

FINANCIAL ANALYSIS

A. Introduction

1. Preparation of the project's financial analysis followed Asian Development Bank (ADB) guidelines.¹ The project will support urban infrastructure and services in Bavet, Kampot and Poipet, through the following outputs: (i) policy and regulatory environment improved; (ii) urban infrastructure improved; and (iii) institutional effectiveness and governance improved.

B. Methodology

2. The cost-benefit analysis of the revenue-generating components, such as wastewater, septage, and solid waste management, determined that high capital investments and limited tariff income would make most subprojects not financially viable without budget and/or tariff reforms. The financial analysis evaluated (i) the financial sustainability of operating subprojects considering the proposed tariffs, operation and maintenance (O&M) costs, and subsidies required to fill any financial gaps; (ii) the affordability of the tariffs to low-income households; and (iii) the incremental recurrent cost analysis, including fiscal analysis of the municipal administrations (Table 1).²

Table 1: Summary of the Financial Analysis Methodology for Subprojects

Table 1. Summary Of the Financial Analysis Methodology for Subprojects					
Item	Revenue-Generating Project	Cost-Benefit Evaluation	Financial Sustainability Analysis		
			Proposed Tariffs to Cover O&M	Affordability Analysis	Incremental Recurrent Cost Analysis
Bavet					
Drainage					✓
Septage	✓	✓			✓
SWM	✓	✓	✓	✓	✓
Wastewater	✓	✓	✓	✓	✓
Kampot					
Wastewater	✓	✓			✓
Poipet					
Drainage					✓
Septage	✓	✓			✓
SWM	✓	✓	✓	✓	✓
Wastewater	✓	✓	✓	✓	✓

O&M = operation and maintenance, SWM = solid waste management.

Source: Asian Development Bank.

C. Financial Cost-Benefit Evaluation

1. Assumptions

3. The financial model developed to forecast the income and expenditure for the revenue-generating subprojects from 2021 to 2040 had the following underlying assumptions:

- (i) The projections are performed in real terms.
- (ii) The applied exchange rate is KR4,095 = \$1.
- (iii) The projected solid waste and sewerage production is based on the projected population growth for each municipality.

¹ ADB. 2019. *Financial Analysis and Evaluation: Technical Guidance Note*. Manila.

² Sub-Decree 182 on Functions and Structure of Municipal Administration was adopted on 2 December 2019 to make municipal public service administration and delivery more efficient. The sub-decree transferred the responsibility of managing utility services and other activities to the municipal administrations; this transfer has implications on city operations because of gaps in finance and resources needed to fulfill the functions.

- (iv) Tariffs and user charges are based on existing levels or related ordinances (Prakas).
- (v) The weighted average cost of capital is 0.37%.³

2. Financial Viability of Subprojects

4. **Wastewater and solid waste management.** The financial net present values of these subprojects are negative because of the high capital investments for the assets and the limited tariff income based on the current tariff scheme. The subprojects are not financially viable as is, and tariff increase and/or budget support are reviewed in paras. 7–13.

5. **Septage.** The project will provide two vacuum trucks to Bavet and one to Poipet for their municipal administrations to provide septage services to households excluded from the sewerage network, competing with private septage service providers that charge a collection fee of KR40,950/cubic meter (m³) for residential users and KR61,425/m³ for nonresidential users.

6. Households are assumed to generate 90% of septage and commercial users, 10%; the fee collection efficiency is 85% from residential customers and 95% from commercial customers. Cash flows for Bavet, calculated based on each truck's capacity, show KR75.5 million per year of O&M costs with an annual net cash flow of KR147.5 million. This results in a financial internal rate of return of 9.8%, which is sufficient to supplement the initial capital costs of KR880.0 million for the trucks and their replacement after 10 years. In Poipet, KR484.0 million of capital expenditure, KR40.3 million of operating expenditure (OPEX), and KR111.5 million of expected annual revenue result in a financial internal rate of return of 6.5%. The financial evaluation results and sensitivity analysis confirm the septage service is financially viable under all scenarios (Table 2).

Table 2: Financial Evaluation and Sensitivity Analysis for Septage

Item	Bavet		Poipet	
	FNPV (KR million)	FIRR (%)	FNPV (KR million)	FIRR (%)
Base case (weighted average cost of capital: 0.37%)	832.4	9.8	286.3	6.5
Case 1: 10% increase in capital costs	660.3	7.4	191.7	4.3
Case 2: 10% increase in O&M costs	701.8	8.5	216.6	5.1
Case 3: 10% decrease in revenues	446.4	5.7	93.3	2.5
Case 4: 1-year delay in benefits	611.1	6.2	175.7	3.6

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

Source: Asian Development Bank estimate.

