

Project Administration Manual

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People's Republic of China:
Henan Dengzhou Integrated River Restoration and
Ecological Protection Project

ABBREVIATIONS

ADB	-	Asian Development Bank
DCG	-	Dengzhou City Government
DFB	-	Dengzhou Finance Bureau
DMF	-	design and monitoring framework
EMDP	-	ethnic minority development plan
EMP	-	environmental management plan
FMA	-	financial management assessment
GAP	-	gender action plan
GRM	-	grievance redress mechanism
HPDRC	-	Henan Provincial Development and Reform Commission
HPFD	-	Henan Provincial Finance Department
HPG	-	Henan Provincial Government
IEE	-	initial environmental examination
LIBOR	-	London Interbank Offered Rate
LURT	-	land use right transfer
M&E	-	monitoring and evaluation
MOF	-	Ministry of Finance
O&M	-	operation and maintenance
OCB	-	open competitive bidding
PAM	-	project administration manual
PIUs	-	project implementing units
PMO	-	project management office
PPMS	-	project performance management system
RRP	-	report and recommendations of the president
SDAP	-	social development action plan
SNWDP	-	South-To-North Water Diversion Project
SOE	-	statement of expenditure
SPS	-	Safeguard Policy Statement
WRB	-	Water Resources Bureau
WSP	-	water supply plant
WWTP	-	wastewater treatment plant
YRB	-	Yangtze River Basin
YREB	-	Yangtze River Economic Belt

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Project Administration Manual Purpose and Process

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

The Dengzhou City Government (DCG), as the executing agency, and Integrated Urban Rural Development Pilot Area Administration Bureau (IURDPAAB), Environment Protection Bureau (EPB), and Water Resources Bureau (WRB) as the implementing agencies, are wholly responsible for the implementation of the project, as agreed jointly between the borrower and ADB; and in accordance with government and ADB policies and procedures. ADB staff is responsible to support implementation including compliance by the DCG of their obligations and responsibilities for project implementation in accordance with ADB policies and procedures.

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

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

I. PROJECT DESCRIPTION

1. The project will help the Dengzhou City Government (DCG) restore the Tuan River ecosystem and improve the water services with a well-balanced mix of structural and nonstructural interventions, leading to environmental sustainability and improved livelihoods. The project will adopt an integrated approach to enhance rural and urban water links that addresses a complex environmental problem in rapidly developing societies therefore serves as a demonstration model for the PRC and beyond.

A. Rationale

2. The Yangtze River Economic Belt (YREB) is one of the three key economic growth engines in the PRC. Its nine provinces and two specially administered municipalities account for more than 40% of the PRC's population, 40% of its freshwater resources, and about 45% of economic output. While the YREB has benefited from extensive development since the 1980s, economic growth in the middle and upper reaches of the Yangtze River Basin lags that of the coastal areas. These parts of the YREB still face significant challenges as a result of (i) weak institutional coordination for strategic planning; (ii) increasing pollution and pressure on natural resources; (iii) slow transformation to green development; and (iv) limited integration of waterways, ports, and intermodal logistics. To manage these challenges, the Government of the PRC formulated the Yangtze River Economic Belt Development Plan, 2016–2030.¹ The Asian Development Bank (ADB) and the government have agreed to adopt a framework approach to strategically program ADB's lending support for development initiatives in the YREB.² Priority is given to (i) institutional strengthening and policy reform; (ii) ecosystem restoration, environmental protection, and management of water resources; (iii) inclusive green industrial transformation; and (iv) construction of an integrated multimodal transport corridor.

3. Rural livelihoods in the YREB have lagged industrial production and urban livelihoods. As a result, income inequality and poverty persist in rural areas of the less-developed middle and upper reaches of the Yangtze River Basin. Most rural wastewater and solid waste is discharged directly to the water system without treatment and proper disposal.³ As the rural economy expands, increasing regulatory, administrative, and environmental management challenges will require stronger institutional capacity. Against this background, the government formulated the National Strategic Plan for Rural Vitalization, 2018–2022 to promote poverty reduction, rural development, and green and inclusive growth.⁴ The rural vitalization strategy focuses on governance reform, wastewater and solid waste management, rural–urban integration, ecosystem protection, and rural development. The strategy prioritizes managing climate change and the environment to support ecological civilization and rural vitalization.

4. **Project area.** Dengzhou, a county-level city in Nanyang City, Henan Province, is poor and relatively rural. It has weak institutional capacity in environmental management and is strategically located at the sources of South–North Water Diversion Project.⁵ As part of the Han River watershed in the Yangtze River Basin, Dengzhou City is a national key ecological function zone,

¹ Government of the PRC. 2016. *Outline of the Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing.

² ADB. 2018. *Framework for the Asian Development Bank's Assistance for the Yangtze River Economic Belt Initiative: 2018–2020*. Manila.

³ In 2017, only 25% of villages had appropriate sanitation facilities and only 60% had solid waste collection and disposal services, contributing to poor environmental conditions. In 2015, the Thirteenth Five-Year Plan, 2016–2020 mandated the installation of sanitation systems in at least 70% of the rural villages in the country by 2020 (Government of the PRC. 2016. *Outline of the Thirteenth Five-Year Plan for National Economic and Social Development, 2016–2020*. Beijing).

⁴ Government of the PRC. 2018. *National Strategic Plan for Rural Vitalization, 2018–2022*. Beijing.

⁵ South–North Water Diversion Project. <http://www.china.org.cn/waterdiversion/index.htm>.

as designated by the government. With 28 townships and 606 villages, the city has an area of 2,369 square kilometers and had a population of 1.78 million people in 2018, of which 60% are rural. The project area covers the townships and villages along the Tuan River, a tributary of the Han River in Dengzhou City. In 2018, most of the city's 32,465 poor people (with an annual per capita income of less than CNY3,208) were low-paid women. The Tuan River Basin has (i) a per capita freshwater availability of only 345 cubic meters (m³) per year (less than 13% of the national average), (ii) the lowest water supply coverage that relies on polluted groundwater, and (iii) the highest disposal rate of untreated wastewater and solid wastes. Located in Henan Province, an ecological red-line area, Dengzhou City is part of a cluster of cities and counties surrounding the YREB that significantly contribute to the YREB's development goals.⁶

5. **Poor water quality.** Almost 100% of Dengzhou City's rural population and 30% of its urban population lacks proper access to water, wastewater, and solid waste management facilities. This results in poor health and creates heavy burden particularly for women, who play a major role in household water and waste management in the city. Despite experiencing an acute water scarcity, the city, as a source of water diversion project, helps resolve the water scarcity problems in the water-deprived northern region of the PRC. About 143,000 of the city's rural population relies for their drinking water supply on shallow groundwater that is contaminated by the heavily polluted Tuan River, untreated wastes, and chemical fertilizers used extensively on farmland. The city's groundwater quality is far below national standards.⁷ From 2008 to 2018, there were 300,000 cases of waterborne diseases, affecting mainly women and children.⁸ The Tuan River is heavily polluted from point sources, including 6 million m³ of wastewater, and 300,000 tons of garbage directly disposed into the river annually; and nonpoint sources, mainly from farmlands; and water quality exceeds class V (the worst on the scale) in almost every section of the lower Tuan River.⁹

6. **Impaired water ecosystem service.** The untreated wastewater and accumulated solid waste in the Tuan River have severely impacted the aquatic life and impaired the entire water ecosystem. The river's hydrology, water environment, and geomorphology have also been substantially altered by water operation, urbanization, and climate change impacts, resulting in a degraded river corridor environment. Serious riverbank erosion has progressively damaged the productive farmlands. The undercutting of the riverbank and accumulation of construction wastes in various sections of the river have also exacerbated the degradation of the water environment and damaged the riverfront design in the urban area. Further, several of the city's natural wetlands and drainage channels, including small creeks of hydrological, environmental, and historical significance, have disappeared since 2010. The frequency of floods is on the rise because of morphological changes, urbanization on the floodplain, and climatic variability, therefore likely to pose a serious problem for the city. The 30-kilometer (km) river profile in the city is fully eutrophic, and the resulting persistent foul odor has impaired the living environment along the river reach.¹⁰

7. **Weak institution and capacity to manage water resources.** Since beginning operations in late 2014, the water diversion project has allocated 692 million m³ of free of charge water to Dengzhou City each year, of which only about 15% has been used because of a lack of proper planning and limited water resource management capacity. The DCG adopted various measures to protect the river environment and improve the livelihood of the people, but it could not deliver the expected results because of inadequate problem analysis, fragmented management of water

⁶ In 2015, PRC formulated a national policy, mandating local governments to establish ecosystems services assessments in land use planning, which is known as ecological redline policy.

⁷ Government of the PRC. 2007. *National Drinking Water Quality Standard (GB 5749-2006)*. Beijing.

⁸ Dengzhou City Government. 2018. *Statistical Yearbook*. Dengzhou City.

⁹ Above Class III water is unfit for drinking as per PRC's Environmental Water Quality Standard (GB 3838-2002).

¹⁰ Eutrophication is the excessive nutrients in water causing dense plant growth and animal death from lack of oxygen.

and ecosystem services, and poor planning and design without proper stakeholder participation. Lack of asset management in the DCG has substantially increased the risk of poor public services and unforeseen costs in development investments. Located at the headstream of the water diversion project, the city faces restrictions on development mainly because water quality and quantity in the Danjiangkou Reservoir is being degraded.¹¹ To ensure sound environmental management and protection of the reservoir, the DCG receives eco-compensation annually from the Beijing Municipal Government as an incentive, but this has not been used properly.¹²

8. Given the competing needs for soil and water conservation and rural livelihood development in this unique ecosystem, an integrated watershed management is required with strong database. To establish a fair compensation mechanism, a performance-based approach with proper monitoring and evaluation of outcomes and financial rewards or penalty provisions also needs to be developed with the involvement of the DCG and the cities that benefit from the water diversion project. To do this, the DCG needs to strengthen its institutional and operational capacities.

9. **Rural–urban water linkages.** Complex and poorly managed rural–urban water links have direct implications on rural and urban livelihoods, and the Tuan River environment. For example, untreated sewage from the urban area on the right bank of the river is discharged directly into the Tuan River, where it recharges the groundwater that is the only source of drinking water in the rural area on the left bank. Similarly, poor sanitation and solid waste management in the rural villages, and the use of chemical fertilizer and pesticides on the farmlands, contaminate the groundwater and damage the river environment and the river front design of the urban area. Urban encroachment into the river corridor and disposal of construction wastes into the river have resulted in river sedimentation leading to the water contamination and frequent flooding in rural villages 30 km downstream.

10. The DCG urgently needs to address these links by improving its water management strategy and plan and strengthening its institutional and technical capacities to achieve the goals. Located in a less-developed region in the middle of Yangtze River Basin, the city can demonstrate an environmentally sustainable growth model for addressing the rural–urban water links that can be replicated in other parts of the river basin and the PRC.

11. **Strategic fit.** Under the rural vitalization plan (footnote 4), local governments will implement their own plans to improve rural public services and the environment. The DCG has formulated its Thirteenth Five-Year Plan, 2016–2020, consistent with the national Thirteenth Five-Year Plan, 2016–2020.¹³ In addition to local development plans, the project is aligned with ADB's Strategy 2030, especially the operational priority areas of tackling climate change, building disaster resilience, and enhancing environmental sustainability; promoting rural development and food security; and making cities more livable.¹⁴ It is also closely aligned with ADB's country

¹¹ The reservoir of the water diversion project, constructed in the 1950s, has a surface area of 1,050 square kilometers; storage capacity of 29.05 cubic kilometers; and a watershed area of 95,200 square kilometers. Besides irrigation, flood control, and hydropower generation, it also supplies water through a 1,274 km stretch of canal to 14 cities in the northern PRC, benefiting more than 50 million people in the water-deprived cities of Beijing and Tianjin, and the provinces of Hebei and Henan under the water diversion project.

¹² The eco-compensation includes CNY278 million in direct cash payments, CNY340 million for capacity building in environmental protection, medical coverage and education for affected populations, and free use of 692 million m³ of water from the water diversion project for various uses. The amount is part of the city government's annual budget and there is no proper accounting provision for the compensation fund by source and area.

¹³ Government of the PRC. 2016. *Outline of the Thirteenth Five-Year Plan for National Economic and Social Development, 2016–2020*. Beijing.

¹⁴ ADB. 2018. [*Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*](#). Manila.

partnership strategy for the PRC, 2016–2020, particularly the three major principles of managing climate change and environment, supporting inclusive economic growth, and fostering knowledge cooperation.¹⁵ It is consistent with ADB's Water Operational Plan, 2011–2020, which emphasizes integrated water resources management (IWRM) with a focus on rural water management;¹⁶ and Sustainable Development Goals 6, 11, and 13.¹⁷ The project also supports ADB's new action plan for healthy oceans by reducing the amount of solid waste discharged into the Yangtze River and eventually the sea.¹⁸ The project will contribute to the fulfillment of the Paris Agreement that the PRC signed in 2015, and is aligned with the PRC's Intended Nationally Determined Contributions to limit carbon emissions by 2030.¹⁹

12. **Lessons learned.** The project will implement IWRM focusing on rural–urban integration aiming at improving the rural livelihoods and Tuan River environment in Dengzhou City. 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 rural–urban integration in the PRC and other developing member countries. Past and ongoing ADB support in the PRC underscore the importance of (i) strengthening nature-based solutions and community engagement; (ii) ensuring operation and maintenance (O&M) provisions with sustainable sources of finance; (iii) using high-level technologies in IWRM including in decision-making; (iv) introducing institutional and financial management reforms that contribute to sustainable water resources management; (v) developing capacity for project implementation and O&M; and (vi) instituting an effective project monitoring and evaluation system.²⁰

B. Impact and Outcome

13. The project is aligned with the following impact: quality of life along YREB improved.²¹ The project will have the following outcome: water security and environmental sustainability in Dengzhou City improved.²²

C. Solutions

14. **Output 1. Urban and rural water infrastructure in Dengzhou City improved.** This output will include: (i) a rural water supply system: (a) construction of water intake at the water diversion project canal and treatment facilities, (b) installation of distribution network, and (c) installation of an advanced network monitoring and evaluation system; (ii) wastewater management, including (a) installation of distributed wastewater treatment facilities in rural areas, (b) construction of a centralized wastewater treatment plant in urban area, and (c) construction of wastewater collection networks; (iii) solid waste management in rural towns, including (a) installation of solid waste separation and recycling facilities, and (b) establishment of solid waste

¹⁵ ADB. 2016. *Country Partnership Strategy: People's Republic of China, 2016–2020—Transforming Partnership: People's Republic of China and Asian Development Bank*. Manila.

¹⁶ ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

¹⁷ United Nations. *Sustainable Development Goals*.

¹⁸ ADB. 2019. *The Action Plan for Healthy Oceans and Sustainable Blue Economies*. Manila.

¹⁹ Intended Nationally Determined Contributions. https://unfccc.int/files/adaptation/application/pdf/all_parties_indc.pdf

²⁰ ADB. 2018. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Chongqing Longxi River Basin Integrated Flood and Environmental Risk Management Project*. Manila; ADB. 2016. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Shandong Groundwater Protection Project*. Manila; and ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Hubei Enshi Qing River Upstream Environment Rehabilitation Project*. Manila.

²¹ National Development and Reform Commission. 2016. *Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing; and State Council of the People's Republic of China. Policies: [Latest Releases](#).

²² The design and monitoring framework is in Appendix 1.

collection and transport facilities; and (iv) flood risk management, including construction of (a) ecological dikes at critical locations, and (b) stormwater drainage. This output will greatly enhance the quality of water supply and sanitation for residents, particularly women. The construction and operation of the facilities will create some employment opportunities for residents, including women and people on low incomes.

15. **Output 2. Ecosystem services in Dengzhou City improved.** This output will implement (i) river corridor improvement by (a) constructing Tuanbei Cultural Park,²³ (b) greening and gardening the riverbanks in city area, and (c) removing polluted sediment from the Tuan River through limited dredging in discrete sections of the river; (ii) soil and water conservation by (a) undertaking riverbank protection using eco-friendly measures, (b) planting bio-shield (a vegetative buffer zone) and constructing runoff interceptors to control nutrients and topsoil leaching from the farmlands, and (c) afforesting hill slopes in the watershed of Danjiangkou Reservoir; and (iii) wetland restoration by (a) constructing small artificial wetlands and (b) restoring small creeks to enhance the natural drainage system. These activities will improve the living environment and generate employment opportunities for residents including women and people on low incomes.

16. **Output 3. Water resources management capacity enhanced.** This output will develop (i) an environmental research and education center by (a) constructing research laboratories with research facilities, and (b) cooperating with local research institutes; (ii) river health monitoring by (a) installing real-time hydrological and water quality monitoring stations, (b) establishment of a research park in the lower Tuan River, and (c) upgrading of Dengzhou Digital Center for field data management; and (iii) institutional capacity building by (a) establishing an asset management and decision support system, (b) strengthening community-based watershed management, including solid waste management, (c) piloting manure use in crop production to reduce the use of chemical fertilizer and nutrients runoff from livestock farms, (d) promoting community entrepreneurship, mainly community nursery and agroforestry, (e) developing a dialogue between the DCG and the water diversion project beneficiary cities to establish a fair eco-compensation and accounting mechanism, (f) drafting of a water utilization plan for the city, and (g) conducting environmental training programs for local governments and communities.

17. **Special project features and value addition.** The project will (i) contribute to global and regional public goods through soil and water conservation and waste management in the Yangtze River Basin. It will also contribute to (i) the PRC's Intended Nationally Determined Contributions to ensure that carbon emissions peak by 2030 through afforestation and (ii) regional water distribution under the water diversion project; and will help launch the implementation of the rural vitalization plan (footnote 4). The project represents a fraction of the larger 5-year investment plan by the DCG and will demonstrate ecological protection, while advocating a river-basin-scale IWRM approach in the YREB.²⁵ It will support the DCG in identifying and improving the rural–urban water links in a complex but representative case of rapidly urbanizing societies in the PRC.

18. The project will also demonstrate urban planning by preserving the historical sites and establishing ecological parks that reflect Dengzhou City's historical values. It will establish an advanced asset management practice with (i) digital asset inventory and records on geographic information systems, (ii) an interactive service delivery system and automatic water leakage detection system, (iii) a decision support system for asset acquisition and disposal, and

²³ The park will feature the city's 2,500 years of history related to Chinese medicine, literature, governance, agriculture, and architecture for educational and tourism purposes.

²⁵ A comprehensive river basin model developed during project appraisal will be further developed during project implementation to establish a decision support system and aid development planning and project design.

(iv) guidelines and training courses for asset criticality and risk assessment. The project will promote the sustainability of the rural water supply system by integrating it with the urban water services for the management, including O&M, and service delivery provisions to fill the current institutional and policy gaps in rural water supply in the PRC. It will leverage the knowledge partnership between the DCG and local research institutes by establishing an environmental research and education center that studies and monitors the local water and environmental issues and evaluate project performance. Lastly, it will support the DCG in implementing the project in a gender-responsive and socially inclusive manner. The project's innovations and value addition will be disseminated through knowledge products and knowledge-sharing events.

19. The details of each output and component are summarized in Table 1 below:

Table 1: Summary of Project Subcomponents

No.	Output/Component	Major Contents
Output 1: Urban and rural water infrastructure in Dengzhou City improved		
1.1	Wastewater management in both rural and urban areas	
1.1.1	Tuanbei WWTP	Construction of the Tuanbei WWTP in the Tuanbei New Town District. The WWTP has a capacity of 30,000 t/d and covers a land area of 4.6 ha to service approximately a population of 180,000 in the Tuanbei New Town District (about 20 km ²).
1.1.2	Affiliated Sewer Pipe Network to the Tuanbei WWTP	Construction of sewer pipe network to the proposed WWTP with a total length of about 10.0 km: Tuanbin North Road (Beijing Road–Ping'an Road) approximately 1,479 m; Tuanbei New Town Green Corridor Park (Tuanbin North Road–Fusheng Road) approximately 5,939 m; Fusheng Road (Ping'an Road–#207 National Road) approximately 2,562 m; and the discharge pipe of approximately 1,095 m.
1.1.3	Rangdong Township WWTP	Construction of a WWTP in Rangdong Town (Phase I) with a capacity of 2,000 m ³ /d, and the affiliated sewer pipe network of approximately 3.52 km in length, servicing the south-western area of Rangdong Town.
1.1.4	Jitan Township WWTP	Construction of a WWTP in Jitan Town with a capacity of 1,500 m ³ /d and the affiliated sewer pipe network of approximately 12.3 km in length, servicing the entire town.
1.2	Construction of rural water supply system	
1.2.1	Sangzhuang WSP and Auxiliary Pipe Network	Construction of a WSP with a capacity of 30,000 m ³ /d at Sangzhuang Town, servicing rural residents in Sangzhuang Town, Yaodian Town, Jitan Town, Yangying Town, and Liuji Town. The affiliated facilities include a water distribution pipe network of 305 km; 1 booster pump station; 1 chlorination station; and a 750 m water source diversion pipe.
1.2.2	Jiulong WSP and Auxiliary Pipe Network	Construction of WSP at Jiulong Town at a capacity of 30,000 m ³ /d, servicing five towns of Jiulong, Wenqu, Zhangcun, Gaoji, and Pengqiao. Affiliated facilities include a water distribution pipe network of 310 km long in total; 3 booster pump stations; and 1.2 km water source diversion pipe.
1.2.3	Cultural heritage protection	Protection works on Huo Qubing's Cenotaph in Guanjun Village in Zhang Town; eco-logical park, educational boards, and environment-friendly visitor resting area.
1.3	Solid waste management in rural towns	
1.3.1	Solid waste treatment in Rangdong Town	Pilot biological treatment of organic solid wastes from a farmer's vegetable market at a capacity of 4 t/d in Rangdong Town.
1.4	Natural drainage management	

Table 1: Summary of Project Subcomponents

No.	Output/Component	Major Contents
1.4.1	West to east water diversion channel	Canal construction works of 4.9 km from Yesheng Road to the west to Huolong Canal in Tuanbei New Town District. The total width of the canal construction is 40 m, of which the canal is 15 m wide, and greening area on two sides of the canal is 15 m and 10 m wide, respectively.
1.4.2	North-to-south open channel	Channel construction works of 1.35 km at the west side of Beijing Avenue in Tuanbei New Town District. The total width of the channel works is 70 m, of which the width of the channel is 20 m, and the greening area on the two sides of the channel is 25 m, respectively.
Output 2: Ecosystem services in Dengzhou city improved		
2.1	River corridor improvement	
2.1.1	Ecological dredging of lower Tuan River	13.8 km ecological dredging of lower Tuan River to remove 207,000 m ³ of sediment with an average dredging depth of 0.2 m (for removal of thin polluted layer).
2.1.2	Embankment of Lower Tuan River	(i) ecological riverbank protection and repair at 7 different sections of the lower Tuan River with a cumulative length of 3.7 km; and (ii) levee heightening works on a 1 km river reach.
2.1.3	Tuanbei New Town Green Corridor Park	Tuanbei Green Corridor Park is on the north side of Tuan River in Tuanbei New Town District, Dengzhou City. The park covers a total area of 653,000 m ² from Beihuan Road to the north, Wenxin Street to the east, Ping'an avenue to the west, Fusheng Road and Tuan River landscape belt to the south. The park also includes the waterscape Weiming Channel (2.94 km) and associated connecting roads (3.819 km) to the park.
2.1.4	Connecting Roadworks	Construction of the Dongfang connecting bridge (245 m) to connect the Tuanbei New Town Green Corridor Park to the city area in the south of Tuan River.
2.2	Water and soil conservation	
2.2.1	Tuan River Green Buffer Belt	Green buffer zones along the banks of a 13.8 km reach of lower Tuan River that covers an area of 1,170,000 m ² , including (i) about 13 km long and 3 m wide shady porous foot paths on both sides of the river bank, covering an area of 78,000 m ² ; (ii) ecological interception zone of 13.8 km long and 20 m wide, with an area of 552,000 m ² ; (iii) ecological greening area on both sides of the river bank (620,000 m ²); and (iv) planting area of aquatic plants in river is about (5,000 m ²).
2.2.2	Wetland Development	Development of a 15,000 m ² constructed wetland in the Tuan River North Shore Green Park (Phase III), consisting of horizontal subsurface flow and vertical subsurface flow zones at a design capacity of 3,000 m ³ /day to treat the Tuanbei WWTP effluent.
2.2.3	Xingshan Afforestation	The location of the Xingshan plantation subproject is at Yu Hill, Hanying Village in the Xingshan Tourism Management Area, which is close to the canal head of the middle route of the South-to-North Water Diversion Project. The total area of tree plantation is 800 <i>mu</i> .
Output 3: Water resources management capacity enhanced		
3.1	Environmental Research and Education Center	Development of an environmental research and education center with affiliated operating and monitoring equipment for Tuan River watershed in the Tuanbei New Town District of Dengzhou City. The center covers an area of 25 <i>mu</i> , mainly for information dissemination, education, scientific research, training and environmental monitoring.
3.2	River health monitoring of lower Tuan River	Installation of real-time hydrological and water quality monitoring stations along lower Tuan River and associated data connection and reporting systems at 5 locations along the river at the bridge along the 207 National Road crossing Tuan River, Yaodian, Xihou Bay, Jitan

Table 1: Summary of Project Subcomponents

No.	Output/Component	Major Contents
		Bridge and Donghou Bay in Zhao River. The Tuan River health will be monitored 24 hours a day real-time. All monitoring data will be collected automatically and linked to data management and processing systems at proposed Environmental Research and Education Center as well as to the Digital Center of DCG.
3.3	Trial experiment on 500 m river ecological restoration	A trial experiment on the river ecological restoration methods at a 500 m reach of lower Tuan River near the confluence with Zhao River in Jiaolin Village, Yaodian Town along the South Bank of Tuan River.
3.4	Institutional strengthening and capacity building of DCG	Institutional strengthening and capacity building of DCG, consulting services to support the project management, asset management system development, community-based watershed management including solid waste management, and public awareness education programs.

DCG = Dengzhou City Government, ha = hectare, km = kilometer, km² = square kilometer, m = meter, m² = square meter, m³/d = cubic meter per day, t/d = ton per day, WSP = water supply plant, WWTP = wastewater treatment plant.

Note: A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 square meters or 0.067 hectare).

Source: Asian Development Bank.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 2: Project Readiness Activities

Indicative Activities	2019												2020						Responsibility
	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6		
Procurement agent recruited																		DPMO	
Advance contracting actions (design, LAR, procurement)																		DPMO, IAs	
Retroactive financing actions (design, LAR, procurement, construction)																		DPMO, IAs	
Domestic FSR approved																		HPDRC	
Design institute recruited																		DPMO, IAs	
FCUP approved																		NDRC, HPFD	
EIA and RPs approved																		ADB	
ADB management review																		ADB	
Loan negotiations																		ADB, MOF, DCG	
ADB's Board consideration																		ADB	
Loan and project agreements signed																		ADB, MOF, DCG	
Government legal opinion provided																		MOF, DCG	
Government budget inclusion																		DPMO, IAs	
Loan effectiveness																		ADB, MOF	

ADB = Asian Development Bank, DCG = Dengzhou City Government, DPMO = Dengzhou project management office, FCUP = foreign capital utilization plan, FSR = feasibility study report, HPDRC = Henan Provincial Development and Reform Commission, IA = implementing agency, LAR = land acquisition and resettlement, MOF = Ministry of Finance, NDRC = National Development and Reform Commission.

Source: Asian Development Bank.

