Report and Recommendation of the President to the Board of Directors

Project Number: 47048-002
August 2015

Proposed Loan
People's Republic of China: Hubei Enshi Qing River Upstream Environment Rehabilitation Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 15 July 2015)

Currency unit	–	yuan (CNY)
CNY1.00	=	$0.1610
$1.00	=	CNY6.2094

ABBREVIATIONS

ADB	–	Asian Development Bank
ECG	–	Enshi city government
EIA	–	environmental impact assessment
EMP	–	environmental management plan
ETMAP	–	Enshi Tujia and Miao Autonomous Prefecture
ETMAPG	–	Enshi Tujia and Miao Autonomous Prefecture Government
km	–	kilometer
LCG	–	Lichuan city government
m^3/d	–	cubic meter per day
O&M	–	operation and maintenance
PAM	–	project administration manual
PMO	–	project management office
PPP	–	public–private partnership
PRC	–	People's Republic of China
WWTP	–	wastewater treatment plant

NOTE

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

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PROJECT AT A GLANCE

1. Basic Data

Project Number: 47048-002

Project Name	Hubei Enshi Qing River Upstream Environment Rehabilitation Project	**Department /Division**	EARD/EAER
Country	China, People's Republic of	**Executing Agency**	The People's Government of Enshi Tujia and Miao Autonomous Prefecture
Borrower	China, People's Republic of		

2. Sector

	Subsector(s)	ADB Financing ($ million)
✓ **Agriculture, natural resources and rural development**	Rural sanitation	2.00
	Water-based natural resources management	50.00
Water and other urban infrastructure and services	Urban flood protection	24.00
	Urban sewerage	24.00
	Total	**100.00**

3. Strategic Agenda

	Subcomponents
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive
Environmentally sustainable growth (ESG)	Natural resources conservation Urban environmental improvement

Climate Change Information

Climate Change impact on the Project	High

4. Drivers of Change

	Components
Governance and capacity development (GCD)	Civil society participation Institutional systems and political economy Organizational development
Private sector development (PSD)	Conducive policy and institutional environment Public sector goods and services essential for private sector development

Gender Equity and Mainstreaming

Effective gender mainstreaming (EGM)	✓

5. Poverty Targeting

Project directly targets poverty	Yes
MDG-targeting (TI-M)	MDG7

Location Impact

Rural	Medium
Urban	High

6. Risk Categorization: Complex

7. Safeguard Categorization

Environment: A **Involuntary Resettlement:** A **Indigenous Peoples:** B

8. Financing

Modality and Sources	Amount ($ million)
ADB	**100.00**
Sovereign Project loan: Ordinary capital resources	100.00
Cofinancing	**0.00**
None	0.00
Counterpart	**131.62**
Government	131.62
Total	**231.62**

9. Effective Development Cooperation

Use of country procurement systems	No
Use of country public financial management systems	Yes

Source: Asian Development Bank

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 Hubei Enshi Qing River Upstream Environment Rehabilitation Project.[1]

2. The project will address inadequate wastewater collection and treatment, extensive nonpoint source pollution, and recurrent flooding that affect living standards and sustainable economic development in the Enshi Tujia and Miao Autonomous Prefecture (ETMAP) of Hubei province.[2]

II. THE PROJECT

A. Rationale

3. Located in the upper Qing River basin (a major tributary of the Yangtze River), the ETMAP has an ethnically diverse population of 4.01 million. Because of its mountainous terrain and lack of connectivity, ETMAP's per capita income in 2012 was only CNY10,327, which was about half of the provincial level; the poverty incidence is 40% in rural areas. The ETMAP includes two cities at district level—Enshi and Lichuan—and six counties, which are all designated as national poverty areas. In addition to poverty, water quality deterioration, riverbank erosion, and recurrent flooding are key factors undermining living standards and sustainable economic development in the ETMAP.

4. The Qing River is the primary water supply for Enshi and Lichuan and their surrounding rural populations. Since the 1990s, the water quality of the Qing River and its tributaries has deteriorated. Monitoring data show that water quality in 45% of all cross sections is class IV, V, or below, meaning it is unfit for human consumption.[3] Water pollution is most serious in Enshi and Lichuan, resulting in odor and eutrophication. Continuing deterioration of the water quality poses a public health threat for local residents, who rely on the river for their water use. In addition, the degraded water environment threatens Qing River riparian and aquatic ecosystems, and limits opportunities for ecological diversity and tourism-related recreation.

5. The major sources of pollution are untreated domestic wastewater, unregulated runoff, and inadequately treated industrial effluent. As a result of prolonged underinvestment, wastewater collection and treatment facilities in Enshi and Lichuan are seriously deficient. Less than 60% of wastewater from Enshi and Lichuan is collected and treated because of the lack of treatment capacity, aging pipelines, and incomplete coverage of wastewater collection systems. This problem will become increasingly serious with economic development and rapid urbanization, as projected in the master plans for Enshi and Lichuan. Further, there are no facilities for collection and treatment of domestic wastewater and solid waste in rural areas along the Qing River and its tributaries.

