

## **FINANCIAL ANALYSIS**

### **A. Introduction**

1. The Air Quality Improvement in the Greater Beijing–Tianjin–Hebei Region—Regional Emission-Reduction and Pollution-Control Facility (the facility) is the third in a set of multiyear projects by the Asian Development Bank (ADB) that seek to support air quality improvement in the greater Beijing–Tianjin–Hebei (BTH) region.<sup>1</sup> This project aims to help remove the barriers to deploy high technology in pollution reduction investment, such as lack of access to suitable financing and high perceived risks in investments in high and emerging technologies. The facility will leverage financing and scale up investments in advanced technologies to reduce air pollution in agriculture, energy, transport, and industry. It will achieve this by (i) financing medium- and large-scale subprojects to control emissions and reduce pollution, (ii) providing technical support to enhance the readiness of such projects, (iii) developing capacity, and (iv) promoting knowledge transfer and high technology demonstration with new business models to scale up their deployment. The facility will use the financial intermediation loan modality. It will create funds at different administrative levels and lend directly to industries. China Energy Conservation and Environmental Protection Group (CECEP), a state-owned enterprise with substantial experience in investing in clean energy technologies and managing clean energy funds, and with technical knowledge of advanced technologies, will act as the implementing and executing agency. CECEP’s majority-owned subsidiary, CECEP Huayu Fund Management Co., Ltd. (CECEP Huayu) will manage the facility and the funds. CECEP will provide expert advice to CECEP Huayu on potential investments. CECEP Huayu will assess and approve investments on individual subprojects, as well as monitor implementation and performance.

2. The financial due diligence for the project comprises (i) a financial management assessment (FMA) and financial performance analysis of CECEP and CECEP Huayu; (ii) agreement on selection criteria for subprojects; (iii) agreement on due diligence for subborrowers and selection criteria for subborrowers; (iv) application of fund structure and draft term sheet for the funds; (v) financial analysis of a proposed initial set of subprojects; (vi) financial risk assessment and management; and (vii) assessment of the facility’s financial sustainability.

### **B. Summary of Financial Management and Financial Performance Analysis of Partner Agencies**

3. The FMA found that CECEP, CECEP Huayu, and Shanghai Pudong Development Bank (SPDB) as the entrusted bank have the financial management systems and procedures in place to perform proper financial management and reporting necessary for smooth project implementation. SPDB has complied with the requirements of establishing sustainable operation systems deemed adequate for project implementation. CECEP and CECEP Huayu practice accrual-based accounting and follow the People’s Republic of China (PRC) business accounting standards, which are consistent with international accounting standards. Their accounting procedures are aligned with the regulations and policies issued by the Ministry of Finance, which are considered effective and adequate for the project.

4. The designated accounting and financial staff of CECEP are recognized as sufficient for the project, and CECEP has a lot of experience in participating in international financial institutions’

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<sup>1</sup> The greater BTH region (referred to as the BTH region) includes Beijing and Tianjin municipalities; Hebei, Henan, Shandong, Shanxi, and Liaoning provinces; and Inner Mongolia Autonomous Region.

loan projects or technical assistance projects.<sup>2</sup> However, CECEP Huayu has adequate capacity with some limitations to undertake the designated tasks. For the proposed ADB loan, CECEP Huayu has formed a very capable top management team with sufficient experience in both debt and equity investment funds, but its staffing at the implementing level is found insufficient. CECEP Huayu needs to hire more staff and retain capable debt and equity investment professionals. CECEP Huayu has formulated a new recruitment plan and a compensation incentive policy especially for the ADB loan project, and submitted them to CECEP for approval. On the other hand, the newly recruited staff are likely to be unfamiliar with ADB's guidelines and procedures on procurement, disbursement, and safeguards. CECEP Huayu and ADB have agreed on suitable measures for CECEP Huayu staff, such as capacity development activities, which will be implemented before loan effectiveness.