B. Overall Project Implementation Plan

Table 3: Project Implementation Plan

[illegible]

Indicative Activities	2019				2020				2021				2022				2023				2024				2025				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1
Engineering design																													
Procurement																													
Construction																													
1.3 Solid waste management in rural towns																													
1.3.1 Solid waste treatment in Rangdong Town																													
Engineering design																													
Land acquisition																													
Procurement																													
Construction																													
1.4 Natural drainage management																													
1.4.1 West to east Water Diversion Channel																													
Engineering design																													
Land acquisition																													
Procurement																													
Construction																													
1.4.2 North to South Open Channel																													
Engineering design																													
Land acquisition																													
Procurement																													
Construction																													
1.4.3 Weiming Channel																													
Engineering design																													
Land acquisition																													
Procurement																													
Construction																													
Output 2: Ecosystem services in Dengzhou City improved																													
2.1 River corridor improvement																													
2.1.1 Ecological Dredging of Lower Tuan River																													
Engineering design																													
Land acquisition																													
Procurement																													
Construction																													
2.1.2 Embankment of lower Tuan River																													
Engineering design																													
Land acquisition																													
Procurement																													
Construction																													
2.1.3 Tuanbei New Town Green Corridor Park																													
Engineering design																													
Land acquisition																													

[illegible]

Indicative Activities	2019				2020				2021				2022				2023				2024				2025				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1
3.3 Trial experiment on 500 m river ecological restoration																													
Engineering design																													
Procurement																													
Construction																													
3.4 Institutional strengthening and capacity building of DCG																													
Start-up individual consultant supports																													
Quarterly progress reports																													
Semiannual environmental monitoring reports																													
Semiannual external resettlement M&E reports																													
Audit reports																													
Project completion report																													
Project management support by consultant team																													

DCG = Dengzhou City Government, m = meter, M&E = monitoring and evaluation, WSP = water supply plant, WWTP = wastewater treatment plant.

Source: Asian Development Bank.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Table 4: Project Implementation Organization

Project Implementation Organizations	Management Roles and Responsibilities
Executing Agency: Dengzhou City Government (DCG)	<ul style="list-style-type: none"> • Responsible for the overall implementation of the project, including land acquisition and resettlement, GAP, SDAP, and EMP. • Provide overall policy guidance, facilitate inter-agency coordination, and resolve any institutional problems that may affect project implementation. • Supervise the implementing agencies. • Facilitate disbursement. • Facilitate audit of project accounts. • Responsible for providing counterpart funds.
Henan Provincial Finance Department (HPFD)	<ul style="list-style-type: none"> • Provide overall project guidance and coordination. • Establish and manage the project advance account. • Submit withdrawal applications to ADB. • Manage and supervise loan repayment.
Dengzhou Finance Bureau (DFB) Dengzhou Project Management Office (PMO)	<ul style="list-style-type: none"> • Provide oversight and daily management of the project preparation and implementation. • Ensure coordination across sectors. • Responsible for overall guidance, coordination, supervision, and management for implementation of the project, including procurement, land acquisition, and safeguards. • Review withdrawal applications prepared by the implementing agencies and facilitate submission to ADB through DCG. • Update procurement plan. • Provide ADB with (i) quarterly progress reports; (ii) semiannual environmental monitoring reports; (iii) annual audit reports; and (iv) project completion report. • Coordinate training and capacity development activities. • Maintain separate accounting records for the project; prepare project financial statements and have them audited. • Carry out project performance and compliance monitoring. • Disclose project-related information and documents in accordance with ADB guidelines. • Coordinate between implementing agencies and DFB for financial transactions and payment.
Implementing Agency: Integrated Urban Rural Development Pilot Area Administration Bureau (IURDPAAB)	<ul style="list-style-type: none"> • Responsible for implementing wastewater collection network and treatment plant in Tuanbei New Town District. • Responsible for implementing water drainage, small creek rehabilitation, and clearing natural drainage works in the Tuanbei New Town District. • Responsible for implementing landscaping, greening, gardening, and construction of foot trails and bridge in the Tuanbei New Town District. • Responsible for implementing channel construction works Tuanbei New Town District. • Responsible for implementing the constructed wetland works in the Tuanbei New Town District. • Prepare withdrawal applications for relevant project expenses. • Participate in training and capacity development activities. • Maintain separate accounting records for the project.

Project Implementation Organizations	Management Roles and Responsibilities
Implementing Agency: Environmental Protection Bureau (EPB)	<ul style="list-style-type: none"> • Update, implement, and monitor land acquisition and resettlement plans. • Responsible for implementing solid waste management subprojects in Rangdong Town. • Responsible for implementing ecological dredging of lower Tuan River. • Responsible for implementing installation of distributed wastewater collection and treatment plants in rural areas (villages in downstream reaches of Tuan River) subproject. • Responsible for implementing embankment works in lower reaches of Tuan River. • Responsible for implementing the planting subprojects in lower reaches of Tuan River. • Responsible for implementing landscaping, greening, gardening, and construction of foot trails in lower reaches of Tuan River. • Responsible for implementing embankment works in lower reaches of Tuan River. • Responsible for implementing installation of bio-shield subprojects. • Responsible for implementing the research and education center and data management subprojects. • Prepare withdrawal applications for relevant project expenses. • Participate in training and capacity development activities. • Maintain separate accounting records for the project. • Update, implement, and monitor land acquisition and resettlement plans.
Implementing Agency: Water Resources Bureau (WRB)	<ul style="list-style-type: none"> • Responsible for implementing the subprojects on construction of rural water supply plants in Sangzhaung and Jiulong towns. • Responsible for implementing the development of watershed modelling tools. • Installation of real-time river health monitoring stations (hydrology and water quality) with data management systems. • Prepare withdrawal applications for relevant project expenses. • Participate in training and capacity development activities. • Maintain separate accounting records for the project. • Update, implement, and monitor land acquisition and resettlement plans.
ADB	<ul style="list-style-type: none"> • Provide the DCG and implementing agencies with guidance to ensure smooth project implementation and achieve the desired development impacts and their sustainability. • Conduct regular review missions. • Review and approve procurement actions. • Process withdrawal applications and disburse loan proceeds. • Review annual audit reports and follow up on audit recommendations. • Update regularly the project performance review reports with the assistance of the executing and implementing agencies. • Update regularly the project information documents for public disclosure at ADB website, including safeguard documents. • Monitor implementation of ADB's anticorruption policies.

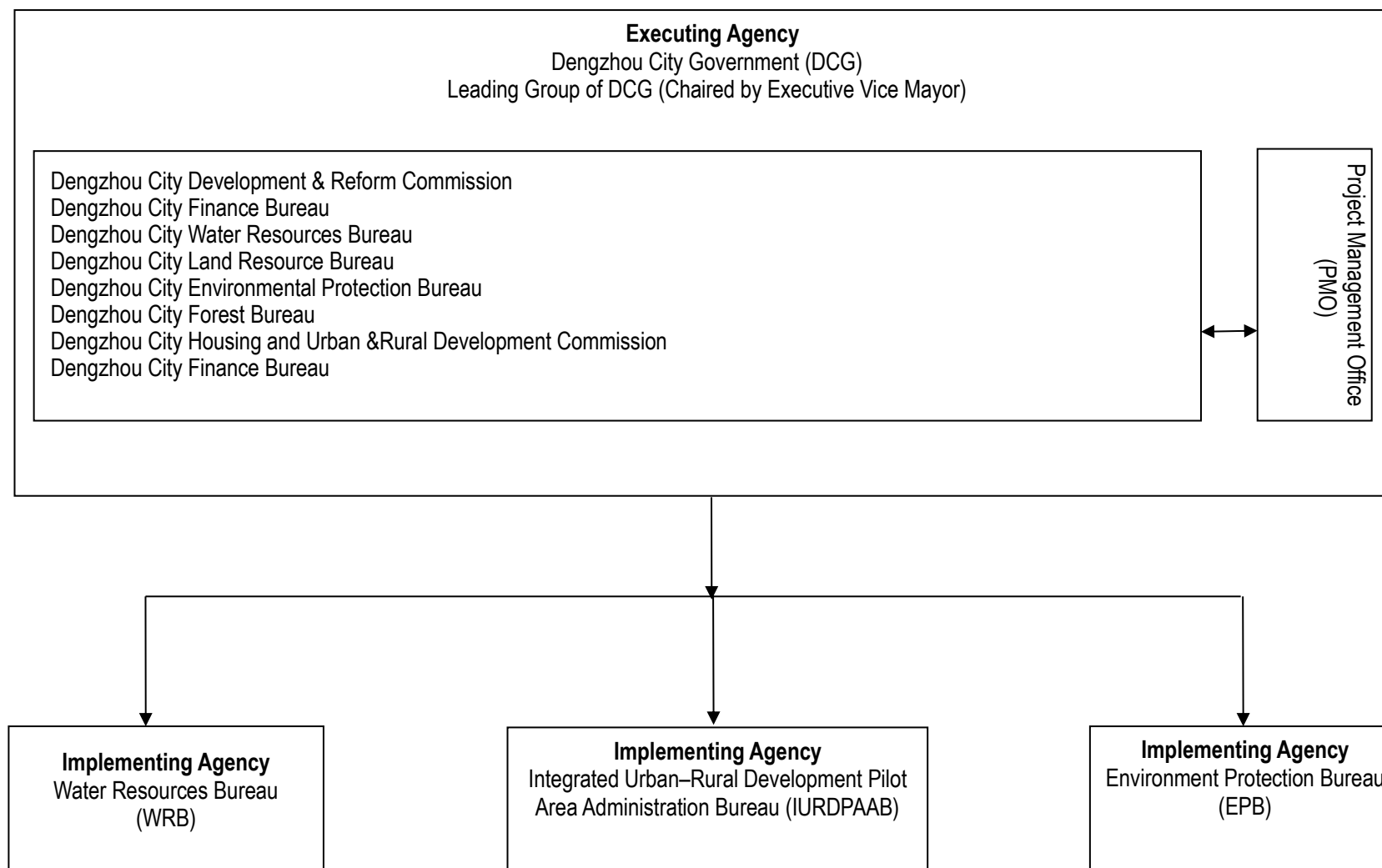
ADB = Asian Development Bank, DCG = Dengzhou City Government, DFB = Dengzhou Finance Bureau, EMP = environmental management plan, EPB = Environmental Protection Bureau, GAP = gender action plan, HPFD = Henan Provincial Finance Department, IA = implementing agency, PMO = project management office, SDAP = social development action plan.
Source: Asian Development Bank.

B. Key Persons Involved in Implementation

Organization	Contact Details
Executing Agency	
DCG	Officer's Name: Mr. He Ying Position: Executive Vice Mayor Telephone No.: +86 13598256189
Project Implementation Agencies	
PMO	Officer's Name: Mr. Hou Qifeng Position: Director Telephone No.: +86 18537731889 Email address: dzfgwwjk@163.com Officer's Name: Mr. Lu Zhentao Position: Deputy Secretary General Telephone No.: +86 13598203999
EPB	Officer's Name: Mr. Fan Junfeng Position: Chief Engineer Telephone No.: +86 13037617589 /+0377 62192873 Email address: 746917168@qq.com Office Address: No.236 Leifeng Road, Dengzhou City, Henan Province, PRC
IURDPAAB	Officer's Name: Mr. Liao Xianting Position: Section Chief Telephone No.: +86 13849712807 Email address: laoting@126.com Office address: 3 rd Floor of Xinghewan, Tuanbei District, Dengzhou City, Henan Province, PRC
WRB	Officer's Name: Mr. Gao Xintao Position: Section Chief Telephone No.: +86 19837726366 Email address: 3170630861@qq.com Office address: No.27 Wenmiao Road, Dengzhou City, Henan Province, PRC
ADB	
East Asia Department Environment, Natural Resources, and Agriculture Division	Staff's Name: Qingfeng Zhang Position: Director, EAER Telephone No: +63 2 6326967 Email address: qingfengzhang@adb.org
Mission Leader	Staff's Name: Rabindra Osti Position: Senior Water Resources Specialist, EAER Telephone No: +63 2 6324083 Email address: rosti@adb.org

DCG = Dengzhou City Government, EPB = Environment Protection Bureau, WRB = Water Resources Bureau, IA = implementation agency, IURDPAAB = Integrated Urban Rural Development Pilot Area Administration Bureau, PMO = project management office
Source: Asian Development Bank.

C. Project Organization Structure



IV. COSTS AND FINANCING

20. The project is estimated to cost €383.49 million, including price contingencies and financial charges during implementation. The major expenditure items that constitute the project include civil works, land acquisition, and resettlement.

21. The Government of the PRC has requested a loan of €181.27 million from ADB's ordinary capital resources to help finance the project. The loan will have a 26-year term including a grace period of 5 years. The annual interest rate is determined in accordance with ADB's London interbank offered rate (LIBOR)-based leading facility. A contractual spread of 0.5% per annum is applied to disbursed loan proceeds, and a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan and project agreements. Financial charges during the project implementation will not be capitalized in the loan. The government has requested that repayment will follow the straight-line repayment method. The average loan maturity is 15.75 years with a maturity premium of 0.1% payable to ADB. Accrual of commitment charge will commence 60 days after loan signing and will not be billed before the loan agreement has become effective. All conditions will be finalized at the loan negotiation.

22. The ADB loan will finance 45.06% of the total project costs including expenditures relating to civil works, goods, consulting services, capacity development, interest during construction, commitment charges; and taxes and duties of €6.43 million for eligible ADB-financed expenditures. The government will finance 52.73% of the total project costs, including engineering designs, procurement activities, and construction supervision; land acquisition and resettlement; civil works; environmental protection; taxes and duties of €6.09 million, and contingencies.

23. Climate mitigation is estimated to cost €17.75 million and climate adaptation is estimated to cost €2.27 million. ADB will finance 100% of mitigation and adaptation costs.

A. Cost Estimates Preparation and Revisions

24. Cost estimates were prepared on behalf of the project management office (PMO) by the feasibility study report design institute, in consultation with the implementing agencies and transaction technical assistance consultants, and under the guidance of the ADB project officer. Costing was completed using government costing standards, costing information from site investigations, and project files of the design institute.

25. Responsibility for revising and updating the cost estimates during implementation rest with the PMO and implementing agencies. The PMO and implementing agencies, supported by the design institute, a procurement agent, supervision companies and implementation consultants, are responsible for the design and procurement, the administration and monitoring of contractors and suppliers. The revision of cost estimates will be undertaken during the execution of these responsibilities. Cost evaluations will occur, and revisions will be made as necessary at detailed design during the review of tenders, and during the monitoring of contract execution.

B. Key Assumptions

26. The following key assumptions underpin the cost estimates and financing plan:

- (i) Exchange rate: CNY 7.813348 = €1.0 (as of 18 October 2019)
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:²⁷

²⁷ A purchasing power parity model is used to account for international cost inflation.

Table 5: Escalation Rates for Price Contingency Calculation

Item	2020	2021	2022	2023	2024	2025	Average
Foreign rate of price inflation ^a	1.5%	1.6%	1.6%	1.6%	1.6%	1.6%	1.58%
Domestic rate of price inflation ^a	1.8%	2.0%	2.0%	2.0%	2.0%	2.0%	1.97%

Sources: ^a ADB Economic Research and Regional Cooperation Department website escalation rates for May 2019.

- (iii) The executing and implementing agencies have assured ADB that counterpart funding will be provided or secured in a timely manner, including any additional counterpart funding required for any shortfall of funds or cost overruns.

C. Detailed Cost Estimates by Expenditure Category

Table 6: Detailed Cost Estimates by Expenditure Category

Item	(CNY Million)			(Euro € Million)			% of Base Cost
	Foreign	Local	Total	Foreign	Local	Total	
A. Base Cost							
1. Civil works and Installation	396.59	1,586.37	1,982.97	50.76	203.03	253.79	76.00
Wastewater management	49.35	197.38	246.73	6.32	25.26	31.58	9.46
Construction of rural water supply systems	120.09	480.37	600.47	15.37	61.48	76.85	23.01
Solid waste management in rural towns	0.94	3.77	4.71	0.12	0.48	0.60	0.18
Natural drainage management	24.67	98.68	123.34	3.16	12.63	15.79	4.73
River corridor improvement	153.82	615.28	769.10	19.69	78.75	98.43	29.48
Water and Soil Conservation	32.58	130.33	162.91	4.17	16.68	20.85	6.24
Environmental research and training centers	14.54	58.17	72.71	1.86	7.44	9.31	2.79
Trial experiment on river ecological restoration	0.60	2.40	3.00	0.08	0.31	0.38	0.11
2. Equipment and Installation	25.31	16.87	42.18	3.24	2.16	5.40	1.62
Construction of rural water supply systems	2.51	1.67	4.18	0.32	0.21	0.53	0.16
Environmental research and training centers	16.20	10.80	27.00	2.07	1.38	3.46	1.03
River health monitoring of lower Tuan River	6.60	4.40	11.00	0.84	0.56	1.41	0.42
3. Land Acquisition and Resettlement	-	372.87	372.87	-	47.72	47.72	14.29
4. Project preparation and management	19.52	175.66	195.18	2.50	22.48	24.98	7.48
5. Consulting Service	8.00	8.00	16.00	1.02	1.02	2.05	0.61
Subtotal (A)	449.42	2,159.78	2,609.20	57.52	276.42	333.94	100.00
B. Contingencies							
Physical Contingency	22.47	107.99	130.46	2.88	13.82	16.70	5.00
Price Contingency	26.17	102.74	128.91	3.35	13.15	16.50	4.94
Subtotal (B)	48.65	210.73	259.37	6.23	26.97	33.20	9.94
C. Financing Charges During Implementation							
Interest During Implementation	120.91	-	120.91	15.48	-	15.48	4.63
Commitment Charges	6.86	-	6.86	0.88	-	0.88	0.26
Subtotal (C)	127.77	-	127.77	16.35	-	16.35	4.90
Total Project Cost (A+B+C)	625.84	2,370.51	2,996.35	80.10	303.39	383.49	114.84

Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan Proceeds

Table 7a: Allocation and Withdrawal of Loan Proceeds (Summary)

Number	Item	Total Amount Allocated for ADB Financing (€)	Basis for Withdrawal from the Loan Account
		Category	
1	Project Costs	181,274,000	Up to 100% of total expenditures claimed ^a
Total		181,274,000	

ADB = Asian Development Bank estimates.

^a Detailed categories and financing percentages to be used during disbursements are in Table 7b.

Source: Asian Development Bank estimates.

Table 7b: Allocation and Withdrawal of Loan Proceeds

No.	Item	Total Amount Allocated for ADB Financing (€)		Percentage and Basis for Withdrawal from the Loan Account (% of total expenditure claimed)
		Category	Subcategory	
01	Civil Works	174,063,000		68.59% of the total expenditure claimed
02	Equipment & Consulting Services	7,211,000		100.0% of the total expenditure claimed
	Total	181,274,000		

Source: Asian Development Bank estimates.

E. Detailed Cost Estimates by Financier

Table 8: Detailed Cost Estimates by Financier
(€ million)

Item	ADB		Dengzhou City Government		Total Cost
	(€ million)	% of Cost Category	(€ million)	% of Cost Category	
A. Base Cost					
1. Civil works and Installation	174.06	68.59	79.73	31.41	253.79
Wastewater management	21.66	68.59	9.92	31.41	31.58
Construction of rural water supply systems	52.71	68.59	24.14	31.41	76.85
Solid waste management in rural towns	0.41	68.59	0.19	31.41	0.60
Natural drainage management	10.83	68.59	4.96	31.41	15.79
River corridor improvement	67.51	68.59	30.92	31.41	98.43
Water and Soil Conservation	14.30	68.59	6.55	31.41	20.85
Environmental research and training centers	6.38	68.59	2.92	31.41	9.31
Trial experiment on river ecological restoration	0.26	68.59	0.12	31.41	0.38
2. Equipment and Installation	5.40	100.00	-	-	5.40
Construction of rural water supply systems	0.53	100.00	-	-	0.53
Environmental research and training centers	3.46	100.00	-	-	3.46
River health monitoring of lower Tuan River	1.41	100.00	-	-	1.41
3. Land Acquisition and Resettlement	-	-	47.72	100.00	47.72
4. Project preparation and management	-	-	24.98	100.00	24.98
5. Consulting Service ^a	1.81	88.50	0.24	11.50	2.05
Subtotal (A)	181.27	54.28	152.67	45.72	333.94
B. Contingencies					
Physical Contingency	-	-	16.70	100.00	16.70
Price Contingency	-	-	16.50	100.00	16.50
Subtotal (B)	-	-	33.20	100.00	33.20
C. Financing Charges During Implementation					
Interest During Implementation	-	-	15.48	100.00	15.48
Commitment Charges	-	-	0.88	100.00	0.88
Subtotal (C)	-	-	16.35	100.00	16.35
Total Project Cost (A+B+C)	181.27	47.27	202.22	52.73	383.49

Numbers may not sum precisely because of rounding.

^a The consulting costs will be financed in parallel by the government.

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Output

Table 9: Detailed Cost Estimates by Outputs/Components
(€ million)

Item	Total Cost	Output 1		Output 2		Output 3	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Base Cost							
Civil works and Installation	253.79	124.82	49.18	119.28	47.00	9.69	3.82
Equipment and Installation	5.40	0.53	9.91	0.00	0.00	4.86	90.09
Land Acquisition and Resettlement	47.72	4.64	9.72	42.71	89.49	0.38	0.79
Project preparation and management	24.98	11.99	47.99	11.15	44.65	1.84	7.35
Consulting Service	2.05	0.00	0.00	0.00	0.00	2.05	100.00
Subtotal (A)	333.94	141.98	42.52	173.15	51.85	18.82	5.63
B. Contingencies							
Physical Contingency	16.70	7.10	42.52	8.66	51.85	0.94	5.63
Price Contingency	16.50	7.28	44.11	8.26	50.07	0.96	5.83
Subtotal (B)	33.20	14.38	43.31	16.92	50.96	1.90	5.73
C. Financing Charges During Implementation							
Interest During Implementation	15.48	7.71	49.85	6.62	42.78	1.14	7.37
Commitment Charges	0.88	0.40	45.76	0.41	46.86	0.06	7.38
Subtotal (C)	16.35	8.12	49.63	7.03	43.00	1.21	7.37
Total Project Cost (A+B+C)	383.49	164.47	42.89	197.10	51.40	21.92	5.72

Numbers may not sum precisely because of rounding.
Source: Asian Development Bank estimates.

G. Detailed Cost Estimates by Year**Table 10: Detailed Cost Estimates by Year**
(€ million)

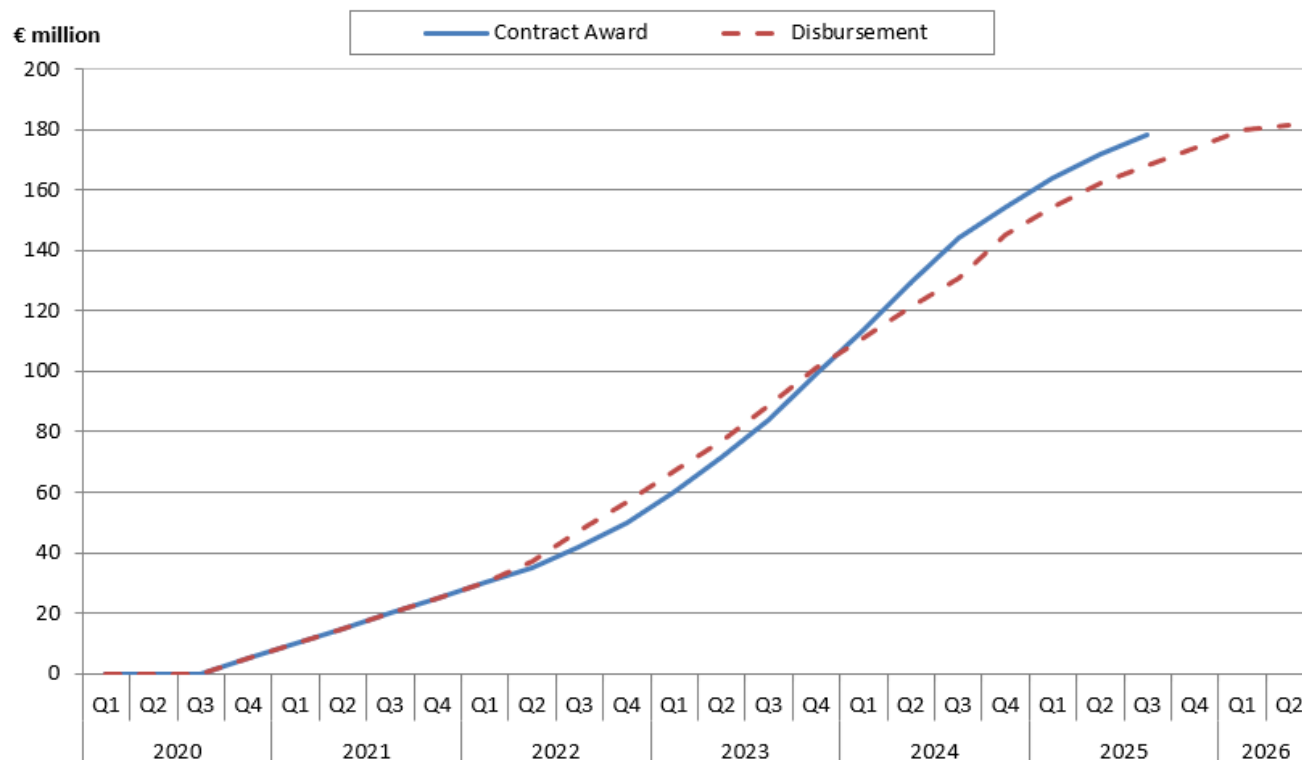
Items	Total Cost	2020	2021	2022	2023	2024	2025
A. Base Cost							
1. Civil works and Installation	253.79	8.70	29.18	73.74	69.30	59.89	12.97
Wastewater management	31.58	-	1.04	2.38	14.42	13.09	0.65
Construction of rural water supply systems	76.85	-	12.96	31.63	10.81	19.82	1.63
Solid waste management in rural towns	0.60	-	0.30	0.30	-	-	-
Natural drainage management	15.79	0.47	7.94	6.82	0.11	0.32	0.13
River corridor improvement	98.43	6.35	6.94	18.28	29.63	26.67	10.57
Water and Soil Conservation	20.85	1.50	-	9.68	9.68	-	-
Environmental research and training centers	9.31	-	-	4.65	4.65	-	-
Trial experiment on river ecological restoration	0.38	0.38	-	-	-	-	-
2. Equipment and Installation	5.40	-	0.86	0.18	-	4.36	-
Construction of rural water supply systems	0.53	-	0.09	0.18	-	0.26	-
Environmental research and training centers	3.46	-	0.77	-	-	2.69	-
River health monitoring of lower Tuan River	1.41	-	-	-	-	1.41	-
3. Land Acquisition and Resettlement	47.72	14.32	23.86	9.54	-	-	-
4. Project preparation and management	24.98	5.00	6.25	6.25	2.50	2.50	2.50
5. Consulting Service	2.05	0.44	0.58	0.41	0.24	0.24	0.14
Subtotal (A)	333.94	28.45	60.73	90.12	72.03	66.99	15.61
B. Contingencies							
Physical Contingency	16.70	1.42	3.04	4.51	3.60	3.35	0.78
Price Contingency	16.50	0.26	1.54	3.81	4.28	5.12	1.49
Subtotal (B)	33.20	1.68	4.57	8.31	7.88	8.47	2.27
C. Financing Charges During Implementation							
Interest During Implementation	15.48	0.10	0.52	1.63	3.15	4.58	5.49
Commitment Charges	0.88	0.27	0.25	0.19	0.12	0.05	0.01
Subtotal (C)	16.35	0.37	0.77	1.83	3.27	4.63	5.49
Total Project Cost (A+B+C)	383.49	30.50	66.07	100.26	83.18	80.09	23.38
% Total Project Cost	100.00	7.95	17.23	26.15	21.69	20.89	6.10

Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

H. Contract Award and Disbursement S-Curve

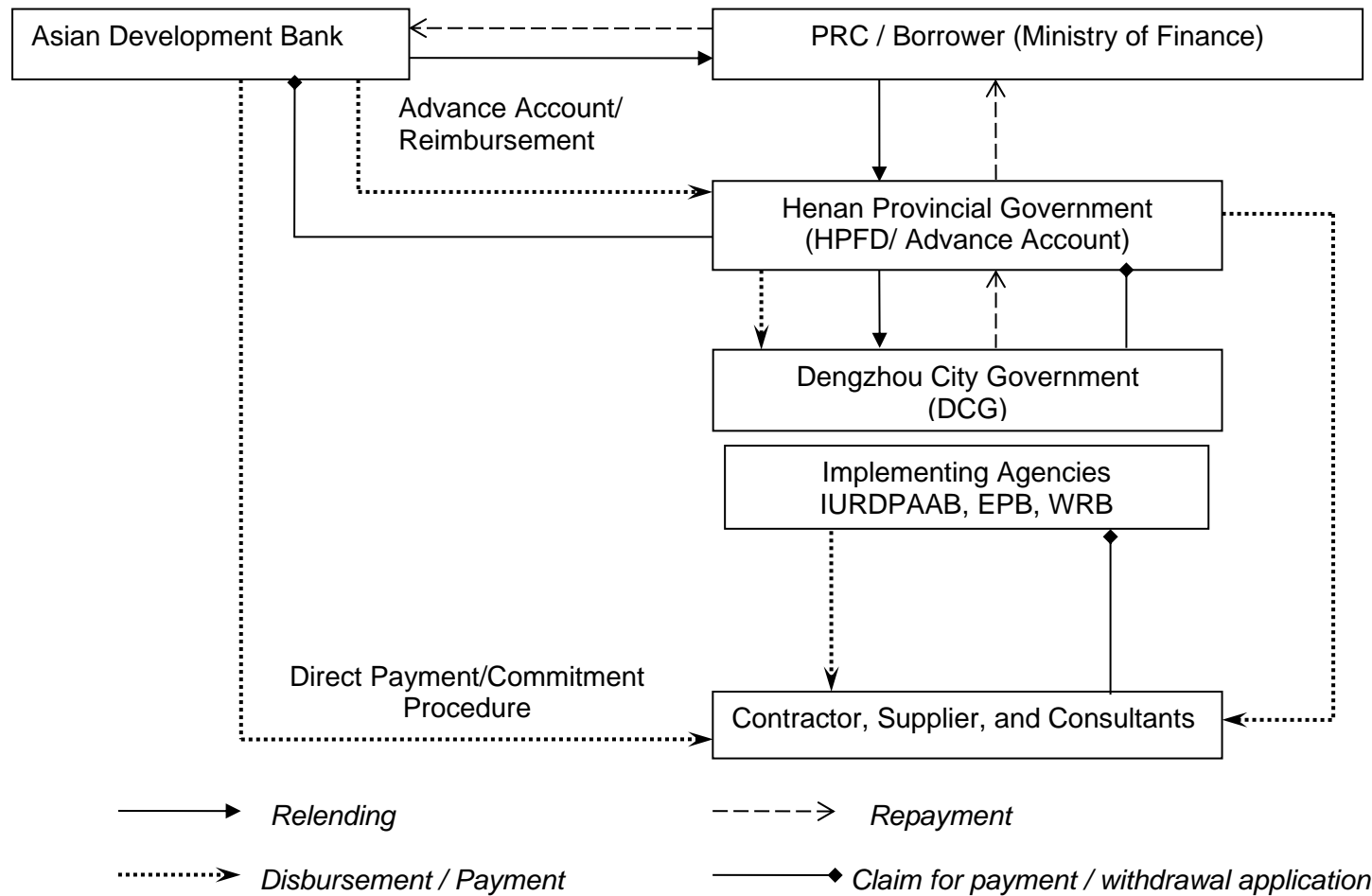
Contract Award and Disbursement (€ million)



(€ million)										
Year	Contract Award					Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2020	0.0	0.0	0.0	5.0	5.0	0.0	0.0	0.0	5.0	5.0
2021	5.0	5.0	5.0	5.0	20.0	5.0	5.0	5.0	5.0	20.0
2022	5.0	5.0	7.0	8.0	25.0	5.0	7.0	10.0	10.0	32.0
2023	10.0	12.0	12.0	15.0	49.0	10.0	10.0	12.0	12.0	44.0
2024	15.0	15.0	15.0	10.0	55.0	10.0	10.0	10.0	14.0	44.0
2025	10.0	8.0	6.0	3.3	27.3	9.0	8.0	6.0	6.0	29.0
2026	0.0	0.0			0.0	6.0	1.3			7.3
Total					181.3					181.3

Source: Asian Development Bank estimates.

