



# Report and Recommendation of the President to the Board of Directors

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Project Number: 47069-002  
June 2016

## Proposed Loan People's Republic of China: Henan Hebi Qihe River Environmental Improvement and Ecological Conservation Project

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Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 6 June 2016)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1526
\$1.00	=	CNY6.5518

## ABBREVIATIONS

ADB	–	Asian Development Bank
EIA	–	environmental impact assessment
EMP	–	environmental management plan
HCG	–	Hebi city government
IWRM	–	integrated water resources management
km	–	kilometer
LAR	–	land acquisition and resettlement
LIBOR	–	London interbank offered rate
MIS	–	management information system
<i>mu</i>	–	Chinese unit of measurement (1 <i>mu</i> = 666.67 square meters)
NWP	–	national wetland park
PAM	–	project administration manual
PIU	–	project implementation unit
PMO	–	project management office
PRC	–	People's Republic of China
WWTP	–	wastewater treatment plant

## NOTES

- (i) The fiscal year of the Government of the People's Republic of China and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number:</b> 47069-002	
<b>Project Name</b>	Henan Hebi Qihe River Environmental Improvement and Ecological Conservation Project	<b>Department /Division</b>	EARD/EAER
<b>Country Borrower</b>	China, People's Republic of People's Republic of China	<b>Executing Agency</b>	Hebi City Government
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ <b>Agriculture, natural resources and rural development</b>	Rural flood protection		27.85
	Water-based natural resources management		62.33
<b>Water and other urban infrastructure and services</b>	Urban flood protection		7.17
	Urban sewerage		52.65
		<b>Total</b>	<b>150.00</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Adaptation (\$ million)	97.33
Environmentally sustainable growth (ESG)	Disaster risk management	Climate Change impact on the Project	High
	Global and regional transboundary environmental concerns		
	Natural resources conservation		
	Urban environmental improvement		
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas	Effective gender mainstreaming (EGM)	✓
	Knowledge sharing activities		
Private sector development (PSD)	Public sector goods and services essential for private sector development		
<b>5. Poverty Targeting</b>		<b>Location Impact</b>	
Project directly targets poverty	Yes	Rural	Medium
MDG-targeting (TI-M)	MDG7	Urban	Medium
<b>6. Risk Categorization:</b>	Complex		
<b>7. Safeguard Categorization</b>	Environment: B Involuntary Resettlement: A Indigenous Peoples: C		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>150.00</b>	
Sovereign Project loan: Ordinary capital resources		150.00	
<b>Cofinancing</b>		<b>0.00</b>	
None		0.00	
<b>Counterpart</b>		<b>175.40</b>	
Government		175.40	
<b>Total</b>		<b>325.40</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		Yes	
Use of country public financial management systems		Yes	

## 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 Henan Hebi Qihe River Environmental Improvement and Ecological Conservation Project.<sup>1</sup>

2. The Qihe River basin in Hebi city has been selected as one of the PRC's pilot locations for "water ecological civilization."<sup>2</sup> To help the Hebi city government (HCG) achieve this aim, the project will demonstrate an integrated and holistic approach to ecosystem and water resources management by (i) restoring degraded ecosystems, (ii) improving flood management capacity, (iii) enhancing wastewater and solid-waste management, and (iv) strengthening the overarching technical and institutional monitoring framework for the Qihe River system.

## II. THE PROJECT

### A. Rationale

3. Rapid economic development in the PRC has led to severe degradation of ecosystems and the decline of their fundamental services to human well-being.<sup>3</sup> Deforestation and overgrazing in the watersheds, combined with point and nonpoint source pollution, have led to increased runoff, higher peak flows, downstream flooding, and poor water quality in many regions. This has resulted in loss of life and property and has required costly investments in large-scale water management infrastructure and reinforcement of river embankments.

4. Located in northern Henan province, Hebi city has a population of 1.6 million and encompasses 83 kilometers (km), or 52%, of the Qihe River. Originating from Shanxi province, the Qihe River flows into the Weihe River and then the Hai River and finally into the Bohai Sea. Ecosystem degradation, poor flood management capacity, pollution, and weak intersector coordination are the key issues affecting the ecological integrity of the Qihe River basin that this project will address in an integrated manner.

5. **Environmental degradation in the upper Qihe River watershed.** Environmental conditions along the Qihe River have deteriorated because of intensive economic development and increasing human populations, while vegetation, wetlands, and water quality along the river have declined because of urbanization, modification of the river hydrology, habitat loss and deforestation, livestock grazing, agriculture, overextraction of water, and nonpoint source pollution. The 1,300 hectares of degraded hills within the scope of this project in the upper Qihe are almost completely devoid of vegetation. The pilot Qihe River National Wetland Park (NWP) in the river's upper reaches requires habitat restoration and improved facilities and management.<sup>4</sup>

6. **Poor flood management capacity.** In the lower Qihe River, current flood management practices have resulted in waterlogging and flooding in selected rural areas as a result of diversion of water for emergency storage of flows that exceed the dike crest levels. In addition, because the old embankments and dikes are in poor condition because of erosion and washout,

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<sup>1</sup> The design and monitoring framework is in Appendix 1.

