Emission Standard (GB 16297-1996)
	Noise limits of PME at boundary of construction site	Emission Standard of Environmental Noise for Boundary of Construction Site (GB 12523-2011)
	Water quality during dredging and other river works (SS)	No PRC standard. Use upstream (of the dredging works) location as control station and downstream location as the impact station. If the SS level at the downstream location is >130% of the upstream location, mitigation measures such as reducing the dredging rate or changing the dredging equipment will be implemented
	Quality of dredged sediment for urban landscaping	Control Standards for Pollutants in Sludges for Gardens and Parks (GB/T23486-2009), and land improvement (GB3838-2002).
	Quality of wastewater from construction sites and supernatant water from dredged sediment disposal sites (SS, BOD, COD, LAS)	PRC's Integrated Wastewater Discharge Standard (GB 8978-1996), Class I standard (for discharging into Category III water bodies) No discharge into Category II water bodies is allowed
	Soil erosion	Class II Control Standards for Soil and Water Loss on Development and Construction Projects (GB50434-2008)
Operation	Odor from WWTP	Emission Standards of Odor Pollutants (GB14554-93)
	Noise from WWTP	Emission Standard for Industrial Enterprises Noise at Boundary (GB12348-2008)
	Effluent discharge from WWTP	Class 1B Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant (GB18918-2002)

26. **EMP monitoring.** EMP monitoring will be undertaken by the PMO, with verification by the EEM, who will report to ADB the project's adherence to the EMP, information on project implementation, environmental performance of the contractors, and environmental compliance through semi-annual environment progress reports (**Table EMP-8**). The reports should confirm the project's compliance with the EMP, local legislation such as PRC EIA requirements, and identify any environment related implementation issues and necessary corrective actions. The performance of the contractors in respect of environmental compliance will also be reported. The operation and performance of the project GRM, environmental institutional strengthening and training, and compliance with all covenants under the project will also be included in the report.

27. **Environmental acceptance monitoring and reporting.** Within three months after each component completion, or no later than 1 year with permission of the Pingxiang EPB, environmental acceptance monitoring and audit reports of each component completion shall be: (i) prepared by a licensed environmental monitoring institute in accordance with the PRC

[4] The project applies PRC standards. A comparison of PRC standards with internationally accepted standards (as defined in the World Bank's Environment Health and Safety Guidelines) was conducted and is described in Chapter II. The comparison confirmed that PRC standards are either internationally accepted, or have comparable standard limits with internationally accepted standards. A deviation from PRC practices and standards would make the task of compliance monitoring authorities unnecessarily complicated, and is deemed not justified.

Management Method for Acceptance of Environmental Protection at Construction Project Completion (MEP, 2001), (ii) reviewed for approval of the official commencement of individual component operation by environmental authorities, and (iii) finally reported to ADB (**Table EMP-8**). The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.

Table EMP-8: Reporting Plan

Reports		From	To	Reporting Frequency
Construction Phase				
Progress reports by contractors	Internal project progress report by construction contractors, including EMP monitoring results by ESE	Contractors, ESE	PIU	Monthly
Progress reports by PIUs	Internal project progress report including EMP implementation progress	PIU	PMO	Quarterly
Environment quality monitoring report	Environment quality monitoring report by licensed EMS (contracted by EEM)	EMS	PMO, EEM	Quarterly
Reports to ADB and disclosed to AP	Project progress report (including section on EMP implementation and monitoring)	PMO	ADB	Quarterly
	Environment monitoring reports	EEM	ADB, AP	Semi-annual
Operational Phase				
Reports to ADB and disclosed to AP	Project progress report (including section on EMP implementation and monitoring)	PMO	ADB	Semi-annual
	External environment monitoring report	EEM	ADB, AP	Annual until PCR

Notes: ADB = Asian Development Bank; AP = affected people; EEM = external environmental monitor; EMS = Environment Monitoring Station; PCR = project completion report; PIU = Project Implementation Unit; PMO = Pingxiang Project Management Office.

4. Institutional Capacity Building and Training

28. The capacity of PMO, PIUs, O&M units and contractors' staff responsible for EMP implementation and supervision will be strengthened. All parties involved in implementing and supervising the EMP must have an understanding of the goals, methods, and practices of project environmental management. The project will address the lack of capacities and expertise in environmental management through (i) institutional capacity building, and (ii) training.

29. **Institutional strengthening.** The capacities of the PMO and PIUs to coordinate environmental management will be strengthened through a set of measures:

i. The appointment of qualified environment specialists within the PMO staff to be in charge of EMP coordination, including GRM and coordination of environmental impact monitoring, training, reporting, etc.;
ii. The contracting of specialists in flood risk management, wetland design and operation, environment, traffic safety and others under the loan implementation technical assistance (LI-TA);
iii. The contracting of an External Environmental Monitor (EEM) to guide and verify PMO and PIUs in implementing the EMP and ensure compliance with ADB's Safeguard Policy Statement (SPS 2009);

iv. The appointment of environment specialist(s) by the PIUs on their staff to conduct regular site inspections; and
v. The contracting of environmental supervision engineers (ESE) by the PIUs to verify environment performance of the project on construction sites.