6. Upstream of Enshi and Lichuan, the Qing River watershed is mountainous with high seasonal rainfall and rapid runoff. This, combined with inadequate flood management facilities,

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[1] The design and monitoring framework is in Appendix 1.

[2] The Asian Development Bank (ADB) provided project preparatory technical assistance for preparing the Hubei Enshi Qing River Upstream Environment Rehabilitation Project. (TA 8424-PRC).

[3] Class IV is suitable for general industrial water supply and recreational use involving no direct human contact. Class V is suitable for agricultural water supply and general landscaping use. Below class V is unsuitable for any use (PRC Environmental Water Quality Standard GB3838-2002).

results in regular flooding. Following national flood management standards, flood management facilities in Enshi and Lichuan should provide protection against 20-year floods in the short term and 50-year floods in the long term. The existing facilities only provide protection against a maximum of 4-year floods. There are some revetments along the banks within Enshi and a mid-sized multipurpose reservoir on the upper Qing River. However, there are virtually no revetments or other flood control measures along the Qing River and its tributaries flowing through Lichuan. Since the 1950s, at least nine major floods have occurred, resulting in significant loss of lives and property. There has also been severe riverbank erosion as a result of high-intensity rainfall, loss of vegetation, and lack of revetment works. This has caused heavy siltation of the river and blockage in urban sections of the Qing River and its tributaries, which further exacerbates flood risk and water pollution.

7. Lack of integrated water resource management in the Qing River basin hinders a coordinated and effective response by planning, pollution control, and flood management authorities to improve water quality and reduce flooding. Weak interagency coordination and lack of monitoring and enforcement capacity have resulted in ineffective management of nonpoint source pollution from rural and urban sources. Important rural sources include discharges of domestic waste from unsewered rural households, agricultural runoff, animal waste discharges, and erosion of riverbanks during high-flow conditions. In urban areas, unregulated runoff along the riverbanks also contributes to nonpoint pollution, including garbage dumped along the riverbanks and inflow of wastewater due to leaks, clogging, and misalignment of wastewater pipes. While the river embankment is a critical flood management facility, proper maintenance of the banks would also help reduce nonpoint pollution.

8. Guided by both the national western region development strategy and the Hubei provincial 12th Five-Year Plan (2011–2015), the Enshi Tujia and Miao Autonomous Prefecture Government (ETMAPG) is committed to reducing poverty, improving the water quality of Qing River, and advancing the ecological rehabilitation of the river and lakes. The ETMAP is covered under the Water Pollution Control Plan for the Three Gorges Reservoir Area and the Upper Reaches, which is one of the national priorities for water pollution control. The provincial government has formulated and approved the Qing River Basin Pollution Prevention and Control Master Plan (2010–2020) and the ETMAPG has prepared the Qing River Near-Term Flood Control Master Plan (2013–2015),[4] which was approved in 2012 by the Ministry of Water Resources. To implement and complement components of these plans, the ETMAPG requested that the Asian Development Bank (ADB) provide financial and technical support for water quality improvement and flood management in Enshi and Lichuan.

9. With support from the central and provincial governments, the ETMAPG has taken the following steps to implement the master plans: (i) incorporate water quality improvement goals in performance evaluation of local governments; and (ii) implement more than 30 projects with a total investment of CNY8 billion for sewage network improvement, solid-waste management, nonpoint source pollution reduction, river rehabilitation, and soil erosion control in 2014.

10. The project is consistent with the priorities of ADB's country partnership strategy, 2011–2015 for the PRC;[5] the comprehensive reform agenda announced at the Third Plenary Session of the 18th Communist Party of China Central Committee;[6] the strategic priorities of ADB's

[4] The plan includes construction of the Yao Jia Ping Reservoir, which together with the existing Da Long Tan Reservoir will provide greater flood regulation capacity for the upper Qing River basin.

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

[6] Passed at the Third Plenum of the 18th Central Committee of the Chinese Communist Party on 12 November 2013.

Midterm Review of Strategy 2020, [7] and the Water Operational Plan. [8] Environmental sustainability is one of the three strategic pillars of the country partnership strategy. The comprehensive reform agenda announced at the third plenum emphasized the need for better environmental infrastructure and the strengthening of institutional development and environmental services at the local level.

11. Past ADB interventions in water resources management in the PRC and other developing member countries include investment projects and technical assistance in flood management, water supply, and wastewater collection and treatment.[9] The following are among the major lessons learned: (i) the benefits of (a) adopting an integrated approach in the watershed, (b) incorporating nonstructural measures, and (c) incorporating stakeholder and community participation and public awareness raising; and (ii) the need for (a) capacity development for project management, (b) effective project monitoring and evaluation, and (c) sustainable financing of facilities based on a realistic and enforceable tariff structure. The project incorporates these lessons and includes a number of innovative design features in structural and nonstructural components.