<sup>2</sup> The PRC conceptualizes ecological civilization as a development approach that aims to balance the relationship between humanity and nature. In order to achieve ecological civilization, the PRC has selected candidate locations for "water ecological civilization" to establish good practices in ecological and water resources management.

<sup>3</sup> Ecosystem services are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. <http://biodiversity.europa.eu/topics/ecosystem-services>

<sup>4</sup> "Pilot" refers to the State Forestry Administration's practice for national wetland parks prior to official designation.

the vulnerability of these sections to potential dike failure, catastrophic flooding, and crop damage is high. The flood management capacity of selected tributaries and canals of the Qihe River in Qi county and Qibin district is also limited to a less than 1-in-5 year flood because of heavy siltation, congestion with solid waste, and degraded banks.

7. **Wastewater and solid-waste pollution.** The Qihe River and its canals are highly polluted. The surface water quality of the river's mainstream exceeds the class III environmental quality standard for surface water, while that of the canals exceeds class V.<sup>5</sup> The city sewage network currently covers 60% of Qibin district and Qi county, while the three wastewater treatment plants (WWTPs) that serve the same project areas cannot accommodate the increasing volumes of wastewater. As a result, untreated wastewater discharges directly to the lower Qihe River mainstream and tributaries. The lack of waste transfer stations has also resulted in poor solid-waste management.

8. **Poor institutional and technical monitoring capacity for river basin and water resource management.** While the management of the Qihe River involves numerous agencies, integrated water resources management (IWRM) only has limited intersector coordination because of a lack of mechanisms for information sharing and monitoring capacity. The established multisector city-level project management office (PMO) is the first step toward stronger intersector coordination. Continued capacity building will be essential to supporting IWRM, including developing a management information system (MIS) and ecological monitoring program, to guide interagency decision-making on flood management, conservation, and other issues.

9. To address these issues, the HCG has prepared various plans, including the Master Plan for Hebi City Qihe River Ecological Areas for 2010–2020 and the Hebi City Urban Flood and Waterlogging Control Plan for 2011–2020.<sup>6</sup> The HCG requested that the Asian Development Bank (ADB) (i) provide lending support to implement environmental improvement and ecological conservation in and around the Qihe River by integrating key activities in the above-mentioned plans in a consistent manner using innovative yet cost-effective approaches; and (ii) support the city's efforts to implement this pilot initiative on ecological civilization, which will serve as a demonstration project for other cities or provinces.<sup>7</sup> The project will demonstrate an integrated and holistic approach to ecosystem and water resources management in one of the most flood-prone and ecologically sensitive sections of a river system by combining structural and nonstructural measures to the differing conditions of the river sections.

10. **Strategic fit.** The project contributes to the PRC's goal of building a harmonious and prosperous society through environmentally sustainable growth and the priorities of its Thirteenth Five-Year Plan, 2016–2020. The decision of the Third Plenary Session of the 18th Central Committee of the Communist Party of the PRC supports the establishment of a system to protect ecosystems.<sup>8</sup> The project also supports ADB priorities as stated in the Midterm Review of Strategy 2020;<sup>9</sup> Environment Operational Directions, 2013–2020;<sup>10</sup> Water Operational Plan,

<sup>5</sup> Following the GB 3838-2002 environmental quality standard for surface water of the PRC, class III means the water is suitable for drinking and swimming, class IV for general industrial and recreational use, and class V for agriculture and landscaping. Class V+ means the water is unsuitable for any purpose.

<sup>6</sup> These plans set targets for 2020, including an improvement in the flood management capacity of the lower reaches of the Qihe River and its tributaries to just a 1-in-20 year flood.

<sup>7</sup> The project is included in the 2016 lending pipeline in ADB. 2016. *Transforming Partnership: People's Republic of China and Asian Development Bank, 2016–2020*. Manila; and ADB. 2016. *Country Operations Business Plan: People's Republic of China, 2016–2018*. Manila.

<sup>8</sup> Held in Beijing on 9–12 November 2013.

<sup>9</sup> ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

2011–2020;<sup>11</sup> and Urban Operational Plan, 2012–2020<sup>12</sup> to increase coverage and improved services for sanitation and to promote integrated water resources and river basin management.

11. **Lessons.** The project design has incorporated lessons from previous ADB-financed projects and policy-oriented studies on IWRM, environmental and ecosystem improvement, wetland and lake management and restoration, and urban–rural integration in the PRC. Major lessons incorporated into the project design include the need for (i) an integrated approach, including structural and nonstructural measures; (ii) strong leadership and governance in environmental management; (iii) adequate consultation and better communication with affected people; (iv) project activities that encourage community participation; (v) sustainable management of facilities based on a realistic tariff structure; and (vi) management and data information systems for IWRM decision-making.

## **B. Impact and Outcome**

12. The impact of the project will be to restore ecosystem services in the Qihe River basin. The outcome of the project will be to demonstrate integrated environmental management in the Qihe River basin in Hebi city. The project will improve water security and flood management and enhance the delivery of ecological services.

