FINANCIAL ANALYSIS

A. Introduction

1. This financial analysis includes (i) a financial viability assessment of the water supply component, which is expected to recover all costs through increased revenues from incremental tariff revenues; (ii) a fiscal sustainability analysis to assess the capacity of the final borrower, Zuoquan County Government (ZCG), to provide sufficient funds for all incremental recurrent costs incurred by the project; and (iii) an incremental recurrent cost analysis for the wastewater treatment component to assess the adequacy of wastewater tariffs to cover operation and maintenance (O&M) costs. The financial analysis of the project was carried out in accordance with Asian Development Bank (ADB) policies and guidelines for financial analysis of projects.[1]

2. The project has four outputs: (i) Shixia Reservoir operation and its watershed vegetation improved, (ii) Qingzhang River and Binhe Road rehabilitated, (iii) inclusive water supply and wastewater collection services achieved, and (iv) institutional capacity strengthened. These components (i) address the depletion of the water storage and flood control functions of the Shixia Reservoir, (ii) improve dam flood control facilities operations, (iii) address the continuing deterioration of river water quality caused by nonpoint source pollution and soil erosion, (iv) improve the riparian and aquatic ecosystems of the Qingzhang River, (v) improve existing water supply and wastewater systems, and (vi) provide infrastructure facilities required for economic growth.

B. Financial Evaluation—Water Supply Subcomponent

3. The water supply component is expected to recover all costs through increased revenues from incremental tariff revenues. A financial cost–benefit analysis was conducted to assess the financial viability of this subcomponent. The financial internal rate of return (FIRR) was estimated for the improved water supply subcomponent, which is estimated to cost CNY229.1 million (26.4% of the total project investment cost). The investment cost will mostly finance an expansion of the water supply network, with the installation of water transfer and distribution pipelines. The O&M cost includes costs for workers, chemicals and agents for water treatment, utilities, administration, and taxes. Revenue was estimated based on the projected tariff rates and water consumption.

4. The weighted average cost of capital (WACC) was estimated to compare with the FIRR to assess the financing viability of the output. The project will be financed from two sources: the ADB loan (65.7% of total financing) and government counterpart funds (34.3%). The cost of the ADB loan was estimated at 2.41% per year based on the latest 10-year US dollar swap rate, the contractual spread of 0.5%, and a maturity premium of 0.1%. Income tax was assumed at 25%. The inflation rate was estimated based on the latest international cost escalation factor.[2] The cost of government counterpart funds was estimated at 7.76% based on the government's latest 10-year bond rate, which was adjusted upward to cover the longer period of the project and project

[1] ADB. 2014. Financial Management, Cost Estimates, Financial Analysis, and Financial Performance Indicators. *Operations Manual.* OM G2/BP. Manila; ADB. 2009. *Financial Due Diligence: A Methodology Note.* Manila; and ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

[2] Inflation assumptions as follows:

Item	2017	2018	2019	2020	2021+
Domestic rate of price inflation (%/year)	2.30	2.40	2.50	2.50	2.50
Foreign rate of price inflation (%/year)	1.50	1.40	1.50	1.50	1.50

risk. The inflation rate was computed based on the latest cost escalation factor for the People's Republic of China. The WACC was estimated at 1.42%.

5. The FIRR for the improved water supply infrastructure subcomponent is estimated at 6.89%, and the financial net present value is CNY205 million. As the FIRR is higher than the WACC, investing in the subcomponent is financially viable.

6. The financial viability of the subcomponent was further assessed using four adverse scenarios: (i) revenue reduction, (ii) investment cost increase, (iii) O&M cost increase, and (iv) delay in project implementation. Table 1 summarizes the results of the sensitivity analysis. Financial viability is maintained against all scenarios.

Table 1: Financial Viability and Sensitivity Analysis

Scenario	**FIRR** (%)	**FNPV** (CNY million)
Base case	6.89%	205.0
(i) 3% revenue reduction	5.51%	147.9
(ii) 4% investment cost increase	5.97%	183.3
(iii) 10% operation and maintenance cost increase	6.47%	187.4
(iv) 1-year delay in implementation	4.24%	108.3

FIRR = financial internal rate of return, FNPV = financial net present value.
Source: Asian Development Bank estimates.