30. **Training.** The PMO, PIUs, contractors and O&M units will receive training in EMP implementation, supervision, and reporting, and on the Grievance Redress Mechanism (**Table EMP-9**). Training will be facilitated by the EEM and experts under the loan implementation consultant services.

Table EMP-9: Tentative EMP-related Training Program

Training	Attendees	Contents	Times	Period (days)	No. of persons	Cost ($/person /day)	Total Cost
EMP adjustment and implementation	PMO, PIUs, contractors, ESEs	Development and adjustment of the EMP, roles and responsibilities, monitoring, supervision and reporting procedures, review of experience (after 12 months)	Twice - Once prior to, and once after one year of project implementation	2	15	100	$6,000
Grievance Redress Mechanism	PMO, PIUs, contractors, EPBs, ESEs	Roles and responsibilities, procedures, review of experience (after 12 months)	Twice - Once prior to, and once after one year of project implementation	1	10	100	$2,000
Environmental technologies and processes	PMO, PIUs, contractors, O&M units	Pollution control technologies, equipment selection and procurement	Twice (during project implementation)	2	15	100	$6,000
Environmental monitoring, occupational health & safety	PMO, PIUs, contractors	Monitoring methods, data collection and processing, reporting systems, occupational health & safety during construction	Once (at beginning of project construction)	2	10	100	$2,000
						Total estimated cost:	$16,000
Notes: O&M = operation & maintenance; EPB = Environmental Protection Bureau; PIU = Project Implementation Unit; PMO = Pingxiang Project Management Office.							

31. **Capacity building.** In addition to training for EMP implementation, the project will provide a substantial capacity building package to ensure effective implementation of the project and sustainable O&M of the project facilities. The institutional components of the project will involve training by loan implementation consultants in operation and maintenance of completed facilities. Part of this training will focus on teaching staff how to use a set of indicators to monitor performance of the completed facilities. These indicators will be designed by loan implementation consultants prior to operation start-up.

5. Consultation, Participation and Information Disclosure

32. Section VII of the project environmental impact assessment report has described the meaningful public participation and consultation implemented during project preparation. Plans for public involvement during construction and operation stages have been developed during project preparation (Table EMP-10). PMO is responsible for public participation during project implementation. Affected communities will be involved and consulted site visits, workshops, investigation of specific issues, interviews, and public hearings. The budget for public consultation is estimated at approximately **$10,000**.

Table EMP-10: Public Consultation Plan

Organizer	Format	Frequency	Subject	Attendees
Construction Stage				
PMO, PIUs, EEM	Public consultation &	4 times: once before construction commences	Adjusting of mitigation measures, if necessary;	Residents in DPA

Organizer	Format	Frequency	Subject	Attendees
	site visits	and once each year during construction	construction impact; comments and suggestions	
PMO, EEM	Expert workshop	As needed, based on public consultation	Comments and suggestions on mitigation measures, public opinion	Experts of various sectors, county/ district EPBs
EEM, PMO	Public opinion survey	Once at MTR stage	Public satisfaction with EMP implementation	Residents in DPA
Operational Stage				
PMO, PIUs EEM	Public consultation and site visits	Once in the first year	Effectiveness of mitigation measures, impacts of operation, comments and suggestions	Residents in DPA
EEM, PMO	Public satisfaction survey	Once at PCR stage	Public satisfaction with EMP implementation Comments and suggestions	Residents in DPA
EPB = Environmental Protection Bureau, PMO = Pingxiang project management office, DPA = direct project area, EEM = external environment monitor; MTR = midterm review; PCR = project completion review.				

33. **Information disclosure** relating to environment safeguards will continue throughout project implementation. The project's environmental information will be disclosed as follows:

(v) Domestic EIRs and EITs (in Chinese) were disclosed on the local governments' websites before approval by relevant municipal/county/district environmental protection authorities;

(vi) Copies of the domestic EIRs and EITs (in Chinese) are available on request in the PMO.

(vii) The draft EIA is disclosed on the project website at www.adb.org.

(viii) All semiannual environmental monitoring reports during project implementation will be available at www.adb.org.