5. CECEP is one of the largest state-owned enterprises specialized in energy conservation, clean energy, resource recycling, and environmental protection businesses. Its profit margin is not high but the cash flows are stable. It is financially robust and has the financial strength to undertake the fundamental investment risks, including technical, financial, and credit risks, as well as market risks such as foreign exchange rate risk and interest rate risk associated with the ADB loan. When dealing with foreign exchange rate risk and interest rate risk, CECEP expects to obtain regular monitoring reports and professional advice from SPDB, and to have timely access to related risk-mitigating financial instruments and measures arranged by SPDB.

6. Since 2012 the external audit reports for CECEP, CECEP Huayu, and SPDB have had an unqualified opinion. SPDB fully complies with prudential regulations set by the regulator, China Banking Regulatory Commission. The financial management risks were assessed to be moderate. Risk analysis of CECEP, CECEP Huayu, and other key institutional arrangements found four substantial risk areas: (i) financial sustainability of the project implementation structure, (ii) timing of the establishment of various dedicated funds and identification of enough subprojects for these funds to invest in, (iii) performance of fund investments, and (iv) fund management team staffing. The conclusion of the risk analysis is that the project is feasible considering CECEP Huayu's capacity, its firm commitment, and CECEP's resources. The overall project risk can be mitigated to a low level if the recommended measures are adopted.

### **C. Financial Selection Criteria**

7. Subprojects are required to meet selection criteria to ensure the sustainability of the facility.<sup>3</sup>

8. The financial viability criteria are:

- (i) The estimated subproject investment and operational costs, as well as cash inflows, must be clearly presented and must be reasonable.
- (ii) The financial internal rate of return (FIRR) calculated on a real basis in consistence with ADB guidelines on the financial management and analysis of projects shall be greater than the weighted average cost of capital.
- (iii) The FIRR must be robust under various sensitivity scenarios.
- (iv) The subborrower's debt service coverage ratio, with consideration of the debt investment in the relevant subproject and calculated as per the related ADB

<sup>2</sup> For example, CECEP acted as project management office for the Energy Efficiency Financing Project of the World Bank, and its consulting subsidiary undertook many technical assistance projects for ADB and the World Bank.

<sup>3</sup> Selection criteria are in Appendix 2 of the project administration manual (accessible from the list of linked documents in Appendix 2 of the main text of the report and recommendation of the President).

guidelines, shall be greater than 1.2. Any inconsistency shall require ADB's prior acceptance.

- (v) The subborrowers must be capable to contribute, with consideration of any equity enhancement from the facility and funds' put-protected equity investment, a minimum of 20% of the total subproject investment cost as counterpart financing.
- (vi) The payback period of subprojects shall match the repayment period of subloans.

9. All subborrowers must be financially creditworthy and not have a poor credit record, as recorded in the People's Bank of China credit history database.

#### **D. Financial Assessment of Initial Group of Subprojects**

10. During project processing, six subprojects were identified that have a high degree of project readiness and conform to ADB guidelines for project financial management and analysis.<sup>4</sup> The analysis was based on the incremental financial costs and benefits, as assessed in the feasibility studies that were available.

11. For subsequent subprojects, CECEP Huayu will conduct a similar financial analysis and apply the same selection criteria. CECEP Huayu will also conduct its own due diligence of these subprojects, in accordance with ADB guidelines.

12. **Financial viability of subprojects.** Capital costs—civil works, equipment and materials, installation, and related expenses (e.g., design and technical services)—were estimated based on investment cost estimates from feasibility studies. Provisions were made for physical and price contingencies, as appropriate. The incremental financial benefits from the subprojects consist primarily of (i) revenue accruing to the subproject sponsors from energy, fertilizer, and fuel sales (for example, for biogas production subprojects or district heating subprojects); and (ii) energy savings accruing (for example, from energy service company [ESCO]-sponsored energy efficiency subprojects).

