



Report and Recommendation of the President to the Board of Directors

Project Number: 52026-001
November 2019

Proposed Loan People's Republic of China: Anhui Huangshan Xin'an River Ecological Protection and Green Development Project

Distribution of this document is restricted until it has been approved by the Board of Directors. Following such approval, ADB will disclose the document to the public in accordance with ADB's Access to Information Policy after excluding information that is subject to exceptions to disclosure set forth in the policy.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 October 2019)

Currency unit	–	yuan (CNY)		
CNY1.00	=	€0.1284	or	\$0.1399
\$1.00	=	CNY7.1484	or	€0.9175
€1.00	=	CNY7.7907	or	\$1.0899

ABBREVIATIONS

ADB	–	Asian Development Bank
EMP	–	environmental management plan
ESMS	–	environmental and social management system
HMG	–	Huangshan Municipal Government
HTIC	–	Huangshan Trust and Investment Corporation
HXIC	–	Huangshan Xintou Investment Company
MIS	–	management information system
O&M	–	operation and maintenance
PAM	–	project administration manual
PMO	–	project management office
PRC	–	People's Republic of China
SMEs	–	small and medium-sized enterprises
YREB	–	Yangtze River Economic Belt

NOTE

In this report, "\$" refers to United States dollars.

Vice-President	Ahmed M. Saeed, Operations 2
Director General	Amy S.P. Leung, East Asia Department (EARD)
Director	Qingfeng Zhang, Environment, Natural Resources, and Agriculture Division, EARD
Team leader	Mingyuan Fan, Principal Water Resources Specialist, EARD
Team members	Margaret Clare P. Anosan, Project Analyst, EARD Omar Shariff B. Belisario, Senior Operations Assistant, EARD Mark R. Bezuijen, Senior Environment Specialist, EARD Annabelle Giorgetti, Environmental Economist, EARD Kang Hang Leung, Senior Financial Specialist, EARD Takako Morita, Senior Counsel, Office of the General Counsel Li Ning, Senior Environment Officer, People's Republic of China Resident Mission (PRCM), EARD Xiaoyan Qin, Senior Procurement Officer, PRCM, EARD Nogendra Sapkota, Senior Social Development Specialist, EARD Au Shion Yee, Senior Water Resources Specialist, EARD
Peer reviewer	Frederic Asseline, Principal Climate Change Specialist, Sustainable Development and Climate Change Department

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

CONTENTS

	Page
PROJECT AT A GLANCE	
I. THE PROPOSAL	1
II. THE PROJECT	1
A. Rationale	1
B. Project Description	3
C. Value Added by ADB	4
D. Summary Cost Estimates and Financing Plan	5
E. Implementation Arrangements	6
III. DUE DILIGENCE	7
A. Technical	7
B. Economic and Financial Viability	7
C. Sustainability	8
D. Governance	8
E. Poverty, Social, and Gender	9
F. Safeguards	9
G. Summary of Risk Assessment and Risk Management Plan	11
IV. ASSURANCES AND CONDITIONS	11
V. RECOMMENDATION	11
APPENDIXES	
1. Design and Monitoring Framework	12
2. List of Linked Documents	15

PROJECT AT A GLANCE

1. Basic Data		Project Number: 52026-001	
Project Name	Anhui Huangshan Xin'an River Ecological Protection and Green Development Project	Department/Division	EARD/EAER
Country Borrower	China, People's Republic of People's Republic of China	Executing Agency	Huangshan Municipal Government
Country Economic Indicators Portfolio at a Glance	https://www.adb.org/Documents/LinkedDocs/?id=52026-001-CEI https://www.adb.org/Documents/LinkedDocs/?id=52026-001-PortAtaGlance		
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Agriculture, natural resources and rural development	Agricultural policy, institutional and capacity development		5.00
	Forestry		20.00
	Rural sanitation		30.00
Water and other urban infrastructure and services	Urban flood protection		5.00
	Urban sewerage		40.00
		Total	100.00
3. Operational Priorities		Climate Change Information ¹	
✓ Addressing remaining poverty and reducing inequalities		Climate Change impact on the Project	Medium
✓ Accelerating progress in gender equality			
✓ Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability		ADB Financing	
✓ Making cities more livable		Adaptation (\$ million)	15.32
✓ Promoting rural development and food security		Mitigation (\$ million)	15.17
✓ Strengthening governance and institutional capacity			
Sustainable Development Goals		Gender Equity and Mainstreaming	
SDG 2.4		Effective gender mainstreaming (EGM)	✓
SDG 5.5			
SDG 6.2, 6.3, 6.5, 6.6		Poverty Targeting	
SDG 11.5		General Intervention on Poverty	✓
SDG 13.a			
SDG 15.1			
4. Risk Categorization:	Low		
5. Safeguard Categorization	Environment: B Involuntary Resettlement: B Indigenous Peoples: C		
6. Financing			
Modality and Sources		Amount (\$ million)	
ADB		100.00	
Sovereign Project (Regular Loan): Ordinary capital resources		100.00	
Cofinancing		55.53	
KfW Bankengruppe - Project loan (Not ADB Administered)		55.53	
Counterpart		55.50	
Government		55.50	
Total		211.03	
Currency of ADB Financing: Euro			

¹ The project reduces greenhouse gas emissions. However, it does not fall under the eligibility criteria for climate mitigation finance as defined by the joint multilateral development bank methodology on tracking climate finance, which notes that not all activities that reduce greenhouse gases in the short term are eligible to be counted towards climate mitigation finance. Accordingly, greenfield fossil fuel projects are excluded, and climate mitigation finance is considered zero.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of China (PRC) for the Anhui Huangshan Xin'an River Ecological Protection and Green Development Project. The project will promote ecological protection and green development by (i) instituting and applying international best practice in the management of point source water pollution in urban areas; (ii) introducing new financing mechanisms to improve the management of agriculture-based nonpoint source water pollution; and (iii) promoting green development in rural areas through piloting small and medium-sized green businesses.¹ The project is envisaged to play a demonstrative role for municipalities with pervasive ecological pressures in the Yangtze River Economic Belt (YREB) and other parts of the PRC, and to promote regional public goods by reversing the negative impacts of pollution within and beyond the PRC. The project integrates an investment project loan, a cash grant, and equity investment components, and leverages significant cofinancing from German development cooperation through KfW and counterpart financing from the Huangshan Municipal Government (HMG).