## **C. Outputs**

13. The project will have four outputs: (i) restored vegetation and wetlands in the upper Qihe River basin, (ii) improved flood management capacity of the lower Qihe River, (iii) enhanced wastewater and solid-waste management in the Qihe River basin, and (iv) strengthened technical and institutional support system and capacity for integrated management of the Qihe River basin.

14. Output 1 will include two subcomponents: (i) ecological restoration of the Qihe River upstream watershed, and (ii) restoration of the pilot Qihe River NWP. Under subcomponent 1, approximately 1,300 hectares of degraded hills in the upper Qihe will be reforested to reduce soil erosion. Under subcomponent 2, activities in the NWP will include (i) restoring wetland habitats and riverbanks, (ii) providing fencing and signage to protect targeted species, (iii) improving park infrastructure, (iv) establishing a park management agency and management plan, (v) establishing a park monitoring program, and (vi) encouraging community participation in park monitoring.

15. Output 2 will include three subcomponents: (i) improvement of the Qihe River mainstream watercourse in Qi county; (ii) rehabilitation of tributaries in Qi county (Side River, Zhaojia Canal, Hucheng River, and Zhejing River; approximately 30 km in total); and (iii) restoration of five canals in Qibin district (about 11.3 km in total) and revegetation of about 11.5 km riverside in Qi county.

16. Output 3 will support improved wastewater and solid-waste management. The main subcomponents are (i) Qibin district wastewater management, (ii) Qi county wastewater management, and (iii) solid-waste management in both Qi county and Qibin district.

17. Output 4 will support (i) the establishment of a Qihe River ecological monitoring program; (ii) the development of a Qihe River MIS; and (iii) training and capacity building on ecological

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<sup>10</sup> ADB. 2013. *Environment Operational Directions, 2013–2020*. Manila.

<sup>11</sup> ADB. 2012. *Water Operational Plan, 2011–2020*. Manila.

<sup>12</sup> ADB. 2013. *Urban Operational Plan, 2012–2020*. Manila.



conservation, river restoration, wastewater management, solid-waste management, and project management and implementation; and operation and maintenance of facilities.<sup>13</sup>

18. **Innovation and special features.** The project demonstrates an integrated and holistic approach to ecosystem and water resources management in one of the most flood-prone and ecologically sensitive sections of a river system. The integrated approach combines structural and nonstructural measures to the differing conditions of the river sections, and include (i) wetland protection and soil erosion reduction, (ii) reduction of pollution loads from sewage and solid waste, (iii) flood management, (iv) capacity building of community “river guards,”<sup>14</sup> (v) establishment of community environmental monitors, and (vi) development of the MIS. The leadership by the HCG and the establishment of an intersector PMO is also a unique feature of this project. As Hebi city has been selected as a national pilot city for water ecological civilization, and pilot NWP, this project offers a unique opportunity to demonstrate a successful IWRM model and future replication.

#### D. Investment and Financing Plan

19. The project is estimated to cost \$325.4 million (Table 1).

**Table 1: Project Investment Plan**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base cost<sup>b</sup></b>	
1. Vegetation and wetlands in the upper Qihe River basin restored	34.6
2. Flood management capacity of the lower Qihe River improved	70.4
3. Wastewater and solid-waste management in the Qihe River basin enhanced	153.0
4. Institutional and technical support system and capacity for integrated management of the Qihe River basin strengthened.	3.9
<b>Subtotal (A)</b>	<b>261.9</b>
<b>B. Contingencies<sup>c</sup></b>	<b>55.5</b>
<b>C. Finance charges during implementation<sup>d</sup></b>	<b>8.0</b>
<b>Total (A+B+C)</b>	<b>325.4</b>

<sup>a</sup> Includes taxes and duties of \$10.68 million, of which \$5.91 million will be financed by government counterpart funds and \$4.77 million by the Asian Development Bank (ADB) loan. The amount of taxes and duties to be financed by ADB is based on the principles that (i) the amount will be within the reasonable threshold identified during the country partnership strategy preparation process, (ii) the amount of taxes and duties financed by the ADB loan does not represent an excessive share of the project, (iii) the taxes and duties apply only to ADB-financed expenditures, and (iv) the financing of taxes and duties is material and relevant to the success of the project.

<sup>b</sup> As of 2 August 2015.

<sup>c</sup> Physical contingencies computed at 10% of base costs. Price contingencies were computed using the escalation factors published by ADB on local and foreign components of the project costs, and include provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

<sup>d</sup> Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar fixed-swap rate plus a spread of 0.5% 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: Hebi city government and ADB estimates.

20. The government has requested a loan of \$150 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including (i) a grace

<sup>13</sup> For wastewater management, the government has agreed to continue to pursue tariff reform. The project implementation consultants will support the HCG to undertake annual tariff reviews for wastewater tariff and assess the impact and/or affordability of the tariff increase on the poor.

<sup>14</sup> River guards refer to a number of community representatives appointed by the HCG to monitor and report illegal activities or issues affecting the Qihe River. They currently receive little or no training on river health monitoring.

period of 5 years, (ii) a straight-line repayment method, (iii) an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, (iv) a commitment charge of 0.15% per year to be charged on the undisbursed loan amount, and (v) such other terms and conditions set forth in the loan agreements. The average loan maturity is 15.25 years and the maturity premium payable to ADB is 0.10% per annum. Finance charges during implementation will be capitalized.

