



Report and Recommendation of the President to the Board of Directors

Project Number: 50164-001
October 2016

Proposed Loan China Water Environment Group Investment and Xinkai Water Environment Investment Integrated Wastewater Management Project (People's Republic of China)

This is an abbreviated version of the document approved by ADB's Board of Directors that excludes information that is subject to exceptions to disclosure set forth in ADB's Public Communications Policy 2011.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 26 September 2016)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1500
\$1.00	=	CNY6.6655

ABBREVIATIONS

ADB	–	Asian Development Bank
CWE	–	China Water Environment Group
CWEI	–	China Water Environment Group Investment
ESMS	–	environmental and social management system
PPP	–	public–private partnership
PRC	–	People’s Republic of China
SPS	–	Safeguard Policy Statement
XWE	–	Xinkai Water Environment Investment

NOTES

- (i) The fiscal years (FY) of China Water Environment Group, China Water Environment Group Investment, and Xinkai Water Environment Investment end on 31 December. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2016 ends on 31 December 2016.
- (ii) In this report, "\$" refers to US dollars.

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 50164-001	
Project Name	Integrated Wastewater Management Project	Department /Division	PSOD/PSIF2
Country	China, People's Republic of		
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Water and other urban infrastructure and services	Urban sewerage	100.00	
Agriculture, natural resources and rural development	Water-based natural resources management	50.00	
		Total	150.00
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Medium
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Private sector development (PSD)	Promotion of private sector investment	No gender elements (NGE)	✓
5. Poverty and SDG Targeting	Location Impact		
Project directly targets poverty and SDGs	No	Rural	Medium
		Urban	High
6. Nonsovereign Operation Risk Rating			
Entity Name		Obligor Risk Rating	Facility Risk Rating
Xinkai Water Environment Investment		NSO5	NSO6
China Water Environment Group Investment		NSO5	NSO6
7. Safeguard Categorization Environment: B Involuntary Resettlement: B Indigenous Peoples: C			
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		150.00	
Nonsovereign Dual Currency Loan: Ordinary capital resources		150.00	
B-Loans		100.00	
Dual Currency Complementary Loan from Commercial Banks		100.00	
Official Cofinancing ^a		0.00	
None		0.00	
Others ^b		1,150.00	
Total		1,400.00	

^a Concessional financing from external sources.

^b Derived by deducting ADB financing, B Loans and Official Cofinancing from Project Total Cost.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan of up to \$250,000,000 equivalent in US dollars and yuan, comprising (i) an A loan of up to \$150,000,000 equivalent in US dollars and yuan, and (ii) a complementary loan of up to \$100,000,000 equivalent in US dollars and yuan, to China Water Environment Group Investment (CWEI) and Xinkai Water Environment Investment (XWE) for the Integrated Wastewater Management Project in the People's Republic of China (PRC).

II. THE PROJECT

A. Project Identification and Description

2. **Project identification.** Restoring the health of river and lake ecosystems and improving resilience to water-related disasters are increasingly important priorities of the Government of the PRC. According to the Ministry of Environmental Protection, 28% of the available surface water of the country's seven major rivers and 31% of the water of key lakes and reservoirs are unfit for human consumption.¹ Once polluted to this degree, traditional pollution mitigation measures, such as standalone wastewater treatment facilities, are usually insufficient to recover the water ecosystem.

3. The government has announced an aggressive action plan to develop water infrastructure, enforce strict pollution controls, and rehabilitate degraded water resources.² To support these efforts, the government is also encouraging new forms of public-private partnership (PPP) to promote waterbody pollution control and rehabilitation.³ Through an integrated, coordinated approach to planning, an increasing number of local governments are engaging private operators to mitigate pollution and restore the health of river and lake ecosystems through multiple, interlocking subprojects tendered under a single basin-wide concession. Openness to this comprehensive approach, involving wider participation of the private sector, reflects a growing expectation that PPP will enhance operational efficiency, financing capacity, and technical expertise, and thereby address the country's water pollution issues more effectively.