II. THE PROJECT

A. Rationale

2. The YREB is one of the three key economic growth engines in the PRC. Its nine provinces and two specially administered municipalities account for more than 40% of the country's population, 40% of its freshwater resources, and about 45% of its economic output. While having benefited from extensive growth since the late 1980s, the YREB is now facing significant development challenges as a result of (i) increasing pollution and pressure on natural resources; (ii) slow transformation into green development; (iii) limited integration of waterways, ports, and intermodal logistics; and (iv) weak institutional coordination for strategic planning. To manage these challenges, the Government of the PRC formulated the YREB Development Plan, 2016–2030, which stipulates the prioritization of ecological protection and promotion of green development as the guiding principle for the YREB's future growth.² In this context, the Asian Development Bank (ADB) and the government have agreed to adopt a framework approach that prioritizes (i) ecosystem restoration, environmental protection, and management of water resources; (ii) inclusive green industrial transformation; (iii) construction of an integrated multimodal transport corridor; and (iv) institutional and policy reform. The project is included as part of the YREB framework.

3. The Xin'an River is an independent river system located within the YREB, originating from Huangshan municipality in Anhui province and passing through Hangzhou, the capital city of Zhejiang province, before entering the sea. The river is the main source of drinking water for 10 million residents living in the urban and rural areas surrounding Qiandao Lake and Hangzhou. Huangshan is a prefecture-level municipality located in the southern part of Anhui province, comprising three districts and four counties with a population of 1.5 million and a land area of 9,807 square kilometers. The HMG recognizes the importance of protecting the ecological system of the Xin'an River, not only in preserving a sound living environment for its residents, but also in achieving water security for the people living downstream of the river basin.

¹ Green development supported under the project refers to economic activities and/or growth that have environmental impacts that may be managed at the targeted level to ensure environmental improvement and sustainability.

² Government of the PRC. 2015. *Outline of the Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing.

4. In 2012, the government introduced a pilot cross-provincial ecological compensation (eco-compensation) scheme between Anhui and Zhejiang provinces as a new mechanism to help the HMG address cross-provincial water quality concerns in the Xin'an River Basin.³ In the first two phases (2012–2017) of the pilot scheme, an eco-compensation fund totaling CNY3.7 billion was mobilized with the support of the central government and the two provincial governments. The majority of the resources mobilized were invested in Huangshan for the control of industrial wastewater pollution, improvement of wastewater collection and treatment capacity, and restoration of the ecosystem along the river. Through the scheme, the HMG made significant progress in industrial and point source pollution control, with the discharge of chemical oxygen demand reduced by 28% and the water quality at the interprovincial section achieving the agreed standard. However, with rapid urbanization, intensified agriculture production, and tourism growth, maintaining the level of water quality at the upstream of the Xin'an River is becoming increasingly difficult. The HMG requested support from ADB to help design and implement a project that will improve the efficiency and effectiveness of the current government-driven eco-compensation scheme. ADB assistance is expected to support the pollution management of both point sources and agriculture nonpoint sources.

5. **Urban point source pollution.** Despite good progress in urban pollution management, a significant part of the urban wastewater collection system requires upgrading. Many of the existing sewerage systems in Huangshan were neither systematically planned nor designed to cope with the pace of urbanization, but were rather designed as combined stormwater and sewerage systems. As a result, sewerage overflows occurring during storm season (June to September) are directly discharged into streams and waterways. Huangshan is also vulnerable to flooding during storm season because of its mountainous terrain. The eroded urban embankment and revetment sections of the river system pose another concern, not only for flood management but also for water pollution control. The exposure of the river system to stormwater runoff has contributed to the seasonal fluctuation of water quality.

6. **Rural point source and nonpoint source pollution.** Rural areas in Huangshan, as in the YREB and much of the PRC, face relatively greater challenges compared with urban areas. About 75% of Huangshan's 889 administrative villages lack wastewater treatment facilities. Poor public infrastructure and sanitation service coverage in rural Huangshan is affecting residents' living conditions and resulting in direct discharge of rural point pollution to river system. Another key contributor to the degraded water quality is nonpoint source pollution, 85% of which is derived from rural sources, particularly discharge of pollutants such as total nitrogen and total phosphorus from agriculture activities. The dispersed nature of agriculture activities also makes the control of agricultural nonpoint source pollution a challenge. In addition to agriculture activities, the resilience of the river ecosystem is impacted by poor forest management and pest attacks, undermining forest capacity to control soil erosion.

7. **Green financing mechanisms.** Changing farmers' behavior is a key to realizing a more sustainable farming practice. In view of the prevailing impact of nonpoint source pollution from the agriculture sector in Huangshan, a green incentive fund is needed to complement the ongoing cross-provincial eco-compensation scheme. Such a fund would serve as a reward mechanism,

³ Under the scheme, the central government and the two provincial governments set up an eco-compensation fund, with water quality subjected to periodic assessment at the interprovincial section to determine whether (i) Zhejiang province should compensate Anhui province to defray the ecological protection cost; or (ii) Anhui province should compensate Zhejiang province to pay for additional water treatment cost, in case the water quality fails to meet agreed standards. From 2012 to 2017, the phosphorus index (measured by total phosphorus, total nitrogen, ammoniacal nitrogen, and permanganate indices) for water quality compensation index in the Xin'an River was in the range of 0.833–0.880.

through which the HMG can provide cash grants to farmers who have achieved pollution control targets through the adoption of sustainable farming practices, in accordance with a well-designed pollution control plan. In parallel, introducing a green investment fund to provide equity financing to support small and medium-sized enterprises (SMEs) involved in green business would give further impetus to venture into and expand ecological agriculture, eco-tourism, and pollution control. Effective and innovative interventions are envisaged to have wider implications beyond the project scope.