21. The financing plan is in Table 2. The ADB loan will finance 46.1% of the project cost, including civil works, goods, and consulting services. The local governments of Hebi city, Qibin district, and Qi and Xun counties will finance the remaining 53.9% of the project cost. The government has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility on the basis of these terms and conditions, and (ii) an undertaking that these choices were its own independent decision and not made based on any communication or advice from ADB.

22. The Government of the PRC is the borrower of the loan and will make the loan available, through the Henan provincial government and the HCG, to the responsible county and district governments on the same terms and conditions as those of the ADB loan. Municipal, county, and district governments will assume the foreign exchange and interest variation risks of the ADB loan, including contingencies. The HCG has assured ADB that counterpart funding will be provided in a timely manner, including any counterpart funding required for any shortfall of funds or cost overruns.

**Table 2: Financing Plan**

<b>Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank		
Ordinary capital resources (loan)	150.0	46.1
Qibin district	79.0	24.3
Qi county	90.7	27.9
Xun county	5.0	1.5
Hebi municipal (city) government	0.7	0.2
<b>Total</b>	<b>325.4</b>	<b>100.0</b>

Source: Hebi city government and Asian Development Bank estimates.

## **E. Implementation Arrangements**

23. The project will be implemented over a period of 5 years, tentatively from 1 October 2016 to 31 December 2021.

24. The HCG, the executing agency, will be responsible for overall project implementation. The city PMO, established in the HCG, will be responsible for project coordination, guidance and consolidated planning, and reporting and financial management. Key agencies, including the development and reform commission, finance bureau, and Qihe River Ecological Conservation and Construction Office, are represented in the city PMO. The governments of Qibin district and Qi and Xun counties will be the implementing agencies. Three county and/or district PMOs and nine project implementation units (PIU) have been established. All ADB-financed procurement will be conducted following ADB's Procurement Guidelines (2015, as amended from time to time). A procurement agency will be hired to conduct procurement on behalf of the city PMO. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual (PAM).<sup>15</sup>

<sup>15</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

**Table 3: Implementation Arrangements**

Aspects	Arrangements		
Implementation period	1 October 2016–31 December 2021		
Estimated completion date	31 December 2021 (loan closing date: 30 June 2022)		
Management			
(i) Oversight body	Comprehensive project management office; project leading group; executive vice-mayor of the Hebi city government (chair); senior officials of the Hebi city government, including from the development and reform commission, finance bureau, Qihe River Ecological Conservation and Construction Office, planning bureau, water resources bureau, forestry bureau, environmental protection bureau, housing and urban–rural development bureau, tourism bureau, audit bureau, transportation bureau, and governments of Qi and Xun counties and Qibin district		
(ii) Executing agency	Hebi city government		
(iii) Key implementing agencies	Governments of Qibin district, Qi county, and Xun county		
(iv) Implementation units	City project management office established in the Hebi city government Three district and county project management offices established in Qihe River Ecological Protection and Construction Offices in the governments of Qibin district and Qi and Xun counties Nine project implementation units established: Qi County Forestry Bureau, Qi County Water Resources Bureau, Qi County Housing and Rural–Urban Development Bureau, Qi County Urban Administration Bureau, Qi County Demonstration Area National Land Construction and Environmental Protection Bureau, Qibin District Forestry Bureau, Qibin District Municipal Administration Division, Qibin District Housing and Rural–Urban Development Bureau, and Xun County Water Resources Bureau		
Procurement (indicative)	National competitive bidding	40 contracts	\$215.24 million (including advance procurement)
	International competitive bidding	1 contract	\$3.18 million
	Community participation	Various	\$0.32 million
Consulting services (indicative)	Quality- and cost-based selection	3 contracts	\$2.57 million
	Consultant's qualification selection	1 contract	\$0.19 million
	Individual consultant selection	1 contract	\$0.08 million
Retroactive financing and/or advance contracting <sup>a</sup>	The government requested advance contracting and retroactive financing for works and consulting services.		
Disbursement	Loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2015, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank.

<sup>a</sup> Approval of advance contracting does not commit ADB to finance the project. The amount to be retroactively financed does not exceed 20% of the loan and will be incurred before loan effectiveness but not earlier than 12 months before the signing of the related legal agreement.

Source: ADB.

### III. DUE DILIGENCE

#### A. Technical

25. Due diligence assessed the project's technical feasibility and sustainability. The HCG's domestic feasibility study reports are technically sound and provide sufficient information on the design feasibility. International and national consulting services will provide the necessary technical support to ensure that international best practices are integrated into the final detailed design, and are applied during construction and implementation. Solid-waste management and nonstructural project components have strengthened the integrated approach of the project. Negative impacts have been avoided by (i) the removal of some activities, particularly the construction of two mainstream barrages, a captive garden for wild cranes, a wildlife rescue center, a "reed maze," fish releases, and fish and bird nests in the pilot NWP; and (ii) the use of invasive plant species for

revegetation. During the preparation phase, the environmental assessments were strengthened by the inclusion of heavy metal sampling (to help identify spoil disposal locations).

