

## FINANCIAL ANALYSIS

### A. Introduction

1. The financial analysis was conducted in accordance with Asian Development Bank (ADB) guidelines.<sup>1</sup> Financial sustainability analyses were carried out for the non-revenue-generating elements of the project. For the component aimed at improving the central heating network, which has a cost-recovery objective, a financial viability analysis and a tariff analysis were conducted.

### B. Financial Sustainability Analysis

2. Financial sustainability analyses were carried out for the non-revenue-generating elements, including construction or upgrade of urban roads and associated infrastructure, public parks and “living streets”, and water supply and sewerage networks; solid waste management; and wetland restoration and rehabilitation. The Akesu Municipal Government (AMG) is to provide counterpart funds, service debt for the whole project, and finance the operation and maintenance (O&M) of the non-revenue-generating elements after construction. Therefore, the AMG’s financial statements of the last 5 years (2009–2013) were reviewed in detail to assess historical fiscal performance, capital structure, generation of internal funds to support project implementation and future debt service, and O&M after construction. Projections were prepared to assess the AMG’s likely financial performance for a period of operations after commissioning.

3. **Historical revenue and expenditure.** The historical financial performance was analyzed to determine whether the AMG can provide the required counterpart funds during construction, and necessary funds for O&M and debt service during operations. Income is sourced from taxes (e.g., value-added tax, business tax, income tax, resource tax, real property tax), non-tax revenues, and funding from central government revenue. Expenditures are categorized into general budget expenditures, such as general public services, education, public safety, staff welfare, environmental protection, agriculture, forestry and water, and central government funding expenditure.

4. Like most municipalities in the People’s Republic of China (PRC), Akesu has experienced robust socioeconomic development since the early part of the century. According to statistics, fiscal revenues grew at an average annual rate of 22.89%, from CNY0.86 billion in 2009 to CNY1.95 billion in 2013, while expenditures grew by an annual 22.31% in the same period.

5. **Projections of revenue and expenditure.** The financial forecasts assume that revenues and expenditures after 2013 will increase at the average growth rate experienced from 2009 to 2013.

6. **Results of the fiscal impact analysis.** The total project investment is estimated at \$250.99 million (CNY1,543.57 million equivalent), and the AMG will finance \$100.99 million (CNY621.07 million equivalent). The projection indicates that all project components are expected to receive sufficient counterpart funds during implementation (Table 1). The municipal contributions were analyzed in terms of affordability relative to the revenues and expenditures projected for 2015–2017. During the implementation period, annual funds required range from CNY170.61 million to CNY210.04 million, or an average of CNY207.02 million over 3 years. This

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<sup>1</sup> ADB. 2005. *Financial Management and Analysis of Projects*. Manila; ADB.2009. *Financial Due Diligence: A Methodology Note*. Manila.

represents 4.71%–8.15% of the AMG’s projected revenues and 2.94%–5.03% of its projected expenditures during 2015–2017.

7. The AMG will pay interest on the ADB loan, with the first \$3.00 million of interest and other charges during construction to be capitalized under the loan during the grace period. Table 1 shows that in 2020, the first year of repayment of the ADB loan, annual debt service represents 0.91% of the AMG’s projected revenues, and 0.57% of its projected expenditures.

8. Annual funds required for O&M of the five non-revenue-generating elements in 2018 are estimated at CNY25.69 million, and will increase to CNY31.23 million in 2022. This represents 0.47%–0.25% of AMG revenues and 0.29%–0.16% of AMG expenditures projected for this period.

**Table 1: Akesu Municipal Government – Fiscal Impact Analysis**  
(CNY million)

Item	2015	2016	2017	2018	2019	2020	2021	2022
Total revenues	2,950	3,626	4,456	5,475	6,728	8,268	10,160	12,485
Total expenditures	4,779	5,846	7,150	8,745	10,696	13,082	16,001	19,571
<b>Annual counterpart fund</b>	240.43	170.61	210.04					
% of total revenue	8.15	4.71	4.71					
% of total expenditures	5.03	2.92	2.94					
<b>Annual debt service</b>	2.57	6.03	8.93	27.63	28.39	75.00	73.74	72.27
% of total revenue	0.09	0.17	0.20	0.50	0.42	0.91	0.73	0.58
% of total expenditures	0.05	0.10	0.12	0.32	0.27	0.57	0.46	0.37
<b>Annual operation and maintenance</b>				25.69	26.97	28.32	29.74	31.23
% of total revenue				0.47	0.40	0.34	0.29	0.25
% of total expenditures				0.29	0.25	0.22	0.19	0.16

Source: Asian Development Bank estimates.

9. In conclusion, based on generally accepted criteria employed by the World Bank—that the counterpart contributions by the municipality are considered affordable if the required annual counterpart contribution does not exceed 15%–20% of the projected total annual construction budget—the AMG should have adequate provision for counterpart funding, debt service, and O&M coverage. Further, it is expected that its fiscal revenues will grow in line with economic development, providing it with more resource mobility to fund the proposed project components.

### C. Financial Viability Analysis

10. The central heating component is the only one that generates direct revenue. So a financial viability analysis of this component has been carried out on the basis of the financial internal rate of return (FIRR) being greater than the weighted average cost of capital (WACC), a positive financial net present value using the WACC as the discount factor, and sensitivity tests. The WACC is calculated based on the percentage of debt and equity associated with the investment cost. Sensitivity tests were undertaken to test the robustness of the FIRR to changes in the underlying parameters, i.e., an increase in capital and operating costs and a decrease in revenues, or delays in the component’s implementation.