8. **Institutional and environmental management capacity.** The HMG has developed a series of online monitoring and management information systems (MISs) in the areas of water resources management, environmental monitoring, forestry management, and agriculture production. However, these MISs are not integrated, which hinders the information sharing and collaboration among line agencies and other stakeholders. The HMG needs to take urgent action to integrate MISs to strengthen its capacity in environmental monitoring, pollution control, and disaster risk management. Special support is required to further improve the information sharing with downstream cities in Zhejiang province to further strengthen cross-provincial collaboration established under the existing eco-compensation scheme. Operational research is also necessary to enhance the HMG's planning capacity for green development, economic valuation of natural resources, sustainable operation and maintenance (O&M) of sanitation facilities in rural areas, and detailed design of operational mechanisms for the green incentive fund.

B. Project Description

9. The project is aligned with the following impact: sustainable economic growth and environmental improvement in the YREB achieved (footnote 2). The project will have the following outcome: economic and environmental conditions in the upstream of the Xin'an River improved.⁴

10. **Output 1: Urban point source pollution management facilities upgraded.** This output will include (i) sewage and stormwater management through installing and rehabilitating of the existing centralized sewerage systems in Huangshan's central district and four county urban areas, and (ii) river rehabilitation and flood control through river embankment construction.

11. **Output 2: Rural point and nonpoint source pollution control facilities and systems enhanced.** Innovative approaches supporting ecological agriculture will be adopted. This includes point and nonpoint source pollution controls through (i) decentralized sewage treatment system and environment management in rural villages; (ii) the changing of fertilizer application practices, including the improved use of organic fertilizer and biological pesticides with low toxicity at agricultural and forestry sites; and (iii) improvement of pine forest conditions through disease monitoring and prevention.

12. **Output 3: Green financing mechanisms piloted.** This output includes the establishment, piloting, and operationalization of (i) a green incentive fund to encourage farmers to adopt sustainable farm management practices to address agricultural nonpoint source pollution in Huangshan and (ii) a green investment fund to invest in SMEs involved in green business.

13. **Output 4: Capacity for ecological system and project management strengthened.** This output will enhance the HMG's capacity in water resources and flood forecasting management in the Xin'an River Basin. This includes (i) establishing environmental, health, and

⁴ The design and monitoring framework is in Appendix 1.

safety management systems to strengthen the HMG's industrial and urban environmental monitoring and emergency response capacity; (ii) installing integrated smart MISs;⁵ (iii) completing studies on eco-compensation evaluation, green farming certification, tea farming eco-compensation, rural wastewater discharge study, and pig manure management; and (iv) carrying out HMG implementation support and capacity development.

C. Value Added by ADB

14. **Strategic fit.** The project will (i) address Huangshan's urban and rural environmental degradation issues; (ii) improve water quality in the Xin'an River Basin; and (iii) strengthen financing mechanisms, environmental management, and water quality monitoring capacities, improving people's quality of life. The project is consistent with (i) the PRC's Thirteenth Five-Year Plan, 2016–2020;⁶ (ii) the YREB Development Plan, 2016–2030 (footnote 2); (iii) the PRC's National New-Type Urbanization Plan, 2014–2020;⁷ (iv) the PRC's National Strategic Plan for Rural Vitalization, 2018–2022;⁸ (v) the operational priorities of ADB's Strategy 2030;⁹ and (vi) ADB's country partnership strategy for the PRC, 2016–2020.¹⁰ As part of the YREB framework, the project is aligned with the guidelines on the YREB's economic development issued by the State Council in 2014 to promote inclusive green development, environmental protection, and sustainable water resources management.¹¹

15. **Lessons.** The project design incorporates key lessons from previous ADB and development partner projects as well as international best practices and innovative approaches. These include (i) the importance of inclusive green development for sustainable growth; (ii) the need for innovative technology (information and communication technology-based and smart systems) and standards to address urban and rural environmental degradation; and (iii) the need to provide effective water resource management and monitoring systems, improved agricultural practices and stakeholder participation, and enhanced green development and financing.

16. **Value addition of ADB assistance.** The project will introduce a green incentive financing mechanism to address agricultural nonpoint source pollution, which will be designed through participatory approaches via direct engagement of farmers and farmer cooperatives. This mechanism will incentivize farmers and farmer cooperatives to effectively manage agricultural nonpoint source pollution. This includes (i) implementing a results-based incentive payment, (ii) introducing an independent third-party verification system, and (iii) establishing green farming and farm management standards. The green investment fund will create a new avenue to support SMEs involved in green business that suffer from lack of access to long-term financing because of the general perception of low financial returns from their investments in ecological agriculture, eco-tourism, and pollution control. The green investment fund will enhance private sector investment and commercial financing in green business. In addition, the design of the green investment fund has already brought in an international dimension and introduced many good

⁵ Smart systems incorporate functions of sensing, actuation, and control to analyze a situation and make decisions based on the available data in a predictive or adaptive manner, thereby performing smart actions.

⁶ Government of the PRC. 2015. *Outline of the Thirteenth Five-Year Plan for Economic and Social Development of the People's Republic of China, 2016–2020*. Beijing.

⁷ Government of the PRC. 2013. *National New-Type Urbanization Plan, 2014–2020*. Beijing.

⁸ Government of the PRC. 2018. *National Strategic Plan for Rural Vitalization, 2018–2022*. Beijing.