D. Financial Sustainability Analysis

1. Wastewater

7. The municipal administrations will manage the O&M of the wastewater services. However, Bavet, Kampot and Poipet have no operating municipal sanitation services and no precedence for sanitation tariffs. A recently proposed wastewater tariff schedule applied a monthly flat rate of KR10,237 (up to 70m³/month) to residential users, KR154,791 to commercial users, KR358,312 to hotels, KR102,375 to institutions, and KR2 million–KR6 million to special economic zones.⁴

³ Calculation of the weighted average cost of capital is based on the weighted real financing cost (tax-adjusted nominal cost deducted by the inflation rate) of financing sources. The financing contribution weight is 93% for the ADB loan and 7% for government financing. The real financing cost of each source is 0.08% (ADB) and 0.29% (government).

⁴ Proposed for Preah Sihanouk by the provincial government and pending approval by the Ministry of Economy and Finance and the Ministry of Public Works and Transport.

8. The proposed tariff scheme will not generate sufficient revenue to cover expected O&M costs in all three cities. The Ministry of Economy and Finance also requires investment cost recovery of the household connection fee⁵ through tariff collection. To ensure full O&M cost and connection fee recovery from 2027 onward, residential tariffs must increase to KR51,188/month in Bavet, KR68,591/month in Kampot and KR76,781/month in Poipet.

9. The cash flow projection⁶ for wastewater based on the proposed tariff rate is in Table 3. The analysis indicates all three cities can recover full O&M costs with positive net cash flow from 2027 onward, except on the year when periodic replacement is required. The funding gap derived from the replacement cost can be fulfilled with savings of projected surplus.

Table 3: Projected Cash Flow for Wastewater
(KR billion)

Item	2027	2028	2029	2030	2032	2034	2036	2038	2040
Bavet									
Tariff income	1.36	1.36	1.36	1.49	1.49	1.49	1.64	1.64	1.80
O&M cost	0.98	1.01	1.04	1.08	1.14	1.21	1.28	1.36	1.45
Replacement cost						3.40			
Connection cost	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Net cash flow	0.21	0.18	0.15	0.26	0.19	(3.27)	0.20	0.12	0.20
Kampot									
Tariff income	2.05	2.05	2.05	2.36	2.36	2.36	2.71	2.71	3.12
O&M cost	1.86	1.91	1.97	2.03	2.15	2.28	2.42	2.57	2.73
Replacement cost						1.27			
Connection cost	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Net cash flow	0.09	0.09	0.09	0.09	0.09	(1.18)	0.09	0.09	0.09
Poipet									
Tariff income	2.62	2.62	2.62	3.01	3.01	3.01	3.46	3.46	3.98
O&M cost	2.30	2.37	2.44	2.51	2.67	2.83	3.00	3.18	3.38
Replacement cost						3.40			
Connection cost	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Net cash flow	0.07	0.00	-0.07	0.25	0.09	(3.46)	0.21	0.03	0.35

() = negative, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

10. An affordability analysis was undertaken to verify that domestic consumers can afford the proposed tariff. As wastewater expenditure accounts for less than 5.0% of household income, which has been taken as the threshold for affordability, the proposed wastewater tariffs in all three cities are considered affordable. Detailed analysis is in Table 4.

Table 4: Affordability Analysis Results for Wastewater
(Base Year: 2027)

Item	Bavet	Kampot	Poipet
Proposed monthly tariff	KR51,188	KR68,591	KR76,781
Monthly household income	KR2.4 million	KR3.0 million	KR2.3 million
Tariff share of household income	2.2%	2.3%	3.3%

Source: Asian Development Bank estimates.

⁵ Includes toilet construction and septic tank installation for the identified vulnerable households. Connection costs will be amortized and charged to each household throughout the loan repayment period.

⁶ The O&M cost reflects 3% annual inflation rate. The tariff income considers rate increases of 10% in Bavet and 15% in Poipet and Kampot every 5 years.

2. Solid Waste Management

11. Private service providers deliver solid waste services in Bavet and Poipet. The project will fund a controlled landfill, a waste sorting facility, a composting facility, collection bins and rubbish collection trucks, landfill machinery, and solar power equipment. Waste collection will be extended to cover 85% of households in Bavet; 84% of households in Poipet; and 100% of nonresidential entities (hotels, casinos, special economic zones) in both cities.

12. In June 2019, the government issued Prakas No. 195, which defines the maximum tariff for urban solid waste management. This Prakas has been implemented in Bavet and Poipet and is expected to apply to the project. The proposed monthly rates are KR13,513 residential tariff and KR225,225 commercial tariff in Bavet, and KR15,356 residential tariff and KR245,700 commercial tariff in Poipet. Table 5 confirms the residential tariffs are affordable.

**Table 5: Affordability Analysis Results for Solid Waste Management
(Base Year: 2027)**

Item	Bavet	Poipet
Proposed monthly tariff	KR13,513	KR15,356
Monthly household income	KR2.4 million	KR2.3 million
Tariff share of household income	0.6%	0.7%

Source: Asian Development Bank estimates.

13. The cash flow forecast based on the proposed tariffs for solid waste management in each city is summarized in Table 6. The analysis concludes that solid waste management will generate sufficient surplus for sustainable O&M under the proposed tariffs.