4. Through discussion with stakeholders in the PRC's water and sanitation sectors and the ongoing screening of project opportunities, the project team identified China Water Environment Group (CWE), a leading integrated water infrastructure provider, as having specialized expertise in river and lake restoration projects. CWE acknowledged the strong experience of the Asian Development Bank (ADB) in sovereign and nonsovereign water sector operations, and asked ADB to lead the arrangement of a dual currency financing package.

5. **Project design.** The project is designed to support the implementation of integrated wastewater management concessions targeting environmental services for rivers and lakes. The ADB loan would support CWE in designing, constructing, and operating a series of facilities spanning several components, including (i) wastewater treatment plants; (ii) sludge treatment plants; (iii) sewage conveyance and interception pipelines; (iv) other civil works, such as the

¹ Ministry of Environmental Protection. 2015. *Report on the State of the Environment in China*. Beijing.

² State Council. 2015. *Water Pollution Prevention and Control Action Plan*. Beijing.

³ National Development and Reform Commission, Ministry of Finance, People's Bank of China, Ministry of Water Resources, Ministry of Housing and Urban-Rural Development, and Ministry of Transport. 2015. *Administrative Measures on Concession for Infrastructures and Public Utilities*. Beijing.

dredging of rivers and lakes, riverbank reinforcements, odor treatment, and landscaping; and (vi) the development of wetlands.

6. CWE will select subprojects located in urban sections of key rivers and lakes designated as government priority areas for environmental protection. For each subproject, CWE will develop and operate the component facilities as PPPs to be governed under concession agreements signed with city or county governments. The agreements will (i) state CWE's responsibilities for construction and operation, (ii) convey rights of service exclusivity, (iii) identify performance standards and other output requirements, and (iv) set forth payment mechanisms. The subprojects will be located in the central and western provinces of the PRC.⁴

7. **The sponsor and borrowers.** CWE is the project's sponsor and guarantor. With a treatment capacity of 1.8 million tons per day in 2015, CWE is one of the world's 50 largest wastewater treatment companies by operating scale.⁵ The company is the PRC's most experienced player in integrated river and lake pollution control projects, and features prominently in national PPP initiatives. In 2014, CWE successfully implemented two greenfield national PPP demonstration projects out of the Ministry of Finance's first batch of eight, and is currently developing four projects from the second batch.⁶

[CONFIDENTIAL INFORMATION DELETED]

8. Two wholly owned subsidiaries of CWE will serve as ADB's borrowers: (i) CWEI will be the borrower for the US dollar and offshore yuan tranches, and (ii) XWE will be the borrower for the onshore yuan tranche. Both companies are investment holding companies of CWE, and do not have managerial or financial autonomy. CWE will guarantee the ADB loans.

9. The requisite integrity due diligence was conducted during project preparation, and no significant integrity issues were discovered.

B. Development Impact, Outcome, and Outputs

10. **Impact.** The impact will be mitigated water pollution in rivers and lakes in the PRC, consistent with the goals of the PRC's State Council (footnote 3).

11. **Outcome.** The outcome will be the expanded provision of wastewater management services under integrated concessions in selected central and western provinces of the PRC.

12. **Output.** The output will be the construction of wastewater treatment plants and associated civil works for the improvement of river and lake water quality. By 2024, river or lake rehabilitation subprojects will be developed with the capacity to treat 2.3 million tons of

⁴ The designation of "central" and "western" here includes the provinces and provincial areas of Chongqing, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Ningxia, Qinghai, Shaanxi, Sichuan, Xinjiang, and Yunnan.

⁵ *Global Water Intelligence*. 2015. China Shakes up Private Water Power List. July.