I. Funds Flow Diagram



DCG = Dengzhou City Government, EPB = Environmental Protection Bureau, HPFD = Henan Provincial Finance Department, IURDPAAB = Integrated Urban Rural Development Pilot Area Administration Bureau, PRC = People's Republic of China, WRB = Water Resources Bureau.
Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

27. A financial management assessment of the executing agency and implementing agencies were conducted in January 2019 in accordance with ADB's Technical Guidance Note on Financial management Assessment (2015), to determine their financial management capacity with respect to funds flow arrangements, staffing, accounting policies and procedures, internal and external auditing arrangements, reporting and monitoring, and financial information system.

28. The assessment determined that the main financial management risks arise because the executing agency and implementing agencies have no experience in the implementation of an ADB loan project before. The overall pre-mitigation financial management risk is rated as "moderate". The Henan Provincial Finance Department (HPFD), which is experienced with several ADB funded projects and has adequate financial management capacity, will ensure proper use of the advance account and SOE procedures. With HPFD supervision, the executing agency (DCG) has adequate capacity to administer use of Statement of Expenditures (SOE) procedures. The borrower and executing agency and implementing agencies have agreed to implement an action plan as key measures to address the deficiencies. The identified risks in financial management will be closely monitored during the project implementation.

29. It was agreed that the implementing agencies will strengthen their capabilities by (i) setting up clear institutional arrangements and coordination mechanisms; (ii) completing staff deployment in appropriate financial management positions with English language support; (iii) developing methodologies for managing foreign exchange and interest rate risks; and (iv) undertaking more training, particularly on ADB policy and procedures. Table 11 demonstrates a financial risk mitigation plan to be adopted by the implementing agencies during the project implementation:

Table 11: Financial Management Action Plan

Action	Responsibility	Timing
1. Training on ADB financial management requirements, including disbursement, accounting, auditing procedures, and foreign exchange and interest rate risk management	PMO/DFB with support from ADB	1 month before loan effectiveness and any other time as needed
2. Recruitment of experienced consultants and skilled accountants to enhance the operational capacities	PMO/IAs	Immediately after loan effectiveness
3. Completing staff deployment in appropriate financial management positions with English language support	PMO/IAs	3 months before loan effectiveness
4. Development of financial management manuals	PMO/DFB	1 month before loan effectiveness
5. Establishment of accounting systems that maintain separate project accounts and records by funding source for all expenditures incurred on the project	IAs	3 months before loan effectiveness and any other time as needed

ADB = Asian Development Bank, DFB= Dengzhou Finance Bureau, IA = implementing agency, PMO = project management office.

Source: Asian Development Bank.

Table 12: Financial Management, Internal Control and Risk Assessment and Risk Management Plan

Risk type	Risk Assessment	Risk Description	Mitigation Measures
Inherent Risk			
Country-Specific Risks	L	Lack of adequate skills to implement the updated Accounting and Budget Law	ADB will work on the recommendations made in the CPS by encouraging the consistent use of IFRS in all projects
Entity (EA and IAs)-specific risks	M	Lack of familiarity with ADB disbursement procedures and requirements, and ADB financial management requirements, particularly on accounting, reporting and auditing, leading to delayed project implementation and reporting	Training on ADB financial management requirements, including disbursement, accounting and auditing, foreign exchange and interest rate risk management.
Control Risk			
1. Implementing Agency	M	Project financial management policies and procedures are not in place	The project will adopt the generally accepted accounting principles in the PRC, specifically the “Accounting Methods for Projects Financed by the Asian Development Bank” issued by the Ministry of Finance. The EA and IAs will set up the project accounts three months after loan effectiveness.
2. Funds Flow	M	Lack of familiarity with ADB disbursement requirements and procedures	Training will be conducted before loan effectiveness to ensure IA staff acquires required knowledge
3. Staffing	M	The staff are adequately qualified with lifetime employment but none of them have previous experience in financial management and are familiar with ADB loan management policies and procedures	Procedures and training on ADB loan management policies and procedures including procurement, disbursement and repayment policy need to be provided to enhance the professional capacity of relevant staff before implementing the project
4. Policies and Procedures	L	EA and IAs have cash-based accounting system according to national accounting standards	Ensure the project financial reporting in line with national accounting standards
5. Internal Audit	M	Internal audit unit lacks adequate capacity	Training of the PRC Basic Government Auditing Standard will be provided
6. External Audit	L	It is audited by Dengzhou City Audit Bureau on an annual basis in accordance with the PRC Basic Government Auditing Standard	Audit will be delegated to Henan Provincial Audit Office which is already experienced with ADB-funded projects

Risk type	Risk Assessment	Risk Description	Mitigation Measures
7. Reporting and Monitoring	L	The financial reports are prepared using budget accounting systems	To be conducted in accordance with accounting system established by the MOF and ADB project requirements
8. Information Systems	L	The financial reports are generated by Fangzhengchunyu and Xinzhongda software system	The EA and IAs will use stand-alone computerized accounting systems which produce financial statements automatically
Overall Risk	Medium		

ADB = Asian Development Bank, CPS = country partnership strategy, EA= executing agency, IA = implementing agency, IFRS = international financial reporting standards, L = low, M = medium, MOF = Ministry of Finance, PRC = Peoples Republic of China.

Source: Financial Management Assessment questionnaires.

B. Disbursement

1. Disbursement Arrangements for ADB Funds

30. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017 as amended from time to time),²⁸ and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.²⁹ Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

31. The implementing agencies, through the PMO, will be responsible for all disbursement arrangements including (i) preparing disbursement projections; (ii) requesting budgetary allocations for counterpart funds; (iii) collecting supporting documents; and (iv) preparing and sending withdrawal applications through DFB to ADB.

32. **Advance fund procedure.** To facilitate project implementation through timely release of loan proceeds, the HPFD will establish an advance account promptly after loan effectiveness at a commercial bank. The advance account is to be used exclusively for ADB's share of eligible expenditures. The currency of the advance account is US dollar. HPFD, who established the advance account in its name, is accountable and responsible for the proper use of advances to the advance account.

33. The total outstanding advance to the advance account should not exceed the estimate of ADB's share of expenditures to be paid through the advance account for the forthcoming 6 months. HPFD may request initial and additional advances to the advance account based on an Estimate of Expenditure Sheet³⁰ that sets out the estimated expenditures to be financed through the account for the forthcoming 6 months. Supporting documents should be submitted to ADB or retained by HPFD in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) when liquidating or replenishing the advance account.

²⁸ The handbook is available electronically from the ADB website (<http://www.adb.org/documents/loan-disbursement-handbook>).

²⁹ Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning

³⁰ Estimate of Expenditure sheet is available in Appendix 8A of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

34. **Statement of expenditure (SOE) procedure.**³¹ The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance account. Supporting documents and records for the expenditures claimed under the SOE should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

35. Before the submission of the first withdrawal application, the DCG, through the HPFD, should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the DCG, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is stipulated in the *Loan Disbursement Handbook* (2017, as amended from time to time). Individual payments below this amount should be paid by the DCG and subsequently claimed from ADB (i) through reimbursement; or (ii) from the advance account, unless otherwise accepted by ADB. The borrower should ensure sufficient category and contract balances before requesting disbursements. Use of ADB's Client Portal for Disbursements (CPD) system is encouraged for submission of withdrawal applications to ADB.³²

2. Disbursement Arrangements for Counterpart Fund

36. The DCG will provide counterpart funds on a timely basis for civil works; goods; design, procurement, and supervision; land acquisition and resettlement; environmental protection; and contingencies as specified in the loan and project agreements. The DCG will disburse counterpart funds to contractors, suppliers, service providers, and people affected by land acquisition and resettlement.

C. Accounting

37. The DCG will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following the Accounting Methods for Projects Financed by the World Bank (reference No. 2000 [13]).³³ The DCG will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations, which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

38. DCG will cause the detailed consolidated project financial statements to be audited in accordance with national auditing standards by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be submitted in the English language to ADB within 6 months of the end of the fiscal year by the DCG.

39. The annual audit report for the project accounts will include a management letter and audit opinions which cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan proceeds were used only for the purposes of the project; and (iii) whether the borrower or DCG was in compliance with the financial covenants contained in the legal agreements for the project where applicable. The management letter may, in addition to other matters, describe the satisfactory arrangements with regard to the proper use of the SOE

³¹ SOE forms are available in Appendix 7B and 7D of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

³² The CPD facilitates online submission of withdrawal applications to ADB, resulting in faster disbursement. The forms to be completed by the Borrower are available online at <https://www.adb.org/documents/client-portal-disbursements-guide>.

³³ Accounting regulations issued by the Ministry of Finance for all foreign aid-funded projects.

and advance procedures in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time) and the project documents.

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

41. DCG and the implementing agencies have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.³⁴ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

42. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Access to Information Policy.³⁵ After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.

³⁴ ADB's approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.
- (iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

³⁵ Access to information Policy: <http://www.adb.org/access-information-policy>

VI. PROCUREMENT AND CONSULTING SERVICES

43. A project procurement risk assessment was conducted for the project, in accordance with the Guidance Note on Strategic Procurement Planning and Guidance Note on Procurement Risk assessment (2018). The overall project procurement risk is moderate.

44. The main weaknesses identified include: (i) lack of experience of the DCG and implementing agencies in internationally financed projects; (ii) some discrepancies between domestic and ADB practices; and (iii) lack of procedures in place for procurement management and project implementation.

45. Proposed mitigation measures include training to be provided to relevant staff of the DCG and implementing agencies and the officials who are responsible for procurement regulations in the Public Resource Trading Center. The procurement training was delivered by the ADB officials and TRTA consultants during the project preparation to the implementing agencies on topics in ADB procedures for procurement of goods, works, and consulting services to ensure that the non-familiarity with ADB procurement framework has been addressed. The procurement training will be delivered on a well-defined interval by the loan implementation consultants during project implementation to ensure that procurement activities are undertaken in full conformity with ADB procurement guidelines and regulations.

46. A procurement market assessment was undertaken to understand and assess the availability of potential qualified bidders to supply works, goods, and services for each sector. It was concluded that some works and goods contracts would require international advertisement, since domestic suppliers in the PRC cannot provide certain specialized equipment of value more than 3 million dollars. The majority of the works and goods contracts would require national advertising to attract enough qualified bidders due to the following reasons: (i) most of the project components are classified as normal infrastructures, requiring only mature technology which are widely available nationally; (ii) there are good number of national bidders who have adequate capacities and resources to meet the requirements; and (ii) the practices evidenced that most of the bidders were national, even though the contracts were advertised internationally.³⁶

47. The majority of works and goods contracts can, therefore, be advertised nationally following open competitive bidding (OCB) procedures, and one works and goods contracts will be advertised internationally following OCB procedures.

A. Advance Contracting and Retroactive Financing

48. **Advance Contracting.** All advance contracting and retroactive financing will be undertaken in conformity with ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).³⁷ The issuance of invitations for bid under advance contracting and retroactive financing will be subject to ADB's approval. The borrower, DCG, and the implementing agencies have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

49. **Retroactive financing.** Under retroactive financing, the implementing agencies would implement project activities using their own funds. The government was informed that as a general rule, retroactive financing is permitted only if (i) activities are required to be part of the detailed project description and have been fully appraised by ADB; (ii) goods and works, for which it is requested are on the basis of the approved procurement plan and are procured in accordance

³⁶ Wulong Wujing River Flood Management Contracts WU-C01~C03 in Chongqing Urban-Rural Infrastructure Development Demonstration II Project, ADB Loan 3022-PRC.

³⁷ Available at <https://www.adb.org/documents/adb-procurement-policy>.

with ADBs Procurement Guidelines (2017, as amended from time to time); (iii) amount to be retroactively financed does not exceed 20% of the loan amount; (iv) due diligence on the proposed contracts for advance contracting and retroactive financing on engineering, environmental, financial, social, and other safeguard requirements has been completed to satisfy project preparation requirements; and (v) expenditures must have been incurred before the loan effectiveness but, generally, no earlier than 12 months before signing of the loan agreement. In either instance, detailed assessments (due diligence) on each retroactive financing proposal must demonstrate that (i) the expenditures incurred are genuine, reasonable, and material to getting the project off the ground; and (ii) they were incurred for proper reasons, in a transparent manner over a reasonable period.

B. Procurement of Goods, Works and Consulting Services

50. All procurement of goods and works (including consulting services) will follow ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).³⁸

51. Open competitive bidding (OCB) using national advertising will be used for the majority of civil works and goods contracts. For the first package civil works and goods, regardless of the estimated contract amount, the invitations for bids, bidding documents, bid evaluation reports, and draft negotiated contracts need ADB's prior review and approval. For the subsequent nationally advertised OCB packages, invitations for bids, bidding documents, bid evaluation reports, and signed contracts provided they are consistent with previously approved documents will not require ADB's prior review. However, such documents will be subject to post review sampling. The relevant sections of ADB's Anticorruption Policy (1998, as amended from time to time) will be included in all procurement documents and contracts.³⁹

52. Before the start of any procurement, ADB and the government will review the public procurement laws of the central and local governments to ensure consistency with ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).

53. All consultants will be recruited according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).⁴⁰ Estimated 206 person-months (16 international, 190 national) of consulting services are required to (i) facilitate project management and implementation; (ii) strengthen the institutional and operational capacity of the DCG and participating implementing agencies on project management and implementation; and (iii) implement external monitoring for environment and resettlement issues. Consulting firms for project management and capacity development for flood and environmental risk management will be engaged using the quality- and cost-based selection method with a standard quality: cost ratio of 90:10 and using full technical proposal procedure. Qualified national institutes/firms will be engaged through consultants' qualifications selection method to provide external environmental monitoring services and external resettlement monitoring services. Four project management start-up support packages will engage four individual consultants through individual consultant's selection method.

³⁸ <https://www.adb.org/documents/adb-procurement-policy> and <https://www.adb.org/documents/procurement-regulations-adb-borrowers>

³⁹ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/default.asp>

⁴⁰ Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: <http://www.adb.org/documents/handbooks/project-implementation/>

C. Procurement Plan

54. The procurement plan shall be updated as needed throughout the duration of the project.

Basic Data

Project Name: Henan Dengzhou Integrated River Restoration and Ecological Protection Project		
Project Number: 52023	Approval Number:	
Country: People's Republic of China	Executing Agency: Dengzhou City Government	
Project Procurement Classification: B	Implementing Agencies: <ul style="list-style-type: none"> Water Resources Bureau Integrated Urban and Rural Development Pilot Area Administration Bureau Environmental Protection Bureau 	
Procurement Risk: Moderate		
Project Financing Amount: €383.49 million ADB Financing: €181.27 million Non-ADB Financing: €202.22 million	Project Closing Date: 30 June 2026	
Date of First Procurement Plan {loan/grant approval date}:	Date of this Procurement Plan: 18 October 2019	
Procurement Plan Duration: 18 months	Advance Contracting: Yes	eGP: No

1. Methods, Review and Procurement Plan

55. Except as Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods, works, non-consulting services, and consulting services:

Procurement of Goods, Works and Non-Consulting Services

Method	Comments
OCB	The potential for attracting enough qualified bidders to ensure contracts are delivered on time was examined in the procurement assessment. It was concluded that the majority of civil works and goods contracts can be advertised nationally following the open competitive bidding procedures. ADB's prior review applies to (i) the first OCB AN for works; (ii) the first OCB AN for goods; and (iii) packages estimated at \$10 million or above. All other packages will be for post-review (sampling) by ADB.
RFQ	As per the PPRA, RFQ will be applied for small/simple contracts in the procurement of goods, works, and non-consulting services

ADB = Asian Development Bank, AN = advertised nationally, OCB = open competitive bidding, PPRA = project procurement risk assessment, RFQ = request for quotations.

Note: Post review (sampling) will be conducted at annual project review missions by ADB or its consultants, or on an ad hoc basis when necessary. Each sample size should cover at least 20% of the total number of the post review (sampling) contracts awarded before the initial post review (sampling), or between two consecutive post reviews (sampling). Total sample size aggregated should capture contracts representing (i) about 30%–50% of total project value and (ii) about 20% of the total number of contracts identified for post review (sampling). It should ensure that, to the extent possible, all types of contracts are included in the sample.

Consulting Services

Method	Comments
Quality and Cost Based Selection (QCBS)	Quality–cost ratio 90:10; full technical proposal and simplified technical proposals; prior review
Consultants Qualification Selection (CQS)	Biodata technical proposal or simplified technical proposal; prior review
Individual Consultants Selection (ICS)	Prior review

CQS = consultants' qualification selection, ICS = individual consultant selection, QCBS = quality and cost-based selection.

2. List of Active Procurement Packages (Contracts)

56. The following table lists goods, works, non-consulting services, and consulting services contracts for which the procurement activity is either ongoing or expected to commence within the procurement plan's duration.

Goods and Works							
Package No.	General Description	Estimated Value (€ millions)	Procurement Method	Review	Bidding Procedure	Advertisement Date (Quarter/Year)	Comments (\$ million equivalent)
Subcomponent of Water supply for Dengzhou Water Resources Bureau							
WR-CW11	Sangzhuang Water Treatment Plant – construction and installation of equipment	9.37	OCB AN	Prior	1S1E	Q4/2020	Works (10.87)
WR-CW12	Liuji Pumping Station – construction and installation of equipment	0.59	OCB AN	Post	1S1E	Q3/2021	Works (0.68)
WR-CW13	Jitan Township Water Distribution Network – treatment plant outlet pipe, ductile iron pipe for water mains, 40 km of polyethylene pipe	5.93	OCB AN	Post	1S1E	Q1/2021	Works (6.89)
WR-CW14	Railway New District Water Distribution Network – treatment plant outlet pipe, ductile iron pipe for water mains, 40 km of polyethylene pipe	19.79	OCB AN	Prior	1S1E	Q2/2021	Works (22.97)
Subcomponent of Integrated Water Environment Rehabilitation in the Tuanbei New Town District							
DP-CW02	Water Diversion Canal – civil works, landscaping and greening	9.88	OCB AN	Prior	1S1E	Q3/2020	Works; first OCB (11.46)
DP-CW03	Open Channel – construction of an open channel, river bank restoration, landscaping and greening projects, establishing water supply and drainage systems	5.35	OCB AN	Post	1S1E	Q1/2021	Works (6.21)
Subcomponent of Lower Tuan River Rehabilitation for Environment Protection Bureau							
EP-CW06	Rangdong Wastewater Treatment Station – civil works and equipment for wastewater treatment station	0.88	OCB AN	Post	1S1E	Q4/2020	Works (1.02)

Goods and Works							
Package No.	General Description	Estimated Value (€ millions)	Procurement Method	Review	Bidding Procedure	Advertisement Date (Quarter/Year)	Comments (\$ million equivalent)
	with the capacity of 2,000 m ³ /d						
EP-CW01	Trial Experiment on 500 m Reach of Tuan River – constructing trial experiment on a 500 m reach of Tuan River for river restoration	0.38	RFQ	Post	1S1E	Q4/2019	AC/RF; Various small contracts to be decided by the research institute (0.45)
EP-CW07	Affiliated Pipe Network for Rangdong Wastewater Treatment Station – DN 1000/800 concrete pipe and DN 400 polyethylene pipe	1.18	OCB AN	Post	1S1E	Q1/2021	Works (1.37)
EP-CW08	Solid Waste Treatment in Jidong Town - Trial Organic waste treatment	0.60	OCB AN	Post	1S1E	Q1/2021	Works (0.70)
EP-CW10	Xingshan plantation for soil and water conservation.	1.50	OCB AN	Prior	1S1E	Q4/2019	Works; AC/RF (1.74)

1S1E = one stage–one envelope, AC= advance contracting, km = kilometer, m = meter, m³/d = cubic meter per day, OCB (AN) = open competitive bidding (advertised nationally), Q = quarter, RF = retroactive financing.

Consulting Services							
Package No.	General Description	Estimated Value (€ million)	Selection Method	Review	Type of Proposal	Advertisement Date (Quarter/Year)	Comment (\$ million equivalent)
CS-01	Project implementation startup support (project management and procurement)	0.04	ICS	Prior	NA	Q3/2019	Individual; AC/RF; National (0.04)
CS-02	Project implementation startup support (land acquisition and resettlement)	0.02	ICS	Prior	NA	Q3/2019	Individual; AC/RF; National (0.02)
CS-03	Project implementation startup support (environment)	0.02	ICS	Prior	NA	Q3/2019	Individual; AC/RF; National (0.02)
CS-04	Project implementation startup support (financial)	0.02	ICS	Prior	NA	Q3/2019	Individual; AC/RF; National (0.02)
CS-05	Project management and capacity development	0.91	QCBS	Prior	STP	Q1/2020	Firm quality-cost ratio 90:10 International (1.00)

Consulting Services							
Package No.	General Description	Estimated Value (€ million)	Selection Method	Review	Type of Proposal	Advertisement Date (Quarter/Year)	Comment (\$ million equivalent)
CS-06	External resettlement and social M&E	0.18	CQS	Prior	BTP	Q2/2020	Firm; AC/RF; National (0.20)
CS-07	External environmental M&E	0.18	CQS	Prior	BTP	Q2/2020	Firm; AC/RF; National (0.20)
CS-08	Asset management for water supply and wastewater treatment systems	0.45	QCBS	Prior	STP	Q2/2021	Firm; International (0.50)

AC/RF = advance contracting/retroactive financing, BTP = bi-data technical proposal, CQS = consultants' qualifications selection, FTP = full technical proposal, ICS = individual consultant selection, M&E = monitoring and evaluation, Q = quarter, QCBS = quality- and cost-based selection, STP = simplified technical proposal.

3. List of Indicative Packages (Contracts) Required under the Project

57. The following table lists goods, works, non-consulting services, and consulting services contracts for which the procurement activity is expected to commence beyond the procurement plan duration and over the life of the project (i.e. those expected beyond the current procurement plan's duration).

Goods and Works						
Package Number	General Description	Estimated Value (€ million)	Procurement Method	Review	Bidding Procedure	Comments (\$ million equivalent)
Subcomponents on Water supply for Dengzhou Water Resources Bureau						
WR-CW01	Jiulong Water Treatment Plant – construction and installation of equipment	9.93	OCB AN	Prior	1S1E	Works (11.52)
WR-CW02	Three Pump Stations in the Jiulong Waterworks at Pengqiao – construction and installation of equipment	1.94	OCB AN	Post	1S1E	Works (2.25)
WR-CW03	Level-two Water Pipes	23.75	OCB AN	Prior	1S1E	Works (27.56)
	Lot 1 Pengqiao township water distribution main pipe: 65,258 m	3.40				
	Lot 2 Gaoji water main pipe of 86,498 m for town's water supply	5.67				
	Lot 3 Jiulong water main pipe of 62,623 m for town's water supply	9.80				
	Lot 4 Zhangcun water main pipe of 66,852 m for town's water supply	4.87				
WR-CW15	Liuji Water Distribution Network in Sangzhuang Town – treatment plant outlet pipe, ductile iron pipe for water mains, approximately 40 km of polyethylene pipe	5.56	OCB AN	Post	1S1E	Work (6.45)
WR-ES01	Automatic Control Equipment	0.47	OCB AN	Post	1S1E	Goods (0.55)
	Lot 1 Jiu Long Water Supply Plant	0.23				
	Lot 2 Sang Zhuang Water Plant	0.24				
WR-ES02	Operation Management Equipment, Office Furniture for Jiu Long and Sang Zhuang	0.06	RFQ	Post	1S1E	Goods (0.07)

Goods and Works						
Package Number	General Description	Estimated Value (€ million)	Procurement Method	Review	Bidding Procedure	Comments (\$ million equivalent)
Subcomponents on Integrated Water Environment Rehabilitation in the Tuanbei New Town District						
DP-CW01	Tuanbei New Town District Wastewater Treatment Plant – construction and installation of equipment	20.43	OCB AN	Prior	1S1E	Works (23.71)
DP-CW04	Tuanbei New Town Green Corridor Park – landscaping and greening projects, water systems restoration, construction of roads and integrated service facilities	47.66	OCB AI	Prior	1S1E	Works (55.30)
DP-CW05	Dongfang Connecting Bridge – civil works associated with the bridge and construction of facilities for bridge management	24.27	OCB AN	Prior	1S1E	Works (28.16)
DP-CW06	Civil works for Sewer pipes for pipe network and road management facilities	19.22	OCB AN	Prior	1S1E	Works (22.31)
	Lot 1 Fusheng Road (Ping An Avenue to 207 National Road) – 108,256.2 m²	13.17				
	Lot 2 Tuanbin North Road (Beijing Avenue to Ping An Avenue) 44,519.16 m²	6.05				
Subcomponents on Rehabilitation of lower Tuan River for Environment Protection Bureau (EPB)						
EP-CW02	Ecological Restoration of Lower Tuan River – Dredging of the 13.8 km reach of Tuan River and embankment works	12.70	OCB AN	Prior	1S1E	Works (14.74)
EP-CW03	Green buffer belt along the Lower Tuan River	19.35	OCB AN	Prior	1S1E	Works (22.46)
EP-CW04	Jitan Wastewater Treatment Station – civil works and equipment for the Jitan Wastewater Treatment Station with the capacity of 1,500 m³/day	0.57	OCB AN	Post	1S1E	Works (0.66)
EP-CW05	Affiliated Pipe Network for Jitan Wastewater Treatment Station – DN 800 concrete pipe and DN 600/400 polyethylene pipe	3.66	OCB AN	Post	1S1E	Works (4.24)
EP-CW09	Construction of Environmental Research and Education – civil works, exhibition hall, equipment installation, planting.	9.31	OCB AN	Prior	1S1E	Works (10.85)
EP-ES01	Installation of River Health Monitoring Stations	4.10	OCB AI	Prior	1S1E	Goods (4.75)
	Lot 1 Smart monitoring system	2.69				
	Lot 2 Water monitoring equipment for Tuan River health monitoring	1.41				
EP-ES02	Equipment for Solid Waste Treatment in Rangdong Town– equipment supply and installation:	0.77	OCB AN	Prior	1S1E	Goods; first OCB (0.90)

1S1E = one stage–one envelope, km = kilometer, m = meter, m² = square meter, m³/d = cubic meter per day, OCB (AN) = open competitive bidding (advertised nationally), OCB (AI) = open competitive bidding (advertised internationally), Q = quarter.