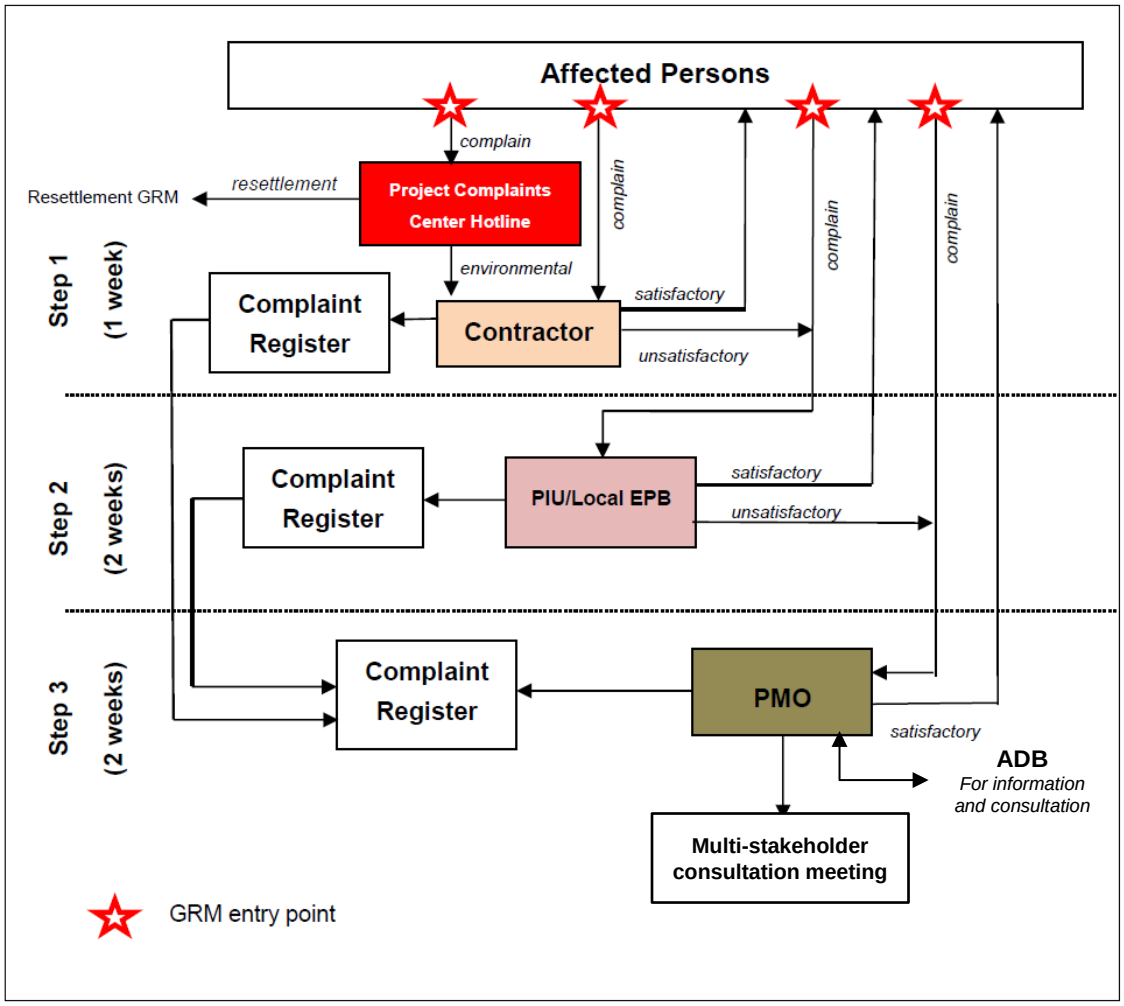
6. Grievance Redress Mechanism

34. Public participation, consultation and information disclosure undertaken as part of the local EIA process have discussed and addressed major community environmental concerns. Continued public participation and consultation has been emphasized as a key component of successful project implementation. As a result of this public participation and safeguard assessment during the initial stages of the project, major issues of grievance are not expected. However, unforeseen issues may occur. To settle such issues effectively, a Grievance Redress Mechanism (GRM) providing effective and transparent channels for lodging and addressing complaints and grievances has been defined. The GRM will be established prior to construction of the project components. The GRM is responsive to ADB's Safeguard Policy Statement (2009) and PRC legislation.

35. **The proposed project GRM.** In consultation with the PMO, PIUs and potentially affected people, it was agreed that PMO will establish a complaints center and coordinate the GRM for the project for complaints related to both environmental and resettlement issues. The project complaint center will direct all environmental complaints as appropriate to: (i) the contractors, ESE or CSC; (ii) PIUs; (iii) EPBs. These are also entry points to whom the affected people could directly register their complaints. Complaints related to resettlement issues

received by the complaints center will be directed to the relevant agencies in accordance with the resettlement GRM. Contact details for the complaints center and the entry points will be publicly disseminated on information boards at construction sites and nearby communities. Multiple means of using this mechanism, including face-to-face meetings, written complaints, telephone conversations, or e-mail, will be available. In the construction and the operational periods until ADB's project completion report (PCR), the PMO will report progress to the ADB, and this will include reporting complaints and their resolution. The EEM will provide training on the GRM to ensure that responsibilities and procedures are clear. The grievance redress steps are described below:

- **Step 1.** For environmental problems during the construction stage, affected persons can register their complaints directly with contractors. Affected persons may also file their complaints through a project complaint hotline to be established by the PMO, with a designated person in charge of handling complaints, and advertised at the main entrance to each construction site. Each contractor is required to document all complaints and to respond to complainants in writing within 1 week about their proposed solutions and how they will be implemented. If a problem is resolved and the complainant (i.e. the impacted person making the complaint) is satisfied with the solution, the grievance handling ends here. Contractors are required to report complaints received, handled, resolved, and unresolved to the CSC, ESE and PIU monthly (through the monthly progress reports).
- **Step 2.** For environmental problems that could not be resolved at the contractor level, the affected person can take the grievance to the PIU. On receiving complaints, the PIU will (i) document the complaint into a complaints register; (ii) send a copy of the complaint to the environmental staff of the PMO; and (iii) reply in writing within 14 calendar days describing the proposed solution and how it will be implemented. The results (the complainant is satisfied or unsatisfied) is documented in the complaint register and reported to the PMO quarterly (through the PIUs' quarterly project progress reports).
- **Step 3.** If the affected person is not satisfied with the solutions proposed in the step 2, he or she can, upon receiving the reply, take the grievance directly to the PMO. The PMO must immediately inform ADB of the complaint. After discussing the complaint and potential solutions among PMO, the EEM, the loan implementation consultant, relevant agencies and EPB, the affected person, and the contractor, the PMO must provide the complainant with a clear and understandable reply within 14 calendar days, and record it into the complaint register.



