

## FINANCIAL ANALYSIS

1. The financial analysis has four components: (i) assessment of the financial viability of the revenue-generating output (i.e., improved water supply infrastructure); (ii) assessment of the financial impact on the Chaonan Water Supply Company (CWSC), the implementing agency responsible for the output; (iii) assessment of the financial sustainability of the nonrevenue-generating outputs (i.e., improved water resources protection, and strengthened institutional and staff capacity); and (iv) assessment of the financial management capacity for the project. The financial analysis has been carried out in accordance with Asian Development Bank (ADB) guidelines.<sup>1</sup>

### A. Background—Water Tariff Structure and Tariff Reform

2. After completion of the project CWSC will be supplying water treated at three water treatment plants to 12 townships (i.e., nine in Chaonan District and three in Chaoyang District). CWSC was established by the Chaonan district government (CDG) in 2012 to provide treated water primarily to water users in Chaonan District. CWSC will be responsible for building, operating, and maintaining the water supply system financed under the project.

3. **Current water tariff structure.** CWSC currently collects the majority of water tariffs from townships and villages at wholesale rates, which are significantly lower than rates applied to end users. This is because most existing water transfer and distribution pipes are owned and managed by the townships and villages, not by the district. Even if CWSC's water treatment capacity significantly increased as a result of the project, the company would still face this financial constraint without a tariff reform. CDG is committed to acquiring and managing the entire water transfer and distribution network of Chaonan District as part of the tariff reform and toward the goal of safe drinking water for all Chaonan residents at uniform water tariffs.

4. **Tariff reform.** The proposed tariff reform is gradual, considering the segmented ownership of the water transfer and distribution pipes. The tariff reform comprises two major steps: (i) direct billing to end users in two townships, and billing to villages for other seven townships in Chaonan District by 2019; and (ii) direct billing to end users in seven townships by 2025. End-user water tariff rates vary from CNY3.0 to CNY4.5 per cubic meter (m<sup>3</sup>) as set by the different owners of the distribution pipes. The tariff reform includes a uniform water tariff to residential end users at the proposed rates of CNY3.3/m<sup>3</sup> from 2013 to 2015, CNY3.6/m<sup>3</sup> from 2016 to 2019, and CNY4.0/m<sup>3</sup> thereafter. The tariff reform is envisaged to boost the financial capacity of CWSC; and consequently, help achieve the financial viability of the project.

5. **Affordability of proposed water tariff.** A willingness-to-pay survey for the project confirmed affordability of the proposed tariff rates for end users. The survey showed that the water tariff would remain within 2.2% of household incomes in middle-income households and within 4.8% in low-income households for the project period, based on the assumption of an 8.0% increase of annual household incomes. As tariff rates will remain within 5.0% of household incomes, it is considered affordable for Chaonan residents. The tariff rates are adequate for CWSC to serve the debt, and operation and maintenance (O&M) costs. Very poor and vulnerable households benefit from government transfer programs, such as the minimum living allowance for rural and urban poor, that cover expenses. Willingness to pay at the same rate is

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<sup>1</sup> ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

higher in unconnected villages. Structured institutional and tariff reform may result in lower water tariffs.

## B. Financial Viability of the Improved Water Supply Infrastructure Output

6. The financial internal rate of return (FIRR) was estimated for the improved water supply infrastructure output, which will require about 90% of the total investment cost of \$230.75. The project cost comprises investment and O&M costs. The investment cost consists of civil works, equipment, materials, other related expenses (e.g., design and implementation supervision), and physical contingency. The investment cost will mostly finance an expansion of the Qiufeng water supply plant (WSP), an upgrade of the Jinxi WSP, construction of the Longxi WSP, and installation of water transfer and distribution pipelines. The O&M cost includes costs for workers, chemical and agents for water treatment, utility, water treatment plant maintenance, administration, and taxes. Revenue was estimated based on the projected tariff rates and water consumption.

7. **Weighted average cost of capital.** 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 (43.34% of total financing) and government counterpart funds (56.66%). The cost of the ADB loan was estimated at 3.91% per annum based on the latest 10-year US dollar swap rate, the contractual spread of 0.4%, and a maturity premium of 0.1%. Income tax was assumed at 25.0%. The inflation rate was estimated based on the latest international cost escalation factor. The cost of government counterpart funds was estimated at 7.0% based on the government's latest 10-year bond rate, which was adjusted upward to cover the longer period of the project and project risk. The inflation rate was computed based on the latest cost escalation factor for the People's Republic of China. There was no income tax assumed for the government's counterpart funds. The WACC was estimated at 2.93%, as shown in Table 1.