⁶ One example of a PPP undertaken by CWE is the Erhai Lake Public-Private Partnership Project in Dali, Yunnan, where CWE is in charge of designing, building and operating an interception sewer pipeline network, water pumping stations, wastewater treatment plants, upstream reservoirs, and artificial wetlands to supply water for farming and irrigation. Another such example is the Nanming River Rehabilitation Project in Guiyang, Guizhou Province, the first phase of which involved wastewater and sludge facilities, river dredging, sewage pipelines, and riverway development. The project benefitted from strategic work undertaken by ADB's East Asia Department under technical assistance to the Guiyang Municipal Government to develop a strategy for integrated water resource management.

wastewater and 2,900 tons of sludge per day, as well as 190 kilometers of sewage pipeline networks and other infrastructure. The facilities will comply with ADB safeguard requirements and technical and financial eligibility criteria.⁷

C. Alignment with ADB Strategy and Operations

13. **Consistency with ADB strategy.** The project is consistent with ADB's Midterm Review of Strategy 2020, which identifies infrastructure and the environment as two of ADB's four strategic priorities.⁸ With regard to infrastructure, the project is aligned with the strategy's focus on water, sanitation, and waste management, as well as its emphasis on PPP. With regard to the environment, the project mitigates water pollution and health threats and promotes environmentally sustainable growth.

14. **Consistency with the country strategy.** By supporting a new form of PPP, environment management, and inclusive growth, the project addresses three of the five strategic priorities of ADB's country partnership strategy for the PRC: managing climate change and the environment, supporting inclusive economic growth, and supporting institutional and governance reform.⁹ In particular, the project aligns with this strategy's sector focus on environmental protection, and strongly complements ADB's initiatives in the management of water-based natural resources, including flood management, wetland conservation, water resources development, and the protection of biodiversity and ecosystems.¹⁰

15. **Consistency with the water sector strategy.** The project aligns with ADB's water policy aims to reverse the degradation of water resources caused by agricultural, industrial, and municipal effluents.¹¹ ADB's Water Operational Plan, 2011–2020 also identifies wastewater management as a key operational focus in rapidly industrializing countries like the PRC.¹² The project is an example of the type of intervention envisaged by the plan, which promotes water as a core investment area and raises ADB's water investment target to \$2.0 billion–\$2.5 billion each year by 2020, with an additional \$500 million per year targeted in private sector lending.

⁷ The eligibility criteria shall include (i) a concession agreement with service exclusivity, (ii) location, (iii) compliance with the PRC's environmental standards, and (iv) the exclusion of category A projects.

⁸ ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

⁹ ADB. 2016. *Transforming Partnership: People's Republic of China and Asian Development Bank, 2016–2020*. Manila.

¹⁰ Lessons from these experiences show that a critical success factor is a local government's adoption of an integrated approach that treats water systems and catchment areas as complete ecosystems. Effective projects adopt both structural and nonstructural measures for the management of water resources, such as increasing public awareness and community participation, linking environmental protection with livelihood opportunities, coordinating the management of urban and rural planning, and implementing an institutional and cost recovery mechanism to operate and maintain the facilities effectively. ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Hunan Dongjiang Lake Environmental Protection and Management Project*. Manila; ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Hubei Enshi Qing River Upstream Environment Rehabilitation Project*. Manila. Lessons from ADB's East Asia Department operations are presented in the following two knowledge products: (i) ADB. 2008. *Reviving Lakes and Wetlands: Lessons Learned from the PRC's Four Case Studies 1*. Manila; and (ii) ADB. 2014. *Reviving Lakes and Wetlands in the PRC: Lessons Learned on Integrated Water Pollution Control from Chao Lake Basin 2*. Manila.