**Table 6: Projected Cash Flow for Solid Waste Management
(KR billion)**

Item	2027	2028	2029	2030	2032	2034	2035	2038	2040
Bavet									
Tariff income	7.26	7.49	7.73	8.77	9.07	9.37	10.47	10.98	12.46
O&M cost	6.73	6.93	7.13	7.35	7.80	8.27	8.52	9.31	9.88
Replacement cost							7.99		
Net cash flow	0.54	0.57	0.60	1.42	1.27	1.10	(6.04)	1.67	2.58
Poipet									
Tariff income	7.59	8.06	8.54	10.40	10.53	11.12	13.74	13.60	17.98
O&M cost	7.31	7.53	7.76	7.99	8.48	8.99	9.26	10.12	10.74
Replacement cost							13.64		
Net cash flow	0.28	0.53	0.79	2.41	2.05	2.13	(9.16)	3.48	7.25

() = negative, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

3. Drainage

14. The project will fund the installation of a gravity drainage network in priority areas at a capital cost of KR32.1 billion for Bavet and KR90.0 billion for Poipet with annual OPEX of KR0.18 billion for Bavet and Poipet. The new drainage system will serve about 17% of households in each city and about 66% of nonresidential entities. The municipal administrations will fund OPEX costs since the service is nonrevenue generating.

4. Incremental Recurrent Cost Analysis

15. The incremental recurrent cost analysis was conducted to assess the capacity of the municipal administrations to fund their projected recurrent cost requirement through budget

appropriations. The financial status of the three municipal administrations was assessed based on historical budget statements, and the incremental cash flow was forecast for the analysis. As the three municipal administrations have maintained their annual revenue and expenditure almost at equilibrium level, the net balance is small and insufficient to manage the new project assets without additional tariff income. Table 7 summarizes the historical budget statements of Bavet, Kampot, and Poipet.

Table 7: Fiscal Analysis of Municipality Administrations
(KR million)

Item	Bavet			Kampot			Poipet		
	2016	2017	2018	2017	2018	2018	2016	2017	2018
Revenue	1,592	1,953	2,838	2,494	3,331	2,269	1,566	1,877	2,143
Local income	22	19	1,259	605	1,172	121	124	91	113
National transfer	1,571	1,935	1,579	1,890	2,158	2,148	1,443	1,786	2,031
Expenditure	1,628	1,950	2,769	2,840	3,124	2,230	1,590	1,795	2,114
Personnel	425	427	1,055	726	1,226	566	434	474	636
Service	356	494	444	397	359	481	408	415	444
Grants	816	988	948	1,070	1,243	1,138	711	867	1,000
Others	32	42	322	647	296	45	37	38	33
Balance	(36)	3	68	(346)	207	39	(24)	83	30

() = negative.

Note: Numbers may not sum precisely because of rounding.

Source: Financial statements of the municipality administrations.

16. The incremental cash flow projection (Table 8) with overall positive net cash flow demonstrates that wastewater tariffs and income from septage and solid waste management fees can cover the O&M cost of project facilities, including the drainage system. The financing gap observed in certain years can be accommodated using the project's overall cash surplus. Considering the limited financial capacity of the municipal administrations, tariff and fee collection is an essential source of O&M funding. Implementing an institutional development framework, which includes tariff reform, tariff collection, and financial management, will be required to achieve the project's financial sustainability. The municipal administrations have committed to the tariff reform; tariff implementation and budgetary support requirements from the central government are included in the loan covenants.

Table 8: Incremental Cash Flow Projection
(KR billion)

Item	2027	2028	2029	2030	2032	2034	2036	2038	2040
Bavet									
Wastewater	0.21	0.18	0.15	0.26	0.19	(3.27)	0.20	0.12	0.20
Septage	0.15	0.14	0.14	0.16	(0.72)	0.15	0.17	0.16	0.18
SWM	0.54	0.57	0.60	1.42	1.27	1.10	1.86	1.67	2.58
Drainage	(0.18)	(0.19)	(0.20)	(0.20)	(1.69)	(0.23)	(0.24)	(0.25)	(0.27)
Net cash flow	0.71	0.70	0.69	1.64	(0.95)	(2.25)	1.99	1.70	2.70
Poipet									
Wastewater	0.07	0.00	(0.07)	0.25	0.09	(3.46)	0.21	0.03	0.35
Septage	0.07	0.07	0.07	0.08	(0.41)	0.07	0.08	0.08	0.09
SWM	0.28	0.53	0.79	2.41	2.05	2.13	3.37	3.48	7.25
Drainage	(0.19)	(0.19)	(0.20)	(0.20)	(1.69)	(0.23)	(0.24)	(0.26)	(0.27)
Net cash flow	0.23	0.41	0.59	2.53	0.05	(1.49)	3.42	3.33	7.41
Kampot									
Wastewater	0.09	0.03	(0.02)	(0.08)	0.17	0.05	(1.36)	0.13	(0.02)
Net cash flow	0.09	0.03	(0.02)	(0.08)	0.17	0.05	(1.36)	0.13	(0.02)

() = negative, SWM = solid waste management.

Source: Asian Development Bank estimates.