**Table 1: Weighted Average Cost of Capital**

<b>Financial Output</b>	<b>ADB</b>	<b>Government</b>
A. Amount (\$ million)	100.00	130.75
B. Weight	43.34%	56.66%
C. Nominal cost	3.91%	7.00%
D. Tax rate	25.00%	0.00%
E. Tax-adjusted nominal cost	2.93%	7.00%
F. Inflation rate	1.89%	2.50%
G. Real cost	1.02%	4.39%
H. Weighted output of WACC	0.50%	2.35%
<b>WACC</b>	<b>2.93%</b>	

ADB = Asian Development Bank, CNY = yuan, WACC = weighted average cost of capital.  
Source: Asian Development Bank estimates.

8. **Financial internal rate of return.** Table 2 summarizes the FIRR and the financial net present value (FNPV) of investing in the improved water supply infrastructure output. Estimation of FIRR and FNPV is shown in Table 3. As the FIRR (4.38%) is higher than the WACC, investing in the output is financially viable. Using the WACC, the FNPV was estimated at CNY208.9 million.

9. The financial viability of the output 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 2 summarizes the results of the sensitivity analysis. Financial viability would be maintained against a 10% increase in operation and cost or a 1-year delay in project implementation. On the other hand, the investment would be financially viable against only up to 3% reduction of the revenue or 4% increase in the investment cost. This reaffirms the importance of an adequate water tariff and close monitoring of the investment cost overrun for the financial viability of the output.

**Table 2: Financial Internal Rate of Return and Sensitivity Analysis**

<b>Scenario</b>	<b>FIRR</b> %	<b>FNPV</b> (CNY million)
Base case	4.38	208.9
(i) 3% revenue reduction	2.94	1.4
(ii) 4% investment cost increase	2.91	9.3
(iii) 10% O&M cost increase	3.01	10.1
(iv) 1-year delay in implementation	3.37	55.3

CNY = yuan, FIRR = financial internal rate of return, FNPV = financial net present value, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

**Table 3: Financial Internal Rate of Return and Net Present Value Estimation (CNY million)**

<b>Year</b>	<b>Capital Expenditure</b>	<b>Operating Inflows</b>	<b>Operating Outflows</b>	<b>Operating Cash Adjustments</b>	<b>Residual Value</b>	<b>Net Cash Flow</b>
2014	22.8	0.0	0.0	0.0		(22.8)
2015	204.0	0.0	0.0	0.0		(204.9)
2016	204.9	0.0	0.0	0.0		(204.9)
2017	204.9	0.0	4.5	0.0		(209.4)
2018	204.9	52.2	17.9	2.8		(173.4)
2019	295.9	69.6	26.7	2.6		(255.6)
2020	36.3	87.1	30.0	3.2		17.6
2021	36.3	91.0	31.9	1.8		21.0
2022	36.3	93.0	32.3	1.3		21.1
2023	36.3	93.0	32.6	1.4		22.7
2024	36.3	162.6	33.0	0.9		22.8
2025	0.0	162.6	34.2	14.1		114.3
2026	0.0	162.6	34.4	14.1		114.1
2027	0.0	162.6	34.4	14.4		113.8
2028	0.0	162.6	34.4	14.6		113.6
2029	0.0	162.6	34.4	14.9		113.4
2030	0.0	162.6	34.9	15.0		112.7
2031	0.0	162.6	34.9	15.2		112.5
2032	0.0	162.6	34.9	15.5		112.2
2033	0.0	162.6	34.9	15.7		112.0
2034	0.0	162.6	34.9	16.0		111.8
2035	0.0	162.6	35.4	16.1		111.1
2036	0.0	162.6	35.4	16.3		110.8
2037	0.0	162.6	35.4	16.5		110.6
2038	0.0	162.6	35.4	16.8	316.3	426.6
					<b>FNPV:</b>	<b>208.9</b>
					<b>FIRR:</b>	<b>4.38%</b>

( ) = negative, CNY = yuan, FIRR = financial internal rate of return, FNPV = financial net present value.

Source: Asian Development Bank estimates.