4. List of Awarded and Completed Contracts

58. The following table list the awarded and completed contracts for goods, works, and consulting service.

Goods, Works and Non-Consulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments
None					

5. Non-ADB Financing

59. The following table lists the works, goods, non-consulting, and consulting services contracts over the life of the project, financed by non-ADB sources.

Consulting Services				
General Description	Estimated Value € million (cumulative)	Estimated Number of Contracts	Procurement Method	Comments
Tuan River ecological restoration research	0.24	1	Domestic Procedure	

D. Consultant's Terms of Reference

60. In addition to the consulting services financed by the ADB loan, domestically funded consulting services will also be recruited by the PMO and implementing agencies. The PMO in coordination with the implementing agencies will recruit a national tendering agency to provide tendering support, including preparation of bidding documents, invitation for bids and bid evaluation reports, and engage domestic design institutes to carry out preliminary and detailed designs. Construction supervision engineers will also be recruited for overseeing and inspecting the construction sites to ensure compliance with national regulations, safety standards, and the ADB requirements.

61. The PMO will be responsible for engaging the consulting services in accordance with ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). Indicative terms of reference for all the consulting services packages are shown in Appendix 4 and will be detailed by the project implementation support consultants during the project implementation.

VII. SAFEGUARDS

A. Environment

62. **Environmental due diligence.** The project was classified by ADB as Category B for environment. A project initial environmental examination (IEE) including an environmental management plan (EMP) was prepared in compliance with ADB's policies and requirements included in ADB's Safeguard Policy Statement (2009). The project IEE and EMP form a basis of the official loan agreement between ADB and the executing agency. The IEE concluded that full and effective implementation of the project EMP, together with the training and project assurances, will minimize the environmental risks of the project and achieve compliance with the policy and regulatory standards applied in this project IEE.

63. **Environmental management plan.** The project EMP (Appendix 1 of the IEE) is to be implemented in all phases of the project – design, pre-construction, construction, and operation. The EMP is to ensure project compliance with PRC environmental laws and ADB's Safeguard Policy Statement (2009). The EMP contains: (i) objectives; (ii) roles and responsibilities; (iii) mitigation measures; (iv) inspection, monitoring, and reporting arrangements; (v) training and institutional strengthening; (vi) GRM; (vii) future public consultation; and (viii) a feedback and adjustment mechanism.

64. **EMP implementation.** The DCG will be responsible for ensuring that the project will be designed, constructed, decommissioned, and operated in accordance with (i) the national and local government environmental, health, and safety laws, regulations, procedures, and guidelines; (ii) the ADB's SPS, and (iii) the IEE including the EMP. The executing agency, through the PMO, holds final responsibility for implementation of and compliance with the EMP. The EMP will be implemented in all phases of the project (design, pre-construction, construction, and operation).

65. For preliminary and detailed designs, the PMO will forward the EMP to the design institutes for incorporating mitigation measures into the detailed designs. The EMP will be updated at the end of the detailed design, as needed. To ensure that bidders will respond to the EMPs provisions, the PMO and implementing agencies will prepare and provide the following specification clauses for incorporation into the bidding documents: (i) a list of environmental management requirements to be budgeted by the bidders in their proposals; (ii) environmental clauses for contractual terms and conditions; and (iii) domestic EIAs, and the project IEE including updated EMP for compliance.

66. **Capacity building.** The PMO and implementing agencies have no previous experience with ADB-funded projects or safeguard requirements. To ensure effective implementation of the EMP, a capacity building program will be implemented on EMP implementation, supervision, reporting, and the grievance redress mechanism (GRM). Training will be provided by the individual consultant for environment for project implementation startup support, the environment specialist in the project management support consultant team, and other consultants in the team. Trainees will include the staff of the PMO, implementing agencies, contractors, and construction supervision consultants. Training programs will cover adjustment and implementation of the EMP, GRM, environmental risks of the project, mitigation measures, monitoring, and reporting.

67. **Grievance redress mechanism.** A project specific GRM has been developed in compliance with ADB's SPS (2009) requirement to address environmental, health, safety, and social concerns associated with project. This complements the PRC's national environmental complaint hotline (12369). The GRM is designed to achieve the following objectives: (i) provide channels of communication for local villages and communities to raise concerns about environmental and social-related grievances which might result from the project; (ii) prevent

and mitigate adverse environmental and social impacts to villages and communities caused by project construction and operation, including those associated with resettlement; (iii) improve mutual trust and respect and promote productive relationships between the project agencies and local villages and communities; and (iv) build village and community acceptance of the project. The GRM is accessible to all members of the villages and communities, including women, youth, minorities and poverty-stricken villagers and residents. Multiple points of entry are available, including face-to-face meetings, written complaints, telephone conversations, e-mail, and social media. The details of the GRM, including a time-bound flow chart of procedures, are included in the project EMP.

68. Procedures for feedback and adjustment of the EMP, including in the event of non-compliance. Based on environmental inspection and monitoring reports, the PMO shall decide, in consultation with the LIEC, whether (i) further mitigation measures are required as corrective actions, or (ii) some improvements are required for environmental management practices. The effectiveness of mitigation measures and monitoring plans will be evaluated by a feedback reporting system. Adjustment to the EMP will be made, if necessary. The PMO Environmental Officer and the LIEC will play critical roles in the feedback and adjustment mechanism. If during inspection and monitoring, substantial deviation from the EMP is observed or any changes are made to the project that may cause substantial adverse environmental impacts or increase the number of affected people, then the PMO will immediately consult with ADB and form an environmental assessment team to conduct additional environmental assessment. If necessary, further public consultation will be undertaken. The revised domestic EIAs and IEE, including the EMP, will be submitted to ADB for review, appraisal, and public disclosure. The revised EMP will be passed to the contractors, CSCs and operators of the project facilities, for implementation.

B. Land Acquisition and Resettlement

69. Category and Impacts. The project is classified as Category A for involuntary resettlement due to significant land acquisition and resettlement impacts. The project will permanently occupy 479.43 ha of land area. Of this, 346.03 ha is existing state-owned land; and 133.4 ha collective land will be obtained through land acquisition. A total of 793 households with 3,023 persons will be affected by the project's land acquisition and resettlement impacts. A total of 525 households with 1,841 persons will be physically relocated due to residential house demolition. Two agencies with 9 persons will be affected by demolition of non-residential structures. In addition, 196.87 ha land will be used temporarily during construction.

70. Resettlement Plan. A resettlement plan (RP) has been prepared in accordance with ADB's Safeguard Policy Statement and relevant laws and regulations of the PRC. The RP includes adequate measures of compensation, resettlement, and rehabilitation for affected people. Surveys and consultations were undertaken with affected people in preparation of the RP during the project preparation. Affected people will be further consulted for updating and implementation of the RP during the project implementation. A grievance redress mechanism has been established and incorporated into the RP. The RP also includes measures of (i) the capacity building of the EA and IAs to implement the RP in compliance with ADB requirements; and (ii) internal and external monitoring and reporting on the RP implementation.

71. Updating Resettlement Plan. The RP will be (i) updated based on the final design, detailed measurement survey and census of affected persons, (ii) disclosed to affected persons, and (iii) submitted to ADB for review and approval prior to the award of civil works contract and commencement of land acquisition or house demolition.

72. Implementation Arrangements. The DCG is the executing agency of the project and has established the PMO to be wholly responsible for comprehensive planning and decision-making for the project. The PMO will be responsible for coordination and management of

resettlement activities of the project. The Land and Resources Bureau, the House Acquisition Office of Dengzhou City, relevant town governments and village committees in the project area will assist in implementation of the RP.

73. **Capacity Building.** The executing and implementing agencies have the capacity to implement domestically funded projects. Their capacity will be strengthened to implement the RP in compliance with ADB requirements. To ensure smooth implementation, the staff in charge of land acquisition and resettlement will participate in training on resettlement implementation organized by the PMO. A resettlement start-up consultant will provide training in ADB's policy requirements and will assist the implementing agencies to update and finalize the resettlement plan.

74. **Implementation Schedule.** The resettlement implementation schedule has been prepared and included in the RP. A summary table below.

Table 13: Resettlement Implementation Schedule

No.	Task	Target	Agencies in charge	Time	Remarks
1	Information disclosure				
1.1	RIB	11 villages in 5 towns	PMO	May 2019	
1.2	Disclosure of the RP on ADB's website		PMO, ADB	May 2019	
2	RP update and resettlement budget approval				
2.1	DMS	11 villages in 5 towns	PMO, IAs	Nov 2019	
2.2	Updating the RP based on the DMS	11 villages in 5 towns	PMO, IAs	Nov 2019	
2.3	RP and budget endorsed by EA (including compensation rates)	CNY 50.621 million	DCG, PMO	Dec 2019	
2.4	Submission of updated RP to ADB for approval	Updated RP	PMO	Dec 2019	
2.5	Disclosure of updated RP on ADB website	Updated RP	ADB	Dec 2019	
3	LA announcement				
3.1	Disclosing the updated RP	11 villages in 5 towns	DCG, PMO	Dec 2019	
3.2	Releasing the LA announcement	11 villages in 5 towns	DCG, PMO	Dec 2019	
4	Compensation agreement				
4.1	Entering into LA agreements and paying compensation	11 villages in 5 towns	DCG, PMO, IAs	Jan 2020 – Dec 2020	
5	Livelihood restoration measures				
5.1	Payment of compensation for young crops and attachments	AHs	DCG, PMO	May 2020	
5.2	Implementation of restoration programs	11 villages in 5 towns	Town governments	Jan 2020 – Dec 2024	
5.3	Implementation of training program	11 villages in 5 towns	Dengzhou labor and social security bureaus	Jan 2020 – Dec 2024	
5.4	Implementing supporting measures for vulnerable groups	7 HH with 19 persons	Civil affairs bureau, PMO	Jan 2020 – Dec 2024	

No.	Task	Target	Agencies in charge	Time	Remarks
5.5	Hiring APs under the Project	11 villages in 5 towns	PMO, labor and social security bureau, contractors	Jan 2020 – Dec 2024	
6	House demolition and resettlement				
6.1	Sign house demolition agreement and pay compensations	525 HHs+4 Enterprises	PMO, IA, Zhanglou Town Government	Jan 2020 – Dec 2020	
6.2	Houses demolition	525 HHs+4 Enterprises	PMO, IA, Zhanglou Town Government	Jun 2020-Jan 2021	
6.3	Move to resettlement houses	525 HHs	PMO, IA, Zhanglou Town Government	Jun 2021	
7	Capacity building of resettlement agencies				
7.1	Training of PMO and IA staff	15 men-times	PMO, IAs	Nov 2019	
7.2	Training of officials of sub-district offices	60 men-times	PMO	Dec 2019	
8	M&E				
8.1	Establishing an internal monitoring mechanism	As per the RP	PMO, IAs	Nov 2019	
8.2	Internal monitoring reporting	Semiannual	PMO	From Jan 2020	
8.3	Appointing an external M&E agency	One	PMO	Dec 2019	
8.4	Conducting baseline survey	Affected area	External M&E agency	Jan 2020	
8.5	External monitoring reporting	Semiannual	External M&E agency	Feb 2020	1 st report (including baseline survey results)
				Jul 2020	2 nd report
				Jan 2021	3 rd report
				Jul 2021	4 th report
8.6	External evaluation reporting	Semiannual	External M&E agency	Jan 2022	5 th report
				Jul 2022	6 th report
				Jan 2023	7 th report
				Jul 2023	8 th report (completion report)
9	Public consultation		PMO, IAs	Ongoing	
10	Grievance redress		PMO, IAs	Ongoing	
11	Disbursement of compensation fees				
11.1	- Disbursement to county water resources bureaus	Initial funds	DCG	Jan 2020	
11.2	- Disbursement to town governments	Initial funds	PMO, IAs	Mar 2020	
11.3	- Disbursement to AHs	Initial funds	Town governments	End of May 2020	
12	Commencement of civil construction				
12.1	Henan Dengzhou Integrated River Restoration and Ecological Protection Project		PMO, IAs	Jun 2020	

ADB = Asian Development Bank, AH = affected household, AP = affected person, DCG = Dengzhou City Government, DMS = disclosure management system, EA = executing agency, HH = household, IA = implementing agency, LA = land acquisition, M&E = monitoring and evaluation, PMO = project management office, RIB = resettlement information booklet, RP = resettlement plan.

Source: Draft resettlement plan.

75. **Monitoring and Evaluation.** Provisions of both internal and external monitoring is included in the RP. With assistance of project management support consultants, the PMO will prepare and submit semiannually the internal monitoring reports to ADB. Furthermore, PMO will employ an external resettlement monitoring institute or firm to (i) monitor and evaluate resettlement progress and results; and (ii) submit semiannual monitoring reports to ADB during resettlement implementation.

C. Indigenous Peoples/Ethnic Minorities

76. The project is categorized as B for the Indigenous Peoples Safeguard. There are 8 villages involving *Hui* ethnic minorities in the project area. The ethnic minorities are integrated with the mainstream society in terms of socioeconomic and livelihood systems, while they have different religious and cultural beliefs and practices. To ensure that ethnic minorities benefit equitably from the project activities, an ethnic minority development plan (EMDP) has been prepared based on social analysis and consultations during the project preparation. The project will strengthen the capacity of the executing and implementing agencies to implement and monitor the EMDP during the project implementation.

77. The executing and implementing agencies will implement the EMDP with help of consultants. ADB loan will finance the costs for the consultants. The project will further strengthen the capacity of the DCG and implementing agencies through training and consultancy supports to implement the EMDP in line with ADB's social safeguard requirements. With assistance project consultants and monitoring experts, the PMO will ensure (i) monitoring of the EMDP implementation and (ii) submit semi-annual monitoring reports to ADB on EMDP implementation (together with the resettlement monitoring report).

78. **Capacity for social and safeguard measures.** The executing and implementing agencies have experience in implementing domestic projects, but they do not have experience with ADB-financed projects. To implement social and safeguard measures properly and in compliance with ADB requirements, (i) executing and implementing agencies will each appoint focal social and safeguard staff, (ii) project implementation support consultants will include social and safeguard specialists, (iii) staff of executing and implementing agencies will be trained on social and safeguard measures, and (iv) an external monitoring agency will be recruited for external monitoring of social safeguard plans.

79. **Grievance Redress Mechanism.** A GRM has been developed in compliance with the SPS's requirements to address environmental, health, safety, and social concerns associated with construction, operation, and land acquisition arrangements under the project. The details of the GRM, including a time-bound flow chart of procedures, are included in the EMP, EMDP, and RP. The complaint channels are slightly different for environmental and resettlement issues, but the PMO will maintain an integrated system to document, follow-up, and report on all cases.

80. **Prohibited investment activities.** Pursuant to the SPS, ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS.

VIII. GENDER AND SOCIAL DIMENSIONS

81. **Poverty and Social.** The project is classified general intervention for poverty reduction. The poverty and social analysis was undertaken based on intensive stakeholder consultations and socioeconomic surveys. It indicated that a total of 746,000 residents in 11 project towns, including 13,137 poor people, will directly benefit from the project through reduced water pollution, improved drinking water supply system, and better environment and ecological protection in the Tuan River watershed. Other residents in Dengzhou City will also benefit indirectly from improved environment and ecology. The project will create 3,000 jobs during project implementation and 150 jobs during operation. A social development action plan has been prepared based on the poverty and social analysis, with specific targets for the poor and low-income people. Consultations were undertaken with local residents and other stakeholders during the project preparation. A consultation and participation plan for the project implementation stage has been included in relevant social and safeguard plans.

82. **Gender.** The project is classified as effective gender mainstreaming, following ADB's Guidelines for Gender Mainstreaming Categories of ADB Projects (2012). The project will ensure women will participate and benefit equitably under each output. Women are expected to benefit from increased employment, piped water supply in rural areas, improved living environment, and better quality of life. A gender action plan (GAP) has been prepared based on gender analyses to ensure that the project contributes to improved gender equality. The GAP includes the following key measures and targets for women: (i) equitable participation of women in decision-making during project design and implementation, with at least 40% women participants; (ii) training and capacity building of staff of the executing and implementing agencies to implement the GAP and related measures; (iii) priority employment opportunities for women, with at least 30% women employees during construction and 40% women employee during operation; (iv) participation of women in awareness raising activities as well as public hearings, with 40% women participants; (v) participation of women in decision making for the pilot community-based environment and ecology supervision program, with at least 40% women members in community groups; and (vi) ensuring women employees equitable access to sanitation facilities and health education (e.g., HIV/AIDS awareness) during construction. Key gender targets have also been included in the design and monitoring framework.

Table 14: Gender Action Plan

Actions	Targets and Indicators	Time	Responsible Agencies	Budget Source
A. Output 1: Urban and rural water infrastructure in Dengzhou City improved				
<p>A.1 Measure time spent by women for water collection and storage in the beginning and end of the project.</p> <p>A.2 Construct 24-hour-piped-water-supply systems in rural areas, with better quality and reliable supply of drinking water (instead of current polluted groundwater or wells).</p> <p>A.3 Construct wastewater treatment plants in rural areas</p> <p>A.4 Support community-based solid waste management, including separation of dry and solid waste in vegetable markets mostly run by women.</p> <p>A.5 Protect lives and properties of women from floods through riverbank protection and flood control measures.</p> <p>A.6 Involve women representatives in consultations on designs of relevant project components and tariff proposals.</p> <p>A.7 Provide jobs during construction and operation stages.</p>	<p>Targets:</p> <ul style="list-style-type: none"> Women's time spent in water collection and storage reduced and tracked 24-hour-piped-water-supply for 607,070 people, with 48% women Wastewater treatment plants for 206,015 people, with 48% women Solid waste management for 89,807 people, with 48% women Riverbank protection and flood control measures for 48,874 people, of whom 48% are women 600 representatives, of whom 40% are women, attended consultations on designs and tariff proposals 1,420 jobs (426 skilled and 994 unskilled) during construction and 108 jobs (80 skilled and 28 unskilled) during operation, including 30% and 40% provided to women, respectively <p>Baseline: 0</p>	2020–2025	PMO, IAs, and contractors (with township/villages, ACWF, design institute, and consultants)	Project budget
B. Output 2: Ecosystem services in Dengzhou City improved				
<p>B.1 Construct river corridors and green parks with proper lighting to ensure safety of women.</p> <p>B.2 Implement programs of nonpoint pollution control, wetland development, agriculture production improvement, etc.</p> <p>B.3 Involve women representatives on detailed design of relevant project components.</p> <p>B.4 Provide job opportunities during construction and operation stages.</p>	<p>Targets: Corridors/parks with proper lighting for 278,383 people, of whom 48% are women</p> <ul style="list-style-type: none"> Water/ soil conservation for 229,509 beneficiaries, with 48% women 300 representatives, with 40% women, attended consultations 1,370 jobs (411 skilled and 959 unskilled) during construction and 28 jobs (10 skilled and 18 unskilled) during operation, including 30% and 40% provided to women, respectively <p>Baseline: 0</p>	2020–2025	PMO, IAs, and contractors (with township/villages, ACWF, and consultants)	Project budget
C. Output 3: Water resources management capacity enhanced				
<p>C.1 Involve women in environmental research and education activities:</p> <p>C.1.1 Involve women in environmental technical training.</p> <p>C.1.2 Involve women in dissemination of environmental knowledge in forms such as poster, calendar, and brochure.</p> <p>C.1.3 Open a public account on Wechat; and disseminate environmental knowledge to women.</p> <p>C.1.4 Provide training on rural environment management and protection to women.</p> <p>C.1.5 Provide training allowances to women.</p> <p>C.1.6 Monitor women's participation and satisfaction</p> <p>C.1.7 Construct separate sanitation and other facilities that are women friendly at research & training center.</p>	<p>Targets:</p> <ul style="list-style-type: none"> 1,100 representatives from 22 pilot villages along Tuan River, of whom 40% are women, participated in technical training 1,100 representatives from the 22 pilot villages, of whom 40% are women, participated in dissemination of environmental knowledge Involved stakeholders, of whom 40% are women, have access to the Wechat account Training developed in consultation with women regarding appropriate training time, theme, and location 100% women trainees receive allowance for the training period 100% women trainees report increased knowledge on training topics. Research and training center provided separate sanitation and 	2020–2025	PMO, IAs, and contractors (with township/villages, ACWF, EPB, LSSB, WRB, and consultants)	Project budget, and relevant local department budget

Actions	Targets and Indicators	Time	Responsible Agencies	Budget Source
	other facilities that are women friendly Baseline: 0%			
C.2 Involve women in river health monitoring of Tuan River. C.2.1 Develop methods for publicizing real-time information water and environment quality to women. C.2.2 Use language and contents understood by women. C.3 Involve women in ecology improvement of Tuan River. C.3.1 Establish six CEEST along Tuan River, including at least two women among the six members of each team. C.3.2 Involve women in CEEST's activities.	Targets: <ul style="list-style-type: none"> 229,509 beneficiaries along lower Tuan River, of whom 48% are women, are aware of and benefit from the information regarding real-time water and environment quality 36 members, including at least 12 women members, participate in 6 CEEST At least 40% of participants in the environmental and ecological protection activities carried out by CEEST are women Baseline: 0%	2020–2025	PMO, IAs, and contractors (with township/villages, ACWF, EPB, WRB, & consultants)	Project budget, and relevant local department budget
C.4 Involve women in institutional strengthening and capacity building. C.4.1 Involve women in Tuan River management. C.4.2 Involve women in institutional capacity building activities and skills training. C.5 Provide jobs during construction and operation stages.	Targets: <ul style="list-style-type: none"> At least 40% female staff in Tuan River management agency At least 40% women participants in training and capacity building 210 jobs (63 skilled and 147 unskilled) during construction and 14 jobs (7 skilled and 7 unskilled) during operation, including 30% and 40% provided to women, respectively Baseline: 0%	2020–2025	PMO, IAs, and contractors (with township/villages, ACWF, etc.)	Project and relevant local department budget
D. Compliance with labor laws and core labor standards				
D.1 Train contractors to comply with labor laws and core labor standards. D.2 Involve residents and workers in public health knowledge promotion. D.3. Provide separate toilets and sanitation facilities to women workers.	Targets: <ul style="list-style-type: none"> 3,150 workers receive training on labor rights, of whom 40% are women 3,150 workers receive training on public health knowledge, of whom 40% are women Baseline: 0	2020–2025	PMO, IAs, and contractors, (with ACWF, LSSB, and consultants)	Project budget
E. Project implementation management support				
E.1 Include social and gender specialists in project implementation support team to guide the implementation of the GAP and provide training to the PMO, IAs, and town governments. E.2. Assign social and gender focal staff in PMO, IAs, and project towns for effective implementation of the GAP E.3 Provide training for PMO and IAs on: (i) ADB gender policy; (ii) how to implement and monitor the GAP; and (iii) the importance of gender mainstreaming in the project. E.4 Collect data disaggregated by sex. E.5 Establish effective grievance redress mechanisms and inform stakeholders.	Targets: <ul style="list-style-type: none"> Social and gender specialists are recruited to guide and assist in implementing GAP activities At least one social and gender focal staff in PMO, IAs, and project town governments is appointed to implement the GAP All staff in the PMO and IAs receive training on the GAP, relevant gender issues, and how to implement and monitor the GAP Women staff in all training account for at least 30% Sex-disaggregated data collected during project implementation All local villages, including women, know about the grievance redress mechanism. Baseline: 0	2020–2025	PMO, IAs, and project town governments (supported by ACWF and consultants)	Project capacity building and/or training budget

ACWF = All China Women's Federation, ADB = Asian Development Bank, CEEST = community environment and ecology supervision teams, EPB = environment protection bureau, GAP = gender action plan, IA = implementing agency, LSSB = labor and social security bureau, PMO = project management office, WRB = water resources bureau.
Source: Asian Development Bank.