C. Financial Statement Analysis—Water Supply Operations

7. The financial statement analysis includes an assessment of the operating cost coverage based on existing tariffs for the improved water supply subcomponent, which comprises the rural North and South Water Supply stations. A financial projection was derived for 10 years after project completion based on the North and South Water Supply companies' financial statements during 2012–2014. Both enterprises are independent self-financing entities operating without subsidies under the authority of the Zuoquan County Water Resources Bureau. They will be responsible for O&M of the water supply systems under the project, which will be financed entirely by tariff revenues. With the improved water quality and service reliability, the estimated cash flow for the companies will be sufficient to cover the O&M cost. Table 2 shows the key financial performance indicators for the North and South Water Supply companies based on financial statements during 2012–2014.

Table 2: Financial Performance of the North and South Water Supply Stations (2012–2014)

Financial Ratio (projected, after project completion)	**North Water Supply Station**	**South Water Supply Station**
Operating ratio (operating expenses/operating revenues)	0.586	0.593
Rate of profit (net earnings/net assets)	0.065	0.084
Financial leverage (total assets/net assets)	1.231	3.203
Ratio of debt to net assets (total long-term debt/net assets)	0.000	1.356

Source: Asian Development Bank estimates.

8. Both companies retain their tariff revenues. The weighted average domestic tariff is CNY3.43 and the non-domestic tariff is CNY4.71.[3] The water supply investment component includes common assets shared by both companies and assets dedicated to each separately.

[3] The current tariffs were introduced in 2009 in the North and in 2003 in the South, and have not been changed.

The costs for these assets are not segregated by water stations. Operating costs have been estimated at CNY3.0 per ton during project implementation and at CNY1.5 after project implementation. Results of the operating costs analysis indicate that existing tariffs cover the O&M costs and will continue to do so following the implementation of the water supply investment. ZCG sets water supply tariffs, following national and provincial guidelines; and a public hearing is mandatory for any tariff adjustment.

D. Fiscal Analysis—Zuoquan County Government

9. The fiscal sustainability analysis of ZCG involves incremental recurrent costs analysis of all project components that are not intended to recover all or a portion of costs through incremental tariff revenues. ZCG will be responsible for (i) servicing the ADB loan; (ii) all O&M costs for project-financed facilities (i.e., residual water supply and wastewater treatment plant [WWTP] O&M costs in case of a shortage in tariff collection) after the extension of the water supply network, the expansion of the WWTP with the project-financed wastewater collection network, the road expansion O&M costs, and the flood protection infrastructure O&M costs; and (iii) providing counterpart funds during project implementation, and the debt service payments after project completion. For the fiscal sustainability analysis, the O&M cost, counterpart fund requirements, and debt service payments were compared with the projected revenues and expenditures of ZCG to assess the fiscal capacity. Two benchmarks for assessment of capacity were used: (i) ZCG has fiscal surplus to absorb project incremental costs; and (ii) the project-related fiscal burden is acceptable, provided it does not exceed 2% of revenues.

10. ZCG's revenue and expenditure were projected based on the historical data of the last 6 years (2010–2015). Then, the O&M cost, counterpart funds, and debt service payment were estimated and compared with ZCG's projected revenue and expenditure during 2016–2022 to determine whether ZCG will be able to bear all the financial obligations during and after the project. Results of the analysis are in Table 3. ZCG's main sources of revenues are the taxes and budget transfers from senior governments. Based on historical performance, ZCG's revenue sources are stable and sustainable. Additional business revenues from a coal power plant capacity expansion are increasing ZCG's revenues, with a resulting surplus during project implementation. ZCG's projected fiscal surplus is sufficient to cover the total project financial obligations resulting from the O&M cost, counterpart funds, and debt service payment. The total project financial obligations will be within 4.2% of ZCG's projected revenue, above the threshold of 2.0%. Historical data show that ZCG has access to finance from banks and provincial government-issued bonds. A significant increase in the financial expenditure owing to the project will be funded through (i) opening cash balances, as they are deemed free and available for use; (ii) access to provincial government-issued bonds during project implementation; and (iii) additional budget allocation to be requested annually. Assurances will be added to legal agreements to ensure availability of funds during the construction and operation of project assets. Fiscal sustainability is concluded based on evidence of historical access to finance ZCG's expenses.