26. **Climate change.** ADB's preliminary climate risk screening indicated the project was at high risk of being impacted by climate change. A climate risk vulnerability assessment was conducted to identify the threat that climate change presents to project viability, assuming a design life of 40–50 years. Modeling indicates that during 2020–2070, mean annual temperatures will rise, the risk of extreme climate events will increase, and variability in precipitation will increase, causing more rainy or dry days. This could cause flood damage to the project embankments, channels, and pipelines; excessive sediment deposition in the lower Qihe River and canals, which would necessitate more channel maintenance; and higher mortality or disease of the planted vegetation because of altered temperatures or water availability. To accommodate these risks, project structures have been designed to PRC flood protection standards and will be regularly maintained, embankments with a porous design have been selected, a flood warning system will be implemented, plant species for revegetation have been selected for suitability to the seasonally harsh climate and local soil conditions, and training on IWRM and wetland management will be given. As a result, flood control capacity will be improved from a 1-in-3 to a 1-in-5 year recurrence interval for the project canals and the 1-in-20 year capacity for the Qihe River mainstream will be secured.

## **B. Economic and Financial**

27. The economic internal rate of return was estimated by comparing with- and without-project scenarios. The project's economic costs reflect (i) the capital cost for construction, including physical contingencies, land acquisition, resettlement, and environmental monitoring costs; and (ii) operation and maintenance costs, which include routine annual maintenance and periodic major maintenance. Least-cost analysis shows that the chosen interventions are both engineering preferred and cost-effective. The economic benefits for the project are derived from beneficiaries' willingness to pay to improve the water quality of the Qihe River and to avoid flood damage. The economic internal rate of return for the overall project is estimated at 13.3% and the net present value is CNY165.3 million, indicating economic viability of the project.

28. A financial evaluation was conducted on the solid-waste and wastewater subprojects to assess viability as both offer some degree of cost recovery. The analysis indicated that the solid-waste fee is not designed to recover operating costs, while the wastewater tariff is intended to recover only the treatment costs. Thus, the project does not receive incremental benefits sufficient to recover all project costs and is deemed not viable from this perspective. ADB's decision to invest in the project is based on the economic benefits and the government's commitment to maintain sound fiscal capacity to absorb project costs.

29. A financial analysis was conducted to evaluate the capacity of local governments to absorb incremental project costs and to ascertain sustainability based on historical performance. The analysis showed that Qi county and Qibin district may experience undue fiscal pressure from counterpart funds contribution. The local governments have historically had annual budget surpluses, which can be assumed as unappropriated for capital works or debt servicing and may be used to finance project costs.

## **C. Governance**

30. A financial management assessment confirmed that the existing structure, capacity, and arrangements of the PMOs and the PIUs are generally appropriate. However, unfamiliarity with

ADB's financial management requirements, including disbursements, and possible insufficiency of counterpart funds are risk areas. The financial management risk rating is *medium*. An action plan has been agreed with the PMOs to mitigate these risks.

31. The city PMO will conduct all procurement and consultant recruitments under the project on behalf of the PIUs (the PIUs will just sign the contracts). A procurement capacity assessment confirmed that the city PMO, acting through a procurement agency and with the assistance of ADB and project management support consultants, will 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 (footnote 15).

32. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the HCG, including city PMO and implementing agencies and PIUs. The specific policy requirements and supplementary measures are described in the PAM (footnote 15).

#### **D. Poverty and Social**

33. The project area covers three counties and/or districts, 16 towns and/or townships, and over 136 communities and/or villages. About 435,000 people will benefit from the project, of which an estimated 5% are poor. This project offers good opportunities for local communities to participate in awareness campaigns, environmental improvements, wetland protection, and solid-waste management. The measures are included in the project design to address potential negative impacts and to enhance benefits for local people, including the poor. These measures are summarized in the social development action plan.

34. Women can play a lead role in many activities, such as greening barren hills, wetland rehabilitation and protection, and solid-waste management. The project is categorized as effective gender mainstreaming and a gender action plan has been prepared. The gender action plan outlines specific activities, target indicators, responsible agencies, and monitoring mechanisms by output to ensure that women will benefit from the project. The key gender actions include (i) involving women in public awareness campaigns, consultation, and participation; (ii) employing local women during project construction and operations; (iii) promoting gender awareness for project staff; and (iv) collecting gender-disaggregated data.

#### **E. Safeguards**

35. **Environment.** The project has been reclassified from category A to category B for environment since no irreversible, diverse, or unprecedented impacts were identified or anticipated. The environmental impact assessment (EIA) report, including an environmental management plan (EMP), follows ADB's Safeguard Policy Statement (2009). The EIA is consistent with the seven domestic EIAs approved by the Hebi Environment Protection Bureau. Consultations involved key stakeholders, including affected people and local government agencies, and the outcomes are integrated in the project design. The draft EIA was publicly disclosed on ADB's website on 18 August 2015. The HCG, through the PMO, with support from the loan implementation environment consultant, will be responsible for implementation and EMP compliance, including inspection, monitoring, reporting, and initiating corrective actions or measures. The PMO will implement a grievance redress mechanism and have final responsibility for handling any disputes. The PMO has no prior experience with ADB projects

and limited capacity for wetland management. Capacity building and on-site support by environmental, wetland, and monitoring specialists were included as part of the project design.