B. Impact and Outcome

12. The impact will be the improved environmental ecological sustainability in the upper Qing River basin[10]. The outcome will be the improved river health and water resource management in the upper Qing River basin.

C. Outputs

13. **Output 1: Wastewater management improved.** The output will include improvement of wastewater collection systems, expansion of two existing wastewater treatment plants (WWTPs), and construction of one new WWTP. In Enshi, about 154 kilometers (km) of interceptors and new branch sewer pipes will be installed; an existing WWTP will be expanded to provide an additional capacity of 30,000 cubic meters per day (m^3/d); and a new WWTP of 50,000 m^3/d will be constructed and will meet class 1A effluent standards, including advanced sludge treatment and disposal capacity of 102 tons/day. In Lichuan, about 77 km of interceptors and new branch sewer pipes will be installed; pump stations will be constructed or improved; an existing WWTP will be expanded to provide an additional capacity of 50,000 m^3/d and meet class 1A effluent standards, with advanced sludge treatment capacity of 688 tons/day; and an existing wastewater treatment facility will be upgraded to improve the effluent standard from class 1B to class 1A.[11] Energy saving and greenhouse gas reduction measures will be incorporated into the operation of the WWTPs.

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[7] ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific.* Manila. In developing the 2016 and 2017 lending and nonlending programs, the PRC and ADB jointly anticipate the strategic direction and priority areas under the PRC's 13th Five-Year Plan and the forthcoming country partnership strategy (ADB. Forthcoming. *Country Partnership Strategy: People's Republic of China, 2016–2020*. Manila.)

[8] ADB. 2011. *Water Operational Plan*. Manila.

[9] ADB. 2002. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Songhua River Flood Management Sector Project*. Manila; ADB. 2003. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Wuhan Wastewater and Storm Management Project.* Manila; ADB. 2012. *Reviving Lakes and Wetlands: Lessons Learned from the People's Republic of China*. Manila.

[10] Qing River Basin Pollution Prevention and Control Master Plan, 2010–2020.

[11] PRC standard Class 1A: Class 1A Standard of the Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant (GB18918-2002).

14. **Output 2: Flood management enhanced.** This output will include (i) construction of a total of 66 km of river embankments with riverside amenities in Enshi, and a total of 49 km in Lichuan; (ii) dredging of silted sections of the Qing River and tributaries to increase the flood carrying capacity in Enshi (51 km) and Lichuan (30 km); and (iii) construction of ecological buffer zones, including wetlands and amenity facilities, in Enshi and Lichuan. Pollution-intercept buffer zone functions will be incorporated in embankment designs including vegetated embankments and constructed wetlands. Public amenity areas will be constructed along the rivers to (i) intercept runoff and reduce nonpoint source pollutants, (ii) renew habitats and restore riparian ecosystems, and (iii) provide recreational space for residents and tourists.

15. **Output 3: Water and environmental management integrated.** This output will include development of (i) a 2-year pilot participatory program in Xinjie village in Enshi to reduce nonpoint source pollution by improving farming practices, training farm service providers, providing subsidies for purchasing formula fertilizers and organic fertilizers, improving solid-waste collection, and installing biogas tanks to treat animal waste; (ii) a riverbank maintenance program, including community-based environmental supervision and public education and awareness-raising initiatives in Enshi and Lichuan; (iii) a sewerage infrastructure geographic information system and asset management systems; and (iv) a flood forecasting and warning system and introduction of water-sensitive land use planning in Enshi and Lichuan.

16. **Output 4: Inclusive capacity development strengthened.** The project will strengthen capacity and institutions for project management. It will include training, capacity building, and consultant engagement for (i) effective monitoring and evaluation of project using the project performance management system; (ii) institutional and capacity strengthening for operation and maintenance (O&M) of the structural works; and (iii) resettlement and social monitoring.

17. **Special features and value addition.** The project will demonstrate that international best practices can be adopted in smaller cities in poverty areas and contribute to sustainable water resources management and development of livable cities and villages. Successful transformation of Enshi and Lichuan can be replicated by other smaller cities in less-developed areas. The ETMAPG is planning major investment projects to implement the master plans for Qing River pollution control and flood management. In addition, the central government will allocate sizable investment and grant funding to implement the Ministry of Environmental Protection's new policy to improve rural environmental protection. The activities demonstrated under the project have the potential to be scaled up through ensuing local and central government initiatives.

18. A public–private partnership (PPP) is under consideration for the O&M of the expanded Lichuan WWTP. A memorandum of understanding was signed by the Lichuan city government (LCG) and ADB on expansion and O&M of the Lichuan WWTP. The PPP will enhance infrastructure efficiency by ensuring that the plant is run by a skilled and experienced service provider with appropriate performance incentives. The construction of the WWTP will be undertaken by the government, and O&M will be tendered as a concession. The LCG expressed preference for a lease contract, which is one form of PPP. This could provide for an up-front payment from the lessee to the LCG to pay project development costs. The approach will be suitable for replication in other infrastructure projects that generate user revenue.