¹¹ ADB. 2003. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

¹² ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

D. Project Cost and Financing Plan

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E. Implementation Arrangements

16. Table 2 summarizes the implementation arrangements.

Table 2: Summary of Implementation Arrangements

Aspects	Arrangements
Regulatory framework	For each ADB-funded subproject, CWE will enter into an overarching concession framework agreement with the host government. The framework agreement will lay out the concession's components, which may consist of separate detailed BOT, TOT, or DBFO sub-agreements. Each subproject will be implemented in accordance with granted approvals and during construction and operation be subject to government inspections for various aspects, including environment, land acquisition, involuntary resettlement, ethnic minorities, labor, safety, quality, and sanitation.
Management	CWE will centralize subproject development, procurement, and financing arrangements across its operations. CWE will establish project companies for each subproject.
Implementation period	January 2017–December 2020
Construction arrangements	CWE will centrally coordinate the construction of each subproject, which will be managed by a dedicated team. Various construction components, primarily civil works, equipment procurement, and installation will be outsourced to subcontractors. Goods and services will be procured from ADB member countries in a transparent manner through competitive bidding.
Operations arrangements	
Revenue structure	Under BOT and TOT, CWE will charge wastewater tariffs based on the volume of treated wastewater, subject to a minimum volume of offtake guaranteed by the host government. Tariffs will be set to ensure an agreed return on investment and indexed to operating costs and inflation. Under DBFO, payments to CWE are made in installments based on the achievement of construction milestones and provision of operational services on an agreed schedule.
Major cost structure	Major operational costs include electricity, materials, labor, and administrative and maintenance expenses.
Operation and maintenance	Operation and maintenance will generally be handled by each subproject company's staff, who will be either transferred from CWE or recruited externally.
Performance monitoring	Key performance indicators, including output and outcome measures, will be reported by CWE and monitored by ADB throughout the life of the project.

ADB = Asian Development Bank, BOT = build-operate-transfer, CWE = China Water Environment Group, DBFO = design-build-finance-operate, PRC = People's Republic of China, TOT = transfer-own-transfer.

Source: ADB.

F. Projected Financial and Economic Performance

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III. THE PROPOSED ADB ASSISTANCE

A. The Assistance

17. ADB's proposed assistance to CWE consists of (i) an A loan of up to \$150 million equivalent in US dollars and yuan, and (ii) a complementary loan of up to \$100 million equivalent in US dollars and yuan. ADB will fund the A loan from its ordinary capital resources and the complementary loan from participating banks with ADB acting as lender of record.

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B. Value Added by ADB Assistance

18. ADB involvement in the project is justified by the following:

- (i) The project will have a significant demonstration impact as the first ADB private sector intervention to support an emerging PPP model for integrated wastewater management, wherein a single concessionaire designs and implements a comprehensive lake and river pollution prevention and rehabilitation program that involves multiple environmental interlocking facilities and services.
- (ii) The project will build on ADB's long-standing public sector interventions and strong nonsovereign track record in wastewater treatment and water supply in the PRC, especially in less developed regions.
- (iii) ADB's requirements will ensure that CWE implements high quality environmental and social management, commercial best practice, and strong corporate governance.
- (iv) ADB will act as a catalyst to mobilize commercial cofinance by linking river and lake rehabilitation in the PRC, a new area of private participation, with the bank financing community.

C. Risks

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IV. POLICY COMPLIANCE

A. Safeguards and Social Dimensions

27. In compliance with ADB's Safeguard Policy Statement (SPS), 2009, the project is classified as category B for environment, category B for involuntary resettlement, and category C for indigenous peoples. The project team conducted environmental and social safeguards due diligence to assess the potential impacts and risks associated with CWE's operations. This revealed that each subproject's potential environmental impacts during civil construction works include the generation of dust, air emissions, noise, wastes, soil erosion, and water pollution. However, these are expected to be short-term and localized. During the operations phase, key environmental impacts could include (i) noise impacts due to plant operations; (ii) water quality impacts due to poor effluent quality; (iii) odor and health risks due to poor sludge management; and (iv) health and safety risks due to the buildup of gases, particularly in underground wastewater treatment facilities. Potential environmental impacts associated with construction and operation can be mitigated by following international engineering best practices and implementing an appropriate environmental management plan. Initial environmental examinations will be prepared for ADB-funded subprojects in accordance with ADB's SPS. Prior

to the first disbursement, CWE will update its environmental and social management system (ESMS) to include screening procedures to avoid subprojects with the potential to be classified as category A for environment, involuntary resettlement, and indigenous peoples.