36. The project is expected to achieve environmental benefits, including improved management of a protected wetland, reduced soil erosion and discharge of untreated wastewater, improved flood management capacity and solid-waste management, and adoption of an integrated approach to water resources management. Anticipated construction impacts are from the project dredging of canals (elevated turbidity, odor from dredged sediment); temporary noise to water birds and low visibility for fish in the pilot NWP from project works; and construction-related air, dust, vibration, soil erosion, and occupational and community health and safety issues. Operational risks include odor emissions from the WWTPs, release of treated effluent into waterways, and inadequate operation and maintenance of project facilities. Mitigation measures are described in the EMP. These include setting appropriate boundaries between WWTP facilities and communities, monitoring water quality, clarifying roles and responsibilities and operating budgets, building capacity, and establishing the first management plan for the protected wetland. The EIA concludes that effective EMP implementation, together with the prescribed training, will result in residual impacts within the limits of the PRC standards defined in the EMP.

37. **Involuntary resettlement.** The project is classified category A for involuntary resettlement. Six of the seven physical project components will cause some land acquisition and resettlement (LAR) impacts. The project will require 4,433.10 *mu* of land to be permanently occupied as follows: acquiring 1,174.23 *mu* of collectively owned land, leasing 1,959.28 *mu* of collectively owned<sup>16</sup> land, and occupying 1,299.59 *mu* of state-owned land. The project will temporarily occupy 1,557.68 *mu* of land, comprising 728 *mu* of collectively owned land and 830 *mu* of state-owned land. In addition, 5,295 square meters of rural houses need to be demolished, which will require eight households and two small businesses to be relocated. The project will permanently affect 739 households with 3,481 people and temporarily affect 515 households with 2,253 people. The land loss is not significant for most households because losses are scattered across 70 villages in 16 towns or townships. Only 65 households with 283 people will be significantly affected. The project's resettlement impacts have been adequately assessed.

38. Six resettlement plans have been prepared. The plans are based on the feasibility studies, national and local regulations, and ADB's Safeguard Policy Statement. Extensive consultation was conducted with the affected villages and an engineering design institute to avoid or minimize LAR impacts. The proposed compensation and rehabilitation policies are adequate to restore incomes and compensate lost assets at replacement cost. The affected villages are supportive of the project as it will improve their living environment and generate employment opportunities. The implementing agencies have made good arrangements for resettlement planning, including allocating responsibilities and appointing staff to implement LAR. They have the capacity and experience to implement LAR and manage impacts. The project will provide staff training to further strengthen the local capacity. The local governments have endorsed the resettlement plans, which they have committed to implement. The grievance redress mechanism will be used and monitored by the PMO. The PMO will engage an external monitoring and evaluation agency to monitor LAR progress and submit semiannual monitoring reports. The estimated resettlement budget, including contingencies, is CNY120 million.

39. **Indigenous peoples.** The project is classified category C for indigenous peoples. There are no differential impacts to any ethnic groups. The project does not impact any distinct and

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<sup>16</sup> The noncivil works of the wetland park will lease collectively owned land through a land transferring system.

vulnerable group of indigenous peoples as defined by ADB's Safeguard Policy Statement. There are no culturally related issues.

## F. Risks and Mitigating Measures

40. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.<sup>17</sup> The integrated benefits and impacts are expected to outweigh the costs.

**Table 4: Summary of Risks and Mitigating Measures**

<b>Risk</b>	<b>Mitigating Measures</b>
The HCG fails to adopt an integrated approach to managing the Qihe River basin.	The multisector PMO and project leading group will be supported by the loan implementation consultants to ensure that there is cross-sector coordination
Technical risks exist as a result of inappropriate design, capacity limitations, and climate variability considerations.	Technical loan implementation consultants will provide the necessary additional guidance to the PMO and implementing agencies.
Financial risks exist stemming from a lack of clear direction on wastewater tariff adjustments, which limits financial sustainability and strains the budget.	The PMO will conduct bilateral discussions with ADB (supported by loan implementation consultants) to review the tariff structure and identify a strategy to adjust tariffs towards recovery of full operating and maintenance costs.

ADB = Asian Development Bank, HCG = Hebi city government, PMO = project management office.

Source: ADB.

## IV. ASSURANCES

41. The HCG and the local governments have assured ADB that implementation of the project will 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 (footnote 15) and loan and project agreements. The government has agreed with ADB on certain covenants for the project, which are set forth in the loan and project agreements.