ADB = Asian Development Bank, EPB = Environmental Protection Bureau, PMO = project management office.

Figure EMP-4: Procedure and Timeframe for the GRM

36. The tracking and documenting of grievance resolutions by PMO (through its complaints center) will include the following elements: (i) tracking forms and procedures for gathering information from project personnel and complainant(s), and notification procedure to ADB; (ii) dedicated staff to update the database routinely; (iii) a system to periodically evaluate the overall functioning of the mechanism; (iv) processes for informing stakeholders about the status of a case; and (v) procedures to retrieve data for reporting purposes, including the periodic reports to the ADB through the semi-annual environment monitoring reports.

37. The PMO complaint center shall accept the complaints/grievances lodged by the AP free of charge. Any cost incurred should be covered by the contingency of the project. The grievance procedures will remain valid throughout the duration of project construction and until project closure.

1. Cost Estimates

38. Cost estimates for EMP implementation, including mitigation measures, environmental impact monitoring, public consultation and training as presented in **Tables EMP-4, EMP-6, EMP-9 and EMP-10** are summarized in **Table EMP-11**. Total budget for implementing these 4 items of the EMP is therefore $2,836,000. Excluded from the costs estimates are infrastructure costs which relate to environment and public health but which are already included in the project direct costs. Excluded are also capacity building packages, the remuneration costs for environment specialists who are staff members within PMO and PIUs, and technical experts on equipment operation and maintenance, which are covered elsewhere in the project budget. The following costs are also not included in the EMP cost: (i) $360,000 for fish stocking on the Pingshui River, an d(ii) $280,000 for fish stocking on the Yuan River.

Table EMP-11: Estimated Budget for Environmental Management Plan Implementation

EMP Item	Estimated Cost	
	EA Funded	ADB Funded
Mitigation measures (noise mitigation cost excluded)	1,890,000	-
Environmental quality monitoring (by EMS, contracted by EEM)	60,000	120,000
External EMP compliance monitoring by ESE/CSC	650,000	-
External monitoring by EEM		80,000
Training	$16,000	$10,000
Public consultation	$10,000	
Subtotal:	2,626,000	210,000
Total:	***2,836,000***	

39. The EEM will bear all environmental impact monitoring costs during the construction stage. O&M Units will bear the monitoring costs of the operational stage. PMO will ensure the necessary budgets are available for the licensed environment monitoring entity (the external environment monitor) and the experienced ichthyologist(s). Contractors will bear the costs for all mitigation measures during construction, including those specified in the tender and contract documents as well as those to mitigate unforeseen impacts due to their construction activities. The O&M units will bear the costs related to mitigation measures during operation. PMO and PIUs will bear the costs related to environmental supervision by their own staff. The PIUs will bear the cost of commissioning the environmental supervision engineer (ESE). The project as a whole (through PMO) will bear the costs for training, for coordinating the Grievance Redress Mechanism (GRM).

2. Mechanisms for Feedback and Adjustment

40. The EMP will be updated as needed by PMO with assistance from the LIC and under supervision of the EEM when there are design changes, changes in construction methods and program, poor environmental monitoring results, and if mitigation measures prove to be ineffective or inadequate. Based on environmental monitoring and reporting systems in place, PIUs (with the support of the LIC and the EEM) shall assess whether further mitigation measures or improvement in environmental management practices are required as corrective actions. PMO will inform ADB promptly on any changes to the project and needed adjustments to the EMP. The updated EMP will be submitted by PMO to ADB for review and approval, and will be disclosed on the project website.