13. To derive each subproject's FIRR, annual incremental cash flows over the subprojects' technical useful life were used. The FIRR was computed on an after-tax basis in real terms—2017 prices: (i) physical contingencies, but no price contingencies and financial charges, included in investment cash flows; and (ii) real operating cash flow, without considering the impact of inflation. Each FIRR was compared with the weighted average cost of capital (WACC) for the respective subproject. The respective WACC was calculated after tax in real terms, using the estimated capital structure and costs of capital. The subloan interest rate from ADB and CECEP loan proceeds ranged from 4.32% to 6.37%, and loan tenors ranged from 3 to 10 years, based on initial credit assessments done by CECEP. The cost of equity is based on information provided by subborrowers, and ranges from 12% to 36%. The corporate income tax rate is 25.0%. Value-added tax was assumed to be 17% (where applicable).

14. Financial analysis results, including each subproject's capital investments, FIRR, and WACC, along with the subborrower's debt service coverage ratio (DSCR), are shown in Table 1.

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<sup>4</sup> Asian Development Bank (ADB). 2005. *Financial Management and Analysis of Projects*. Manila.

**Table 1: Projected Financial Indicators**

Subproject	Subproject Name	Total Investment (CNY million)	FIRR (%)	WACC (%)	DSCR
1	Fengqiu biomass plant	129.97	10.85	1.27	0.88
2	Liheng coke to gas plant	658.16	38.02	11.85	2.22
3	Jinan smart industrial zone	459.47	7.86	4.71	1.14
4	Luhai geothermal	124.20	11.24	6.59	0.74
5	H <sub>2</sub> fuel cell buses	250.00	25.86	4.54	8.27
6	An Steel ESCO	111.12	21.57	1.98	1.45

DSCR = debt service coverage ratio, ESCO = energy service company, FIRR = financial internal rate of return, H<sub>2</sub> = hydrogen, WACC = weighted average cost of capital.

Source: Asian Development Bank estimates.

15. As shown in Table 1, in each subproject, the FIRR is higher than the WACC, indicating that the subprojects are financially viable. However, some subprojects have an average DSCR that is less than the ADB and CECEP criterion of 1.2; in this case, CECEP will require the subborrowers to provide additional guarantee.

### E. Sensitivity Analysis

16. A sensitivity analysis considering various adverse scenarios (higher capital expenditure or operational expenses, or lower tariffs) shows that the subprojects would remain financially viable, with the FIRRs exceeding the subprojects' WACCs (Table 2).

**Table 2: Sensitivity Analysis of Financial Internal Rates of Return (%)**

Subproject	Subproject Name	Base Case FIRR	CAPEX +20%	OPEX +20%	WACC
1	Fengqiu biomass plant	10.85	8.04	4.75	1.27
2	Liheng coke to gas plant	38.02	32.76	36.49	11.85
3	Jinan smart industrial zone	7.86	6.25	7.75	4.71
4	Luhai geothermal	11.24	8.35	9.92	6.59
5	H <sub>2</sub> fuel cell buses	25.86	19.80	22.07	4.54
6	An Steel ESCO	21.57	15.50	19.58	1.98

CAPEX = capital expenditures, ESCO = energy service company, FIRR = financial internal rate of return, H<sub>2</sub> = hydrogen, OPEX = operating expenditures, WACC = weighted average cost of capital.

Source: Asian Development Bank estimates.

### F. Financial Sustainability of the Regional Emission-Reduction and Pollution-Control Facility

17. The facility's financial sustainability was tested based on assumptions of (i) ADB loan terms and conditions; (ii) cross-currency exchange rate projections using the purchasing power parity methodology; (iii) entrusted bank service rate; (iv) staffing of the project management office and staff costs per annum; (v) allocation of human resource expenses to the funds; (vi) allocation of total ADB funding to the financial instruments as agreed with CECEP; (vii) onlending terms and conditions from the facility and funds to final subborrowers and subprojects; (viii) an assumed withdrawal schedule for the facility and funds; and (ix) compensation probability, recovery rate, and loss from equity investment.

18. The model indicates that in the base case with realistic assumptions, CECEP should be able to cover its project management costs as well as a potential loss from its equity investment,

and make a net benefit of CNY52.3 million. If this amount will be used to increase CECEP's capital, the facility will generate a sustainable mechanism for financing advanced technology in the energy efficiency and environmental protection field.