19. Nonstructural and participatory measures are also introduced to complement structural measures. These measures include a village-based pilot program to reduce nonpoint source pollution, a sewer infrastructure geographic information system and asset management system, a flood forecasting and warning system, pollution characterization and management, community

environmental supervision and flood management, a riverbank maintenance program, and water-sensitive land use planning. The project design incorporates findings of an assessment of potential climate change impacts, and includes measures to reduce greenhouse gas emissions in the operation of WWTPs, and to increase climate resilience of flood management facilities.

D. Investment and Financing Plans

20. The project is estimated to cost $231.62 million (Table 1).

Table 1: Project Investment Plan
($ million)

Item		Amount[a]
A.	**Base Cost**[b]	
	1. Wastewater management improved	95.46
	2. Flood management enhanced	103.30
	3. Water and environmental management integrated	1.37
	4. Inclusive capacity development strengthened	1.75
	Subtotal (A)	**201.88**
B.	**Contingencies**[c]	**24.28**
C.	**Financing Charges During Implementation**[d]	**5.46**
	Total (A+B+C)	**231.62**

[a] Includes taxes and duties of $11.77 million to be financed by the government ($6.38 million) and the Asian Development Bank (ADB) loan ($5.39 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 represents 3.5% of base cost, not 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 mid-2014 prices. Of the base cost, 72% will finance civil works, 11% equipment and goods, and 1% consulting services.

[c] Physical contingencies computed at 8.0% for all expenditure categories. Price contingencies are computed at 1.6% in 2016, 1.1% in 2017, 1.4% in 2018, 1.4% in 2019, and 1.5% thereafter on foreign exchange costs, assuming exchange rate fluctuations under a purchasing power parity model. Price contingencies on local currency are calculated at 3% in 2016–2019 and thereafter.

[c] Includes interest during construction and commitment charges. Interest for the ADB loan has been computed at the 3-year US Dollar fixed swap rate plus an ADB spread of 0.5% and a maturity premium of 0.1%. Commitment charges for the ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

21. The government has requested a loan of $100 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; 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; and such other terms and conditions set forth in the loan and project agreements. The government has requested that the repayment will follow the straight line repayment option and that the repayment dates are expected to be 1 March and 1 September in each year. Based on the requested loan terms and the repayment option, the average loan maturity is 15.25 years and the maturity premium payable to ADB is 0.1%. The ADB loan will also finance taxes and duties for eligible ADB-financed expenditures, and transportation and insurance costs included in the base cost for ensuring smooth project implementation. The loan will finance 43.17% of the project cost, including civil works, equipment and materials, and institutional strengthening. The Enshi city government (ECG) will finance 36.7% of the project cost and the LCG 20.1% through counterpart funds (Table 2). Counterpart funds will finance some civil works, land acquisition and resettlement, survey, design, and supervision and monitoring.

Table 2: Summary Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank	100.00	43.2
Enshi City Government	85.10	36.7
Lichuan City Government	46.52	20.1
Total	**231.62**	**100.0**

Source: Asian Development Bank estimates.

22. The PRC will be the borrower of the loan. The borrower shall make the proceeds of the loan available, through the Hubei Provincial Government and ETMAPG, to the ECG and LCG upon terms and conditions satisfactory to ADB. Except as ADB may otherwise agree, the terms for the proceeds of the loan made available shall include (i) a commitment charge and interest at the rates identical to those applied to the loan, (ii) a repayment period including a grace period identical to those applied to the loan, and (iii) the ECG and LCG bearing the foreign exchange and interest rate variation risks of the proceeds of the loan made available thereto. The PRC, Hubei Provincial Government, ETMAPG, ECG, and LCG have assured ADB that counterpart funding will be provided in a timely manner, including any additional counterpart funding required for any shortfall of funds or cost overruns. The indicative flow of funds and the relending and onlending arrangements are in the project administration manual (PAM).[12]