Figure EMP-2: Project Implementation Schedule

	2015	2016 (Quarters)				2017 (Quarters)				2018 (Quarters)				2019 (Quarters)				2020 (Quarters)				2021 (Quarters)		
Overall activities	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
Project implementation																								
Project management support and capacity development, training and study tours																								
Detailed engineering design																								
Bidding documents and tendering																								
Civil works construction and equipment installation, commissioning[a]																								
Project completion report																								
Detailed activities																								
Output 1: Flood risk management and river rehabilitation improved and integrated																								
1.1 Detailed design, RP updated, bidding documents																								
1.2 Contracts awarded																								
1.3 Land acquisition and resettlement plan implementation completed																								
1.4 Civil works including river dredging; sewer pipe relocation, where applicable; interceptor pipe installation, where applicable; toe zone protection; embankment and pathway construction; and riparian landscaping and completion of wetlands vegetation																								
Output 2: Wastewater collection and treatment improved																								
2.1 Detailed design, RP updated, bidding documents																								
2.2 Contracts awarded																								
2.3 Land acquisition and resettlement plan implementation completed																								
2.4 Civil works for sewer pipe installation																								
2.5 Civil works and equipment installation commissioning of wastewater treatment plants																								
Output 3. Rural–urban linkages improved																								
3.1 Detailed design completed, resettlement plan finalized, contract awarded, commencement of construction for Anyuan section (government-financed road)																								
3.2 Detailed design, RP updated, bidding documents																								
3.3 Contracts awarded																								
3.4 Land acquisition and resettlement plan implementation completed																								
3.5 Civil works for road construction																								
Output 4. Inclusive capacity in project planning and management, and urban–rural integration developed																								
4.1 Recruitment of project implementation consultant																								
4.2 Recruitment of external resettlement and environment monitoring consultants																								
4.3 Project performance management system established, project management support and monitoring and evaluation, and quarterly progress reporting																								
4.4 Support to implementation of land acquisition and resettlement plan and submit semiannual reports																								
4.5 Support to implementation of environmental management plan and submit semiannual monitoring reports																								
4.6 Carry out training programs, policy dialogue, study tours, and awareness raising campaigns																								
4.7 Submit project completion report by Q2 2021																								

[a] Except works for Anyuan section of the road (output 3) which will commence in 2015.

Source: Asian Development Bank estimates.

Appendix 2: Contract Clauses Related to the Environment Management Plan (EMP)

The following contract clauses for safeguarding the environment during construction will be incorporated into all the tender documents.

1. General Environmental Clauses for all Bidding Documents and Contracts

1.1 Site specific environmental management plan (SEMP):

1.1.1 The contractor shall prepare a site-specific environmental management plan (SEMP) prior to the commencement of construction works, and shall submit the plan to the project implementation unit (PIU) for review and approval by the environmental supervision engineer (ESE) and the loan implementation environmental consultant (LIEC). The plan shall include method statements on the implementation of pollution control and mitigation measures, as well as an emergency spill contingency plan for containing and cleaning up accidental chemical spills on construction sites. The SEMP shall be updated as needed as and when environmental issues not covered by the plan arise.

1.2 Siting of construction facilities:

1.2.1 Locations of asphalt mixing stations and concrete batching plants shall be at least 300 m downwind of the nearest air quality and noise protection target.

1.2.2 Locations of borrow areas shall be at least 500 m from residential areas.

1.2.3 Borrow areas and spoil disposal sites with long, steep slopes, susceptible to erosion shall be avoided and shall include small level cut-off drains to break up and redirect runoff.

1.2.4 Access and haul roads shall be constructed at sufficient distances from residential areas, in particular, local schools, health clinics and hospitals.

1.3 Construction time:

1.3.1 There shall be no night time (between 22:00 and 06:00 hours) construction.

1.4 Protection of air quality

1.4.1 Provide dust masks to construction workers, especially those involved in the Taohua Tunnel construction.

1.4.2 Build access and hauling roads at sufficient distances from residential areas, particular, from local schools and hospitals.

1.4.3 Assign haulage routes and schedules to avoid transport occurring in the central areas, traffic intensive areas or residential areas. For the areas with high-demand on environmental quality, transport should be arranged at night.

1.4.4 Spray water regularly on unpaved haul roads and access roads (at least once a day) to suppress dust; and erect hoarding around dusty activities.

1.4.5 Cover material stockpiles with dust shrouds or tarpaulin. For the earthwork management for backfill, measures will include surface press and periodical spraying and covering. The extra earth or dreg should be cleared from the project site in time to avoid long term stockpiling.

1.4.6 Minimize the storage time of construction and demolition wastes on site by regularly removing them off site.

1.4.7 Equip asphalt, hot mix and batching plants with fabric filters and/or wet scrubbers to reduce the level of dust emissions.

1.4.8 Install wheel washing equipment or conduct wheel washing manually at each exit of the works area to prevent trucks from carrying muddy or dusty substance onto public roads.

1.4.9 Keep construction vehicles and machinery in good working order, regularly service and turn off engines when not in use.

1.4.10 Vehicles with an open load-carrying case, which transport potentially dust-producing materials, shall have proper fitting sides and tail boards. Dust-prone materials shall not be loaded to a level higher than the side and tail boards, and shall always be covered with a strong tarpaulin.

1.4.11 In periods of high wind, dust-generating operations shall not be permitted within 200 m of residential areas. Special precautions need to be applied in the vicinity of sensitive receptors such as schools, kindergartens and hospitals.

1.4.12 Site all dredged sediment storage or disposal facilities at least 50 m from the nearest air quality protection target.

1.4.13 Unauthorized burning of construction and demolition waste material and refuse shall be subject to penalties for the Contractor, and withholding of payment.

1.5 Protection of the acoustic environment

1.5.1 Noise levels from equipment and machinery shall conform to the PRC standard for Noise Limits for Construction Sites (GB12523-2011) and the WBG EHS Standards, and properly maintain machinery to minimize noise.