⁹ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

¹⁰ ADB. 2016. *Country Partnership Strategy: People's Republic of China, 2016–2020—Transforming Partnership: People's Republic of China and Asian Development Bank*. Manila.

¹¹ Government of the PRC, State Council. 2014. *Outline of Planning on Development Strategy of Yangtze River Economic Zone*. Beijing.

practices, especially in the financial, environmental, and social management of the fund. The implementation of the green investment fund will further improve the corporate governance and operation capacity of the domestic financial institution, the Huangshan Trust and Investment Corporation (HTIC). The dual pooled fund arrangement—comprising a financial incentive fund and a financial investment fund—is a financial innovation to improve the long-term sustainability of the country’s flagship eco-compensation scheme. The project will harness state-of-the-art information and communication technology elements to develop a comprehensive and integrated smart MIS for water resource management, pollution control, environmental health and safety, emergency response, disaster prevention, and monitoring. Other special value additions include introducing an environmental and social management system (ESMS) for green financing in Huangshan. Moreover, ADB has leveraged and mobilized cofinancing from German development cooperation through KfW for the project and has created a platform for collaboration between the HMG and The Nature Conservancy to address agricultural nonpoint source pollution in the Xin’an River Basin, which will leverage the fund for complementary support to further enhance the green incentive fund mechanism implementation. All knowledge created under the project will be shared with other municipalities and developing member countries through trainings and workshops.

D. Summary Cost Estimates and Financing Plan

17. The project is estimated to cost €190.06 million (Table 1). Detailed cost estimates by expenditure category and by financier are included in the project administration manual (PAM).¹²

Table 1: Summary Cost Estimates
(€ million)

Item	Amount ^a
A. Base Cost^b	
1. Urban point source pollution management facilities upgraded	65.14
2. Rural point and nonpoint source pollution control facilities and systems enhanced	57.52
3. Green financing mechanisms piloted	33.01
4. Capacity for ecological system and project management strengthened	14.82
Subtotal (A)	170.49
B. Contingencies^c	17.65
C. Financial Charges During Implementation^d	1.92
Total (A+B+C)	190.06

^a Includes taxes and duties of €11.58 million. Such amount does not represent an excessive share of the project costs. The Huangshan Municipal Government will finance taxes and duties of €1.50 million through exemptions; the remainder will be financed by ADB (€6.89 million) and German development cooperation through KfW (€3.19 million).

^b In mid-2019 prices as of 2 August 2019.

^c Physical contingencies computed at 7% for all cost items, except for land acquisition and resettlement. Price contingencies computed at an average of 1.58% on foreign exchange costs, and 1.97% on local currency costs for 2020–2025; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for the ordinary capital resources loan has been computed at the 5-year euro fixed swap rate plus an effective contractual spread of 0.5% and a maturity premium of 0.1%. Commitment charges for the ordinary capital resources loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

18. The government has requested a regular loan of €90.09 million (\$98.19 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 6 years; 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

¹² Project Administration Manual (accessible from the list of linked documents in Appendix 2).

year; and such other terms and conditions set forth in the draft loan and project agreements. Based on the straight-line method, the average maturity is 15.75 years, and the maturity premium payable to ADB is 0.10% per year.

19. The summary financing plan is in Table 2. ADB will finance the expenditures in relation to civil works, goods, capacity development activities, consulting services, cash grants under the green incentive fund, and equity investment under the green investment fund. The government will finance the design, procurement activities, civil works, project management, land acquisition and resettlement, environmental protection, interest and commitment charges, taxes and duties, and contingencies. The government will ensure that the counterpart funds for the project are provided in a timely manner. German development cooperation through KfW (i) will provide loan cofinancing equivalent to €50 million on a parallel collaborative basis, but the financing will not be administered by ADB; and (ii) will finance civil works, goods, capacity building, and the green investment fund. Climate mitigation is estimated to cost €24.7 million and climate adaptation €25.7 million. ADB will finance 55% of the climate mitigation cost and 54% of the climate adaptation cost. The climate change risk is *medium* on urban flooding, extreme heat, water scarcity, and wildfire in Huangshan. In response to these risks, the storm water flood control, constructed wetland, green farming, and forest health facilities have been introduced into the project design.

Table 2: Summary Financing Plan

Source	Amount (€ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (regular loan)	90.09	47.4
German development cooperation through KfW (loan)	50.00	26.3
Government of the People's Republic of China	49.97	26.3
Total	190.06	100.0

Source: Asian Development Bank estimates.

E. Implementation Arrangements

20. The HMG will be the executing agency and will supervise, coordinate, and manage the project. The Anhui Provincial Finance Department will manage the advance account and support financial management. The three district and four county governments in Huangshan, and HTIC, a state-owned entity wholly owned by the HMG, will be the implementing agencies. The HMG has established a project leading group and a project management office (PMO).¹³ The PMO will manage output 1, output 2, the green incentive fund of output 3, and output 4. Huangshan Xintou Investment Company (HXIC), a subsidiary company of HTIC, will manage the green investment fund under output 3. The implementation arrangements are summarized in Table 3 and described in detail in the PAM (footnote 12).

Table 3: Implementation Arrangements

Aspects	Arrangements
Implementation period	July 2020–June 2026
Estimated completion date	30 June 2026
Estimated loan closing date	30 December 2026
Management	
(i) Oversight body	Project leading group and project management office
(ii) Executing agency	Huangshan Municipal Government

¹³ Chaired by the executive vice mayor of the HMG and comprising officers from the Huangshan Municipal Development and Reform Commission, the Huangshan Finance Bureau, and other municipal bureaus.