E. Implementation Arrangements

23. The implementation arrangements are summarized in Table 3 and described in detail in the PAM.

Table 3: Implementation Arrangements

Aspects	**Arrangements**		
Implementation period	August 2015–July 2020		
Estimated completion date	31 July 2020 (estimated loan closing date: 31 January 2021)		
Management			
(i) Oversight body	ETMAP Project Leading Group Governor of ETMAP (chair)		
(ii) Executing agency	ETMAPG will be responsible for the implementation of the entire project.		
(iii) Key implementing agencies	The Enshi Urban Construction and Investment Company is the implementation agency for all infrastructure subcomponents in Enshi, as is the Lichuan Liangli Urban Construction and Development Company in Lichuan		
(iv) Implementation unit	The PMO has been established in the ETMAPG. A PIU has been established in both the Enshi and Lichuan city governments. During project implementation, the PMO and PIUs will carry out day-to-day project management and implement nonstructural components in cooperation with other government authorities, including water resources, environmental protection, city management, Tunbao township, and Xinjie village.		
Civil works and goods	NCB (civil works)	19 contracts	$131.56 million
	ICB (goods)	2 contracts	$18.54 million
	NCB (goods)	5 contracts	$4.43 million
	Shopping (goods)	1 contract	$0.74 million
Consulting services	Project implementation and institutional strengthening support (QCBS/international) (80:20)	19 person-months (international) 85 person-months (national)	$1.10 million
	External resettlement and social monitoring (CQS/national)	25 person-months (national)	$0.19 million
	Initial project implementation support–project management	9 person-months (national)	$0.06 million

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

Aspects	Arrangements		
	and procurement (ICS/national)		
	Strengthening nonstructural measures on Qing River integrated management (QCBS international) (90:10)	8 person-months (international) 41 person-months (national)	$0.76 million
Retroactive financing and/or advance contracting	The ETMAPG has requested retroactive financing and advance contracting. Retroactive financing will finance up to $20 million of eligible expenditures or 20% of the total loan amount incurred prior to loan effectiveness, but not earlier that 12 months before the loan agreement is signed.		
Disbursement	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 by the Government of the People's Republic of China and ADB.		

ADB = Asian Development Bank, CQS = consultant's qualifications selection, ETMAP = Enshi Tujia and Miao Autonomous Prefecture, ETMAPG = Enshi Tujia and Miao Autonomous Prefecture Government, ICB = international competitive bidding, ICS = individual consultant selection, NCB = national competitive bidding, PIU = project implementation unit, PMO = project management office, QCBS = quality- and cost-based selection.
Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

24. The project technical designs are in accordance with PRC design guidelines and local regulations. After detailed examination of the project's compatibility with local conditions, it was confirmed that technical feasibility is adequate. Capacity building will be provided to ensure sustainable O&M of project facilities.

B. Economic and Financial

25. The economic analysis indicates that the project is economically viable, with an overall economic internal rate of return of 17.2% and an economic net present value of CNY89.8 million. The rates of return for the individual outputs are 10.6% for wastewater improvement in Enshi and 14.9% in Lichuan, and 21.2% for river rehabilitation in Enshi and 20.5% in Lichuan. Sensitivity analysis shows that the project is generally robust to potential variations in costs and benefits. In addition, the actual economic benefits are likely larger than estimated as some significant types of benefits are not quantifiable because of limited data. The financial sustainability assessment for the nonrevenue suboutputs indicates that the ECG and LCG have sufficient funds to finance the counterpart contributions, as well as to finance debt service and O&M costs during operation. During implementation, average annual counterpart funding accounts for 0.55% of the projected revenue of the ECG and 0.67% of the LCG. The sum of annual debt service costs and funds required for facility O&M never exceeds 0.1% of projected revenues from 2021 to 2034.

26. The financial evaluation for output 1 in Enshi and Lichuan confirms that it is financially feasible, with a financial internal rate of return of 4.60% above the weighted average cost of capital of 1.84% in Enshi and a financial internal rate of return of 5.00% above the weighted average cost of capital of 1.72% in Lichuan, given commitments of the ECG and LCG to a progressive increase in wastewater tariffs to achieve full cost recovery and to provide subsidies to fully cover funding shortfalls before tariffs reach full cost-recovery levels. The financial viability is generally robust. Adjustments towards full cost-recovery tariffs are gradual and full cost recovery is achieved by 2026 in Enshi and by 2021 in Lichuan. The tariff affordability analysis shows that the share of income spent on water and wastewater at full cost-recovery levels is less than 1.9% for average-income households and less than 2.6% for low-income households.

Nonetheless, the ECG and LCG have committed to (i) undertake periodic reviews of tariffs and fees following specified tariff setting mechanisms, (ii) assess the impact of wastewater collection fees and tariffs on the poor and provide necessary subsidies to ensure wastewater collection services to the poor, and (iii) hold public tariff consultation hearings to consult with the affected people when setting or adjusting tariffs for wastewater.

27. Assessment of the financial management capacity of the Enshi Prefectural Finance Bureau, Enshi Urban Construction and Investment Company, and Lichuan Liangli Urban Construction and Development Company addressed fund flow arrangements, staffing, accounting and audit policies and procedures, and financial information systems. Existing practices are generally sound but lack of experience with ADB projects and foreign-funded projects was identified as an issue. The executing and implementing agencies have agreed to the proposed measures to strengthen their financial management capability. The overall financial management risk rating of the project, after considering mitigating measures, is *moderate*. The identified financial management risks will be closely monitored during project implementation.[13]

C. Governance

28. An assessment of the procurement capacity confirmed that the executing and implementing agencies, acting through a procurement agency and with the assistance of ADB and the consultants, would have adequate procurement capacity to facilitate full compliance with ADB's Procurement Guidelines (2015, as amended from time to time) and Guidelines on the Use of Consultants (2013, as amended from time to time). Specific policy requirements, capacity development, and other supplementary measures are described in the PAM. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the ETMAPG, ECG, and LCG. The specific policy requirements and supplementary measures are described in the PAM.