Table 15: Social Development Action Plan

Actions	Targets and Indicators	Time frame	Responsible Agencies	Budget Sources
A. Output 1: Urban and rural water infrastructure in Dengzhou City improved				
<p>A.1 Ensure the public participate in rural water supply management and benefit from better water security and water quality in rural areas</p> <p>A.2 Ensure the public participate in rural waste water management and benefit from improved sanitary conditions</p> <p>A.3 Ensure the public participate in solid waste management, including separation of dry and solid waste, and benefit from better living environment</p> <p>A.4 Ensure the public participate in riverbank protection and flood control and benefit from reducing the loss in lives and property</p> <p>A.5 Ensure public representatives attend consultations during the detailed design of relevant project components and public hearings for water tariff</p> <p>A.6 Ensure the poor are entitled to the public assistance program, namely given exemption partly from water tariff increase, and public assistance program is expanded to near-poor households</p> <p>A.7 Engage local labor during construction and operation stages, with priority provided to the poor and low-income people</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ 607,070 beneficiaries, including 20% poor and/or low-income people, participate in and benefit from rural water supply ➢ 206,015 beneficiaries, including 20% poor and/or low-income people, participate in and benefit from rural waste water management ➢ 89,807 beneficiaries, including 20% poor and/or low-income people, participate in and benefit from solid waste management ➢ 48,874 beneficiaries, including 20% poor and/or low-income people, participate in and benefit riverbank protection and flood control ➢ 600 representatives of beneficiaries, including 20% poor and/or low-income people, attend consultations during the detailed design of relevant project components and public hearings for water tariff ➢ 100% of poor and near-poor families covered by public assistance programs. ➢ 20% of 1,420 job opportunities (426 skilled and 994 unskilled) during construction and 20% of 108 job opportunities (80 skilled and 28 unskilled) during operation are provided to poor and/or low-income people with priority <p>Baseline: 0</p>	2020–2025	PMO, IAs, contractors (supported by TGs and VCs, PAO, Design institute, social consultants)	Government counterpart fund and loan funds
B. Output 2: Ecological Zones in Tuan River restored				
<p>B.1 Ensure the public participate in river corridor improvement and benefit from better ecology and environment</p> <p>B.2 Ensure the public participate in water and soil conservation, including non-point pollution control and wetland development, and benefit from improved agriculture production conditions</p> <p>B.3 Ensure public representatives attend consultations during the detailed design of relevant project components</p> <p>B.4 Engage local labor during construction and operation stages, with priority provided to the poor and low-income people</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ 278,383 beneficiaries, including 20% poor and/or low-income people, participate in and benefit from improved river corridor ➢ 229,509 beneficiaries, including 20% poor and/or low-income people, participate in and benefit from water and soil conservation ➢ 300 representatives of beneficiaries, including 20% poor and/or low-income people, attend consultations during the detailed design of relevant project components ➢ 20% of 1,370 job opportunities (411 skilled and 959 unskilled) during construction and 20% of 28 job opportunities (10 skilled and 18 unskilled) during operation are provided to poor and/or low-income people with priority <p>Baseline: 0</p>	2020–2025	PMO, IAs, contractors (supported by TGs and VCs, A PAO, Design institute, social consultants)	Government counterpart fund and loan funds
C. Output 3: Water Resources Management Capacity Enhanced				

Actions	Targets and Indicators	Time frame	Responsible Agencies	Budget Sources
<p>C.1 Ensure the public participate in environmental research and education activities and benefit from improved environment protection awareness</p> <p>C.1.1 Ensure the public participate in and benefit from environmental technical/knowledge training or awareness education activities on: (i) water resource conservation; (ii) wastewater management; (iii) application of organic fertilizer, balanced chemical fertilizer and green manure; (iv) conservation tillage; (v) marketing and promotion of organic products; (vi) solid waste management; (vii) awareness of environmental protection; and (viii) ecology protection etc.</p> <p>C.1.2 Ensure the public participate in and benefit from dissemination of environmental and ecological knowledge and skills in such forms as poster, calendar and brochure, which may be distributed on local festivals and public events.</p> <p>C.1.3 Open a public account on WeChat APP to disseminate environmental and ecological knowledge and skills as well as public participation activities to local residents</p> <p>C.1.4 Provide training on rural environment management and ecology protection to residents, including the poor and/or low-income people in the field, in appropriate season and in a locally acceptable manner</p> <p>C.1.5 Provide appropriate subsidies to the trainees or participants, including the poor and/or low-income people</p> <p>C.1.6 Conduct timely monitoring and evaluation on participation rates and satisfaction degrees of the poor and/or low-income people</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ 1,100 villager representatives from 22 pilot villages along lower Tuan River, including at least 20% poor and/or low-income people, participate in environmental technical/knowledge training or awareness education activities ➢ 1,100 village representatives from 22 pilot villages along lower Tuan River, including at least 20% poor and/or low-income people, participate in dissemination of environmental and ecological knowledge and skills ➢ Stakeholders involved in project activities, including at least 20% poor and/or low-income people, have access to the public account on Wechat application for dissemination of information on relevant activities ➢ at least 20% of poor and/or low-income people trainees or participants consulted regarding appropriate training time, theme, and location ➢ 100% trainees have the equal rights to receive training subsidies ➢ 100% training courses or awareness education activities monitored, evaluated and reported in regular internal social monitoring reports <p>Baseline: 0</p>	2020–2025	PMO, IAs, contractors (supported by TGs and VCs, PAO, LSSB, WRB, EPB, ACWF, social consultants)	Government counterpart fund and loan funds
<p>C.2 Ensure the public participate in river health monitoring of lower Tuan River and benefit from improved water environment</p> <p>C.2.1 Develop methods for publicizing real-time water and environment quality to the public including the poor and/or low-income people</p> <p>C.2.2 Use language and formats which are loved by the public including poor and/or low-income people</p> <p>C.3 Ensure the public participate in ecology improvement of lower Tuan River and benefit from ecological environment</p> <p>C.3.1 Establish 6 community environment and ecology supervision teams (CEEST) along lower Tuan River, including at least two poor and/or low-income people among the 6 members of each team</p> <p>C.3.2 Ensure the public participate in and benefit from environmental and ecological protection activities that CEEST carries out</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ 229,509 beneficiaries along lower Tuan River, including 20% poor and/or low-income people, are aware of and benefit from the information regarding real-time water and environment quality ➢ 36 members, including at least 20% poor and/or low-income members, participate in 6 community environment and ecology supervision teams ➢ at least 20% poor and/or low-income participants in the environmental and ecological protection activities that CEEST carries out <p>Baseline: 0%</p>	2020–2025	PMO, IAs, contractors (supported by TGs and VCs, PAO, WRB, EPB, social consultants)	Government counterpart fund and loan funds

Actions	Targets and Indicators	Time frame	Responsible Agencies	Budget Sources
<p>C.4 Ensure the public participate in institutional strengthening and capacity building and benefit from enhanced implementation and management capacity</p> <p>C.4.1 Ensure public participation in Tuan River management</p> <p>C.4.2 Ensure the public participate in and benefit from institutional capacity building activities and skills training</p> <p>C.5 Engage local labor during construction and operation stages, with priority provided to the poor and low-income people</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ at least 90% local residents among the staffing in Tuan River management agency at end of the project ➢ at least 90% local residents among the participants in institutional capacity building activities and skills training ➢ 20% of 210 job opportunities (63 skilled and 147 unskilled) during construction and 20% of 14 job opportunities (7 skilled and 7 unskilled) during operation are provided to poor and/or low-income people with priority <p>Baseline: 0%</p>	2020–2025	PMO, IAs, contractors (supported by TGs and VCs, WRB, EPB, ACWF, social consultants)	Government counterpart fund and loan funds
D. Comply with labor laws and core labor standards				
<p>D.1 Ensure contractors comply with labor laws and core labor standards, including no child labor, minimum wages, equal pay to equal work, and occupational health and safety</p> <p>D.2 Ensure participation of residents in public health knowledge promotion and trainings regarding prevention and control of HIV/AIDS, STIs and other infectious diseases, including distribution of local information and publicity materials (e.g. posters and brochures)</p> <p>D.3 Ensure contractor construction personnel are involved in HIV/AIDS and STI publicity activities</p> <p>D.4. Provide separate toilets and sanitation facilities to workers</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ 3,150 workers receive training on their labor rights, with at least 20% filled by the poor and/or low-income people ➢ 3,150 workers receive training on public safety and health knowledge as well as religions and customs of the Hui people, with at least 20% filled by the poor and/or low-income people ➢ 100% of workers have access to separate toilets and sanitation facilities <p>Baseline: 0</p>	2020–2025	PMO, IAs, contractors (supported by ACWF, LSSB, contractors, social consultants)	Government counterpart fund and loan funds
E. Project Management Support				
<p>E.1 Ensure social and gender specialists are included in project implementation support team to guide the implementation of SDAP/CPP and provide training to the PMO, IAs and town governments.</p> <p>E.2. Assign social and gender focal staff in PMO, IAs and project towns to ensure the effective implementation of SDAP and CPP</p> <p>E.3 Provide training for PMO and IAs on: (i) ADB social development policies; (ii) how to implement and monitor SDAP; and (iii) social issues on pollution control, wastewater, and solid waste and the importance of social inclusion in all project components.</p> <p>E.4 Collect data disaggregated by income status</p> <p>E.5 Establish effective grievance redress mechanisms and inform stakeholders</p>	<p>Targets:</p> <ul style="list-style-type: none"> ➢ Social and gender specialists are recruited to guide and assist in implementing SDAP and CPP activities ➢ At least one social and gender focal person in PMO, IAs, and project town governments is appointed to undertake the SDAP and CPP activities ➢ All staff in the PMO and IAs receive training on SDAP, CPP, relevant social issues, and how to implement and monitor SDAP and CPP ➢ Disaggregated data by sex and income status collected during project implementation ➢ All local villages and/or residents know about the grievance redress mechanism. <p>Baseline: 0</p>	2020–2025	PMO, IAs, TGs (supported by PAP, ACWF, Social consultants)	Government counterpart fund and loan funds

ACWF = All China Women's Federation, AIDS = acquired immune deficiency syndrome, AP = affected person, CDC = Center for Disease Control, CEEST= community environment and ecology supervision teams, CPP = consultation and participation plan, EMDP = ethnic minority development plan, EMP = environmental management plan, EMRAO = ethnic minority and religion affairs office, DI = design institute, EPB = environment protection bureau, GAP = gender action plan, HH = household, HIV = human immunodeficiency virus, IA = implementing agency, LSSB = labor and social security bureau, PAO = poverty alleviation office, STIs = sexually-transmitted infections, TG = town government, VC = village committee, WRB = Water Resources Bureau.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

Table 16: Design and Monitoring Framework

Impact the Project is Aligned with Quality of life along Yangtze River Economic Belt improved (National Strategic Plan for Rural Vitalization, 2018–2022; and Yangtze River Economic Belt Development Plan, 2016–2030) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Water security and environmental sustainability in Dengzhou City improved	By the end of 2026, within the project area: a. Increased investments in Dengzhou City benefit 746,000 people (2018 baseline: NA) (RFI A) b. Water quality at the outlet of Dengzhou City's Zhao River in Tuan River Basin meets class III standard ^b (2018 baseline: Class V) c. Land area in the Dengzhou City protected from 20-year flood ^c increased to 100 ha (2018 baseline: 0 ha) d. A functional asset management system in Dengzhou City Government established (2018 baseline: 0)	a–d. DCG report, records, annual statistics, and periodic surveys a–d. DCG statistical yearbooks b. Municipal environmental protection bureau's annual monitoring reports	Population in project area exceeds forecasts and exerts more pressure, such as a heavy pollution load, on the Tuan River.
Outputs 1. Urban and rural water infrastructure in Dengzhou City improved	By the end of 2025, within the project area: 1a. Wastewater treatment plants with 33,500 m ³ /day capacity and 25.82 km of wastewater collection networks constructed (2018 baseline: 0) 1b. Discontinuous ecological dike along 3.7 km reach of Tuan River constructed for flood control (2018 baseline: 0) 1c. Two rural water supply treatment plants with 60,000 m ³ /day capacity and 615 km of water distribution networks constructed (2018 baseline: 0) 1d. Advanced dry and wet solid waste separation unit serving 20 t/day installed in Rangdong Township (2018 baseline: 0) 1e. 1,420 jobs (426 skilled and 994 unskilled) created during construction (including at least 30% for women) and 108 jobs (80 skilled and 28 unskilled) created during operation (at least 40% for women) (2018 baseline: 0)	1a–1e. ADB mission reports and quarterly project progress reports 1a–1e. DCG report, records, annual statistics, and periodic surveys	Simultaneous implementation of many other projects by the executing agency causes implementation delays.
2. Ecosystem services in Dengzhou City improved	2a. 3.7 km reach of Tuan River rehabilitated with eco-friendly riverbank protection measures (2018 baseline: 0)	2a–2f. ADB mission reports and quarterly project progress reports	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	<p>2b. 1.05 km² Dengzhou Cultural Heritage Park (green corridor park) with 98,000 m² ponds constructed (2018 baseline: 0)</p> <p>2c. 1.25 km² of greenbelt (ecological interception) to control nutrient, chemical, and sediment leaching, and 188 ha of afforestation constructed (2018 baseline: 0)</p> <p>2d. 8 ha of wetland park constructed at centralized wastewater treatment plant outlet (2018 baseline: 0)</p> <p>2e. 1,370 jobs (411 skilled and 959 unskilled) created during construction (including 30% for women) and 28 jobs (10 skilled and 18 unskilled) created during operation (including 40% for women) (2018 baseline: 0)</p> <p>2f. Women-friendly river corridors and green parks with proper lighting and sanitation facilities constructed benefiting 278,383 people, including 48% women (2018 baseline: 0)</p>	<p>2a–2f. DCG report, records, annual statistics, and periodic surveys</p>	
3. Water resources management capacity enhanced	<p>3a. Environmental research and education center built and equipped (2018 baseline: 0)</p> <p>3b. Five real-time water quality and quantity monitoring stations installed along the Tuan River and connected to research center (2018 baseline: 0)</p> <p>3c. Six community-based environment and ecology supervision teams strengthened in lower Tuan River, involving at least 36 community group members, of whom at least 40% are women (2018 baseline: 0)</p> <p>3d. 500 m long experimental river reach with research and associated facilities established to study nonpoint water pollution modes and the effectiveness of bio-shield, (2018 baseline: 0)</p> <p>3e. Water utilization plan for Dengzhou City drafted and submitted to the DCG for approval (2018 baseline: 0)</p> <p>3f. 210 employees from the DCG and implementing agencies, of whom 30% are women, have improved knowledge and understanding of climate change adaptation and environmental management through training workshops conducted during project construction (2018 baseline: 0)</p>	<p>3a–3f. ADB mission reports and quarterly project progress reports</p> <p>3f. Survey of training participants</p>	

Key Activities with Milestones

1. Urban and rural water infrastructure in Dengzhou City improved

- 1.1 Complete detailed engineering design and bidding documents for sewerage system by Q3 2022, rural water supply system by Q4 2020, solid waste recycling component by Q1 2021, and ecological dike by Q4 2021.
- 1.2 Implement land acquisition and resettlement plan by Q4 2022.
- 1.3 Award contracts by Q3 2020 to Q2 2023.
- 1.4 Complete civil works for sewerage system by Q1 2025.
- 1.5 Complete civil works for rural water supply system by Q3 2024.
- 1.6 Complete civil works and equipment installation for solid waste management by Q1 2023.

2. Ecosystem services in Dengzhou City improved

- 2.1 Complete detailed engineering design and bidding documents for Dengzhou Cultural Heritage Park (green corridor park) by Q2 2022, riverbank protection by Q4 2021, and wetlands construction by Q1 2022.
- 2.2 Implement land acquisition and resettlement plan by Q1 2023.
- 2.3 Award contracts by Q1 2021–Q2 2023.
- 2.4 Complete civil works for landscaping by Q1 2025.
- 2.5 Complete civil works for wetlands construction and riverbank protection by Q1 2025.
- 2.6 Complete construction of bio-shield, afforestation, and greening and gardening by Q3 2024.

3. Water resources management capacity enhanced

- 3.1 Complete detailed engineering design and bidding documents by Q3 2021.
- 3.2 Implement land acquisition and resettlement plan by Q2 2022.
- 3.3 Complete civil works for environmental research and education center by Q2 2025.
- 3.4 Calibrate and install river basin models and real-time river health monitoring stations and connect them to data server by Q2 2025.
- 3.5 Establish functional asset management system by Q2 2025.
- 3.6 Draft and submit water utilization plan for Dengzhou City to the DCG for approval by Q3 2021.
- 3.7 Conduct community-based solid waste management by Q2 2023.
- 3.8 Organize training programs on environmental risk management and climate change adaptation by Q4 2024.

Project Management Activities

Recruit project management consultants by Q3 2020.
 Recruit asset management system development consulting services by Q2 2021.
 Recruit an external monitor for external environmental and resettlement monitoring and evaluation by Q2 2020.
 Implement environmental management plan and submit semiannual environmental monitoring reports to ADB from Q3 2020 to Q3 2025.
 Implement gender action plan and social development action plan and monitor targets achievement from 2020 to 2025.
 Monitor and evaluate project impact, outcome, and outputs using the project performance management system; submit quarterly project progress reports from Q2 2020 to Q4 2025.
 Carry out training programs, policy dialogue, study tours, and awareness-raising campaigns from Q4 2020 to Q2 2025.
 Submit project completion report by Q2 2026.

Inputs

ADB: €181.27 million (ordinary capital resources loan)

Government: €202.22 million

Assumptions for Partner Financing

NA

ADB = Asian Development Bank, DCG = Dengzhou City Government, ha = hectare, km = kilometer, km² = square kilometer, m = meter, m² = square meter, m³ = cubic meter, NA = not applicable, Q = quarter, t = ton, RFI = results framework indicator.

^a National Development and Reform Commission. 2016. *Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing; and State Council of the People's Republic of China. Policies: [Latest Releases](#).

^b According to the GB 3838-2002 environmental quality standards for surface water in the People's Republic of China, water rated class III is suitable for drinking and swimming, class IV for general industrial and recreational use, and class V for agriculture and landscaping. Class V+ means that the water is unsuitable for any purpose.

^c A 20-year flood has a 5% chance of occurring in any given year.

Contribution to ADB Results Framework:

RFI A: People benefiting from increased investments. Target: 746,000.

Source: Asian Development Bank.

B. Monitoring

83. **Project performance monitoring.** The PMO will be responsible for monitoring and reporting on project performance. The basis for performance monitoring will be the design and monitoring framework (DMF), which identifies performance targets for the impact, outcome, and outputs of the project. By the loan effectiveness, the PMO will prepare a format of quarterly project progress reports acceptable to ADB; and make necessary arrangements for preparation of the reports, including a flow of data and information collection, responsibility definition of each of relevant agencies, and reporting formats (from contractors to the implementing agencies, from consultants to the PMO, from the implementing agencies to the PMO). Quarterly project progress reports will include progress of the overall project and each component; status of consulting services and activities performed by each consultant; information on training, workshops, and study tours conducted; status of land acquisition and resettlement based on internal monitoring; status of the implementation of the EMDP, social development action plan (SDAP), and GAP; records of grievance and complaints; project performance (achievement of each performance indicator against the target); and particular issues; and, overall status of EMP implementation, based on submission of semi-annual environmental monitoring reports (para. 84).

84. At the beginning of the project implementation stage, the PMO will develop a project performance management system (PPMS) to monitor the progress of the project in achieving the planned outcome and outputs. The PPMS will be developed with assistance of the project implementation management consultant as one of its work tasks in accordance with ADB's policy requirements, including baseline setting, operational data collection, data analysis, and reporting. The PPMS will adopt indicators relating to the following aspects of the project: (i) Urban and rural water infrastructure in Dengzhou City improved; (ii) Ecological zones in Han River restored, (ii) Water resources management capacity enhanced. The PMO will assign staff, or contract consultants, to collect baseline and progress data at the requisite time intervals to be used in the PPMS. The PMO will be responsible for analyzing and consolidating reported data and reporting outcomes to ADB through semiannual progress reports.

85. By collecting data from the sources identified in the design and monitoring framework, the PMO will be able to report the performance of the project on an annual basis. Specific reporting requirements will be set out in the loan and project agreements between ADB and the Government. The PMO will collect the data, calculate the indicators, analyze the results, and prepare a brief report describing the extent to which the project is generating the intended outputs and outcomes. The relevance and practicability of data collection for indicators will be confirmed with the PMO and IAs. Meanwhile, the agreed socioeconomic and environmental indicators to be used will be further enhanced to measure project impacts. The PMO and implementing agencies will (i) refine and integrate the PPMS framework at the start of project implementation; (ii) confirm that targets are achievable; (iii) develop recording, monitoring, and reporting arrangements; and (iv) establish systems and procedures no later than six months after project inception.

86. Promptly after physical completion of the project, but in any event not later than 6 months thereafter or such later date as ADB may agree for this purpose, the PMO will prepare and submit to ADB a project completion report, in such form and in such detail as ADB shall reasonably request, on the implementation and evaluation of the project, including project description, evaluation of design and implementation, evaluation of performance, and overall assessment and recommendations.

87. **Compliance monitoring.** During project implementation, the executing agency, PMO, and consultants will conduct compliance monitoring, and submit reports and information to ADB

concerning the use of the loan proceeds, project implementation, the implementing agency's project implementation performance, compliance of loan and project covenants under the project, and will take necessary remedial actions for any non-compliance. The compliance status of the covenants will be reported in the quarterly progress reports by the PMO. ADB will verify the compliance by reviewing quarterly project progress reports, communicating with the PMO, and/or conducting review missions.

88. **Environmental safeguard monitoring.** The project monitoring program focuses on the environment in the project areas of influence. The environmental monitoring program is included in the project EMP, including parameters, time and frequency, implementing and supervising agencies, and estimated costs. Three types of monitoring will be conducted in accordance with the EMP: (i) internal monitoring, to be conducted by the implementing agencies and construction supervision consultants (CSCs); (ii) external monitoring of air, water, noise and soil standards, to be conducted by local environment monitoring agencies (EMA) contracted by the PMO; and (iii) compliance monitoring to be conducted by consultants (environment specialists) for project management supports to ensure the EMP is being implemented. Monitoring shall comply with the PRC standards for environmental monitoring. ADB will oversee the compliance on the basis of semiannual environmental monitoring reports provided by the PMO and review missions.

89. **Internal environmental monitoring.** During construction, the CSCs and the implementing agencies will be responsible for conducting internal environmental monitoring in accordance with the monitoring plan. Results will be reported through the CSC monthly reports to the implementing agencies and PMO.

90. **External monitoring.** PMO will contract one certificated EMA to conduct environmental monitoring in accordance with the monitoring programs specified in the EMP. Monitoring will be conducted during construction and operational periods, until a project completion report is issued. Semiannual monitoring reports will be prepared by the EMA and submitted to the PMO and implementing agencies.

91. **EMP compliance monitoring.** The LIEC will review the project progress and compliance with the EMP based on field visits, and the review of the environmental monitoring reports provided by the EMAs. The findings of the LIEC will be reported to ADB through the semiannual EMP monitoring and progress reports. The reports will include (i) progress made in the EMP implementation, (ii) overall effectiveness of the EMP implementation (including public and occupational health and safety), (iii) environmental monitoring and compliance, (iv) institutional strengthening and training, (v) public consultation (including GRM), and (vi) any problems encountered during construction and operation, and the relevant corrective actions undertaken. The LIEC will help the PMO prepare the reports and submit to ADB for disclosure; and will assist the PMO for local disclosure of the reports e.g. on the website of the local ecology and environment bureau.

92. **Environmental acceptance reporting.** Following the PRC Regulation on Project Completion Environmental Audit (Ministry of Environmental Protection, 2001), within three months after the completion of major components, an environmental acceptance report for each subproject shall be (i) prepared by the implementing agencies or capable environmental monitoring institute in accordance with the PRC Guideline on Project Completion Environmental Audit (2017); and (ii) finally reported to ADB through the semiannual EMP monitoring and progress reporting process. The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.

93. **Land acquisition and resettlement.** Internal and external monitoring of the RP implementation will be conducted. Monitoring methodologies are specified in the RP. The PMO and implementing agencies assisted by the project management consultants will carry out internal monitoring and reporting to ensure compliance with the provisions of the RP. The PMO, implementing agencies, and consultants for project management supports will develop a set of supervision milestones in accordance with the RP to ensure timely and effective implementation of resettlement activities. The PMO will submit internal monitoring reports semiannually to ADB.

94. An external monitoring agency acceptable to ADB will be engaged by the PMO by January 2020 prior to commencement of land acquisition. The external monitoring agency will conduct external M&E semiannually during the implementation of land acquisition and resettlement and conduct follow-up evaluation semiannually for two years after the completion of land acquisition and resettlement. The cost of the external resettlement M&E will be funded from the ADB loan. External resettlement M&E reports will be submitted semi-annually to ADB.

95. **Gender and social dimensions monitoring.** Monitoring indicators for the GAP and SDAP will be incorporated into the PPMS. The PMO and implementing agencies will be responsible for establishing and coordinating regular monitoring and evaluation.

96. The regular project progress reports to ADB will include, at least semiannually, reporting on GAP and SDAP progress. Assistance will be provided to the executing agency and implementing agencies by the project consultant who will help to set up effective monitoring systems and work with the focal points and implementing agencies to ensure implementation of the GAP and SDAP. The project's consultants will assist the PMO and implementing agencies to collect data for qualitative analysis to assess the effectiveness of the GAP and SDAP. This will include an end-of-project survey of a small number of sample beneficiaries and/or focus group discussions with beneficiaries to obtain qualitative information on the improvements to their lives as a result of the project.

C. Evaluation

97. In addition to regular monitoring, the project performance will be reviewed at least once a year jointly by ADB and DCG. The review will assess the implementation performance and achievement of project outcomes and outputs, assess the financial progress, identify issues and constraints affecting implementation, and work out a time-bound action plan for resolutions. ADB and DCG will undertake a midterm review to assess implementation status and take appropriate measures - including modification of scope and implementation arrangements, and reallocation of loan proceeds, as appropriate - to achieve the project impact and outcome. Within 6 months of physical completion of the project, DCG will submit a project completion report to ADB.

D. Reporting

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

99. Within 6 months after project completion, the PMO will prepare a project completion report, in coordination with the implementing agencies and DCG, and submit to ADB, evaluating the performance of the PMO and IAs; summarizing the loan funds utilization, project implementation, attainment of project impact, outcome, outputs, implementation experience, project performance, actual costs incurred, benefits, and other information requested by ADB; and assessing the accomplishment of the purposes of the loan.

100. The table below summarizes the key reporting requirements during the project implementation.

Table 17: Key Reporting Requirements

Report	Reference	Timing of Reporting
Quarterly project progress reports	Project Agreement, Schedule	Quarterly, within 1 month after the end of each quarter
Project audited financial statements	Project Agreement, Schedule	Not later than 6 months after the closure of fiscal year (end of June)
Resettlement monitoring		
Internal monitoring reports for the executing and implementing agencies	Project Agreement, Schedule	Include summary in the periodic project progress reports
Land acquisition and resettlement phase—external monitoring report		Semiannual
Post-land acquisition and resettlement phase—external monitoring report		Semiannual reports for 2 years after completion of resettlement activities
Environmental reports	Project Agreement, Schedule	
Construction phase—environmental management plan and progress report		Semiannual
Construction phase—external environmental management plan		Semiannual
Operation phase—external monitoring report		Semiannual, until a project completion report is issued
Social monitoring of the GAP and SDAP	Project Agreement, Schedule	Semiannual; included in the progress reports
Project completion report	Project Agreement, Schedule	Not later than 6 months after the physical completion of the project

GAP = gender action plan, SDAP = social development action plan.

Source: Asian Development Bank.

E. Stakeholder Communication and Participation

101. Project information will be communicated through public consultation, information disclosure mechanism in ADB's and government's website, meetings, interviews, focus group discussions, and community consultation meetings, in accordance with ADB's requirements of information disclosure policy.

102. **Environment.** Meaningful consultation, participation and information disclosure was conducted during project preparation. Information disclosure and public consultation included newspaper disclosure; informal communication with key stakeholders, including residents, local authorities and sector specific institutions and authorities; questionnaire surveys; and wider stakeholder meetings attended by affected people and other concerned stakeholders. A GRM has been defined to address community concerns, reduce risks, and assist the project in maximizing environmental and social benefits. Meaningful consultation will continue throughout project implementation, especially prior to and during civil works. Planning for public consultations will ensure that environmental and social safeguard requirements are discussed.

103. **Involuntary resettlement.** All of the affected households were involved in the project impact and socioeconomic survey. Through meetings, interviews, focus group discussions, public consultation workshops, and community consultation meetings; local representatives participated in the planning, and their concerns have been integrated into the RP. The RP has also been posted on the ADB website. Resettlement information booklets were distributed to affected households. The booklets contain information such as the affected project areas, implementation progress of and procedures for land acquisition and relocation, compensation standards for land acquisition and house demolition, relocation assistance, livelihood restoration strategy, and post-resettlement supports. Each implementing agency includes a full-time resettlement and social officer for supervision of implementation, continued public consultation, monitoring of progress, and response to grievances. The grievance redress procedures have been established and explanations have been included in the resettlement information booklets.

104. **Ethnic minority development plan, social development action plan and gender action plan.** Consultations with communities were conducted and will be continued during the implementation of the EMDP, SDAP, and GAP, not only to inform people about project components or activities, but also to enable people to ask questions, make suggestions, state preferences, and/or express concerns. Special attention will be paid to the participation of women, ethnic minorities, and other vulnerable groups, such as the poor. Public hearings will be held for any proposed adjustments in the water supply tariff, with attendance of adequate representation of the poor, women, and ethnic minorities.

105. **Public Disclosure.** ADB, the DCG including the PMO, and implementing agencies will disclose relevant project information to the public and interested parties. This includes the information regarding the overall project and environment and social safeguards. The information disclosure measures for different stakeholders are described in Table 17.

106. A consultation and participation plan has been prepared for the concerned stakeholders within the project areas as required by ADB to ensure inclusiveness, transparency, and meaningful consultation and participation of concerned stakeholders for the Project. The purpose of this plan is to engage the stakeholders in meaningful consultation and decision-making process; inform them about the project and consult them on various issues relevant to the project/subcomponents and activities during project design and implementation. Consultation and participation serves as a venue for the key stakeholders (i.e., government agencies, project beneficiaries, and women) to be informed about the project, clarify and express feedbacks, issues and concerns, and suggestions; learn how they will be benefited by the projects; participate in decision-making and take action and/or be involved during the design, project implementation and operation/maintenance stages. The plan is in Table 19.

Table 18: Public Disclosure of Project Information

Information	Means of Communication	Responsibility	Audience	Frequency
Report and Recommendation of the President with links to relevant documents	ADB Website	ADB	Public	Once
Project information during design and construction phase	Stakeholder consultations and public notice boards	DCG including PMO, and IAs	Project beneficiaries and affected people	Regular intervals during design and construction phase
Environmental monitoring reports	ADB and DCG websites, and public notice boards	DCG including PMO	Affected people and other interested stakeholders	Semiannually
Information on RP, EMDP, SDAP, and GAP activities	Stakeholder consultation, ADB and DCG websites, and public notice boards	DCG including PMO	Affected people and other interested stakeholders	Regularly
External resettlement and social M&E reports	ADB and DCG websites, and public notice boards	DCG including PMO	Affected people and other interested stakeholders	Semiannually
Project audited financial statements	ADB website	ADB	Public	Once every year
Project information documents	ADB Website	ADB	Public	Quarterly
Project completion report	ADB Website	ADB	Public	Once

ADB = Asian Development Bank, DCG = Dengzhou City Government, EMDP = ethnic minority development plan, GAP = gender action plan, M&E = monitoring and evaluation, IA = implementing agency, PMO = project management office, RP = resettlement plan, SDAP = social development action plan.