## V. RECOMMENDATION

42. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$150,000,000 to the People's Republic of China for the Henan Hebi Qihe River Environmental Improvement and Ecological Conservation 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

6 June 2016

<sup>17</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

## DESIGN AND MONITORING FRAMEWORK

<b>Impact the Project is Aligned with</b>			
Ecosystem services in the Qihe River basin restored (Master Plan for Hebi City Qihe River Ecological Conservation for 2010–2020 and Hebi City Urban Flood and Waterlogging Control Plan for 2011–2020) <sup>a</sup>			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting</b>	<b>Risks</b>
<p><b>Outcome</b></p> <p>Integrated environmental management in the Qihe River basin in Hebi city demonstrated</p>	<p>By 2022:</p> <p>a. Total population in Hebi city benefiting from improved sewage system increased to 435,000 (2015 baseline: 270,000)</p> <p>b. Public satisfaction with water management and environmental management in Hebi increased to 35% (2015 baseline: 27%)</p> <p>c. Annual pollution loads in Qi county reduced: COD 3,285 tons, total nitrogen 383 tons, total phosphorus 49 tons (2015 baseline: COD 3,833 tons, total nitrogen 548 tons, total phosphorus 55 tons)</p>	<p>a. Hebi City Housing and Construction annual reports</p> <p>b–c. Annual survey reports conducted by the PMO</p>	<p>The HCG fails to adopt an integrated approach to managing the Qihe River basin.</p>
<p><b>Outputs</b></p> <p>1. Vegetation and wetlands in the upper Qihe River basin restored</p> <p>2. Flood management capacity of the lower Qihe River improved</p>	<p>By 2021 (2015 baseline: 0):</p> <p>1a. About 1,300 ha of degraded hills in the upper Qihe River watershed reforested</p> <p>1b. About 85 ha of wetland vegetation in the pilot Qihe River NWP restored</p> <p>1c. About 730 restoration-related local jobs during construction (at least 30% for women) and 90 local jobs during operation (at least 40% for women) created</p> <p>By 2021:</p> <p>2a. Riverbank stability enhanced at 14 locations along the lower Qihe River totaling about 4 km (2015 baseline: 0)</p> <p>2b. Flood management capacity of a combined 30 km of canals in Qi county and Qibin district improved to 1-in-5 year capacity (2015 baseline: 1-in-3 year capacity)</p> <p>2c. About 11.5 km of riverside revegetation in Qi county and about 11.3 km in Qibin district completed (2015 baseline: 0)</p> <p>2d. For canal rehabilitation, 1,470 local jobs during construction and 77 local jobs during operation created, at least 40% for women (2015 baseline: 0)</p>	<p>1a–c. Annual project technical and progress reports and annual loan review missions</p> <p>2a–d. Annual project technical and progress reports and annual loan review missions</p>	<p>Climate variability adversely affects success of vegetation restoration.</p>



Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>3. Wastewater and solid-waste management in the Qihe River basin enhanced</p> <p>4. Institutional and technical support system and capacity for integrated management of the Qihe River basin strengthened</p>	<p>By 2021 (2015 baseline: 0):</p> <p>3a. About 81.53 km of storm water pipelines in Qibin district and 132.49 km in Qi county constructed</p> <p>3b. About 90.33 km of sanitary sewers in Qibin district and 69.12 km in Qi county constructed</p> <p>3c. Expansion works of Qi county WWTP to 60,000 m<sup>3</sup>/day completed (2015 baseline: 30,000 m<sup>3</sup>/day)</p> <p>3d. About 15 domestic solid-waste transfer stations in Qi county constructed</p> <p>3e. Solid-waste management works and equipment in 33 rural villages completed</p> <p>3f. For storm water and sanitary pipelines and WWTP, 864 local jobs during construction and 173 local jobs during operation created, at least 40% for women</p> <p>By 2021 (2015 baseline: 0):</p> <p>4a. At least 30 people, including HCG staff and residents, trained for project management, and O&amp;M of constructed or improved facilities</p> <p>4b. Qihe River ecological monitoring program implemented from 2017 in accordance with specified sampling locations, timing, and frequency</p> <p>4c. Qihe River basin management information system fully functioning and producing monitoring data within the QECO from 2020</p> <p>4d. 39 community environmental monitoring teams mobilized and functioning with clear job descriptions from 2017 to support domestic solid-waste management along the Qihe River and its tributaries</p> <p>4e. All staff of PMO and implementation agencies trained on safeguard policy and gender mainstreaming (participants disaggregated by sex)</p>	<p>3a–f. Annual project technical and progress reports and annual loan review missions</p> <p>4a–e. Annual project technical and progress reports and annual loan review missions</p>	<p>There is a lack of clear direction from the national government on wastewater tariff adjustments, which limits financial sustainability and strains the budget.</p>
<p><b>Key Activities with Milestones</b></p> <p><b>1. Vegetation and wetlands in the upper Qihe River basin restored</b></p> <p>1.1 Undertake land acquisition and resettlement activities (Q2–Q4 2016)</p> <p>1.2 Plant trees, shrubs, and/or grass on approximately 1,300 ha of degraded hills in the upper Qihe River watershed (Q4 2016–Q2 2020)</p> <p>1.3 Restore and create habitat areas in the pilot NWP (Q4 2016–Q4 2018)</p> <p>1.4 Upgrade existing roads and construct new roads and/or paths for wetland management and tourism in the pilot NWP (Q4 2016–Q3 2020)</p>			