D. Poverty and Social

29. About 70,900 households will benefit from improved flood protection and 40,000 households from improved wastewater collection and treatment; approximately 6% of these households are poor. The project will create 6,300 temporary jobs during implementation and 105 permanent jobs during O&M. Jobs created under the project will be preferentially offered to women and to people displaced economically or physically under the project. Focus group discussions found that environmental improvements are anticipated to have significant gender and poverty impacts, with reduced time burdens and costs for health care, preparation for floods, and cleanup after floods.[14]

30. The project is categorized as effective gender mainstreaming. A gender action plan contains activities to ensure project benefits contribute to improved gender equality in the project area, including (i) women's participation in discussions on detailed designs, wastewater tariff hearings, community activities, training, and project management; (ii) job creation for women; and (iii) inclusion of gender perspectives in capacity development of ETMAPG staff.[15]

[13] Financial Analysis (accessible from the list of linked documents in Appendix 2).
[14] Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2). The social action plan is included in the PAM.
[15] Gender Action Plan (accessible from the list of linked documents in Appendix 2).

E. Safeguards

31. **Environment.** The project is classified as category A for environment, and an environmental impact assessment (EIA) and environmental management plan (EMP) have been prepared following ADB's Safeguard Policy Statement (2009). The EIA and EMP were disclosed on 26 November 2014. The project is expected to have environmental benefits, including improved water quality of the Qing River in the project area, reduced flood risk, increased wastewater treatment capacity, improved sewage coverage for about 40,000 households, and improved water resources management capacity of the ETMAPG. Potential environmental impacts are a result of the planned dredging and embankment work, and construction- and operation-related disturbances. During preparation of the EIA, consultations were conducted with key stakeholders and the outcomes have been integrated into the project design. The ETMAPG, through the project management office (PMO), will be responsible for overall implementation and compliance with the EMP. The PMO and implementing agencies will be responsible for site-based implementation of the EMP. The EIA concludes that the anticipated environmental impacts and risks can be mitigated through the implementation of the EMP.

32. **Climate change.** An assessment of potential climate change impacts found the project at high risk for climate impacts, with an expected increase in temperature of 1.5^{o} Celsius, higher runoff, more variable precipitation, and more frequent severe storms by 2031–2040. In response, the project design incorporates adaptation measures, including a flood forecasting and warning system, community-based environmental supervision and flood management, and water-sensitive land use planning. Measures to reduce greenhouse gas emissions will be undertaken as part of wastewater treatment standard operation practices.

33. **Involuntary resettlement.** The project is categorized as A for involuntary resettlement under ADB's Safeguard Policy Statement. It will permanently acquire a total of 73.15 hectares of land; an additional 145.28 hectares will be occupied temporarily. The project will demolish 12,778 square meters of housing. It will economically displace 5,431 people, with 1,645 to lose more than 10% of their agricultural productive assets and 143 to be physically displaced. The ETMAPG prepared resettlement plans for Enshi and for Lichuan, in line with ADB's Safeguard Policy Statement and related laws and regulations of Enshi and Lichuan, Hubei province, and the PRC. The ETMAPG will fully finance CNY132.61 million of land acquisition and resettlement costs. The ADB loan will finance the costs for semiannual external resettlement monitoring and evaluation. The ETMAPG has experience in conducting land acquisition and resettlement for foreign-funded projects and has the capacity to implement the project's resettlement plans.

34. **Indigenous peoples.** The project is categorized as B for indigenous peoples under ADB's Safeguard Policy Statement. The ETMAP has an ethnically diverse population of 4.01 million—45% of people are Han, 46% Tujia, 6.5% Miao, and 2.5% belong to other ethnic groups. The project area has similar levels of ethnic diversity. The ethnic minorities have socioeconomic and livelihood systems similar to the mainstream population in terms of income, economic activities, and education, and no language or other cultural barriers were identified. They will benefit equally from the project activities. To ensure the benefits are accrued by the ethnic minorities, an ethnic minority development plan was prepared and endorsed by the ETMAPG.

35. **Grievance redress mechanism.** A grievance redress mechanism to address social and environmental concerns of stakeholders has been designed and will be established by the PMO. The PMO will have final responsibility for handling any disputes within the grievance redress mechanism. The procedures are described in the PAM.