11. **Projection of revenues and costs of the central heating component.** Project financial statements on balance sheet, income statement, and cash flow projections were prepared for the central heating component to estimate average tariffs required to meet operating costs and debt service. Technical data and costs are obtained from the feasibility study report to form the basis of the financial analysis and calculation of the FIRR. Key assumptions are: (i) tariff assumed at CNY20 per square meter (m<sup>2</sup>) during 2015–2034 (no tariff increase assumed); (ii) O&M includes salaries, electricity, water, and others.; (iii) tax rate at 25%; and (iv) demand based on additional households served per the feasibility study report's indication.

12. **Weighted average cost of capital.** The WACC is calculated based on the ratio of debt and equity in the overall investment cost, and it is assumed that the financing sources would consist of AMG equity contributions and ADB's foreign currency loan, with an interest rate of 3.01% on the ADB loan and 8.00% for the AMG, an annual international inflation rate of 1.40%, and a domestic inflation rate of 3.00%. As shown in Table 2, the real WACC for the central heating component is estimated at 1.78%.

**Table 2: Weighted Average Cost of Capital of Central Heating Component**

Source	ADB	AMG	Total
Amount (CNY million)	145.55	44.32	189.87
Weighting (%)	76.66	23.34	100.00
Nominal cost (%)	3.01	8.00	
Income tax rate (%)	25.00	0.00	
Tax-adjusted nominal cost (%)	2.26	8.00	
Inflation rate (%)	1.40	3.00	
Real cost (%)	0.85	4.85	
WACC (%)			1.78

ADB = Asian Development Bank, AMG = Akesu Municipal Government, WACC = weighted average cost of capital.  
Source: Asian Development Bank estimates.

13. **Financial internal rate of return.** The FIRR of the central heating component was calculated at 8.03%, with a financial net present value of CNY180.20 million, using the WACC as the discount factor. The FIRR estimate compares favorably with the WACC, making the component financially viable. The sensitivity analysis shows that the financial viability remains robust under the following adverse conditions: (i) 10% increase in capital costs, (ii) 10% increase in operating costs, (iii) 10% decrease in revenues, and (iv) 1-year delay in project implementation (Table 3).

**Table 3: Financial Internal Rate of Return and Sensitivity Analysis**

Component	Indicator	Unit	Base	Capital	Operating	Revenue -10%	1-Year Delay	WACC
				Cost +10%	Cost +10%			
Central heating network improvement	FIRR	%	8.03	7.06	6.44	4.66	6.75	1.78
	FNPV	CNY million	180.20	162.12	130.63	77.94	137.81	

CNY = Chinese yuan, FIRR = financial internal rate of return, FNPV = financial net present value, WACC = weighted average cost of capital.  
Source: Asian Development Bank estimates.

## D. Tariff and Affordability

14. Tariff and affordability analyses for the central heating component aimed to assess the affordability by determining the percentage of household income required to meet the estimated monthly bill for the heat supply. The affordability analysis compares the average per capita disposable income of consumers with their heat consumption. Generally, the tariff is affordable when heat consumption does not exceed 5% of per capita incomes.

15. According to the statistics, per capita disposable income of urban residents in Akesu has grown at an average annual rate of 12.2% from CNY12,302 in 2008 to CNY21,840 in 2013. Based on the growth rate, per capita disposable income is forecast to increase after 2013. The average housing area per capita is assumed to grow at 0.48% per annum, based on the historical growth from 33.43 m<sup>2</sup> in 2010 to 33.75 m<sup>2</sup> in 2012. The tariff for residential heat consumption was CNY19 per cubic meter in 2013, and is CNY20 per cubic meter during the projection period. As shown in Table 4, the per capita heating expense ranges from 1.29% to 2.49% on average during the projection period, lower than the 5% threshold, which shows that the current tariff level is affordable.

**Table 4: Heat Supply Tariff and Affordability**

Item		2015	2016	2017	2018	2019	2020	2021
Average income		27,476	30,819	34,568	38,772	43,489	48,779	54,712
Heating	CNY	684.7	688.0	691.3	694.6	697.9	701.2	704.6
	%	2.49	2.23	2.00	1.79	1.60	1.44	1.29

CNY = Chinese yuan.

Source: Asian Development Bank estimates.

## E. Financial Management Assessment

16. The purpose of the financial management assessment is to assess the financial management capacities of the executing and implementing agencies, and the project operating agencies. The instrument used for the assessment of the executing and implementing agencies is ADB's standard financial management assessment questionnaire and financial statements.

17. The assessment indicates that the agencies responsible for project implementation and operation satisfy ADB's financial management requirements. They have satisfactory financial management capability to (i) record required financial transactions and balances, (ii) provide regular and reliable financial statements and monitoring reports, and (iii) safeguard financial assets.

18. The executing agency has participated in many earlier ADB projects. But for the implementing agency it is the first implementation of an ADB project, and its financial, accounting, and management staff are not familiar with ADB loan management policies and procedures. Training on ADB loan management policies and procedures covering procurement, disbursement, financial management, and financial reporting needs to be provided to boost the professional capacity of relevant staff before and during the early stages of project implementation.

19. The risk assessments are based on existing circumstances, staffing, and procedures for the executing agency and implementing agency, and include recommendations for risk mitigation measures. The assessment also reviewed whether accounting and internal controls of the executing and implementing agencies are adequate to ensure that project funds are used

economically and efficiently and for the purpose intended, and that the use of the funds is properly reported. Given that the implementing agency is new to ADB projects, the overall financial management risk rating of the project at the appraisal stage is moderate.