Table 3: Zuoquan County Revenue and Expenditure (CNY million)

Actual	2010	2011	2012	2013	2014	2015
Revenue[a]	838.7	952.9	1,062.7	1,300.2	1,471.7	1,630.6
Expenditure[b]	816.3	924.5	1,093.2	1,349.1	1,476.3	1,739.8
Surplus	22.4	28.5	(30.5)	(49.0)	(4.6)	(109.2)
Accumulated surplus						
Opening balance	229.4	251.7	280.2	249.7	200.7	196.1
Closing balance	251.7	280.2	249.7	200.7	196.1	86.9

Forecast	2016	2017	2018	2019	2020	2021	2022
Revenue[a]	1,906.9	2,062.6	2,283.9	2,522.3	2,779.5	3,007.4	3,258.2
Expenditure[b]	1,627.4	1,792.1	1,967.6	2,163.4	2,378.8	2,616.1	2,876.7
Surplus	279.5	270.5	316.2	358.8	400.7	391.3	381.5
Counterpart funds		34.6	98.7	91.6	89.3	68.8	0.0
Principal repayment		0.0	0.0	0.0	0.0	0.0	33.1
Interest		0.0	0.0	0.0	0.0	0.0	15.7
Annual O&M[c]		0.0	0.0	0.0	0.0	0.0	12.6
Total		**34.6**	**95.1**	**84.8**	**81.8**	**63.4**	**63.3**
Project Cost per Revenue		1.7%	4.2%	3.4%	2.9%	2.1%	1.9%

( ) = negative, O&M = operation and maintenance, ZCG = Zuoquan County Government.

[a] Forecast from 2016 onward based on ZCG's estimate of 10% growth; includes revenue from the Huaneng Zuoquan Coal Electricity Limited Co. Phase I revenues started in 2014, and Phase II revenues start in 2016.

[b] Forecast from 2016 onward based on ZCG's estimate of 10% growth.

[c] Includes incremental costs associated with O&M of project-financed facilities.

Source: Asian Development Bank estimates.

E. Incremental Recurrent Costs Analysis—Wastewater Treatment

11. The wastewater component under the project will increase Zuoquan County WWTP's capacity from 10,000 cubic meters (m^3) per day to 15,000 m^3 per day, and rehabilitate some parts of the broken or aged sewage collection system. Wastewater operations are managed by the Zuoquan Housing Security, and Urban and Rural Construction and Management Bureau of ZCG; and are financed out of general government revenues. The wastewater tariff revenues are transferred to ZCG, and are not dedicated to wastewater operations. An incremental recurrent costs analysis was conducted to assess the capacity to cover the O&M costs of the Zuoquan County WWTP component.

12. The current domestic tariff is CNY0.80/m^3 and the non-domestic tariff is CNY1.10/m^3. The tariff must be adjusted to comply with a new wastewater tariff policy requiring minimum domestic wastewater tariffs of CNY0.95/m^3 and minimum non-domestic wastewater tariffs of CNY1.40/m^3.[4] ZCG sets wastewater tariffs, following national and provincial regulations. A public hearing is mandatory for any tariff adjustment. Wastewater operations operate on a cost recovery basis. The wastewater tariff is separate from the water tariff, but they are normally billed together (with the separate amount showing on the bill).

13. Cost coverage analysis results are in Table 4. During project implementation, the tariff-generated revenue does not fully cover operating costs. Full coverage of operating costs by tariff revenues will be achieved after project implementation, as revenues increase because of higher coverage of customers facilitated by new collectors and capacity at the treatment plant grows.

Table 4: Average Wastewater Tariff Revenues and Operating Costs (CNY1,000/year)

Costs and Revenues	Before Implementation 2017–2021	After Implementation 2022–2031
Wastewater tariff revenues[a]	1,940.2	5,402.7
Operation and maintenance costs[b]	2,726.2	4,851.2

[a] Assumes higher tariffs mandated by the Government of the People's Republic of China.

[b] Excluding depreciation and financial charges.

Source: Asian Development Bank estimates.

[4] Notice on setting and adjustment of wastewater treatment fee (No. [2015] 119) was issued by the Ministry of Finance; the Ministry of Housing, and Urban and Rural Construction; and the National Development and Reform Commission on 21 January 2015.