F. Risks and Mitigating Measures

36. Major risks and mitigating measures are summarized in Table 4, and described in detail in the risk assessment and risk management plan.[16] Risk assessment for the overall project is medium and the integrated benefits and impacts are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Implementation delays due to the limited experience of the project management office and implementing agencies	ETMAPG will hire a qualified tendering agent with ADB procurement experience. The project will provide consulting services for technical support and on-the-job trainings on procurement, disbursement, and financial management. ETMAPG has established a good relationship with the project implementing agencies of other ADB-funded projects to gain knowledge on loan implementation.
Buildings and communities are not connected to the new sanitary sewers installed under the project	For buildings and communities where developers having legal title can be identified, pipes connecting the buildings and communities to the sanitary sewers will be procured and installed by the property owners or developers in accordance with a regulation issued by the Ministry of Housing and Urban-Rural Development. For other communities, pipes connecting communities to the sanitary sewers will be installed under the project and financed by Enshi and Lichuan. Both cities have provided written assurances to install all connections within 2 years following installation of interceptor and branch pipes.
Project implementation is delayed because of delays in land acquisition and resettlement	This risk will be mitigated through the implementation of measures laid out in the resettlement plan. A full-time resettlement staff member will be assigned to the project management office for the smooth implementation of land acquisition and resettlement. The project management office will conduct internal monitoring of resettlement plan implementation and report to ADB through semiannual project progress reports.

ADB = Asian Development Bank, ETMAPG = Enshi Tujia and Miao Autonomous Prefecture Government
Source: Asian Development Bank.

IV. ASSURANCES AND CONDITIONS

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

V. RECOMMENDATION

38. 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 $100,000,000 to the People's Republic of China for the Hubei Enshi Qing River Upstream Environment Rehabilitation Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

20 August 2015

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

DESIGN AND MONITORING FRAMEWORK

Impacts the project is aligned with:

Environmental ecological sustainability in the upper Qing River basin improved (Qing River Basin Pollution Prevention and Control Master Plan, 2010–2020)

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome River health and water resource management in the upper Qing River basin improved	By 2022 a. Households affected by 1-in-20-year frequency floods in the project area reduced by 61% (2014 baseline: 82,670) b. Households connected to newly installed sanitary sewers increased by 42% (2014 baseline: 96,000) c. Pollution loads in Enshi and Lichuan are reduced: COD 3,725 tons; Total nitrogen: 685 tons; Total phosphorus: 37 tons (2014 baseline: COD 5,460 tons; Total nitrogen: 844 tons; Total phosphorus: 64 tons) d. Wastewater treatment coverage (m^3 per day) increased to 90% (2014 baseline: 57%)	a–b. Government annual reports, records, and statistics on sanitation, natural disasters, and environment c. Enshi Tujia and Miao Autonomous Prefecture environmental protection bureau water quality monitoring reports for the project d. Project progress reports and review reports	Pollution accidents occur near the Qing River and cause serious deterioration of water quality Impact of climate change on precipitation and storms greater than projected
Outputs 1. Wastewater management improved	By 2020 1a. Total sewage treatment capacity of Enshi and Lichuan increased by 130,000 m^3 per day meeting class 1A effluent standards (2014 baseline: 110,000 m^3/d) 1b. 231 km sewage pipes installed, an existing pumping station upgraded, two pump stations constructed, and one pump station upgraded (2014 baseline: sewage pipes, 104 km) 1c. Treated effluent upgraded to class 1A for existing WWTP facility in Lichuan (2014 baseline: class 1A) 1d. Energy saving and GHG mitigation from three WWTPs: 131,222 tons per year CO_2e (2014 baseline: 145,803 tons per year CO_2e) 1e. 105 permanent O&M jobs created, at least 42 jobs (40%) held by women (2014 baseline: 0)	1a–c. Government annual reports, records, and statistics on wastewater treatment 1a–e. ADB mission reports 1a–e. Site inspection and project progress reports 1c–e. Internal and external environment and LAR monitoring reports 1a–e. Project progress reports and review reports	Trained staff reassigned to other positions or leave the position they are trained for Delays in approval of land clearance and compensation

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
2. Flood management enhanced	2a. 115 km of riverbank constructed or rehabilitated for protection against 1-in-20-year floods (2014 baseline: 0) 2b. 81 km of river channel dredged to increase flood conveying capacity (2014 baseline: 0) 2c. Area inundated by 20-year flood decreased (2014 baseline: 5.6 km^2 (Enshi), 3.4 km^2 (Lichuan))	2a–c. Government annual reports, records, and statistics on environment, spatial planning documents 2a–c. ADB mission reports 2a–c. Site inspection and project progress reports 2a–b. Internal and external environment and LAR monitoring reports	Inappropriate riparian development and loss of vegetation upstream results in continued siltation
3. Water and environmental management integrated	3a. 21 garbage bins and 15 biogas ponds installed; 500 farmers, of whom 50% are women, trained for best farm management practices; adoption of formula fertilizer and low toxicity pesticides in 800 *mu* of farmland[a] (2014 baseline: 0) 3b. Sewer infrastructure GIS and asset management system established (2014 baseline: 0) 3c. 40 people, of whom 20 are women, trained for community supervision; more than 40 staff, of whom 40% are women, trained for O&M of facilities and sewer infrastructure GIS and asset management system (2014 baseline: 0) 3d. Riverbank maintenance program implemented (2014 baseline: 0) 3e. Flood forecasting and warning system with 6-hour lead time (2014 baseline: 0) 3f. Recommendations on water-sensitive land use planning provided to land use bureaus (2014 baseline: 0)	3a. Report on pilot program implementation 3a–f. Government policy announcements, notices, or public speeches of officials 3a–f. ADB mission reports 3a–f. Project progress reports 3a–c. Resettlement and environmental monitoring reports	Data and information necessary for the database are not available and accessible
4. Inclusive capacity development strengthened	4a. More than 100 staff, of whom 40% are women, trained for project management and O&M of the infrastructure by 2016 (2014 baseline: 0) 4b. More than 20 staff trained for implementation and monitoring of the resettlement plans, SAP, GAP, and EMDP by 2016 (2014 baseline: 0)	4a. ADB mission reports 4b. Project progress reports	High staff turnover affects results of capacity building