Source: Asian Development Bank.

Table 19: Consultation and Participation Plan Summary Chart

Stakeholder Group	Objective of their intervention	Type of Participation	Participation methods		Time line		Cost Estimate
	Why they are included		Method	Who will be responsible	Start date	End date	
Government agencies/ bureaus/local government units (Dengzhou City Development and Reform Bureau, Urban-rural Planning Center, Urban Administration, Health Commission, Natural Resources Bureau, Housing & Urban-Rural Construction, Human Resources and Social Security Bureau, Civil Affairs Bureau, Women's Federation, Poverty Alleviation Office, etc.).	<p>To be informed about the project/subcomponents and activities, implementation schedule/arrangements; agencies responsible for project implementation in accordance with the TOR.</p> <p>To provide information on the budget, policies on procurement, ADB safeguard policy, ADB policy on gender mainstreaming, and other relevant information.</p> <p>To enable the concerned agencies/IAs to express their needs/concerns and/or clarify matters to ensure that the projects/subcomponents are implemented in a timely manner and in accordance with the ADB approved guidelines.</p>	Information sharing, regular meetings, consultation, shared decision making, and shared responsibility Participation	Meeting Workshop	DCG/PMO Consultants hired by PMO	2020	2025	Budget included in the project
Agencies/ bureaus/responsible for implementing the project/subcomponents; Agencies responsible for implementing the RP/IEE, EMDP, GAP, and SDAP (Water Resources Bureau, Ecology and Environment Bureau, Integrated Urban–Rural Development Pilot Area Administration Bureau)	<p>Representatives of government bodies in the city, townships and villages are responsible for decision-making and assist during project implementation.</p> <p>To define the roles of each agency during project implementation, elicit their support, and harmonize the projects with the existing programs/plans of the government agencies/bureaus.</p> <p>To enable the concerned agencies/IAs to express their needs/concerns and/or clarify matters to ensure that the projects/subcomponents are</p>	Regular meetings, consultation and shared decision making/ responsibility Participation	Meeting Workshop Public consultation	DCG/PMO Consultants hired by PMO Local govt. units' heads Other concerned agencies	2020	2025	Budget included in the project

Stakeholder Group	Objective of their intervention	Type of Participation	Participation methods		Time line		Cost Estimate
	Why they are included		Method	Who will be responsible	Start date	End date	
	implemented in a timely manner and in accordance with the ADB approved plans.						
Project beneficiaries/local people in the affected communities Including the affected persons/HHs, women, ethnic minorities, farmers, and other stakeholders.	<p>Beneficiaries/households are interested on how they could access project benefits (i.e., employment/jobs, public awareness, training, community mobilization/participation, and other activities), and share inputs/decision-making in all project cycles (design, implementation and monitoring).</p> <p>To provide information to households/individuals that could experience potential negative impacts (i.e., land acquisition/ resettlement, temporary or permanent loss of income) or face the project impact.</p> <p>To explain the entitlement/compensation and assist the affected HHs how they could fully utilize the assistance or compensation that will be provided so that they will have long-term source of income. They are the project beneficiaries and are the direct stakeholders of the project. They need to be informed, participate in decision-making, implementation, monitoring and control.</p> <p>To engage the local people/communities in planning or identifying other community participation activities that are relevant per subcomponent (i.e., training/seminars, public awareness, consultations, mobilization of</p>	Information generation/sharing, consultation and shared decision making/responsibility/ participation	Meeting, FGD, public consultation	DCG/PMO IAs Consultants hired by PMO, local government heads/village heads	2020	2025	Budget included in the project

Stakeholder Group	Objective of their intervention	Type of Participation	Participation methods		Time line		Cost Estimate
	Why they are included		Method	Who will be responsible	Start date	End date	
	cleaners/river guards, community volunteers, etc.).						
Community-based organizations such as: - farmers groups, women associations, etc.; contractors	<p>Representatives of the various community-based organizations responsible on issues/matters concerning drinking water supply, river embankment improvement, solid waste and wastewater treatment/ management, biodiversity/ecological conservations, green space construction, etc. They need to be informed, participate in decision-making, project implementation, monitoring and control.</p> <p>To encourage the contractors to hire the local people including women, ethnic minorities, low income HHs, and other vulnerable groups to have access to project benefits (i.e., jobs created during implementation, operation and maintenance); provide training/capacity building on water resource conservation; wetland management/rehabilitation, greening of riverbanks, solid waste and wastewater management, and other project subcomponents.</p>	Information sharing, Consultation, and shared decision making, and shared responsibility/ participation	Meeting, FGD, public consultation	DCG/PMO IAs, consultants hired by PMO	2020	2025	Budget included in the project
Women	To ensure inclusiveness of women and that they are able to benefit from the project by participating in consultation meetings, tariff setting for solid/waste water treatment subproject), access to linkages or capacity building that may provide them employment opportunities in project related jobs, civil works, operation and maintenance of the subprojects.	Information sharing/generation Consultation, and shared decision making, and shared responsibility, and control Participation	Meeting, FGD, public consultation	DCG/PMO; Consultants hired by PMO, local government heads/village heads LGU/agency heads	2020	2025	Budget included in the project

Stakeholder Group	Objective of their intervention	Type of Participation	Participation methods		Time line		Cost Estimate
	Why they are included		Method	Who will be responsible	Start date	End date	
				Other govt. Agencies: (Women Federation, Poverty Alleviation Office, etc.); NGOs			
Consultancy firms/agencies and organizations that will be selected by the EA through the PMO to implement various project components as approved in the ADB loan project	<p>The consultancy firm/consultants that will be selected by the PMO will ensure that the project outputs and activities, key indicators, etc. will be implemented as planned; inform and engage the people to participate in the decision-making, ensure that social safeguard/gender mainstreaming plans/activities are implemented; conduct capacity building, monitoring and evaluation.</p> <p>To assist the PMO in coordinating and/or working with various government agencies/bureaus; oversee, monitor and compliance implementation</p>	Regular meetings, Information sharing, consultation, and shared decision making, and shared responsibility/ collaboration	Meeting Workshop		2020	2025	Budget included in the project

ADB = Asian Development Bank, DCG = Dengzhou City Government, EA = executing agency, EMDP = ethnic minority development plan, FGD = focus group discussion, GAP = gender action plan, HH = household, IA = implementing agency, IEE = initial environment examination, LGU = local government unit, NGO = nongovernment organization, PMO = project management office, RP = resettlement plan, SDAP = social development action plan, TOR = terms of reference.

Source: Asian Development Bank.

X. ANTICORRUPTION POLICY

107. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.⁴¹ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.⁴²

108. To support these efforts, relevant provisions are included in the loan and project agreements and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

109. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.⁴³

XII. RECORD OF PAM CHANGES

110. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM, including revision to contract awards and disbursement s-curves.

⁴¹ Anticorruption Policy: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

⁴² ADB's Integrity Office web site: <http://www.adb.org/integrity/unit.asp>

⁴³ Accountability Mechanism. <http://www.adb.org/Accountability-Mechanism/default.asp>.

**INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR
PACKAGE CS-01: PROJECT IMPLEMENTATION STARTUP SUPPORT (PROJECT
MANAGEMENT AND PROCUREMENT)**

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban-Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national project management and procurement specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The startup consulting services are expected to take place during the period from 1 October 2019 to 30 March 2020.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national project management and procurement specialist will provide a total of 5.0 person-months of consulting services. The consultant shall have a university degree or higher in project management, procurement, accounting, or related field. He/she shall be proficient in English and has at least 10 years of experience in project management, procurement, and consultant recruitment for projects funded by ADB or other international funding agencies. Knowledge on ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time), and other ADB procedures for procurement and consultant recruitment are required.

5. The specialist will undertake the following tasks: (i) understand the format of quarterly project progress reports provided by ADB, and provide the PMO with guidance on how to fill-in the format by assisting them in preparing the first report; (ii) improve internal procedures of routine data collection and filling and information exchange among the PMO, IAs, and other agencies of the DCG for smooth project implementation and quarterly project progress reporting; (iii) assist the PMO in recruiting competent external monitor for resettlement and social, and environment (package number CS-06 and CS-07), a consultant team for project management support (package number CS-05), and other packages if necessary; (iv) provide any supports to the PMO and a procurement agency engaged by the PMO for procurement of works and goods, including preparation of bidding documents; (v) develop capacities of PMO and IAs for project management, procurement, and

consultant recruitment; and (vi) perform any other tasks for project management, procurement, and consultant recruitment during the start-up phase of the project.

E. Cost Estimate

Table A2.1: Cost Estimate (USD)

Item	Total Cost (\$'000)
1. Consultant	
a. Remuneration and per diem National consultant (5.0 person-months)	36.00
b. Local travel	2.08
c. Reports and communications	0.28
2. Miscellaneous administration and support costs	0.80
3. Contingencies	0.84
Total	40.00

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-02: PROJECT IMPLEMENTATION STARTUP SUPPORT (LAND ACQUISITION AND RESETTLEMENT)

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban–Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national land acquisition and resettlement specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The startup consulting services are expected to take place during the period from 1 October 2019 to 30 March 2020.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national land acquisition and resettlement specialist will provide a total of 3.0 person-months of consulting services. The consultant shall have a university degree or above in resettlement, social or related field. He/she shall be proficient in English and have at least 10 years of experience in land acquisition and resettlement (LAR) in the People's Republic of China on projects funded by ADB or other international funding agencies. Knowledge on ADB's Safeguard Policy Statement (2009) and ADB's or other international funding agencies' procedures for LAR are required.

5. The specialist will undertake the following tasks: (i) assist the PMO, IAs and design institute in updating the resettlement plan approved by ADB, in ADB format and based on the detailed designs, disclosing the RP to the affected persons prior to ADB's approval, and obtaining ADB's approval of the RP; (ii) assist the PMO and IAs in ensuring adequate resettlement readiness prior to LAR; (iii) assist the PMO and IAs in establishing effective grievance redress mechanisms, including mechanisms to ensure reporting of complaints, follow-up actions, and results; (iv) provide training to relevant staff of the PMO and IAs so they will understand ADB's policies and compliance requirements for LAR; (v) assist the PMO and IAs in establishing an internal LAR monitoring and reporting system; (vi) assist the PMO and IAs in handing over relevant documents and files to the project management support consultant team engaged in package number CS-05 and brief the team, particularly the resettlement specialist in the team, status and outstanding issues; and (vii)

perform any other LAR related tasks during the start-up phase of the project.

E. Cost Estimate

Table A2.3: Cost Estimate (USD)

Item	Total Cost (\$'000)
1. Consultant	
a. Remuneration and per diem	
National consultant (3.0 person-months)	20.94
b. Local travel	2.56
c. Reports and communications	0.06
2. Miscellaneous administration and support costs	0.25
3. Contingencies	1.49
Total	25.00

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-03: PROJECT IMPLEMENTATION STARTUP SUPPORT (ENVIRONMENT)

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban–Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national environmental specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The startup consulting services are expected to take place during the period from 1 October 2019 to 30 March 2020.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national environment specialist will provide a total of 2.0 person-months of consulting services. The consultant shall have a university degree or higher in environment or related field. He/she shall be proficient in English and have at least 10 years of experience in environmental management in the People's Republic of China on projects funded by ADB or other international funding agencies. Knowledge on ADB's Safeguard Policy Statement (2009) and ADB's or other international funding agencies' requirements for environmental management are required.

5. The specialist will undertake the following tasks: (i) assist the PMO and design institute in updating the environmental impact assessment (EIA) report and environmental management plan (EMP) approved by ADB for the project, in ADB format and based on the detailed designs; and obtain ADB's approval of them;¹ (ii) assist the PMO and IAs in ensuring adequate environmental management readiness; (iii) assist the PMO and IAs in establishing effective grievance redress mechanisms, including mechanisms to ensure reporting of complaints, follow-up actions, and results; (iv) provide training to relevant staff of the PMO and IAs so they will understand ADB's policies and compliance requirements for environmental management; (v) assist the PMO and IAs in establishing an internal environmental monitoring and reporting system; (vi) work closely with the design institutes for preparation of the detailed engineering designs, to ensure that environmental safeguard requirements in the project EMP are complied with; (vii) assist the PMO and IAs in

¹ The EMP is included in the IEE report.

handing over relevant documents and files to the project management support consultant team engaged in package number CS-05 and brief the team, particularly the environment specialist in the team, status and outstanding issues; and (viii) perform any other environmental management related tasks during the start-up phase of the project.

E. Cost Estimate

Table A2.1: Cost Estimate (USD)

Item		Total Cost (\$'000)
1.	Consultant	
a.	Remuneration and per diem National consultant (2.0 person-months)	15.05
b.	Local travel	1.87
c.	Reports and communications	0.06
2.	Miscellaneous administration and support costs	0.18
3.	Contingencies	0.84
	Total	18.00

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-04: PROJECT IMPLEMENTATION STARTUP SUPPORT (FINANCIAL)

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban–Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The consulting services will be carried out by an individual consultant (national financial specialist). The consulting services will be financed by Asian Development Bank (ADB) and the consultant will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The consultant will be selected using the individual consultant recruitment method. The startup consulting services are expected to take place during the period from 1 October 2019 to 30 March 2020.

C. Reporting Requirements

3. By the end of the assignment, the consultant will submit a report on his/her activities to ADB and the PMO (a soft copy of the English version to ADB and soft copies of the English and Chinese versions to the PMO).

D. Detailed Scope of Services and Consultants' Inputs

4. The individual national financial specialist will provide a total of 2.0 person-months of consulting services to support financial management including ADB loan withdrawal application procedures and related activities. The consultant shall have a university degree or higher in financial management or related field. He/she shall be proficient in English and has at least 5 years of experience in financial management for projects funded by ADB or other international funding agencies. Knowledge on ADB's financial management requirements and other ADB procedures are required.

5. The specialist will undertake the following major tasks: (i) provide consulting supports in financial management particularly ADB loan withdrawal application and disbursement procedures; (ii) understand the format of the relevant financial management reports provided by ADB, and provide the PMO with guidance on how to fill-in the format by assisting them in preparing the first loan withdrawal application and disbursement report; (iii) improve internal procedures of routine data collection and filling and information exchange among the PMO, IAs and other agencies of the DCG for reporting; (iv) review the existing financial management and accounting procedures of the IAs and PIUs and provide suggestions for improvement; (v) develop capacities of PMO, IAs, and involved agencies under each IA through training on ADB financial management procedural requirements particularly loan withdrawal application and disbursement procedures; (vi) assist the PMO, IAs in handing over relevant documents and files to the project management and capacity development support consultant team engaged in package number CS-05 and brief the

team, particularly the financial specialist in the team, status and outstanding issues; and (vii) perform any other tasks for financial management during the start-up phase of the project.

E. Cost Estimate

Table A2.1: Cost Estimate (USD)

Item		Total Cost (\$'000)
1.	Consultant	
a.	Remuneration and per diem National consultant (2.0 person-months)	14.12
b.	Local travel	1.78
c.	Reports and communications	0.08
2.	Miscellaneous administration and support costs ^a	0.17
3.	Contingencies	0.85
	Total	17.00

^a Includes cost of office equipment, data collection and photocopying.
Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-05: PROJECT MANAGEMENT AND CAPACITY DEVELOPMENT

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban–Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The consulting services for project management and capacity development will be carried out by a team of consultants through a firm. A total of 10 person-months of international and 80 person-months of national consultants will be required. The consulting services will be financed by the Asian Development Bank (ADB) loan and the consultants will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). A consulting firm will be selected by (i) inviting full technical proposals (FTP); and (ii) using the quality- and cost-based selection method (QCBS), with a quality–cost ratio of 90:10. The consulting services are expected to be carried out during 1 July 2020 until on 30 December 2025.

C. Reporting Requirements

3. The consultant team will produce (i) an inception report within 4 weeks of the start of the consulting services, (ii) a semiannual report by the end of each year during 2019–2025, (iii) a draft project completion report (PCR) by 31 October 2025, and (iv) a final PCR by 31 December 2025. The inception and semiannual reports and draft PCR will be subject to tripartite reviews by ADB, PMO, and consultants. All reports are to be written in English and translated into Chinese. One soft and three hard copies of each report are to be submitted to ADB (English version only) and the PMO (both Chinese and English versions).

4. The inception report will present an approach for the consulting services, including a work plan and an implementation schedule. The semiannual reports will present activities conducted by the consultants, effects of the consulting services, issues encountered, and recommendations to improve project management. The draft and final PCRs will include summary and evaluation of project implementation; environmental management; land acquisition and resettlement; ethnic minority development; implementation of social development action plan (SDAP), and gender action plan (GAP); compliance to the loan and project covenants; and achievements of the project impact, outcome, and outputs; as well as lesson learned from the project implementation and follow-up actions recommended.

D. Other Requirements

5. The consultant team will provide a fully qualified interpreter to work with the consultants on a full-time basis and support the ADB missions.

E. Scope of Services and Consultants' Inputs

6. For each of the international and national consultant positions, (i) possession of a related degree, qualification, memberships of related academic societies, and/or participation in related training courses, (ii) experience in similar positions for projects or technical assistances, and (iii) experience in working with international organizations and consultants, will be highly evaluated.

1. Water Resources / Project Management Specialist/Team Leader (International)

7. The international water resources specialist (team leader) shall have: i) a post-graduate degree or higher degree in environment or water resources management; ii) a 15-year working experience as the environmental specialist and additional experience as a project implementation team leader in water related sectors.

8. The specialist will (i) coordinate all project management support activities as team leader; (ii) finalize approaches for project management support; (iii) prepare the inception report, interim reports, progress reports, semiannual reports, draft PCR, and final PCR; (iv) assist the PMO in implementing, monitoring, and evaluating the overall project and subprojects; (v) assist the PMO in preparing quarterly project progress reports and other business related document in a format provided by ADB; (vi) assess needs for capacity development for staff of the PMO, IAs, and others, and plan, design, organize, and implement seminars, workshops, and/or training for project management; financial management; disbursement arrangements, implementation, monitoring; and evaluation of resettlement, gender development, and environmental management, and project monitoring and evaluation [M&E], if necessary; (vii) monitor compliance with the loan covenants, assess key implementation issues, and make recommendations for improvement; and (viii) conduct any other necessary work for smooth and appropriate implementation of the project.

2. Construction Management Specialist/Deputy Team Leader (National)

9. The construction management specialist shall have: i) a bachelor's degree or higher degree in civil engineering, or construction engineering or related fields; ii) a 10-year working experience as the construction supervisor or field engineer in water related sectors.

10. The specialist will (i) monitor procurement activities under the project and assist the PMO in updating and implementing the procurement plan; (ii) assist the PMO in conducting management of contracts for civil works, goods, and consulting services, including, but not limited to, supervision and inspection of activities under contracts; payments to contractors, suppliers, and consultants; preparation of withdrawal applications; improvement of fund flow efficiency by streamlining the preparation of withdrawal applications; and contract variations; (iii) assist the project management specialist/team leader in monitoring compliance with the loan covenants, assess key implementation issues, and make recommendations for improvement, from procurement and contract management viewpoint; (iv) provide the PMO with support for the preparation of procurement and contract management aspects of quarterly progress reports; (v) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for procurement and contract management; (vi) provide support to the project management specialist/team leader for preparing the inception report, semiannual reports, DFR, and final report; and (vii) conduct any other necessary work for procurement and contract management assigned by the project management specialist/team leader.

3. Water Resources Specialist (National)

11. The national water resources specialist shall have: i) a bachelor's degree or higher degree in water resources engineering or hydrology or related fields; ii) a 10-year working experience as the designer or modeler, and planner in water resources or related sectors.

12. The specialist will (i) assess the current water resources status in Dengzhou, and help update the water resources development and protection assessment plan; (ii) develop the water resources management tools including hydrological and water quality model and support EA in installing such program for regular use; (iii) provide training to the technical staff of the EA/PMO/IAs on hydrological analysis tools including models; (iv) prepare the inception report, interim reports, semiannual reports, draft PCR, and final PCR; (v) assist the PMO in implementing, monitoring, and evaluating the overall project and subprojects; (vi) collect and assort lessons learned from other similar areas in the PRC relating to water resources development and protection; (vii) provide recommendation for improving water resources development and protection; (viii) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for procurement and contract management; and (ix) support the team leader and conduct any other necessary work for smooth and appropriate implementation of the project.

4. Procurement/Contract Management Specialist (National)

13. The national procurement specialist shall have: i) a bachelor's degree or higher degree in economics, engineering, finance or related fields; ii) a 10-year working experience as the project procurement specialist or similar in donor funded projects in the PRC.

14. The specialist will (i) monitor procurement activities under the project and assist the PMO in updating and implementing the procurement plan; (ii) provide support in preparation and review of the bidding documents including technical specifications, bill of quantities, and drawings; (iii) provide advisory support in bid evaluation and in addressing the review comments for ADB "no-objection"; (iv) provide support in help review of the commercial part of the bidding documents; (iv) provide the PMO with support for the preparation of procurement and contract management aspects of quarterly progress reports; (v) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for procurement; (vi) provide support to the project management specialist/team leader for preparing the inception report, semiannual reports, draft PCR, and final PCR; (ii) assist the project management specialist/team leader in monitoring compliance with the loan covenants, assess key implementation issues, and make recommendations for improvement, from procurement and contract management viewpoint; and (vii) conduct any other necessary work for procurement and contract management assigned by the project management specialist/team leader.

5. Environmental Specialist (National)

15. The national environment specialist shall have: i) a bachelor's degree or higher degree in environmental science or environment and sustainability or related fields; ii) a 10-year working experience as environment specialist (safeguard) or others relevant positions.

16. The specialist will (i) assist the PMO and design institute in updating the initial environmental examination (IEE) and environmental management plan (EMP) approved by ADB for the project, in

ADB format and based on the detailed designs; and obtain ADB's approval of them;² (ii) assist the PMO and IAs in constructing, operating, maintaining, and monitoring the project facilities in strict conformity with all applicable laws and regulations, including national and local regulations and standards for environmental protection, health, labor, and occupational safety; and ADB's Safeguard Policy Statement (2009),³ and the IEE report and EMP; (iii) assist the PMO in preparing and submitting to ADB semiannual environmental monitoring reports in a format acceptable to ADB during construction and implementation of the project; (iv) monitor compliance with the IEE report and EMP, assess the degree of impacts and key implementation issues, explain key issues to the PMO and IAs, and assist them in conducting follow-up actions to address the key issues; (v) provide the PMO with support for the preparation of environmental aspects of semiannual progress reports; (vi) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for environmental management; (vii) assist PMO to plan and implement public consultation meetings prior to and during civil works, to ensure that consultations are meaningful per ADB SPS requirements. Participate in the initial consultation meetings to ensure that PMO personnel are trained in how to plan and conduct the meetings, including responding to community concerns and to collect sex-disaggregated data; (viii) provide support to the project management specialist/team leader for preparing the inception report, semiannual reports, draft PCR, and final PCR; and (ix) undertake any other necessary work assigned by the project management specialist/team leader.

6. Resettlement, Gender and Social Specialist (National)

17. The national resettlement and social specialist shall have: i) a bachelor's degree or higher degree in social science, or land management, or related fields; ii) a 10-year working experience as the resettlement and social specialist or similar positions in donor funded projects in the PRC.

18. The specialist will (i) assist the PMO, IAs, and design institute in updating the resettlement plan approved by ADB, in ADB format and based on the detailed designs; disclose the RP to the affected persons prior to ADB's approval; and obtain ADB's approval of them; as necessary; (ii) assist the PMO and IAs in implementing land acquisition and resettlement in accordance with the resettlement plan, (iii) assist the IAs in supervising contractors to ensure compliance with requirements of the resettlement plan, applicable laws and regulations, and ADB's Safeguard Policy Statement; (iv) assist the PMO and IAs in supervising the processes of resettlement by collecting and updating basic data, and closely coordinating between the PMO and IAs, and an external resettlement monitor; (v) follow up with the districts and county governments for post resettlement subsidies to be provided to households displaced by the Project components; (vi) review external M&E reports prepared by the external resettlement monitor and ADB's comments on the reports, monitor compliance with the resettlement plan, assess the degree of impacts and key implementation issues, explain key issues to the PMO and IAs and assist them in conducting follow-up actions to address the key issues; (vii) assist the PMO to monitor compliance with the resettlement plan, assess key implementation issues, formulate remedial measures, and assist them in conducting follow-up actions; (viii) provide the PMO with support for the preparation of resettlement aspects, including semiannual internal resettlement monitoring of semiannual progress reports; (ix) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for implementation and M&E of land acquisition and resettlement; (x) provide support to the project management specialist/team leader for preparing the inception report, semiannual reports, draft PCR, and final PCR; and (xi) undertake any other necessary work assigned by the project management specialist/team leader.

² The EMP is included in the IEE report.

³ Available at: <http://www.adb.org/documents/safeguard-policy-statement>.

19. The specialist will (i) if there is a change in the project scope, assist the PMO, IAs, and design institute in updating the SDAP and EMDP approved by ADB, in ADB format and based on the change; and obtain ADB's approval of it; (ii) assist the PMO and IAs in implementing the SDAP, EMDP and GAP prepared during project preparation; (iii) assist the PMO and IAs in supervising contractors to ensure compliance with requirements of the SDAP, EMDP and GAP, and applicable laws and regulations; (iv) monitor compliance with the SDAP, EMDP and GAP; assess the degree of impacts and key implementation issues; explain key issues to the PMO and IAs; and assist them in conducting follow-up actions to address the key issues; (v) provide the PMO with support for the preparation of social aspects of semiannual progress reports, including semiannual internal social monitoring reports; (vi) provide support to the project management specialist/team leader for assessing needs for capacity development, and planning, designing, organizing, and implementing seminars, workshops, and/or training for implementation and M&E of the SDAP, EMDP and GAP; (vii) provide support to the project management specialist/team leader for preparing the inception report, semiannual reports, draft PCR, and final PCR; and (viii) undertake any other necessary work assigned by the project management specialist/team leader.

7. Financial Specialist (National)

20. The national financial specialist shall have: i) a bachelor's degree or higher degree in finance with a CA/CPA/ACCA qualification; ii) a 10-year working experience as the project finance specialist or other relevant positions.

21. The specialist will (i) review background documents, including the financial analysis of the project undertaken during project preparation; (ii) conduct financial analysis at the midterm of project implementation, and at physical completion of the project, including (a) financial sustainability analysis to assess the fiscal sustainability debt repayment capacity; and (b) an assessment of the financial viability of the revenue-generating components; (iii) assist PMO and IAs in establishing and implementing a financial management system; (iv) assist the Dengzhou City Government, PMO and IAs in preparing withdrawal applications and streamlining the preparation of withdrawal applications; (v) assist the Dengzhou Finance Bureau, PMO and IAs in meeting requirements of the financial management action plan (Table V-1 Proposed Action Plan for Financial Management in Project Administration Manual); (vi) provide support to the project management specialist/team leader for assessing needs for capacity development; and planning, designing, organizing, and implementing seminars, workshops, and/or training for financial analysis, as necessary; (vii) provide support to the project management specialist/team leader for preparing the inception report, semiannual reports, draft PCR, and final PCR; and (ix) undertake any other necessary work assigned by the project management specialist/team leader.

8. Vegetation/Forest Specialist (National)

22. The national vegetation specialist shall have: i) a bachelor's degree or higher degree in natural resources management or forest science, or biology or related fields; ii) a 10-year working experience as the vegetation specialist in donor funded projects in the PRC.

23. The specialist will: (i) responsible to provide all technical, procurement, and construction support for the implementation of vegetation or/and forest; (ii) assist PMO and provide guidance and recommendations on the detailed engineering design for the vegetation protection and associated river amenity facilities by incorporating the best international practice wherever feasible to achieve the better ecological and environmental benefits; (iii) review the design document/drawing related to plantation as well as conduct technical review of the vegetation construction and provide expert comments on engineering detailed design in accordance with the contract documents and applicable national design codes, standards and the best international

practices; (iv) provide professional advice and support to PMO, IAs and DI on plantation in preparing technical specifications and other relevant technical sections of the bidding documents for the works; (v) conduct site inspections to review construction progress, provide technical support to construction planning and construction method, and verify the completion and compliance with the contract documents including the design drawing; (vi) assisting team leader in training, workshop and study tour; and (vii) assisting team leader in reporting and other tasks.