Aspects	Arrangements		
(iii) Key implementing agencies	Three district and four county governments in Huangshan, and Huangshan Trust and Investment Corporation		
(iv) Implementation units	Huangshan District, 5 staff Huizhou District, 5 staff Qimen County, 5 staff She County, 5 staff Tunxi District, 5 staff Xiuning County, 5 staff Yi County, 5 staff Huangshan Xintou Investment Company, 5 staff		
Procurement	OCB (nationally advertised)	39 contracts	€121.94 million
Consulting services	QCBS	14 contracts	€6.32 million
	CQS	3 contracts	€0.43 million
	ICS	3 contracts	€0.15 million
Retroactive financing and/or advance contracting	Advance contracting and retroactive financing are likely to be applied for five contracts: (i) smart river monitoring system in Huangshan (goods); (ii) village environment improvement project in Tunxi district, lot 1 pilot project (works); and (iii) three contracts for start-up consulting services. The advance actions are encouraged to be adopted for any procurement-ready contracts. Retroactive financing will be subject to a maximum amount equivalent to 20% of the loan amount for eligible expenditures incurred prior to loan effectiveness, but not earlier than 12 months before the loan agreement is signed.		
Disbursement	The loan proceeds will be disbursed following ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and the detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, CQS = consultant's qualification selection, ICS = individual consultant selection, OCB = open competitive bidding, QCBS = quality- and cost-based selection.

Note: Procurement (including consulting services) will follow the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). Since a cofinancier's resources and ADB's ordinary capital resources are being used to jointly finance individual procurement packages, universal procurement will apply to all procurement packages to be financed under this project. ADB. 2015. *Enhancing Operational Efficiency of the Asian Development Bank*. Manila.

Source: ADB estimates.

III. DUE DILIGENCE

A. Technical

21. The project was prepared in accordance with the PRC's guidelines and regulations and ADB's due diligence requirements, and the recommendations during project preparation by ADB mission were considered. The technical feasibility was confirmed to be adequate after detailed examination of the project's compatibility with local conditions and local capacity for O&M. The project design meets the PRC's standards and incorporates innovative and climate change adaptation measures. The capacity development ensures the project's successful implementation and its sustainable operation.

B. Economic and Financial Viability

22. Financial analysis was carried out to assess the financial sustainability of the project as well as the financial viability of the proposed green investment fund. The financial sustainability assessment, including fiscal and financial statement analyses, indicated that the project's executing agency and implementing agencies will have adequate financial capacity to cover the recurrent costs of operating and maintaining the project and to meet the debt service payments. The financial viability assessment of the proposed green investment fund demonstrated that the fund is financially viable. Due diligence on HTIC and HXIC that will oversee the green investment

fund operation confirmed that the entities are financially sound and can meet the financial obligations and debt servicing requirements of the green investment fund. Integrity due diligence confirmed the entities' compliance with ADB's integrity standards.

23. The economic analysis indicated that the project is economically viable, with an expected economic internal rate of return of 16% and an economic net present value of €1.27 billion based on a 6% social discount rate. The analysis also confirmed the economic viability of all outputs. Sensitivity analysis indicated that the project is robust against negative scenarios examined, such as an increase in investment costs, benefits reduction, and an increase in O&M costs.

C. Sustainability

24. Assessments of sustainability were carried out in areas of (i) planning, procurement, and financial management; (ii) institutional capacity and development; (iii) water quality, flood risk management, climate resilience, and environmental planning and monitoring; (iv) wastewater and drainage system design, construction, and operation; and (v) sustainable urban and rural environmental management and monitoring. The project will support the HMG in preparing and implementing municipality-wide capital investment as well as strategic cumulative environmental and social assessments to look at measures the HMG can take to ensure urban and rural growth plans are sustainable. The planned dual pooled fund arrangement is designed to improve the sustainability of the ongoing eco-compensation scheme, given that the revenue generated from the green investment fund can be used to provide cash grants under the eco-compensation scheme. This pilot dual pooled fund arrangement renders a self-financing mechanism for eco-compensation by promoting commercial financing and reducing fiscal burden on central and local governments' budgets. Being the first ADB and KfW investment project with the HMG, key tasks will be managed by the PMO with support from project management consultants and The Nature Conservancy. In addition, capacity building has been designed to ensure that state-of-the-art information and communication technology elements are harnessed to develop smart MISs for different areas, including water quality and environmental health and safety monitoring.

D. Governance

25. The assessed pre-mitigation financial management risk is *moderate*. The key weakness in project financial management is the executing and implementing agencies' lack of experience in executing ADB-financed projects. This risk will be mitigated through the financial management action plan described in the PAM. The executing and implementing agencies will implement the time-bound financial management action plan during the project implementation period to mitigate the risks. Measures to mitigate the risks are in the risk assessment and risk management plan.¹⁴ The procurement risk assessment shows that the executing and implementing agencies will manage and monitor all procurement activities conducted by the project implementation units. Supported by a procurement agency hired by the executing agency, the executing and implementing agencies have adequate procurement capacity to facilitate project procurement in compliance with the ADB Procurement Policy (2017, as amended from time to time) and ADB's Procurement Regulations for ADB Borrowers (2017, as amended from time to time), which has also been agreed with KfW. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and HMG. The specific policy requirements and supplementary measures are described in the PAM.

¹⁴ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

E. Poverty, Social, and Gender

26. **Poverty and social.** The project is classified *general intervention* for poverty targeting. A poverty and social analysis was undertaken based on intensive stakeholder consultations and socioeconomic surveys. It indicated that the project will provide socioeconomic development and poverty reduction opportunities for residents of project-affected areas, including the poor and low-income people, by increasing their access to (i) jobs during project construction and operation, (ii) new jobs in green enterprises, and (iii) a better living environment. A total of 319,607 residents of the seven project districts and counties, including 254,341 urban and 65,266 rural residents, will directly benefit from the project. Other residents in Huangshan and people living downstream of the Xin'an River Basin in Zhejiang province will also benefit indirectly from the improved environment. The project will create 1,204 jobs during project construction and 546 jobs during operation. The HMG prepared a social development action plan based on the poverty and social analysis, with specific targets for the poor and low-income people. The residents and other stakeholders were consulted during project preparation. A consultation and participation plan for project implementation stage has been included in the PAM.