<p>1.5 Construct facilities in the pilot NWP for research, monitoring, management, and service (Q4 2016–Q3 2020)</p> <p><b>2. Flood management capacity of the lower Qihe River improved</b></p> <p>2.1 Undertake land acquisition and resettlement activities (Q2–Q4 2016)</p> <p>2.2 Reinforce riverbank stability with gabion works and slope protection along the lower Qihe River (Q1 2017–Q4 2020)</p> <p>2.3 Pave dike crest road over a 21 km section of the lower Qihe River (Q1 2017–Q4 2020)</p> <p>2.4 Carry out four tributary watercourse improvement works in Qi county (Q4 2016–Q2 2019)</p> <p>2.5 Carry out riverside greening in Qi county along the Side River and Zhaojia canals (Q4 2016–Q2 2019)</p> <p>2.6 Carry out watercourse improvement works on three canals (Tianlai, Mianfeng, and Erzhi canals) in Qibin district (Q4 2016–Q3 2018)</p> <p>2.7 Reconstruct two canals (Sanzhi and Sizhi canals) in Qibin district (Q2 2017–Q1 2019)</p> <p>2.8 Carry out riverside greening in Qibin district along the Tianlai, Mianfeng, and Erzhi canals and along the Shanzhi and Sizhi canals (Q4 2017–Q2 2019)</p> <p><b>3. Wastewater and solid-waste management in the Qihe River basin enhanced</b></p> <p>3.1 Undertake land acquisition and resettlement activities (Q2–Q4 2016)</p> <p>3.2 Construct sanitary and storm water pipelines in Qi county (Q3 2016–Q1 2021)</p> <p>3.3 Construct sanitary and storm water pipelines in Qibin district (Q1 2017–Q1 2021)</p> <p>3.4 Expand the capacity of the Qi county WWTP (Q3 2016–Q3 2018)</p> <p>3.5 Construct about 15 urban domestic solid-waste transfer stations with associated facilities in Qi county (Q3 2016–Q1 2019)</p> <p>3.6 Improve rural domestic solid-waste management in approximately 33 villages along the Qihe River (Q3 2016–Q1 2018) (G/CD)</p> <p>3.7 Implement a pilot community-led solid-waste management system that will raise awareness and improve waste collection in both rural and urban areas of Qi county and Qibin district (Q3 2016–Q3 2020) (GE, G/CD)</p> <p>3.8 Conduct domestic study tours for capacity building of relevant agencies and support the development of a better solid-waste management system (Q3 2016–Q4 2018) (GE, G/CD)</p> <p><b>4. Institutional and technical support system for integrated management of the Qihe River basin strengthened</b></p> <p>4.1 Establish and implement a Qihe River ecological and hydrological monitoring program (Q4 2016–Q2 2021)</p> <p>4.2 Develop a Qihe River basin management information system (Q4 2016–Q4 2020)</p> <p>4.3 Conduct capacity development and training of Hebi PMO and implementation agency staff in ADB project management procedures, technical design and implementation, and safeguard supervision and monitoring during Q3 2016–Q3 2021 (GE, G/CD)</p> <p><b>Project Management Activities</b></p> <p>Support final project design and implementation (Q1 2016–Q4 2021) (G/CD)</p> <p>Provide overall project implementation support for the Hebi PMO and implementation agency staff, including implementation of land acquisition and resettlement (Q1 2016–Q4 2021) (G/CD)</p> <p>Carry out key activities of the gender action plan and the social development action plan (Q3 2016–Q4 2021) (GE)</p> <p>Implement and monitor the resettlement plan and the environmental management plan (Q3 2016–Q4 2021)</p> <p>Prepare knowledge product documenting key lessons learned in integrated environmental management and restoration of the Qihe River (Q2 2021–Q4 2021)</p>	
<b>Inputs</b>	
ADB loan:	\$150,000,000
Government:	\$175,400,000
<b>Assumptions for Partner Financing</b>	
Not applicable.	

ADB = Asian Development Bank, COD = chemical oxygen demand, G/CD = governance and capacity development, GE = gender equity, ha = hectare, HCG = Hebi city government, km = kilometer, m<sup>3</sup> = cubic meter, NWP = national wetland park, O&M = operation and maintenance, PMO = project management office, Q = quarter, QECO = Qihe River Ecological Conservation and Construction Office, WWTP = wastewater treatment plant.

<sup>a</sup> Ecosystem services are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. <http://biodiversity.europa.eu/topics/ecosystem-services>. Hebi City Government. 2010. *Master Plan for Hebi City Qihe River Ecological Conservation for 2010–2020*. Hebi; and Hebi City Government. 2010. *Hebi City Urban Flood and Waterlogging Control Plan for 2011–2020*. Hebi.

Source: ADB estimates.

### **LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/RRPs/?id=47069-002-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Multisector (Agriculture, Natural Resources, and Rural Development; and Water and Other Urban Infrastructure and Services)
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: Four Tributary Watercourse Improvement in Qi County
14. Resettlement Plan: Five Canal Watercourse Improvement in Qibin District
15. Resettlement Plan: Qi County Wastewater and Solid Waste Management
16. Resettlement Plan: Qibin District Wastewater and Solid Waste Management Subproject
17. Resettlement Plan: Qihe River Mainstream Watercourse Improvement Subproject in Qi County
18. Resettlement Plan: Qihe River Wetland Conservation and Rehabilitation
19. Risk Assessment and Risk Management Plan