### C. Financial Impact of the Investment on Chaonan Water Supply Company

10. Based on CWSC's financial statements 2010–2012,<sup>2</sup> financial projection was derived for 10 years after project completion. It shows that the estimated cash flow is sufficient to serve debt for the ADB loan and cover the O&M cost. Table 4 shows key indicators of the financial projection for CWSC. The high current ratio shows CWSC's sufficient capacity to absorb short-term debt. The high debt service coverage ratio confirms that CWSC would have sufficient internal cash generation to cover the debt over the project period. The results suggest that CWSC will be able to operate financially sustainably if the tariff reform is implemented on time.

**Table 4: Key Financial Indicators of Chaonan Water Supply Company**

Item	Actual 2012	Projection			
		Construction		Operation	
		2014	2017	2021	2025
Revenues (CNY million)	25.0	25.0	25.0	121.8	198.0
Operating expenses (CNY million)	24.8	24.8	41.0	108.7	116.8
Net income after tax (CNY million)	0.1	0.1	(16.1)	5.4	42.4
Current ratio	2.2	3.0	5.7	7.6	14.7
Debt service coverage ratio <sup>a</sup>	n.a.	23.0	9.0	3.1	3.4

<sup>a</sup> Debt service coverage ratio for 2012 is indicated as not applicable, as CWSC did not have debt in that year.

( ) = negative, CNY = yuan, CWSC = Chaonan Water Supply Company, n.a. = not applicable.

Source: Asian Development Bank estimates.

### D. Financial Sustainability of Nonrevenue-Generating Outputs

11. The fiscal impact of counterpart fund contribution and interest payment for the ADB loan on CDG was assessed. Based on CDG's financial statements of the past 5 years, financial projection was derived. Based on 8% revenue growth, which is conservative compared with the annual revenue growth rate of 16% in the last 5 years, CDG's counterpart fund contribution and interest repayment will remain less than 4% of the projected revenue throughout the project period, which indicates manageable fiscal stress for CDG.

### E. Financial Management Assessment

12. A financial management assessment (FMA) of the executing and implementing agencies has been conducted for the project in accordance with ADB's pertinent guidelines (footnote 1) and an ADB publication on financial due diligence.<sup>3</sup> The FMA includes a review of the executing and implementing agencies, funds flow arrangement, the staff of finance, accounting policies and procedures (segregation of duties, budgeting system, payments, policies and procedures, cash and banking, safeguarding assets, other offices and implementing agencies), internal and external auditing, reporting and monitoring, and information systems. The instrument used for the assessment was ADB's FMA questionnaire.

13. The Guangdong Provincial Finance Department, the project imprest account holder, has experience in donor-funded projects, including the Guangdong Energy Efficiency and

<sup>2</sup> Financial statements for CWSC's incubated stage is available from 2010 to 2012.

<sup>3</sup> ADB. 2009. *Financial Due Diligence – A Methodology Note*. Manila.

Environment Improvement Investment Program, Tranches 1 to 3.<sup>4</sup> The Chaonan Finance Bureau (CFB), on behalf of CDG, will be responsible for the financial management of the project under the guidance of the Guangdong Provincial Finance Department. The assessment confirmed that CFB financial staff has adequate academic qualification and professional experience as financial specialists or accountants. The audit reports show that the accounting practice of CFB is in accordance with the national accounting standard, which is harmonized with the international accounting standard. Nonetheless, neither CDG nor CFB has experience with foreign-funded projects. Special attention shall be directed to the reporting system, cost control and audit process, loan proceeds disbursement and loan repayment, fund monitoring and management, and contract implementation. The overall financial management risk of the project was therefore rated *medium* at appraisal.

14. It is important for CFB staff to gain understanding on ADB policies and procedures, particularly disbursements, as they have no experience with ADB projects. The implementing agencies—CWSC and five district bureaus—will cooperate with CFB on financial management for respective subcomponents. The role of the implementing agencies lies more within the technical than the financial aspect of subcomponent implementation. The project preparatory technical assistance already provided CFB and the implementing agencies with training on disbursement, and the project will also continue to do so to further strengthen their financial management capacity for the project. Besides, it was agreed that the project management office would (i) develop a financial management manual to guide staff activities and ensure staff accountability, (ii) provide regular training on ADB's financial management and disbursement practices, and (iii) purchase financial software for computerized accounting and regularly back up the accounting data. The implementation arrangements are considered adequate for the financial management of the project.

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<sup>4</sup> ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility and Administration of Grant to the People's Republic of China for the Guangdong Energy Efficiency and Environment Improvement Investment Program*. Manila.