27. **Gender.** The project is categorized *effective gender mainstreaming*, following ADB's Guidelines for Gender Mainstreaming Categories of ADB Projects.¹⁵ The project will ensure women participate and benefit equitably from increased employment, an improved living environment, and better quality of life. A gender action plan has been prepared based on gender analyses. The gender action plan includes actions to support (i) women's economic empowerment through the inclusion of targets for jobs during construction (30%) and operation (40%); (ii) women's representation of at least 30% in management and decision-making staff positions in all SMEs benefiting from the green incentive fund and green investment fund; (iii) integration of a gender perspective in studies on eco-compensation and green development; (iv) the fair and equitable participation of women in project design and implementation, with at least 40% women participants; and (v) training and capacity building of women staff of the executing and implementing agencies. Key gender targets are also included in the design and monitoring framework (Appendix 1). The executing and implementing agencies are responsible for the gender action plan implementation, monitoring, and reporting.

F. Safeguards

28. In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows.¹⁶

29. **Environment (category B).** An initial environmental examination has been prepared and disclosed on ADB's website. This includes (i) an environmental management plan (EMP), which will be applied to outputs 1, 2, 4 and will also cover the green incentive fund; (ii) a draft template ESMS for the green investment fund under output 3; and (iii) a project-specific grievance redress mechanism which will be applied to all project components. The initial environmental examination, EMP, and ESMS are based on the approved domestic feasibility studies, environmental assessment reports, site visits, and stakeholder consultations. Consultations included affected people and local government agencies, and the outcomes have been integrated in the project design. The HMG, through the PMO, will be responsible for compliance with the EMP. The ESMS will be implemented by HTIC through HXIC, with guidance from the PMO.

¹⁵ ADB. 2012. *Guidelines for Gender Mainstreaming Categories of ADB Projects*. Manila.

¹⁶ ADB. [Safeguard Categories](#).

30. The project is expected to contribute to targets for water quality improvement in the Xin'an River Basin and sustainable development through (i) reduced urban and rural wastewater discharge resulting from the upgrading of sewerage systems and construction of rural wastewater treatment facilities, (ii) reduced chemical fertilizer and pesticide application through green farming practices, (iii) reduced water and soil erosion by improving the resilience of natural and plantation forests to disease, (iv) increased flood resistance through the project-supported embankments, and (v) the introduction of a framework for corporate social and environmental responsibility through the ESMS. Environmental risks include construction noise, dust, soil erosion, and inadequate implementation of the ESMS. Measures to avoid, minimize, and/or mitigate potential construction and operational environment impacts are included in the EMP and ESMS. To reduce the risk of inadequate ESMS implementation, an advanced draft template ESMS has been prepared in the format of a user-friendly manual tailored to the project objectives. In addition, a safeguards specialist will be mobilized to support the executing and implementing agencies in implementing the EMP and ESMS.

31. **Involuntary resettlement (category B).** Outputs 3 and 4 are not expected to involve involuntary land acquisition and resettlement impacts. Outputs 1 and 2 involve permanent land occupation of 72.31 *mu* (4.63 *mu* of state-owned land and 67.68 *mu* of collectively owned land), affecting 200 households with 830 persons.¹⁷ A total of 60 square meters of nonresidential house will be affected, involving one household with four persons. No households will have significant impacts from permanent land acquisition or relocation. A total of 316.43 *mu* of land will be used temporarily, including 219.39 *mu* of state-owned land and 97.04 *mu* of collectively owned land. A resettlement plan has been prepared focusing on the resettlement impacts under outputs 1 and 2 in accordance with ADB's Safeguard Policy Statement and relevant laws and regulations of the PRC and local governments. The resettlement plan includes adequate measures of compensation and rehabilitation for affected persons. Surveys and consultations were undertaken with affected persons for the preparation of the resettlement plan during project preparation. The resettlement plan was posted on ADB's website and the relevant information was disclosed to affected persons through the distribution of resettlement information booklets in August 2019. The affected persons will be further consulted during updating and implementation of the resettlement plan. A grievance redress mechanism is included in the resettlement plan. The HMG and relevant project implementing agencies (i.e., the seven district and county governments and HTIC in Huangshan) will implement and monitor the resettlement plan by allocating adequate budget and human resources. These implementing agencies have the capacity for managing resettlement under domestically financed projects, and their capacity will be strengthened to implement the resettlement plan in compliance with ADB requirements.

32. A draft ESMS has been prepared for the green investment fund under output 3, which will be implemented by HTIC. The subprojects under this fund are not expected to involve involuntary land acquisition and resettlement impacts, and the ESMS includes necessary measures for screening and avoidance of such impacts. Necessary training and capacity building will be provided to the HMG, HTIC, and participating agencies for ESMS implementation and monitoring.

33. **Indigenous peoples or ethnic minorities (category C).** The project does not involve impacts on ethnic minority villages or communities that would trigger Safeguard Policy Statement requirements on indigenous peoples. There are only a few ethnic minority individuals living dispersedly among the seven project districts and counties.¹⁸ The scattered ethnic minority

¹⁷ A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 square meters).

¹⁸ Huangshan Municipality has 38 ethnic minority groups with an estimated population of 4,902 persons, accounting for 0.27% of the total population. Majority of the ethnic minority groups are Hui.

individuals in the project area are not expected to have differential impacts; they will enjoy the project benefits as residents of the project area.