Key Activities with Milestones

1. Wastewater management improved

1.1. Installation of 154 km of new sewer pipes in Enshi and 77 km of new sewer pipes in Lichuan (by Q2 2019)

1.2. In Enshi, expansion of an existing WWTP to provide an additional capacity of 30,000 m^3 per day and construction of a new WWTP of 50,000 m^3 per day meeting class 1A effluent standards, including sludge advanced treatment and disposal of 102 tons per day (by Q4 2018)

1.3. In Lichuan, expansion of the existing WWTP to provide an additional capacity of 50,000 m^3 per day meeting class 1A effluent standards, with sludge advanced treatment capacity of 688 tons per day (water content 99.2%) (by Q1 2018), and upgrading of an existing wastewater treatment facility to improve the effluent standard from class 1B to 1A (by Q1 2018)

1.4. In Lichuan, retrofitting of the existing pump station, construction of one new pumping station, and reconstruction of pump station (by Q1 2018)

2. Flood management enhanced

2.1. Construction of 115 km embankment and affiliated structures along the Qing River (both sides) and its tributaries flowing through Enshi and Lichuan (by Q4 2020)

2.2. Dredging and proper disposal of 0.96 million m^3 of sediments, with total length of 81 km in both Enshi and Lichuan, to increase flood conveying capacity (by Q4 2020)

2.3. In Enshi, construction of two wetlands with landscaping features and ecological buffer zones. In Lichuan, construction of wetlands, including a midstream island wetland and a fringing wetland, and ecological buffer zones in association with a waterfront plaza (by Q4 2020)

3. Water and environmental management integrated

3.1. In Enshi, provision of a pilot community participatory program to reduce nonpoint source pollution through improving farming practices (by Q2 2019)

3.2. A sewerage infrastructure GIS and asset management system to be established in both Enshi and Lichuan, incorporating energy saving and GHG reduction measures (by Q2 2020)

3.3. In both Enshi and Lichuan, provision of nonstructural adaptation measures, including flood forecasting and warning system, community environmental supervision and flood management, and river maintenance program (by Q2 2020)

4. Inclusive capacity development strengthened

4.1. Completion of training and recommendations on operation and sustainable financing of wastewater systems (by Q4 2020)

4.2. Completion of training program and procurement of equipment for improving water quality monitoring and enforcement (by Q4 2020)

Project Management Activities

Staffing of project management office and provision of initial training on financial management, project implementation, procurement, consulting services under ADB-financed operations, and safeguards (by Q2 2016)

Recruitment of project management consultants (by Q1 2016)

Procurement of all project management equipment (by Q3 2016)

Reporting and supervision of implementation of resettlement plans, SAP, GAP, EMDP, and environmental management plans (from 2016 to 2020)

Inputs

ADB:	$100,000,000
Government:	$131,620,000

Assumptions for Partner Financing

Not applicable

ADB = Asian Development Bank, COD = chemical oxygen demand, CO_2e = carbon dioxide equivalent, EMDP = ethnic minority development plan, GAP = gender action plan, GHG = greenhouse gas, GIS = geographic information system, km = kilometer, km^2 = square kilometer, LAR = land acquisition and resettlement, m^3 = cubic meter, O&M = operation and maintenance, Q = quarter, SAP = social action plan, WWTP = wastewater treatment plant.

[a] A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 m^2).

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://adb.org/Documents/RRPs/?id=47048-002-3

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Agriculture, natural resources and rural development
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Gender Action Plan
12. Environmental Impact Assessment
13. Resettlement Plan: Enshi City
14. Resettlement Plan: Lichuan City
15. Indigenous Peoples Plan: Ethnic Minority Development Plan
16. Risk Assessment and Risk Management Plan

Supplementary Documents

17. Summary of Climate Change Assessment and Adaptation Measures
18. Framework Arrangement for Public–Private Partnership (Lichuan WWTP)