28. A corporate audit of CWE and four of its existing subprojects, which are currently not candidates for ADB financing, found in place environmental and social safeguards commensurate with the impacts and risks of each.¹³ Where gaps were found, CWE was informed of corrective actions which ADB recommends are addressed and reflected in the updated ESMS. CWE's institutional capacity and commitment to manage the project's social and environmental impacts are deemed adequate, but will be enhanced through company-wide capacity development (covering both CWEI and XWE) in the implementation of the updated ESMS.

29. Similarly, the audit found that land required for existing projects had been acquired in accordance with local laws and to a standard consistent with ADB's SPS. No subproject impacts on distinct and vulnerable ethnic minority groups were detected in past subprojects, and none are expected from future subprojects. New facilities are expected to be constructed in sparsely populated suburban areas classified as development zones or reserved land.¹⁴ This will reduce the impacts on local populations from the acquisition of land and rights-of-way. If the reserved state-owned land is insufficient for future subprojects, collective land will be acquired. Underground pipelines are laid along roads and rivers, which induce temporary land occupation impacts only. CWE will work with government agencies to ensure that subprojects avoid or minimize the need for residential or arable land, but, where displacement impacts are unavoidable, CWE will put in place action plans commensurate with impacts, in accordance with ADB's SPS requirements. CWE will implement the audit's recommendations and submit an annual performance report on ESMS implementation to ADB.

30. CWE will comply with national labor laws and, pursuant to ADB's Social Protection Strategy (2001), will take measures to comply with the internationally recognized core labor standards.¹⁵ The borrower will report regularly to ADB on (i) its (and its contractors') compliance with such laws, and (ii) the measures taken. Information disclosure and consultation with affected people will be conducted in accordance with ADB requirements.

B. Anticorruption Policy

31. CWE was advised of ADB's policy of implementing best international practice relating to combating corruption, money laundering, and the financing of terrorism. ADB will ensure that the investment documentation includes appropriate provisions prohibiting corruption, money laundering, and the financing of terrorism, and remedies for ADB in the event of noncompliance.

C. Investment Limitations

32. The proposed direct A loan is within the medium-term, country, industry, group, and single-project exposure limits for nonsovereign investments.

¹³ The corporate and subproject audits were undertaken by AECOM, a qualified and experienced external expert.

¹⁴ Two types of land can be acquired for future subprojects: (i) state-owned, unused land reserved by local governments for future development activities; and (ii) collective land within the city planning area that can be acquired according to the local development plan.

¹⁵ ADB. 2003. *Social Protection*. Manila (adopted in 2001).

D. Assurances

33. Consistent with the Agreement Establishing the Asian Development Bank (the Charter),¹⁶ ADB will proceed with the proposed assistance upon establishing that the Government of the PRC has no objection to the proposed assistance to CWE. ADB will enter into suitable finance documentation, in form and substance satisfactory to ADB, following approval of the proposed assistance by the Board of Directors.

V. RECOMMENDATION

34. 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 up to \$250,000,000 equivalent in US dollars and yuan, comprising (i) an A loan of up to \$150,000,000 equivalent in US dollars and yuan from ADB's ordinary capital resources, and (ii) a complementary loan of up to \$100,000,000 equivalent in US dollars and yuan, to China Water Environment Group Investment and Xinkai Water Environment Investment for the Integrated Wastewater Management Project in the People's Republic of China, with such terms and conditions as are substantially in accordance with those set forth in this report, and as may be reported to the Board.