1.5.2 Equipment with high noise and high vibration shall not be used near village or township areas and only low noise machinery or the equipment with sound insulation is employed.

1.5.3 Temporary noise barriers or hoardings shall be installed around the equipment to shield residences when there are residences within 20 m of the noise source.

1.5.4 Regularly monitor noise levels at construction site boundaries. If noise standards are exceeded by more than 3 dB, equipment and construction conditions shall be checked, and mitigation measures shall be implemented to rectify the situation.

1.5.5 Provide the construction workers with suitable hearing protection (ear muffs) according to the worker health protection law of the PRC.

1.5.6 Control the speed of bulldozer, excavator, crusher and other transport vehicles travelling on site, adopt noise reduction measures on equipment, step up equipment repair and maintenance to keep them in good working condition.

1.5.7 Limit the speed of vehicles travelling on site (less than 8 km/h), forbid the use of horns unless absolutely necessary, minimize the use of whistles.

1.5.8 Maintain continual communication with the villages and communities near the construction sites, and avoid noisy construction activities during school examination periods.

1.6 Protection of water quality

1.6.1 Portable toilets and small package wastewater treatment plants shall be provided on construction sites and construction camps for the workers and canteens; If there are nearby public sewers, interim storage tanks and pipelines will be installed to convey wastewater to those sewers.

1.6.2 Sedimentation tanks shall be installed on construction sites to treat process water (e.g. concrete batching for bridge construction) and muddy runoff with high concentrations of suspended solids. If necessary, flocculants such as polyacryl amide (PAM) will be used to facilitate sedimentation.

1.6.3 Construction machinery shall be repaired and washed at special repairing shops. No onsite machine repair and washing shall be allowed.

1.6.4 Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces, and provided with bunds and cleanup kits.

1.6.5 The contractors' fuel suppliers must be properly licensed, follow proper protocol for transferring fuel, and must be in compliance with Transportation, Loading and Unloading of Dangerous or Harmful Goods (JT 3145-88).

1.6.6 Material stockpiles will be protected against wind and runoff waters which might transport them to surface waters.

1.6.7 Spills shall be cleaned up according to PRC norms and codes within 24 hours of the occurrence, with contaminated soils and water treated according to PRC norms and codes. Records must be handed over without delay to the PMO and Pingxiang EPB.

1.6.8 All process wastewater and muddy runoff from construction sites and supernatant water from dredged sediment storage or disposal sites shall be treated to GB 8978-1996 Class I standard before discharging.

1.6.9 No treated wastewater from construction sites shall be discharged to Category II water bodies.

1.7 Protection of biological resources and wildlife

1.7.1 Preserve existing vegetation where no construction activity is planned.

1.7.2 Protect existing trees and grassland during construction; where a tree has to be removed or an area of grassland disturbed, replant trees and re-vegetate the area after construction

1.7.3 Remove trees or shrubs only as the last resort if they impinge directly on the permanent works or necessary temporary works

1.7.4 Construction workers are prohibited from capturing any wildlife in the project areas.

1.8 Solid waste management, earth works and soil erosion

1.8.1 Establish enclosed waste collection points on site, with separation of domestic waste and construction & demolition (C&D) waste.

1.8.2 Set up centralized domestic waste collection point and transport offsite for disposal regularly by sanitation department.

1.8.3 Maximize the reuse of earth cut materials and C&D waste for filling and foundations of other construction works specified by the municipal and planning departments, or transport in enclosed containers to designated C&D landfill site.

1.8.4 Confirm location of the borrow pit and temporary spoil storage and final disposal sites.

1.8.5 Develop borrow pit and spoil disposal site management and restoration plan, to be approved by responsible authority; obtain permit for the clearance of excavated earthworks

1.8.6 Construct intercepting ditches and drains to prevent runoff entering construction sites, and diverting runoff from sites to existing drainage.

1.8.7 Construct hoardings and sedimentation ponds to contain soil loss and runoff from the construction sites.

1.8.8 Limit construction and material handling during periods of rains and high winds

1.8.9 Stabilize all cut slopes, embankments, and other erosion-prone working areas while works are going on.

1.8.10 Stockpiles shall be short-termed, placed in sheltered and guarded areas near the actual construction sites, covered with clean tarpaulins, and sprayed with water during dry and windy weather conditions.

1.8.11 All earthwork disturbance areas shall be stabilized with thatch cover within 30 days after earthworks have ceased at the sites.

1.8.12 Immediately restore, level and plant landscape on temporary occupied land upon completion of construction works.

1.8.13 Implement all soil erosion protection measures as defined in the soil and water conservation reports.

1.9 Construction site sanitation

1.9.1 Contractor shall provide adequate and functional systems for sanitary conditions, toilet facilities, waste management, labor dormitories and cooking facilities. The site shall be effectively cleaned and disinfected. During site formation, the site shall be sprayed with phenolated water for disinfection. Toilets and refuse bins shall be disinfected and timely removal of solid waste shall be ensured.

1.9.2 Rodents on site shall be exterminated at least once every 3 months. Mosquitoes and flies shall be exterminated at least twice each year.