34. **Capacity for social and environmental safeguard measures.** The executing and implementing agencies have experience in implementing domestically financed projects and a World Bank-financed project, but have no experience with ADB-financed projects. To implement the social and environmental safeguard measures properly and in compliance with ADB requirements, (i) the executing and implementing agencies will appoint safeguard staff; (ii) project implementation support consultants include social and environmental safeguard specialists will be mobilized to support the executing and implementing agencies; (iii) staff of the executing and implementing agencies will be trained in implementation of social and environmental safeguard measures in the ESMS and relevant safeguard plans; and (iv) external monitoring experts will be recruited for external monitoring of social and environmental safeguard measures.

G. Summary of Risk Assessment and Risk Management Plan

35. The risk assessment of the overall project is *medium*, and the benefits and impacts are expected to outweigh the costs. The risks, which were mostly rated *low* or *moderate*, and one *medium* to *high* for the green investment fund implementing agency—HTIC, and the mitigation measures including a comprehensive investment manual for HTIC, are described in the risk assessment and risk management plan (footnote 14).

IV. ASSURANCES AND CONDITIONS

36. The government, Anhui Provincial Government, and HMG have assured ADB that implementation of the project shall conform to all applicable ADB requirements, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, financial management, and disbursement as described in detail in the PAM and loan documents.

37. The government, Anhui Provincial Government, and HMG have agreed with ADB on certain covenants for the project, which are set forth in the draft loan agreement and project agreement.

38. Conditions for withdrawal include execution and delivery of the cofinancier's loan agreement with the project implementing agencies; and satisfaction of preconditions for operationalizing the green incentive fund and green investment fund.

V. RECOMMENDATION

39. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of €90,090,000 to the People's Republic of China for the Anhui Huangshan Xin'an River Ecological Protection and Green Development Project, from ADB's ordinary capital resources, in regular terms, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 6 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

20 November 2019

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with Sustainable economic growth and environmental improvement in the Yangtze River Economic Belt achieved (Yangtze River Economic Belt Development Plan, 2016–2030) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Economic and environmental conditions in the upstream of the Xin'an River improved	By 2028: a. 95% of urban population provided access to wastewater treatment service (2019 baseline: 90%) b. 130,000 people benefiting from rural investments (2019 baseline: 0) (RFI A) c. 28,000 ha of land improved through climate-resilient infrastructure and sanitation services (2019 baseline: 0) d. 5,000 ha of farming land shifted to green farming with pesticide and fertilizer use control (2019 baseline: 1,666.7 ha of farming land) e. Water quality at the Xin'an River interprovincial section meets the eco-compensation phosphorus index ^b of ≤ 1 (2019 baseline: 1)	a–c. HMG annual reports d. HMG project completion report e. Anhui and Zhejiang provinces' cross-provincial eco-compensation annual evaluation reports	The HMG changes priorities on green development and ecological improvement
Outputs 1. Urban point source pollution management facilities upgraded	By 2026: 1a. 176 km urban trunk, secondary, and tertiary wastewater sewers installed or rehabilitated (2019 baseline: 0 km) 1b. 71.1 km stormwater drainage pipes installed in urban areas in Huangshan (2019 baseline: 0 km) 1c. 9.9 km of river embankments constructed for increased flood protection (2019 baseline: 0 km) 1d. 465 jobs created during construction (180 skilled and 285 unskilled) with 30% women (2019 baseline: Not applicable) 1e. 226 jobs created during operation (88 skilled and 138 unskilled) with 40% women (2019 baseline: Not applicable)	1a–1e. Project reports (monthly, quarterly, semiannual, annual)	Hesitance of urban households to connect to wastewater systems
2. Rural point and nonpoint source pollution control facilities and systems enhanced	By 2026: 2a. 85 decentralized wastewater treatment systems with a minimum capacity of 2 cubic meters per day installed and 14,700 connections for rural households to the wastewater sewer systems installed (2019 baseline: 0) (RFI B) 2b. 100 km of rural water supply pipes installed or rehabilitated in rural areas; 3,250 connections for households to piped water supply installed and connected, with subsidized connections for 380 poor and vulnerable households (2019 baseline: 0 km) (RFI B) 2c. Green farming practice adopted on 548 ha of farmland (2019 baseline: 0 ha)	2a–2f. HMG project completion report	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	<p>2d. Pine forest disease prevention measures implemented in 70,000 ha of forest in the Xin'an River Basin area and 900,000 pine trees immunized (2019 baseline: 0)</p> <p>2e. 288 jobs created during construction (104 skilled and 184 unskilled) with 30% women (2019 baseline: 0)</p> <p>2f. 140 jobs created during operation (49 skilled and 91 unskilled) with 30% women (2019 baseline: 0)</p>		
3. Green financing mechanisms piloted	<p>By 2026:</p> <p>3a. At least six SME projects supported under the first batch of equity financing under the green investment fund, including women's representation of at least 30% in management and decision-making staff positions in all SMEs, selected under the green investment fund (2019 baseline: 0)</p> <p>3b. €2.8 million sustainable green incentive fund established, and compensation provided to 4,500 farmers, including 40% women (2019 baseline: 0)</p> <p>3c. 30% women in management and decision-making positions of SMEs to be selected under the green investment funds (2019 baseline: Not applicable) (RFI C)</p> <p>3d. 251 jobs during construction (126 skilled and 125 unskilled) and 100 jobs during operation (50 skilled and 50 unskilled) created, including 40% women (2019 baseline: Not applicable)</p>	<p>3a–3d. Project reports (semiannual) and HMG project completion report</p> <p>3a. Gender scorecards for selection of projects to be developed under the project</p>	
4. Capacity for ecological system and project management strengthened	<p>By 2026:</p> <p>4a. Smart river monitoring MIS, EHS management in industrial parks, smart environmental monitoring MIS in Qimen county, and pine forest monitoring MIS are installed (women's participation included) (2019 baseline: Not applicable)</p> <p>4b. Information management top layer design and smart EHS general platform are developed and operational for the data resource bureau of the HMG (2019 baseline: Not applicable)</p> <p>4c. Xin'an River eco-compensation evaluation study, green farming certification, tea farming eco-compensation study, rural wastewater discharge standard study, and pig manure management study are completed, with a gender perspective^c on relevant studies (2019 baseline: Not applicable)</p> <p>4d. Information shared with the downstream Qiandao Lake area in Zhejiang Province provided through river quality MIS data sharing (2019 baseline: None)</p> <p>4e. 300 project staff and beneficiaries (at least 50% of whom are women) report enhanced knowledge and skills on ecological system and water resource management, water and environmental monitoring, data sharing, and project management (2019 baseline: None)</p>	<p>4a–4b. and 4d. Consultant study reports, and project completion report</p> <p>4c. Sex-disaggregated data and reports to be collected under the project on farmers led by women and practices used</p> <p>4e. Consultant training reports and participants' survey</p>	