9. Wastewater Management Specialist (National)

24. The national wastewater management specialist shall have: i) a bachelor's degree or higher degree in civil engineering or related fields; ii) a 10-year working experience as the designer or engineer or similar in wastewater management project.

25. The national wastewater and sludge expert will assist the international expert in: (i) review any preliminary and construction drawing designs on wastewater project component, i.e., Tuanbei WWTP and other two distributed WWTPs in the rural areas; (ii) good coordination and communication among PMO, IAs, and LDI on wastewater issues; (iii) provision of guidance on wastewater engineering to LDI during the design stage, as well as construction phase; (iv) developing Dengzhou strategic wastewater development plan with the detail requirement specified in work scope considered; (v) improving and updating the pollution control program and its implementation, including monitoring, tracking and enforcing mechanism for non-compliant parties; (vi) discharging industrial wastewater to the public sewer network not meeting the quality standards auditing waste water operators and ensuring sustainable waste water management, focusing on key areas of energy consumption reduction, environment protection, waste water recycling, and efficient maintenance of the network; (vii) developing a mid and long term strategic plan for sustainable solutions for sludge reduction, stabilization, and beneficial use; (viii) implementing, monitoring and supporting public education campaigns; (ix) providing workshops, seminars and trainings in relation to developing various sector development plans and strategies, and capacity development program; (x) Assisting team leader in reporting and other tasks; and (xi) assisting team leader in training, workshop and study tour.

10. Water Supply Specialist (National)

26. The national water supply management specialist shall have: i) a bachelor's degree or higher degree in water supply or environmental engineering related fields; ii) a 10 year working experience as the practitioner or management expert or others in water supply or environmental engineering related sectors.

27. The specialist will be responsible to provide the technical support for the implementation of water supply plant (WSP). The specific tasks may include: (i) responsible to provide all technical, procurement, and construction support for the implementation of the WSP; (ii) provide the technical supports for DCG to comply with the covenant on the design of expansion of water supply systems by reviewing relevant engineering designs, drawings, bill of quantities and other technical documents, including addressing potential technical issues and proposing feasible solutions, and provide expert comments on detailed engineering design in accordance with the design codes and standards; (iii) assist the IAs or design institutes in preparing technical specifications and other relevant technical sections of the bidding documents and ensure that the bidding documents include for contractors to provide equipment operation and maintenance (O&M) manuals in Chinese, and that training in equipment and maintenance is adequately provided for; (iv) provide the assistances in evaluate the technical aspects of the bids related to the contracts; (v) conduct routine site visits and provide technical support and construction planning, supervision and monitoring, and assess construction progress and quality control of the project, and verify the completion and compliance

with the contract documents including the design drawing; and (vi) assist IAs on the start-up, testing and commissioning of newly constructed facilities, including preparing.

11. River Engineer (National)

28. The national river engineer shall have: i) a bachelor's degree or higher degree in civil engineering or water resources management fields; and ii) 10-year working experience as the designer or engineer or others in river restoration projects.

29. The specialist will be responsible to provide the technical and management support for the implementation of the activities related to Tuan river and related components. The specific tasks may include: (i) responsible to provide all technical, procurement, and construction support for the implementation of the Tuan river; (ii) provide guidance and recommendations on the detailed engineering design for the river embankment and flood protection facilities by incorporating the best international practice wherever feasible to achieve the better ecological and environmental benefits; conduct technical review of the river rehabilitation and provide expert comments on engineering detailed design in accordance with the contract documents and applicable national design codes and standards as well as the best international practices; (iii) assist the IAs or design institutes in preparing technical specifications and other relevant technical sections of the bidding documents for the works related the mainstream watercourse improvement and construction of embankment etc.; (iv) conduct site inspections to review construction progress, provide technical support to construction planning and construction method, and verify the completion and compliance with the contract documents including the design drawing; (v) review and inspect the quality of the construction items and safety measures in the construction site, carry out the quality assurance and/or quality control and construction safety plans; and (vi) coordinate with TL/DTL and other team specialist to develop capacity development and training program for river rehabilitation, flood control

12. Solid Waste Management Expert/Solid Waste Separation and Recycling Specialist/Solid Waste Public Awareness Education Specialist (National)

30. The national solid waste management specialist shall have: i) a bachelor's degree or higher degree in civil engineering, environmental science or related fields; and ii) 10-year working experience as the designer or engineer of solid waste management project, working closely with the local communities.

31. The national solid waste experts will assist the international expert in: (i) providing expertise comments from viewpoint of international best management practice on solid waste collection, transfer, and detailed engineering design under the subproject component; (ii) taking key role on assisting DCG in developing a solid waste management strategy and the reuse, reduce, recycle (3R) strategy; (iii) providing input for the training and capacity development, in coordination with project manager, and conducting any other necessary work for smooth and appropriate implementation of the project, assigned by the project manager or deputy project manager; (iv) developing strategic solid waste development plan with the detail requirement specified in work scope considered; (v) monitoring implementation of a solid waste sorting and recycling pilot scheme and providing recommendations to enhance the implementation and to replicate the program in other communities; (vi) conducting community based program including awareness raising, training to the local residents, (vii) training, workshop and study tour; (viii) providing workshops, seminars and trainings in relation to developing various sector development plans and strategies, and capacity development program; and (ix) reporting and other tasks.

32. **Qualifications.** Each consultant's input is shown in table below. For each of the international consultant positions, (i) possession of a related degree, qualification, and/or memberships of related

academic societies; and/or past participation in related training courses; (ii) experience in similar positions for projects or technical assistances; and (iii) experience in projects in the People's Republic of China will be highly evaluated. For each of the national consultant positions, (i) possession of a related degree, qualification, memberships of related academic societies, and/or participation in related training courses, (ii) experience in similar positions for projects or technical assistances, and (iii) experience in working with international organizations and consultants, will be highly evaluated.

Tentative Consultants' Inputs

Position	International	National
Water Resources /Project Management Specialist/Team Leader	10.0	
Construction Management Specialist/Deputy Team Leader		20.0
Water Resources Specialist		3.0
Procurement/Contract Management Specialist		10.0
Environmental Specialist		8.0
Resettlement, Gender and Social Specialist		15.0
Financial Specialist		8.0
Vegetation/Forest Specialist		3.0
Wastewater Management Specialist		4.0
Water Supply Specialist		4.0
River Engineer		3.0
Solid Waste Management Specialist		3.0
Solid Waste Separation and Recycling Specialist		3.0
Solid Waste Public Awareness Education Specialist		3.0
Total	10.0	87.0

Source: Asian Development Bank estimates.

F. Cost Estimate (USD)

No.	Description	Total Cost (\$'000)
1	Consultants	
	a. Remuneration and per diem	
	International consultants	300.00
	National consultants	600.00
	b. International and local travel	45.00
	c. Reports and communications	5.00
2	Equipment	8.00
3	Workshops, training, seminars, and conferences	18.00
4	Surveys	10.00
5	Miscellaneous administration and support costs	14.00
	Total	1,000.00

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-06: EXTERNAL RESETTLEMENT AND SOCIAL MONITORING AND EVALUATION

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban–Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The external resettlement and social M&E will be carried out by a team of specialists through a competent external monitoring agency (EMA). The M&E will be financed by ADB, and the team of specialists will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time), through consultants' qualifications selection. The PMO and IAs will provide assistance to the EMA, particularly in the aspects of field survey, staffing, and logistics.

C. Reporting Requirements

3. The EMA will submit to ADB and PMO semiannual external resettlement and social M&E reports during the implementation of social safeguards and social dimensions for the project (for each report, a soft copy of the English version to ADB and soft copies of the English and Chinese versions to each of the PMO and IAs), not later than 30 days after the completion of the field investigations.

4. The EMA will take full responsibility on the content and quality of the reports; and if necessary, must revise reports based on the comments of ADB. Format of the reports will be proposed by the EMA in the technical proposal. The EMA may seek guidance from ADB's Involuntary Resettlement Safeguards: A Planning and Implementation Good Practice Sourcebook (Draft Working Document) and from examples of reports on ADB website.

D. Scope of External Monitoring and Evaluation

5. According to ADB's requirements, the implementation of the resettlement plan (RP), ethnic minority development plan (EMDP) as well as GAP and SDAP should -besides internal monitoring undertaken by the PMO and IAs—be monitored by the EMA. The EMA to be selected will monitor the implementation of the resettlement plan; and report progress semiannually during the implementation of the project. The EMA will establish an M&E team. The main duties of the team are to (i) carry out the M&E on the implementation of the RP, EMDP, GAP and SDAP to ensure they are implemented and complied with; (ii) advise PMO and IAs on the implementation of the RP, EMDP, GAP and SDAP to ensure policies and procedures are complied with; and (iii) provide information and data, monitoring results, and observations that the team leader will aggregate into the external M&E reports.

E. Specific Tasks of External Monitoring and Evaluation

6. The main tasks to be undertaken by EMA are described but not limited to the following:

E1: M&E of RP Implementation- Specific Tasks

7. The EMA will be engaged intermittently for the whole duration of RP implementation. The EMA will (i) conduct baseline survey (sex-disaggregated) of the affected persons (APs) and monitor to ensure implementation of the RP in compliance with ADB's safeguard and other relevant policies; (ii) make specific and time-bound recommendations to resolve any issues or problems or potential issues or problems on implementation of RP, and advise to improve resettlement implementation to PMO and IAs.; (iii) pay special attention to vulnerable groups, including women, ethnic minority groups, and the poor to assess whether they have participated and fully regained or improved their standard of living; (iv) submit the external resettlement and social monitoring reports simultaneously to PMO and ADB with high-quality acceptable to ADB every 6 months during project implementation; and (v) prepare resettlement due diligent reports, if necessary.

8. The details of work tasks are specified as follows:

(i) Baseline survey - the Agency will conduct baseline survey on APs, to obtain production and living standards (life, production and income levels) of APs as baseline material. Production and living standards survey conducted once every six months, to track changes in production and living standards. Using follow-up survey of a representative sample, random interviews and field observations and other methods shall be used to take the necessary relevant information.

(ii) Regular monitoring and evaluation - During the implementation of the RP, the EMA will conduct semiannual monitoring and verification on resettlement, through on-site observation, follow-up survey of sample households, focus group discussions and key informant interviews, etc., so as to monitor the following activities:

- timely payment of compensation;
- skill training;
- support for vulnerable groups;
- infrastructure and special facilities reconstruction;
- production, resettlement and recovery;
- compensation for loss of land;
- compensation for loss of property;
- schedule of these activities;
- resettlement organization networks;
- use of collective land compensation fees and resettlement earnings; and
- employment income growth.

(iii) Public consultation – The EMA will monitor and evaluate the public consultations carried out by the IAs and concerned organizations.

(iv) Grievance redress - The EMA will visit the affected village groups periodically, RP implementing agencies and village/community committees that accept grievances to assess how well grievances have been handled. It will also meet complainants. The EMA will propose corrective measures and advice for existing issues so as to make the resettlement process more effective. In addition, the EMA will verify the data and findings of internal monitoring reports.

(v) Monitoring Indicators - Baseline survey, follow-up monitoring, and completion evaluation will include but not limited to the following points:

- a) For compliance of compensation payment and support provision

- In case of land-for-land compensation, whether the replaced land is equal in area and location as well as production, living conditions compared with the affected land; in case of cash-for-affected land, whether the replacement cost principle is ensured.
 - Whether compensation for affected structures is equal to materials and labor replacement cost according to standards and specification of the work; whether reused materials are not deducted or discounted; and whether assets are depreciated based on age.
 - Whether compensation for trees and/or crops takes into account market rates.
 - Whether compensation is fully paid to affected persons; either through single installment or multiple installments.
 - Whether other assistance as specified in the resettlement plan is provided to affected persons, as required.
- b) For compliance of information disclosure and community consultation
- Whether project documents (resettlement information booklet and relevant documents) are disseminated to communities.
 - Whether information (results of detailed measurement survey, prices application, disbursement of payment) is promulgated at public places, and whether the process was effective.
 - Whether the affected persons are fully consulted about issues of land recovery, policies on compensation, resettlement, livelihood restoration, and access to a grievance redress mechanism.
 - Whether the concerns and recommendations of the affected persons are resolved during the implementation of the resettlement plan; as well as the manner by which they have been addressed.
- c) For relocation plan and implementation
- Resettlement methods, participation in relocation planning, announcement of relocation plan, and support to relocated households.
- d) For compliance of LAR implementation for the relocated affected persons
- Housing and living conditions in resettlement sites (such as road, domestic power, water distribution and/or drainage system); and restoration of community, education, and health services.
 - Whether replacement housing was provided in a complete and timely manner.
 - Any issues related to transitional housing and/or period.
 - Whether the new location has had any impact on the affected persons' livelihoods.
- e) For compliance of income restoration and support to livelihood stabilization
- Whether support to income restoration is adequately provided, and efficiency of the income restoration support (e.g., training, credit assistance).
 - Post resettlement life and production stabilization. How affected persons stabilize their life and production.
 - Problems that affected persons are facing during the income restoration and life stabilization.
 - Compensation and restoration of temporary land occupation.
- f) For compliance of the satisfaction of the affected persons
- Satisfaction of the determination of losses and compensation valuation.
 - Satisfaction of compensation payment and other assistance.
 - Satisfaction of information disclosure and consultation.

- Satisfaction on life stabilization and income restoration support activities.
 - Satisfaction of resettlement site, relocation site, and completeness of facilities.
- g) For compliance of grievance redress mechanism of the affected persons
- Degree of efficiency of the grievance redress mechanism (time, efficiency of resolution).
 - Results of complaint resolution at various levels.
 - Satisfaction of the grievance redress mechanism.

E2: M&E of EMDP- Specific Tasks

9. The objectives and details of work tasks are specified as follows:

(i) Objectives

10. The objectives of monitoring and evaluation on EMDP include: i) to continue the consultation with the participation of EM people in project area; ii) to investigate and report the implementation progress and variations; iii) to evaluate the effects and impacts to ensure the EMDP objectives have been satisfied; and iv) to learn lessons for future projects.

(ii) Main contents and indicators

11. The main contents and indicators for EMDP M&E are described but not limited to the following:

- a) Implementation of agreed actions in EMDP. In light of the specific actions planned in EMDP, supervision is exercised to check whether the relevant activities are carried out and, if they are not carried out on time, what the specific reasons are and how they should be resolved?
- b) Implementation progress of specific actions. If an action is carried out according to the plan, what is the specific progress, are there any difficulties and how should it be solved?
- c) Benefited/affected peoples of specific actions. To the development of each specific action, what are the target groups, what are the direct or indirect effects, whether according to the requirements in EMDP, or realizing a complete coverage for the target groups? If a project target group is not covered, what are the specific reasons and what are the further solutions?
- d) Performance of specific actions. The EMA will evaluate the benefits of specific actions to EM groups, such as the direct and indirect benefits, what are the potential risks, which action need further measures, etc.?
- e) Implementation management and capacity building. The EMA will monitor and evaluate the organization arrangement, staff inputs, capacity building of PMO, IAs and concerned agencies for EMDP implementation. If necessary, the EMA will advise measures to enhance the implementation capacity and provide training on EMDP.
- f) Necessary adjustments during implementation of specific actions. During EMDP implementation, whether relevant adjustments need to be made according to actual circumstances, what is the specific reason, how to adjust, what are the expected effects?

(iii) Monitoring and Reporting Period

12. EMDP monitoring and evaluation will be conducted semi-annually and reported to PMO and ADB in a timely manner.

E3: M&E of SDAP and GAP Implementation- Specific Tasks

13. Main tasks on SDAP and GAP monitoring are described but not limited to the following:
- (i) Liaise with the social focal persons at PMO and IAs, monitor the appointments of town level focal points, as well as monitor and evaluate the implementation of the SDAP and GAP and other social measures;
 - (ii) Monitor social and poverty alleviation measures and ensure social and poverty targets in the project planning documents are achieved during the project implementation as stated in SDAP and GAP;
 - (iii) Monitor to ensure labor standards are upheld throughout project implementation;
 - (iv) Working with PMO and IAs' social staff, maintain database on social aspects in a consistent manner; Guide the PMO social staff to compile, review and store social progress reports from the IAs, records of any grievances and any other relevant issues; Maintain digital copies of all information; When necessary, guide the PMO social staff to enter data into summary tables in digital format (e.g. to transfer records of grievances from hard copy forms); Monitor to ensure that all information is stored in the PMO filing system, backed up, and can be easily retrieved;
 - (v) Monitor to ensure that local residents affected directly and indirectly by the project have been meaningfully consulted during all times of project implementation, that women and vulnerable groups are consulted (meeting SDAP and GAP targets) and that all consultation processes are adequately documented;
 - (vi) When necessary, provide training to PMO, IAs, as well as concerned township authorities and village committees in the gender disaggregation of all project related activities and ensure that adequate records are kept in accordance with good implementation practice;
 - (vii) Monitor to ensure women and vulnerable households are offered opportunities to participate in employment and other benefits as stated in SDAP and GAP;
 - (viii) Monitor to ensure that women employed during construction and operation stages are offered appropriate facilities (e.g. separate toilets, bathrooms/ showers) which are considered adequate by women and conform to occupational health and safety requirements, as referenced in the SDAP and GAP;
 - (ix) Prepare reporting and monitoring forms for IAs and PMO regarding SDAP and GAP targets and indicators and ensure regular monitoring on these;
 - (x) Prepare regular monitoring reports on the progress of SDAP and GAP activities to be provided to the PMO and ADB;
 - (xi) Monitor and report the social and gender indicators included in the DMF; and
 - (xii) Perform any other tasks deemed necessary to monitor social safeguard issues and social dimension as they apply to the project.

G. Methodology of M&E

14. The EMA will apply both qualitative and quantitative methods during monitoring, including the following.

(i) Quantitative methods

- a) Conduct baseline survey (prior to start of LAR) covering a representative sample of affected persons, focusing more on those seriously affected and vulnerable affected persons.
- b) Conduct semiannual and annual questionnaire survey during project implementation for 50% of severely affected households and 20% of all other affected households.

- c) Use the existing statistical data at local levels, and data from district and/or county resettlement bureaus.
- d) Survey affected businesses and workers.
- e) Conduct final M&E of LAR implementation (prior to project completion) by conducting a sample survey on 50% of severely affected households and 20% of all other affected households.

(ii) Qualitative methods

- a) Review project documents (feasibility study reports and resettlement plan), ADB relevant policies, laws and regulations of the PRC, Henan Province, Dengzhou City.
- b) Consult and discuss with different stakeholders, including Henan Province, and Dengzhou City Government, and social organizations through consultation meetings, in-depth interviews, and group discussions.
- c) Undertake focused group discussions, in-depth interviews with the target affected persons; and/or groups such as severely affected households, relocated households, vulnerable households, and women's groups.

(iii) Site visits

- a) Conduct site visits to original housing areas and resettlement sites, as well as project construction sites to check whether resettlement sites are constructed with complete infrastructure and identify potential impacts on local people during civil works construction.

15. All information and data collected will be processed, analyzed, and included in the baseline or subsequent M&E reports. The EMA must store the processed data to be used for the next M&E. These data will belong to (and will be the asset of) the PMO and will be made available to ADB and the PMO on request. All documentation will be transferred to the PMO at the completion of the contract.

H. Qualification Requirements

16. The EMA should be a registered social organization (research institution, design institute, consulting institution and/or firm, university or nongovernment organizations) without direct administrative subordination relations with the Henan Province, and Dengzhou City Government. The EMA should have 5 or more qualified technical staff members. Professional staff members of the EMA should have degree in economics, sociology and/or anthropology, or relevant field of social sciences; are familiar with ADB's or World Bank's resettlement policies and procedures; and have previous experience in M&E of LAR for projects funded by ADB or World Bank. The EMA should also have experience in undertaking similar projects in the PRC. Three (3) national specialist positions will provide a total of 24 person-months of consulting services to support extremal resettlement M&E. The key responsibilities are proposed but not limited to the following:

(i) Resettlement Specialist and Team Leader

17. The specialist will undertake the following tasks: (i) lead all the activities of the team; (ii) lead and set up the monitoring methodology, including design of baseline and tracer surveys; (iii) work and coordinate with relevant agencies and/or bodies within the project to implement the task of M&E activities; (iv) lead and conduct the M&E activities and required surveys to collect data and information at office and project sites, and then analyze the findings; (v) prepare external resettlement M&E reports which include conclusions and recommendations; (vi) discuss findings with the PMO and IAs to reach agreement on follow-up actions; and (vii) participate in ADB review missions.

(ii) Social Evaluation Specialist

18. The specialist will undertake the following tasks: (i) monitor the LAR activities mentioned in the resettlement plan to ensure LAR is being carried out in compliance with principles, requirements, and procedures according to the resettlement plans and the governments' laws and/or regulations; and monitor the compensation payments and livelihood restoration of the affected persons; (ii) provide inputs to the external resettlement M&E reports, which would include progress, challenges and/or bottlenecks during implementation; and propose solutions and/or recommendations to address these issues; (iii) participate in ADB review missions, if required; and (iv) conduct any other duties assigned by the resettlement specialist/team leader.

(iii) Field Surveyors

19. The surveyors will (i) assist the resettlement and social evaluation specialists in carrying out the monitoring on the implementation of the resettlement plans to ensure that the LAR implementation is in compliance with the resettlement plans; (ii) under the guidance of the resettlement and social evaluation specialists, carry out field surveys; (iii) analyze the data collected from the field surveys; (iv) provide assistance to the resettlement and social evaluation specialists for the preparation of the external resettlement M&E reports; and (v) conduct any other duties assigned by the resettlement specialist/team leader.

Tentative Consultants' Inputs

Position	National
Resettlement specialist/Team Leader	10.0
Social evaluation specialists	8.0
Field surveyors	8.0
Total	26.0

Source: Asian Development Bank estimates

I. Cost Estimate

Cost Estimate (USD)

No.	Description	Total Cost (\$'000)
1.	Consultants	
	a. Remuneration and per diem	
	National consultants (26.0 person-months)	180.00
	b. Local travel	8.20
2.	Reports and communications	2.80
3.	Surveys	3.40
4.	Miscellaneous administration and support costs	2.00
5.	Contingencies	3.60
	Total	200.00

Source: Asian Development Bank estimates.

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-07: EXTERNAL ENVIRONMENTAL MONITORING AND EVALUATION

A. Introduction

1. This document sets out indicative terms of reference for consulting services needed to ensure the smooth implementation startup of the Henan Dengzhou Ecological Protection and Integrated Rehabilitation Project. The direct client of the consulting services is the project management office (PMO). The PMO is under the Dengzhou City Government (DCG) (executing agency of the project). There are three Implementing Agencies (IAs) under this Project, namely Dengzhou Environmental Protection Bureau (DEPB), Dengzhou Water Resource Bureau (DWRB) and Integrated Urban–Rural Development Pilot Area Administration Bureau (IURDPAAB).

B. Implementation Arrangements

2. The external environmental M&E will be carried out by a team of specialists through a competent independent external monitoring agency (EMA). The M&E will be financed by ADB, and the team of specialists will be recruited by the PMO according to ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time) through consultants' qualifications selection. The PMO and IAs will provide assistance to the EMA, particularly in the aspects of field survey, staffing, and logistics.

C. Reporting Requirements

3. The EMA will submit to ADB and PMO the M&E reports regularly twice a year during the implementation of the project. For each report, a soft copy of the English version to ADB and soft copies of the English and Chinese versions to each of the PMO and IAs. The EMA will submit the consolidated M&E report in both English and Chinese within two months after completion of the project.

4. The EMA will take full responsibility on the content and quality of the reports; and if necessary, must revise reports based on the comments of ADB. Format of the reports will be proposed by the EMA in the technical proposal. The EMA may seek guidance from examples of reports on ADB website.

D. Applicable Standards and Regulations

5. The following applicable national standards and regulations shall be complied with in undertaking the external environmental monitoring and evaluation:

National Environmental Laws and Acts

- ✓ Environmental Protection Law (1 Jan 2015)
- ✓ EIA Method (1 Sep 2003)
- ✓ Air Pollution Control Act (1 Jan 2016 Revision)
- ✓ Water Pollution Control Act (1 Jun 2008)
- ✓ Solid Waste Pollution Control Act (1 Apr 2005)
- ✓ Noise Control Act (1 March 1997)
- ✓ Water Act (1 Oct 2002)
- ✓ Water and Soil Conservation Law (1 March 2011)
- ✓ Flood Control Law (24 Apr 2015 Revision)

Relevant Rules and Regulations in Environmental Protection

- ✓ Rules on Environmental Protection Management for Project Construction (No. 253 Decree of State Council)
- ✓ Rules on Soil and Water Conservation (No.120 Decree of State Council)
- ✓ Rules on River Works Management (No.167 Decree of State Council)
- ✓ Comments on Strengthening Environmental Protection Works (No.35 GuoFa 2011)
- ✓ Notice on Effective Control of Flowing Dust in Urban Cities) (No.35 MOEP/MOHURD)
- ✓ Air Pollution Control Action Plan (No.37 2013)

Environmental Protection Standards

- ✓ Air Quality Standards (GB 3095-2012)
- ✓ Air Pollutants Emission Standards (GB 16297-1996)
- ✓ Surface Water Quality Standards (GB 3838-2002)
- ✓ Sewage Discharge Standards (GB 8978-1996)
- ✓ Sonic Environment Quality Standards (GB 3096-2008)
- ✓ Noise Standards in Construction Site (GB 12523-2011)
- ✓ Hazardous Wastes Identification Standards (GB 5085-2007)
- ✓ Hazardous Wastes Storage Pollution Control Standards (GB 18597-2001)

Relevant Project Documents

- ✓ EMPs of Project Components
- ✓ EIAs of Project Components
- ✓ Official EIA Approval Documents

E. Scope of Services

6. Tasks and responsibilities of the consultant team are described but not limited to the following:

- (i) Collect relevant information from the implementing agencies and relevant local government agencies on environment impact.
- (ii) Assist PMO in updating the environmental management plan (EMP) including environmental monitoring plan as necessary to revise or incorporate additional environmental mitigation and monitoring measures, budget and institutional arrangements, based on the detailed design; submit the revised EMP to ADB for approval and disclosure;
- (iii) Develop and provide training to staff from PMO, IAs, Construction Supervision Companies (CSCs) prior to the commencement of each construction package on the following topics: ADB's Safeguard Policy Statement (2009), monitoring and reporting requirements of the EIA and EMP, GRM, preparation and implementation of contractor's EMP, implementation plan, and method statements;
- (iv) Assist PMO and IAs to establish a GRM; assist PMO and IAs in conducting consultation meetings with relevant stakeholders as required, informing them of imminent construction works, updating them on the latest project development activities and GRM.
- (v) Prepare a monthly environmental supervision report template and review the reports provided by the IAs and CSCs to identify progress with implementation of EMP, key issues and actions and environmental performance;
- (vi) Assist the PMO in selecting an external environment monitoring organization; provide guidance to the organization to conduct environmental impact monitoring

according to the environmental monitoring plan in the EMP; and coordinate with this organization on all monitoring activities; review external environment monitoring reports (both construction and operation periods) prepared by the organization;

- (vii) Prepare environmental and safety provisions for the bidding document and contract;
- (viii) Undertake site visits to assess the implementation of the EMP; verify the implementation of the environmental protection measures specified in the EMP; identify environment-related non-compliance issues, highlight areas of good practice, and oversee implementation of necessary corrective actions;
- (ix) Identify any environment-related implementation issues and suggest necessary corrective actions, and reflect these in a corrective action plan;
- (x) Assist PMO to prepare annual environmental monitoring reports in accordance with ADB requirements; and
- (xi) Work closely with and provide support to the environmental management specialist during the process of establishing the environmental monitoring station (EMS)

7. **Qualification.** The EMA should be a registered social organization (research institution, design institute, consulting institution and/or firm, university or nongovernment organizations) without direct administrative subordination relations with the EA and IAs. The EMA should have 5 or more qualified technical staff members. Professional staff members of the EMA should have degree in environment, social sciences or relevant fields; are familiar with ADB's or World Bank's environmental policies and procedures; and have previous experience in M&E for projects funded by ADB or World Bank. The EMA should also have experience in undertaking similar projects in the PRC. Two (2) national specialist positions will provide a total of 24 person-months of consulting services to support extremal environmental M&E. The key responsibilities are proposed but not limited to the following:

1.) **Environmental Specialist/Team Leader**

8. The specialist will undertake the following tasks: (i) lead all the activities of the team; (ii) lead and set up the monitoring methodology, including design of baseline and tracer surveys; (iii) work and coordinate with relevant agencies and/or bodies within the project to implement the task of M&E activities; (iv) lead and conduct the M&E activities and required surveys to collect data and information at office and project sites, and then analyze the findings; (v) prepare external environmental M&E reports which include conclusions and recommendations; (vi) discuss findings with the PMO and IAs to reach agreement on follow-up actions; and (vii) participate in ADB review missions. Specifically:

- (i) Coordinate overall M&E activities in compliance with contract requirements;
- (ii) Develop detailed work plan and procedures;
- (iii) Conduct regular site visits for guidance of local site workers;
- (iv) Hold regular meeting to review work progress and propose actions for improvement;
- (v) Review M&E work plan and training programs;
- (vi) Review and approve M&E reports and consolidated M&E report at completion;
- (vii) Propose suggestions based on the progress and participate in handling pollution accidents;
- (viii) Review variations in relation to environmental components and provide advices;

- (ix) Review environmental sections contained in the construction management plan, and to review compliance of environmental protection systems developed by contractors.