1.9.3 Public toilets shall be provided in accordance with the requirements of labor management and sanitation departments in the living areas on construction site, and designated staff responsible for cleaning and disinfection shall be appointed.

1.9.4 Work camp wastewater shall be discharged into the municipal sewer system or treated on-site using portable systems or septic tanks.

1.10 Occupational safety

1.10.1 A person responsible for environmental, health and safety during construction shall be appointed for the project.

1.10.2 Personal protective equipment (safety hats and shoes and high visibility vests) shall be provided to all construction workers.

1.10.3 Ear defenders for hearing protection shall be provided to workers operating and working near noisy power mechanical equipment.

1.10.4 Safety goggles and respiratory masks shall be provided to workers doing asphalt road paving and tunnel blasting.

1.10.5 Method statements shall be prepared and approvals obtained for hazardous activities such as blasting, tunnel works, excavation and working near water.

1.11 Food safety

1.11.1 Food hygiene in canteens on site shall be inspected and supervised regularly. Canteen workers must have valid health permits.

1.11.2 If food poisoning is discovered, effective control measures shall be implemented immediately to prevent it from spreading.

1.12 Disease prevention and health services

1.12.1 All contracted labor shall undergo a medical examination which shall form the basis of an (obligatory) health/accident insurance and welfare provisions to be included in the work

contracts. The contractors shall maintain records of health and welfare conditions for each person contractually engaged.

1.12.2 Health clinic shall be established at location where workers are concentrated, which shall be equipped with common medical supplies and medication for simple treatment and emergency treatment for accidents.

1.12.3 A person responsible for health and epidemic prevention and education and training on food hygiene and disease prevention shall be specified (by the IA and contractors) to raise the awareness of workers.

1.12.4 Induction and training by local health departments on prevention and management of communicable diseases shall be provided.

1.13 Social conflict prevention

1.13.1 The following shall be prioritized: (i) employ local people for works, (ii) ensure equal opportunities for women and men, (iii) pay equal wages for work of equal value, and to pay women's wages directly to them; and (iv) not employ child or forced labor.

1.14 Community health and safety

1.14.1 A traffic control and operation plan shall be prepared together with the local traffic police prior to any construction. The plan shall include provisions for diverting or scheduling construction traffic to avoid morning and afternoon peak traffic hours, regulating traffic at road crossings with an emphasis on ensuring public safety through clear signs, controls and planning in advance. Haulage routes and schedules shall be assigned to avoid transport occurring in the central areas, traffic intensive areas or residential areas.

1.14.2 Residents and businesses shall be informed in advance of the road improvement activities, given the dates and duration of expected disruption, dusty and noisy activities, and access to the grievance redress mechanism. Local communities shall be alerted of the time and location of hazardous activities such as blasting. Construction billboards, which include construction contents, schedule, responsible person and complaint hotline number, will be erected at each construction site.

1.14.3 Clear signs shall be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations etc. and raising awareness on safety issues. Heavy machinery shall not be used at night, where possible, and all such equipment shall be returned to its overnight storage area/position before night. All sites shall be made secure, discouraging access by members of the public through appropriate fencing, signage and/or security personnel, as appropriate.

1.14.4 Continual communication with the villages and communities along the road alignments shall be maintained and the grievance redress mechanism shall be accessible and effective.

1.15 Utility interruption

1.15.1 Contractors shall assess construction locations in advance and identify potential for disruption to services and risks before starting construction. Any damage or hindrance/disadvantage to local businesses caused by the premature removal or insufficient replacement of public utilities shall be subject to full compensation, at the full liability of the contractor who causes the problem.

1.15.2 If temporary disruption is unavoidable the contractor shall, in collaboration with relevant local authorities such as power company, water supply company and communication company, develop a plan to minimize the disruption and communicate the dates and

duration in advance to affected persons.

2. Environmental Clauses specific for Lianhua County Integrated River Rehabilitation and Flood Risk Management Bidding Documents and Contracts

2.1 To avoid odor impacts caused by sediment dredging, transport dredged sediment in closed tank wagons to contain odor and prevent scattering along the way.

2.2 Mitigation of water quality impact during bridge and weir construction, dredging, cofferdam construction and water pumping out of the cofferdam shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

2.3 During dredging works within the Class 1 protection zone for the drinking water intake (from 1,000 m upstream of the intake to 100 m downstream of the intake) of the Lianhua County Water Treatment Plant (WTP) intake on the Baima River, a silt curtain shall be deployed in front of this intake for protection of intake water quality.

2.4 No treated wastewater from construction sites shall be discharged to Category II water bodies, which include the Class 1 drinking water protection zone above.

2.5 Prior to commencement of construction, tag and conspicuously mark all the identified protected Camphor Trees along the Baima River and the Lianjiang River as identified in the EIRs and Table V.3 of this EIA, to prevent damage to these trees by construction workers.

3. Environmental Clauses specific for Luxi County Integrated River Rehabilitation and Flood Risk Management Bidding Documents and Contracts

3.1 To avoid odor impacts caused by sediment dredging, transport dredged sediment in closed tank wagons to contain odor and prevent scattering along the way.