Takehiko Nakao
President

26 October 2016

¹⁶ ADB. 1966. *Agreement Establishing the Asian Development Bank*. Manila.

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned With			
Water pollution in rivers and lakes of the People's Republic of China is mitigated. ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>Outcome Provision of wastewater management services under integrated concessions in selected central and western provinces of the People's Republic of China expanded</p>	<ul style="list-style-type: none"> a. Amount of treated wastewater increased to 755 million m³ per year by 2028^b (2015 baseline: Not applicable) b. At least 400 jobs provided to local workers during operation by 2028 (2015 baseline: Not applicable) c. At least CNY6,189 million spent in domestic purchases during operation from 2017 to 2028 (2015 baseline: Not applicable) d. At least CNY2,356 million paid to the governments during construction and early operation from 2017 to 2028 (2015 baseline: Not applicable) 	<p>a.–d. Annual project monitoring and development effectiveness monitoring reports submitted by CWE</p>	<p>Construction of associated infrastructure, such as the tap water distribution network and sewage pipelines, is delayed.</p> <p>Local governments do not adequately implement a wider watershed management plan to control pollution.</p>
<p>Output Wastewater treatment plants and associated civil works for the improvement of river and lake water quality constructed^c</p>	<ul style="list-style-type: none"> a. Integrated river or lake rehabilitation subprojects with a total value of CNY9.0 billion constructed by 2024 (2015 baseline: Not applicable) b. Subprojects with a total installed wastewater treatment capacity of 2.3 million m³ per day constructed by 2024^b (2015 baseline: Not applicable) c. Sludge treatment subprojects with a total capacity of about 2,070 m³ (2,900 tons) per day constructed by 2024^d (2015 baseline: Not applicable) d. 190 kilometers of sewage pipeline networks constructed by 2024 (2015 baseline: Not applicable) e. At least CNY7,388 million spent in domestic purchases during 	<p>a.–f. Annual project monitoring and development effectiveness monitoring reports submitted by CWE</p>	<p>Host local governments delay the granting of concession rights to the private sector due to unforeseen regulation changes.</p>

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	<p>construction by 2024 (2015 baseline: Not applicable)</p> <p>f. At least 1,200 jobs provided during the construction phase by 2024 (2015 baseline: Not applicable)</p>		

Key Activities with Milestones

1. Wastewater treatment plants and associated civil works for the improvement of river and lake water quality constructed
- 1.1 Signing of the loan agreement by Q1 2017
- 1.2 Corporate environmental and social management system operational by Q1 2017 prior to financial closure
- 1.3 Financial closure by Q1 2017
- 1.4 Clearance of all loan drawdown conditions by Q1 2017
- 1.5 Construction work in progress, as scheduled
- 1.6 Full commissioning of subproject plants by 2024

Inputs

ADB A loan: Up to \$150 million equivalent in US dollars and yuan
ADB complementary loan: Up to \$100 million in US dollars and yuan
Local bank commercial loans: Up to \$730 million equivalent in yuan
Sponsor equity: \$420 million equivalent in yuan

Assumptions for Partner Financing

Not applicable

ADB = Asian Development Bank, CWE = China Water Environment Group, m³ = cubic meter, Q = quarter.

^a Government of the People's Republic of China, State Council. 2015. *Water Pollution Prevention and Control Action Plan*. Beijing.

^b One ton of wastewater is assumed to have a volume of 1m³. The treatment plants will meet the Ministry of Environmental Protection's Grade 1A standard of the Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant (GB18918-2002).

^c As specific projects that will receive ADB funding are yet to be identified, an estimate was made on the extent of operations that can be supported by ADB assistance in terms of the number of wastewater and sludge treatment plants. Outputs from these subprojects were then extrapolated using information from existing CWE operations.

^d One cubic meter of sludge is assumed to weigh 1.4 tons.

SOURCE: ADB.