2.) Field Surveyors

9. The surveyors will (i) assist the environmental specialists in carrying out the monitoring on the implementation of the projects to ensure that the environmental implementation is in compliance with the environmental management plans; (ii) under the guidance of the environmental specialists, carry out field surveys; (iii) analyze the data collected from the field surveys; (iv) provide assistance to the environmental specialists for the preparation of the external environmental M&E reports; and (v) conduct any other duties assigned by the environmental specialist/team leader. Specifically:

- (i) Undertake field survey and inspection under the guidance of team leader;
- (ii) Participate in preparation of environmental M&E procedures;
- (iii) Conduct environmental monitoring at project sites, and evaluate control of pollutants for compliance with relevant environmental standards and regulations;
- (iv) Identify issues and report in a timely manner and propose mitigation measures;
- (v) Arrange site meetings for effective coordination with clients and contractors and deliver training on a needed basis;
- (vi) Participate in handling pollution accidents under the guidance of team leader;
- (vii) Assist the team leader in review of variations in relation to environmental components;
- (viii) Prepare external environmental M&E reports and consolidated M&E report;
- (ix) Undertake other tasks assigned by the team leader.

Tentative Consultants' Inputs

Position	National
Environmental specialist / Team Leader	12.0
Field Surveyor	12.0
Total	24.0

Source: Asian Development Bank estimates

F. Inputs and Cost Estimate

Indicative Cost Estimate (USD)

No.	Description	Total Cost (\$'000)
1.	Consultants	
	a. Remuneration and per diem	
	National consultants (24.0 person-months)	180.00
	b. Local travel	8.20
2.	Reports and communications	2.80
3.	Surveys	3.40
4.	Miscellaneous administration and support costs	2.00
5.	Contingencies	3.60
	Total	200.00

Source: Asian Development Bank estimates

INDICATIVE TERMS OF REFERENCE FOR CONSULTING SERVICES FOR PACKAGE CS-08: ASSET MANAGEMENT FOR WATER SUPPLY AND WASTEWATER TREATMENT SYSTEMS

A. Background

1. With the rapid development of China's economy, the PRC State Council has set up a goal for building up eco-friendly societies across the country to promote sustainable development and to adapt to the economic and social changes.
2. The Project will serve as a demonstration example in China on integrated urban-rural development and management, which can be replicated to other municipalities and provinces to other regions of the country. The proposed Dengzhou Ecological Protection and Integrated Rehabilitation Project includes three main outputs: (i) Urban and rural water infrastructure in Dengzhou City improved; and ii) Ecological zones in Han River restored; and (iii) Water resources management capacity enhanced.
3. The Project is located in an integrated urban-rural development area within Dengzhou City, Henan Province. Dengzhou City is a prefecture-level city located in the southwestern area of Henan Province.
4. Strategic, risk-based asset management practices are important during an era of infrastructure replacement. Asset management plans can be developed to document how groups of assets will be managed to provide a satisfactory service level in a sustainable and environmentally responsible manner. A critical component of the asset management structure involves risk management, where information on the physical condition of existing infrastructure is collected and recorded. Although many municipalities have traditionally relied solely on expert opinion when determining asset condition, a wide range of advanced inspection technology and condition assessment tools are now available for those municipalities seeking accurate and reliable condition data. The ability for a utility to effectively manage its water and wastewater infrastructure assets will largely be controlled by its ability to organize large amounts of data.
5. The key objective of the consulting service is to replace the conventional asset management practice by a modern one with the use of (a) digital asset inventory and records on geographic information systems, (b) interactive service delivery system and automatic water leakage detection system, (c) decision support system for asset acquisition and disposal, (d) guidelines and trainings for asset criticality and risk assessment, and (e) performance indicators. The asset management in this document does not only for the components implemented under the project but for the entire DCG asset management. However, the consulting service will demonstrate the system for the selected project components that includes system development, trial applications, and regular application of the system throughout the project implementation period that also covers certain time of project operation. The consulting service will also help build the capacity of DCG in asset management and establishing decision support mechanism.

B. Asset Management of Water Supply Systems

Project Content and Objectives

6. At present, urban water supply is managed by Dengzhou Water Supply Company, while the water supply plants in Dengzhou City are separately managed by the Water Resources Bureau.

Rural water supply plants (WSP) are basically run by the water resources organizations, which means the organization that constructed the WSP will keep managing and operating it. Rural WSPs are operated by the township government. However, a document has been published by the provincial government recently. In the future, the township water supply plants will be planned, invested and operated by the municipal government.

7. In this project, innovative asset management system will be developed to register the inventory, record the performance status, and operation and maintenance needs of the assets. Management information systems and GIS will be utilized simultaneously to establish an asset management system to effectively track water supply assets. The structure design of GIS asset registration system is divided into two subsystems of ground and underground assets. The ground assets include water source, raw water reservoir, water plant facilities, pumping station, water supply tank and various electromechanical equipment, while underground assets include: underground water pipe network and related facilities.

8. To develop an effective and sustainable asset management program for Dengzhou city through the project, by improving existing practices and performance to ensure service standards (as reported in regional benchmarking studies) are achieved and maintained.

9. Key advantages of the asset management system include reduction on unacceptably high levels of nonrevenue water, while Non-revenue water is low in PRC by international standards, it is higher for Henan province, at an average of 38%.¹ Other benefits include planned, timely replacement and maintenance of existing assets, improved services levels, accurate tariffs projections and better cost recovery.

10. A newly established water supply company will be responsible for the operation and maintenance of the project assets, the preservation and appreciation of the assets, asset registration and asset database structure, to register the inventory, record the performance status, and operation and maintenance needs of the assets. Management information systems and GIS system will be utilized simultaneously to establish an asset management system to effectively track water treatment assets.

11. The total investment of the asset management system is roughly estimated to be 700,000 RMB.

12. The objectives of the system are:

- (i) To realize the dynamic management of the newly constructed water supply pipelines;
- (ii) To provide the data support for pipeline construction and inspection management;
- (iii) To assist the rationalization of pipeline planning and the informatization of pipeline business, so as to form a comprehensive, scientific and intelligent information management mechanism for water supply pipeline management.

Project Requirements

13. The scope of the assignment includes water supply plant (WSP), water distribution networks, boost pump station, and intake pipeline in Jiulong town and Sangzhuang town.

¹ https://en.wikipedia.org/wiki/Water_supply_and_sanitation_in_China

14. The consultant will deliver the following outputs:

Project Work Plan

15. Activities under the work plan will include:

- Recruiting and mobilizing experts
- Developing the implementation timetable
- Carrying out work program
- Training utility staff and strengthening governance of the SOE

16. In order to achieve the above objectives, the system must meet the following functional requirements:

- (i) Provide comprehensive software solutions to support HDF database building and data management.
- (ii) Provide software solutions for dynamic pipeline data storage status and data updating.
- (iii) Provide rich pipeline editing function and intelligent attribute editing function.
- (iv) Provide water supply pipeline analysis function to meet various business needs.
- (v) Provide various forms of query and statistics functions.
- (vi) Provide the functions of drawing output, report output and multi-file format output that meet the national standards.
- (vii) Provide pipeline location function, statistical query and analysis function.
- (viii) Intelligent pipeline assistant design, providing feasible design scheme in accordance with national standards.
- (ix) Realize the process of emergency handling, responding to emergencies effectively and efficiently.
- (x) Realize the informatization management of pipeline intelligent inspection and equipment maintenance.
- (xi) Realize the whole process management of pipeline construction business.
- (xii) In the development of interface and function, conform it to engineering design habits to make the system easy to master and use.
- (xiii) To satisfy the connection and service between the system and other professional departments, platform software providers are required to have relevant management experience in professional pipeline research and management.
- (xiv) To satisfy the function expansion in the later stage of the system, the software provided needs to have good expansibility. The supplier should provide free docking service between the existing ports of the water company and the new ports in the future to facilitate the development of new functions and integration with other business systems.
- (xv) Thematic map display: pipe diameter, pipe material, valves, fire hydrants, pressure points, DMA zoning measurement, secondary water supply and other maps.

Functional Requirements for the Asset System of Water Supply Network

17. **Browse:** The system provides a rich and smooth map browsing function. Users can browse the data by zooming in, zooming out and moving. It also supports overlapping display and browsing of vectors, tiles and Google online maps.

18. **Query statistics:** It can query graphics and attribute information interactively. For the queried information, the system provides different statistical methods according to the different needs of users. The statistical results can not only be displayed visually in the form of charts and lists, but also in the form of Excel and PNG.

19. **Tools:** The system labels directly on the map, so that users can quickly locate the label in the future. Moreover, the system provides a variety of positioning methods to support users achieving rapid and accurate map positioning through a variety of channels. It provides convenient data output function of pipeline graphics, which can be output to JPG, PNG and other image formats, as well as to CAD file format.

20. **Display:** The system can display the spatial distribution of valves, pipes and fire hydrants whose caliber is larger than the critical value in the map view window. Users can click on the detailed information of each valve and export it to Excel file.

21. **Analysis:** Provide analysis function such as explosion analysis, section observation and connectivity analysis.

22. **Network editing:** For the pipeline network equipment in the system, the system provides rich editing functions. Mainly: input, delete, move, cut, connect, add points on the line and other operations, provide flexible capture mechanism and multi-element check operation, support revocation and regression functions.

23. **Network input:** Provide new pipe network input function, support the field point and line table data, CAD data and other pipe network data input function.

24. **Authority Management:** The system can not only create new users and roles, but also configure corresponding functional permissions for users and roles, as well as add, delete and modify the permissions for specified users and roles.

Functional Requirements for the Inspection System of Water Supply Network

25. **Handheld terminal of inspection.** Support mainstream mobile operating systems such as Android, which can be installed on smartphones or laptops, and supports the field works of inspection personnel.

26. **Daily management.** (i) Map browsing: Inspection personnel can browse the map of water supply network via handheld terminal, view the information of the network or facilities, and understand its operation status; (ii) Locating: Locate the current position of the inspection personnel and the position of the network in real time. Instantly query and locate the geographical location of a specific place and highlight it. Support three types of locating methods: place name, road center line and locating line; (iii) Measuring: Distance measuring: When a sudden accident occurs in a place or a section of pipe network needs to be repaired, the distance from relevant personnel to the accident site or the length of the pipe network needed to be repaired can be measured immediately at the handheld terminal, so as to improve work efficiency. Area measuring: Area calculation can be carried out in real time per the graphics (circles, polygons, etc.) input by the user; (iv) Network query: Click on query: Click on a pipeline or an intersection to find out all the relevant information. Spatial query: It can carry out administrative division, rectangle, arbitrary range and other spatial queries. Preinstall query: Some specific pipe network information can be queried per presupposition conditions.

27. **Scheduled task.** The new inspection task will be automatically acquired by the handheld terminal and then reminds will be sent to inspection personnel, which does not need to be acquired manually. For the inspection task issued by the monitoring center, personnel can use the handheld terminal to view the inspection route, which have been highlighted for map visualization, assisting the personnel to implement the inspection task efficiently.

28. **Location report.** The GPS coordinates are acquired by the handheld terminal, and then transformed into the coordinates of the GIS. The coordinate information will be sent to the monitoring center according to the set time and frequency, such as every 30 seconds, so that the monitoring center can grasp the position coordinates of the inspectors in real time to facilitate the monitoring and dispatching of the inspectors.

29. **In place feedback.** During the performing of inspection task, when the inspectors reach the designated inspection point, the handheld terminal can give voice and vibration prompts to indicate that the personnel are in place.

30. **Event reporting.** Event reporting can be divided into two categories: inspection route scheduled event feedback and temporary event reporting. When inspection personnel performing the inspection task, the events found can be reported directly to the monitoring center through the handheld terminal. The road, the exact point and the pipeline network where the events are located are automatically read from the map, and the scene can be photographed and uploaded in real time.

31. **Historical events.** Historical events and reporting status can be viewed and searched by period.

32. **Inspection monitoring terminal.** Monitoring terminal can receive real-time information of inspection events reported by mobile terminal, and send inspection tasks to field personnel, so as to realize comprehensive supervision and dispatching of inspection business.

Inspection monitoring

33. **Map browsing.** (i) Browsing: Users can browse the data in an all-round way by means of enlarging, shrinking, moving, resetting, updating and full screen to understand the panoramic topography and the distribution of water supply network of the water supply plant. It also supports overlapping display and browsing of vectors, tiles and Google online maps; (ii) Locating: Instantly query and locate the geographical location of a specific place and highlight it. Support three types of locating methods: place name, road center line and locating line; (iii) Measuring: Distance measuring: When a sudden accident occurs in a place or a section of pipe network needs to be repaired, the distance from relevant personnel to the accident site or the length of the pipe network needed to be repaired can be measured immediately at the handheld terminal, so as to improve work efficiency. Area measuring: Area calculation can be carried out in real time per the graphics (circles, polygons, etc.) input by the user; (iv) Network query: Click on query: Click on a pipeline or an intersection to find out all the relevant information. Spatial query: It can carry out administrative division, rectangle, arbitrary range and other spatial queries. Condition query: Some specific pipe network information can be queried by customizing the conditions.

34. **Location and track.** (i) Real-time position: After the coordinate information reported by the handheld terminal is sent to the monitoring center, the current position information of the inspection personnel can be shown on the map in real time, which facilitates the manager to monitor the inspection work in real time. The unattended monitoring mode is adopted to

automatically complete attendance management and track recording; (ii) Historical track: It can record the daily working track of the inspectors and generate the information of track length and online time of the inspectors in any period. It can be highlighted, and the direction of the track can be marked by arrows, so as to supervise and manage the working status of the inspectors.

35. **Multi texting.** The supervisor can notify the field staffs or dispatch tasks by multi texting.

36. **Distribution of events today.** The monitoring center can receive real-time events reported by the handheld terminal, display the location distribution of events on the electronic map, and view the detailed event information such as pictures and spatial locations reported with events.

37. **Distribution of historical events.** View the events reported on the inspection route in a certain period and the location distribution of events on the electronic map and view the detailed event information such as pictures and spatial locations reported with events.

Inspection Plan

38. **Plan customization.** Monitoring center makes inspection plan, which is divided into three categories: regional inspection, route inspection and equipment inspection. Inspection route can be specified and the period of the execution of inspection plan can be set. Inspection plan serves as a resource that can be reused once customized.

39. **Plan allocation.** All the inspection plans that have been made can be inquired via the monitoring center, and one or several of them can be selected to be assigned to the relevant inspectors along with some basic information of the plan assignment. The system will automatically send inspection tasks to the handheld terminal to ensure that the inspection work can be responded and processed promptly. (i) Overview of events: Records of all the events reported on the inspection route and their status can be viewed. Support event search by time, event type and other conditions; (ii) Statistical analysis: It can carry out work statistics for inspectors in any period, and check the number of events, the length of inspection route, effective mileage, off-line time and arrival rate reported by the inspectors, which can easily provide reliable and accurate basis for work evaluation; (iii) Route setting: The system provides flexible settings, which can customize the inspection cycle, the type of inspection events, the inspector, the type of plan, the working time, etc.

Functional Requirements for the Maintenance System of Water Supply Network

40. Maintenance system is composed of handheld terminal (M/S) and monitoring terminal (B/S), which are integrated and complementary.

Handheld terminal (Mobile/Server, M/S)

41. **Common tools:** Using the handheld terminal, basic operations such as information browsing, map locating, spatial query, distance/area measurement can be carried out.

42. **Task list:** New maintenance tasks can be automatically obtained and alerted. For maintenance tasks issued by the monitoring terminal, maintenance personnel can use the handheld terminal to view the specific spatial location.

43. **Task details:** For the tasks in the task list, details of the task can be clicked to view.

44. **Task processing:** For each task, maintenance personnel can use the handheld terminal to process "receiving" or "withdrawing" orders.

45. **Field feedback:** For the tasks received, the maintenance personnel can report the situation of the site using the handheld terminal when they arrive at the site.

46. **Handling feedback:** The handheld terminal can be timely used for the feedback of specific processing situation, uploading live photos, audio and other multimedia information.

47. **GPS status:** Maintenance personnel can report their GPS spatial position information in real time when processing tasks.

Monitoring terminal (Browser/Server, B/S)

48. **Graphic browsing:** Via monitoring terminal, the pipeline network of the whole area based on electronic map can be viewed, and the spatial distribution of maintenance engineering, maintenance personnel and other information can be visualized.

49. **Event Management:** The monitoring terminal of the system can visually display the basic information of all types of maintenance events in the form of lists and can also display the classified lists per the progress of events.

50. **Emergency repair management:** For the emergency repair events distributed by dispatchers, the monitoring terminal can display visually in the form of a list and indicate the processing status of each event. It can also track, manage and assess the events, alarm and remind the tasks that exceed the time limit, and display graphics per the status of the tasks.

51. **Maintenance:** Supervisors can use the system monitoring terminal to send maintenance tasks to the maintenance personnel's handheld system and track the implementation process and completion of the task in real time.

52. **Statistical analysis:** Not only can the trend of reporting different types of events be analyzed according to the historical situation of maintenance events, but also the overall analysis of the incident execution rate and effective mileage of inspectors can be made.

Required Qualifications

53. The consultancy will be led by a national firm with demonstrated experience in water utility asset management.

54. The following are the required general qualifications, knowledge and experience of the consultants

- National experience in the design and/or implementation of utility asset management systems;
- Experience in developing and managing change management strategies for government or government associated entities;
- Experience in working with senior government officials and development partners;
- Experience in working in the PRC;

- Familiarization with computerized government financial management information systems and how these can be designed/enhanced to effectively support the implementation of the computer-based asset management system; and
- Strong analytical and communication skills (Mandarin and English)
- Experience in the privatization of water and sewerage companies in developing countries (assisted by a local lawyer with relevant knowledge of PRC water laws and company law and a labor redundancy specialist with relevant experience in privatization).
- Supervisory system design, implementation plan compilation and technical support management platform construction
- System Architect (Chief Engineer) to complete the design of the main structure of the system and the development and integration of various software modules/components and guide the development of relevant developers.
- Procurement of hardware and software for organizational system environment
- Overall technical assistance
- Responsible for quality control of planning outline, Planning Research Report and basic data acquisition
- Project progress monitoring and reporting.
- Any other responsibilities assigned by the expert under project management team
- Provide relevant training
- Summary of expert opinions and general contributions
- Coordination of communication among project stakeholders, experts and customers
- Organize project implementation
- Responsible for quality control

55. Computer and Model Expertise:

- Collect data to ensure the accuracy and timeliness of data.
- Establishment of a sound archives management system, strict implementation of archival formulation of all data and original records, to ensure verifiability;
- Preparing Comprehensive Planning
- Establishment of technology support management platform (database development/model establishment/model calibration, etc.)
- Regular inspection and coordination;
- Establish data sharing and quality control mechanism.
- Progress monitoring and reporting
- Any other responsibilities assigned by the project manager and deputy project manager
- Provide relevant training

C. Asset Management of Wastewater Treatment Plants

Objectives and Purpose of the Assignment

56. To develop an effective and sustainable asset management program for Dengzhou City through the project, by improving existing practices and performance to ensure service standards (as reported in regional benchmarking studies) are achieved and maintained.

57. Key advantages of the asset management system include reduction in unacceptably high levels of nonrevenue water, While Non-revenue water is low in PRC by international standards, it is higher for Henan province, at an average of 38%.² Other benefits include planned, timely

² https://en.wikipedia.org/wiki/Water_supply_and_sanitation_in_China

replacement and maintenance of existing assets, improved services levels, accurate tariffs projections and better cost recovery.

58. A newly established water supply company will be responsible for the operation and maintenance of the project assets, the preservation and appreciation of the assets, asset registration and asset database structure, to register the inventory, record the performance status, and operation and maintenance needs of the assets. Management information systems and GIS system will be utilized simultaneously to establish an asset management system to effectively track water treatment assets.

Scope of Work and Detailed Tasks

59. The scope of the assignment includes one wastewater treatment plant (WWTP) in Tuanbei New Town and two township wastewater treatment stations (WWTS) in Rangdong Town and Tuanji Town.

60. The consultant will deliver the following outputs:

Project Work Plan

61. Activities under the work plan will include:

- Recruiting and mobilizing experts
- Developing the implementation timetable
- Carrying out work program
- Training utility staff and strengthening governance of the SOE

Asset Management System

- Asset management diagnostic report of [existing utility's] current asset management policies, plans, and practices. A self-assessment diagnostic guide is available for reference as shown in Table 1;
- Asset management improvement recommendations
- Asset management modules required by the implementation plan:
 - Asset registers (records of purchase and registration of fixed assets, management and Maintenance of fixed assets, Allocation and transfer of fixed assets, scrapping of fixed assets, inventory taking, compensation for loss or damage to fixed assets)
 - Standard operating practices
 - Performance indicators
 - Cashflow forecasts
- Linking asset registers to MIS and GIS
- Inception, progress, and completion reports in accordance with the agreed implementation plan with comment on expected and actual asset management performance results.

Table 1: Asset Management Self-Diagnostic Guide

Asset Management Aspect	Minimum	Core	Intermediate	Advanced
Policy	Corporate expectations are expressed informally	Policy statements are defined for all significant activities. There is a clear link to corporate goals, and action	All policy and strategies are reviewed and adopted by executive team	Asset management policy and strategy are integrated into the organization's

Asset Management Aspect	Minimum	Core	Intermediate	Advanced
	and simply: all departments must update asset plans every 3 years.	plans and accountabilities are stated.	each year. Detailed plans, resources, responsibilities, and time frames are in place.	business processes and subject to audit, review, and updating procedures.
Demand forecast	Demand forecasts are based on experienced staff predictions. Past demand trends and likely future growth patterns are considered.	Demand forecasts are based on robust projections. Risks associated with demand change are broadly understood and documented.	Demand forecasts are based on mathematical analysis of past trends and primary factors. A range of scenarios is developed.	Demand forecast includes risk assessment of different demand scenarios with identified mitigation actions.
Levels of service	Asset's contribution to the organization's objectives and some basic levels of service have been defined.	Customer groups have been defined and requirements informally understood. Levels of service and performance measures are in place covering a range of service attributes. There is annual reporting against service targets.	Customer group needs are analyzed. Costs to deliver alternative levels of service are assessed. Customers are consulted on significant service levels and options.	Levels of service consultation strategy is developed and implemented. Technical and customer levels of service are integral to decision making and business planning.
Asset register	Basic physical information is recorded in a spreadsheet or similar (location, size, type), but may be based on broad assumptions or may be incomplete.	There is sufficient information to complete asset valuation (same as for minimum level, plus replacement cost and asset age life). Asset hierarchy, asset identification, and asset attribute systems are documented.	A reliable register of physical and financial attributes is recorded in an information system with data analysis and reporting functionality. A systematic and documented data collection process is in place. There is a high level of confidence in critical asset data.	Information on work history type and cost, condition, performance, etc., is recorded at the asset component level. There is a systematic and fully optimized data collection program. There is a complete database for critical assets and minimal assumptions for noncritical assets.
Asset condition assessment	Condition assessment is conducted at asset group level (top down). This supports minimum requirements for managing critical assets and statutory requirements (e.g., safety).	Condition assessment program is in place for major asset types prioritized based on asset risk. Data supports asset life assessment. Data management standards and processes are documented. A program for data improvement is developed.	Condition assessment program is derived from cost-benefit analysis of options. A good range of condition data for all asset types may be sampling based. Data management processes are fully integrated into business processes. Data validation process is in place.	The quality and completeness of condition information supports risk management. Lifecycle decision making and financial performance reporting are done. Periodic reviews of program suitability are carried out.

Operations and Maintenance, and Investment Plan

- Develop monitoring mechanism for fixed assets, including condition monitoring (simple condition monitoring illustrated in Table 2 and incidental events recording. To be more specific:

- Check CCTV video playback regularly to prevent video settings from changing due to incidental events.
- Check the CCTV video playback regularly to find out if there is a time period when the video is not recorded, so as to find out the problem, and prevent the loss caused by finding out no video was recorded during the incidental event happened.
- Check whether the CCTV is recording regularly to prevent the software database from being damaged by sudden power failure. If the database is damaged and not repaired, the situation that the video cannot be recorded will occur. In this case the database needs to be repaired manually.
- Check the operating system log regularly to prevent hard disk damage, leading to the system unable to record.
- Develop asset life cycle decision making (opex and capex strategies) based fixed asset register

Table 2: Simple Condition Ranking

Condition Class	Action Required
1	Repair immediately
2	Repair within 1 year
3	Repair within 3 years
4	Repair within 7 years
5	Repair when convenient
6	No damage, repair unnecessary

Institutional analysis- recommendations for new company formed to manage the network

- Based on institutional analysis, determine needs for capacity building (governance, financial management, asset management, general operations and maintenance, as required)

Private sector participation option study

- Recommendations for modalities outsourcing to private companies the operations and maintenance for the water and wastewater network.
- Development of a long list of international and national private companies with a demonstrated success rate in PPP O&M arrangements.

Required Qualifications

62. The consultancy will be led by an international firm with demonstrated experience in water utility asset management.

63. The following are the required general qualifications, knowledge and experience of the consultants

- International experience in the design and/or implementation of utility asset management systems;
- Experience in developing and managing change management strategies for government or government associated entities;

- Experience in working with senior government officials and development partners;
- Experience in working in the PRC;
- Familiarization with computerized government financial management information systems and how these can be designed/ enhanced to effectively support the implementation of the computer-based asset management system; and
- Strong analytical and communication skills (Mandarin and English)

64. The process requires commitment from management. It should be based on a detailed diagnostic study of existing systems. The consultant's outputs are dependent upon the utility providing an implementation team and sustaining the team for the duration of the implementation period. They also depend on the acquisition of new software or modification of existing software, including the geographic information systems (GIS), needed to underpin reliable asset registers and the asset management modules referred to in the implementation plan.

65. As an alternative to a full technical assistance project, a pilot study could be conducted to provide at least a diagnostic report, which could then be used to frame a more substantive assistance project.

Tentative Consultants' Inputs

Position	International	National
<u>Water Supply</u>		10.0
Urban Water Supply and Drainage Specialists		
International Water Supply Specialists	3.0	
System Architect/Chief Engineer		8.0
Computer and Model Experts		16.0
<u>Wastewater</u>		
International Wastewater Engineer	3	
National Wastewater Engineer		16.0
Total	6.0	50.0

Source: Asian Development Bank estimates.

F. Cost Estimate (USD)

No.	Description	Total Cost (\$'000)
1.	Consultants	
	a. Remuneration and per diem	
	International consultants	120.00
	National consultants	265.00
	b. International and local travel	45.00
	c. Reports and communications	10.00
2.	Equipment	16.00
3.	Workshops, training, seminars, and conferences	20.00
4.	Surveys	10.00
5.	Miscellaneous administration and support costs	14.00
	Total	500.00

Source: Asian Development Bank estimates.