<p>Key Activities with Milestones</p> <p>1. Urban point source pollution management facilities upgraded</p> <p>1.1 Conduct stakeholder consultations, with at least 40% women's participation (Q1 2020–Q2 2021)</p> <p>1.2 Undertake full analysis of other sources of pollution, including their transport and effect on the river, to determine the impact on water quality objectives to be calculated per pollution source (Q3 2020–Q4 2022)</p> <p>1.3 Develop design and bidding documents; conduct tenders; and carry out construction of sewage collection systems and a centralized treatment system in the urban areas (Q3 2020–Q2 2026)</p> <p>2. Rural point and nonpoint source pollution control facilities and systems enhanced</p> <p>2.1 Conduct stakeholder consultations with at least 40% women participation (Q3 2020–Q4 2022).</p> <p>2.2 Recruit consultants; design and implement a comprehensive system for managing nonpoint source pollution in rural areas (Q3 2020–Q2 2023)</p> <p>2.3 Develop designs and bidding documents; conduct tenders; and carry out construction of decentralized sewage treatment systems and green infrastructure facilities in rural towns and villages (Q3 2020–Q2 2026)</p> <p>2.4 Plan, design, procure, and install forest prevention systems (Q3 2021–Q2 2026)</p> <p>2.5 Promote environment-friendly (clean) agricultural production practices (Q3 2021–Q2 2026)</p> <p>3. Green financing mechanisms piloted</p> <p>3.1 Define, establish, pilot, and operationalize green investment fund (Q3 2020–Q4 2023)</p> <p>3.2 Define, establish, pilot, and operationalize green incentive fund within Huangshan municipality (Q2 2021–Q4 2026)</p> <p>3.3 Identify, conduct due diligence, and invest in about six green SMEs from the green investment fund (Q4 2020–Q4 2026)</p> <p>3.4 Identify farmers, potential farmers' cooperatives, and SMEs; formulate procedures; and implement green incentive fund, including proactive and inclusive measures for women in leadership positions on boards, employment, and other project benefits (Q3 2021–Q2 2026)</p> <p>4. Capacity for ecological system and project management strengthened</p> <p>4.1 Develop and install improved river water and environmental monitoring MISs, and a pine forest monitoring MIS, including software and hardware acquisition (Q3 2020–Q4 2025)</p> <p>4.2 Develop and install a smart EHS management MIS for industrial parks, including software and hardware acquisition (Q1 2021–Q2 2026)</p> <p>4.3 Improve the EA and IAs' capacity to implement the project (Q2 2021–Q2 2026)</p> <p>4.4 Share knowledge with other municipalities and developing member countries through trainings and workshops (Q3 2021–Q2 2026)</p>
<p>Project Management Activities</p> <p>Provide overall support for the project's final design and implementation, including support for capacity development and training of the staff of the HMG, the Huangshan PMO, district and county PMOs, and Huangshan Trust and Investment Corporation on ADB's project management procedures, technical design and implementation, and safeguard and gender actions supervision and monitoring</p>
<p>Inputs</p> <p>ADB: €90.09 million (ordinary capital resources loan)</p> <p>German development cooperation through KfW: €50.00 million (loan, not administered by ADB)</p> <p>Government of the People's Republic of China: €49.97 million</p>
<p>Assumptions for Partner Financing</p> <p>Not applicable</p>

ADB = Asian Development Bank, EHS = environmental health and safety, ha = hectare, HMG = Huangshan Municipal Government, km = kilometer, MIS = management information system, PMO = project management office, Q = quarter, SMEs = small and medium-sized enterprises.

^a Government of the People's Republic of China. 2016. *Outline of the Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing.

^b Under the eco-compensation scheme between Anhui and Zhejiang provinces, the central government and the two provincial governments set up an eco-compensation fund, with water quality subjected to periodic assessment at the interprovincial section.

^c This identifies gender impacts on people's opportunities and constraints to benefit equally in a given context.

Contribution to the ADB Results Framework:

RFI A: People benefitting from increased rural investment. Expected: 130,000.

RFI B: Rural infrastructure assets established or improved. Expected: tbd. (Rural infrastructure includes decentralized wastewater treatment systems and water supply pipes, and connections to these for rural households.)

RFI C: Women represented in decision-making structures and processes. Expected: tbd. (30% women in management and decision-making positions).

Source: ADB estimates.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=52026-001-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Water and Other Urban Infrastructure and Services; and Agriculture, Natural Resources, and Rural Development
4. Project Administration Manual
5. Financial Analysis
6. Economic Analysis
7. Summary Poverty Reduction and Social Strategy
8. Risk Assessment and Risk Management Plan
9. Climate Change Assessment
10. Gender Action Plan
11. Initial Environmental Examination
12. Resettlement Plan

Supplementary Documents

13. Procurement Risk Assessment Report
14. Financial Management Assessment
15. Integrity Due Diligence
16. Detailed Economic Analysis
17. Project Innovation and Knowledge Dissemination
18. Strategic Procurement Planning
19. Eco-Compensation and Green Incentive and Investment Fund Mechanism
20. Financial Sustainability Analysis