3.2 Mitigation of water quality impact during bridge and weir construction, dredging, cofferdam construction and water pumping out of the cofferdam shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

3.3 During dredging works within the Class 1 protection zones for the drinking water intakes (from 1,000 m upstream of the intake to 100 m downstream of the intake) of the Luxi County WTP intake on the Yuan River, a silt curtain shall be deployed in front of this intake for protection of intake water quality.

3.4 No treated wastewater from construction sites shall be discharged to Category II water bodies, which include the Class 1 drinking water protection zone above.

3.5 There shall be no construction works on the Yuan River, Xinhua River and Tankou River from March to June each year for protection of the Provincial Protection Zone for Pingxiang Red Transpartent Crucian Carp Germplasm.

4. Environmental Clauses specific for Shangli County Integrated River Rehabilitation and Flood Risk Management Bidding Documents and Contracts

4.1 To avoid odor impacts caused by sediment dredging, transport dredged sediment in closed tank wagons to contain odor and prevent scattering along the way.

4.2 Mitigation of water quality impact during bridge and weir construction, dredging, cofferdam construction and water pumping out of the cofferdam shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

5. Environmental Clauses specific for Xiangdong District Integrated River Rehabilitation and Flood Risk Management Bidding Documents and Contracts

5.1 To avoid odor impacts caused by sediment dredging, transport dredged sediment in closed tank wagons to contain odor and prevent scattering along the way.

5.2 Mitigation of water quality impact during bridge and weir construction, dredging, cofferdam construction and water pumping out of the cofferdam shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

5.3 During dredging works within the Class 1 protection zones for the drinking water intakes (from 1,000 m upstream of the intake to 100 m downstream of the intake) of the Lengtanwan WTP on the Pingshui River in Xiangdong District, a silt curtain shall be deployed in front of these intakes for protection of intake water quality.

5.4 No treated wastewater from construction sites shall be discharged to Category II water bodies, which include the Class 1 drinking water protection zone above.

5.5 There will be no construction works on the Pingshui River from April to June each year for the protection of the National Protection Zone for Pingshui River Special Fish Species Germplasm.

6. Environmental Clauses specific for Lianhua County Wastewater Collection Bidding Documents and Contracts

6.1 Mitigation of water quality impact during pipeline construction crossing rivers shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

7. Environmental Clauses specific for Luxi County Wastewater Collection Bidding Documents and Contracts

7.1 Mitigation of water quality impact during pipeline construction crossing rivers shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

7.2 There shall be no construction works on pipeline crossing the Yuan River, Xinhua River and Tankou River from March to June each year for protection of the Provincial Protection Zone for Pingxiang Red Transpartent Crucian Carp Germplasm.

8. Environmental Clauses specific for Shangli County Wastewater Collection Bidding Documents and Contracts

8.1 Mitigation of water quality impact during pipeline construction crossing rivers shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

9. Environmental Clauses specific for Xiangdong District Wastewater Collection Bidding Documents and Contracts

9.1 Mitigation of water quality impact during pipeline construction crossing rivers shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

9.2 There will be no construction works on the pipeline crossing the Pingshui River from April to June each year for the protection of the National Protection Zone for Pingshui River Special Fish Species Germplasm.

10. Environmental Clauses specific for Rural-urban Road Bidding Documents and Contracts

10.1 Mitigation of water quality impact during bridge construction shall be based on water quality monitoring results. The water quality monitoring approach shall include, at each of the above location, one control station 50 m up current of the location and one impact station 100 m down current of the location. When the monitoring result shows that the suspended solids (SS) level at the down current impact station is ≥130% higher than that at the up current control station, it is indicative of bottom sediment being stirred up, re-suspended in the water column, and transported down current. The contractor shall deploy a silt curtain 100 m downstream of the location or reduce the dredging rate and/or adopt alternative dredging method until the down current SS level is less than 130% of the upstream SS level.

10.2 No treated wastewater from construction sites shall be discharged to Pingshui River and Yuanbei River, which are Category II water bodies.

10.3 Prior to commencement of construction, tag and conspicuously mark all the identified protected Camphor Trees and Happy Trees along the rural-urban road as identified in the EIRs and Table V.3 of this EIA, to prevent damage to these trees by construction workers.

10.4 There shall be no construction works on the rural-urban road section crossing the Yuen River from March to June each year for protection of the Provincial Protection Zone for Pingxiang Red Transpartent Crucian Carp Germplasm.

10.5 There will be no construction works on the rural-urban road section crossing the Pingshui River from April to June each year for the protection of the National Protection Zone for Pingshui River Special Fish Species Germplasm.

10.6 During construction of the road section through the Yangqi Mountain Scenic Area in Luxi County: (1) no asphalt mixing or concrete batching station is allowed within the scenic area; (2) no material stockpile is allowed within the scenic area; (3) no borrow area and spoil disposal site is allowed within the scenic area; (4) water unpaved areas within the scenic area every two hours during dry weather to suppress dust and to reduce visual impact; (5) erect hoardings around the construction area within the scenic area to shield off noise and visual impact from construction machinery.