

FINANCIAL ANALYSIS

1. This financial analysis has been undertaken in accordance with the Asian Development Bank (ADB) *Financial Management and Analysis of Projects* and *Financial Due Diligence: A Methodology Note*.¹ It focused on the financial viability of two outputs—the Kampong Chhnang and Pursat urban area improvements. These outputs included both revenue- and nonrevenue-generating subprojects aimed at improving flood protection, drainage, and solid waste management (SWM) in the two municipalities.

A. Financial Analysis for Revenue-Generating Subprojects

2. Financial internal rates of return (FIRRs) were prepared for the SWM subprojects in Kampong Chhnang and Pursat. Table 1 presents the major indicators of the financial viability of the proposed SWM subprojects. For SWM in Kampong Chhnang, the base case FIRR of 5.98% exceeded the weighted average cost of capital (WACC) of 2.33%. Sensitivity tests indicated that the FIRR will be most sensitive to a reduction in revenues. For SWM in Pursat, the base case FIRR of 9.59% is greater than the WACC of 2.33%. The FIRR is also highly sensitive to reductions in revenues, underscoring the need for project management to pay close attention to the effective and efficient collection of the targeted revenues, and adhering to projected capital and O&M costs with the planned establishment of the urban service units (USUs).

Table 1: Financial Evaluation of Solid Waste Management in Kampong Chhnang and Pursat

Scenarios	FIRR (%)	NPV (\$'000, at 2.33%)	Switching Value	Sensitivity Indicator
Kampong Chhnang				
Base Case Scenario	5.98	2,998		
Sensitivity tests:				
Case 1: 10% increase in investment cost	5.70	2,849	202.36	0.49
Case 2: 10% increase in O&M costs	5.18	2,367	71.23	1.40
Case 3: 10% decline in revenues	4.81	1,919	48.95	2.04
Case 4: Combination of cases 1, 2, and 3	3.75	1,139		
Case 5: Revenues delayed by 1 year	4.59	1,771		
Pursat				
Base Case Scenario	9.59	9,757		
Sensitivity tests:				
Case 1: 10% increase in investment cost	8.00	7,563	58.57	1.71
Case 2: 10% increase in O&M costs	9.04	9,068	171.93	0.58
Case 3: 10% decline in revenues	8.45	7,789	82.18	1.22
Case 4: Combination of cases 1, 2, and 3	7.44	6,796		
Case 5: Revenues delayed by 1 year	8.21	7,689		

FIRR = financial internal rate of return, NPV = net present value, O&M = operation and maintenance.
Source: Asian Development Bank.

3. The financial analysis considered two primary sources of revenues. The first is garbage collection fees for residential households. An average tariff of KR4,000 or about \$1.0 per month per household is levied for garbage collection (average household size is 5.16). This rate was increased by 5% to \$1.05 and maintained during 2019–2021, increasing by 5% every 3 years thereafter. The estimated collection service was assumed at 5% based on the current range of 3%–10% of households being serviced by private entities in both towns. It was assumed that community awareness activities would increase the collection efficiency during the project implementation period.

¹ ADB. 2005. *Financial Management and Analysis of Projects*. Manila; and ADB. 2009. *Financial Due Diligence A Methodology Note*. Manila.

4. USUs will be established in Pursat and Kampong Chhnang and will be responsible for SWM, inclusive of the O&M of controlled landfill and garbage collection. The USU in Pursat will also manage the town center drainage, the pumping station, wastewater stabilization ponds, and the embankment. The USU in Kampong Chhnang will also manage the flood control river embankment works. In the absence of USUs, the respective provincial departments of public works and transport (PDPWT) will assume responsibility, including town center drainage and the flood control river embankment (with the provincial department for water resources and meteorology).

5. The second major source of revenue considered were the collection charges on business firms, estimated at \$75–\$500 per year depending on the nature and size of the firm.² These charges were projected to increase by 8%–10% per annum to mobilize revenues sufficient to cross-subsidize poorer households in the towns. Both charges are consistent with the polluter pays principle, which encourages the imposition of taxes on parties directly responsible for producing the pollution.³

B. Financial Sustainability Analysis

6. Financial projections for the towns of Kampong Chhnang and Pursat confirmed that, with a properly phased and executed collection of charges on drainage and/or flood protection services plus other user charges and fees, the project implementation units (PIUs) in each town will be able to transition into semiautonomous USUs.

7. The revenues considered in undertaking the projections included SWM garbage collection fees and charges; drainage and/or flood control service charges; and other charges and fees on urban services, which will be formulated and levied during the project. Initial collection efficiency was assumed at 20%, gradually increasing to 85% toward the end of the 30-year period. Annual price indices were applied to the projected revenues and the costs associated with O&M and incremental administration for the subprojects.

8. For the drainage and flood control service charges, each household will be levied a minimal fee of KR1,500 or \$0.38 per month beginning in 2019, increasing by 5% every 3 years. Business entities will be charged higher within the range of \$50–\$300 per annum depending on their classification (capitalization and type of business operation).

9. The garbage collection fee and the drainage and flood management fee should be consolidated into an environmental sanitation fee for ease of administration. The flat tariff for households starts at \$1.05 and is maintained during 2019–2021, increasing by a minimum of 5% every 3 years thereafter. The progressive block tariff for businesses will increase by a minimum of 8% per annum thereafter. To ensure high billing and collection efficiency, the following billing options will be explored for the environmental sanitation fee: integrate billing into the electricity bill, with the power distribution utility deducting a percentage of the amount collected as commission; fee payment prior to the annual approval and release of business licenses and permits; and/or fee payment together with property taxes by property owners. Other fees and surcharges on urban services, to be formulated and levied during the project, were estimated at 15%–20% of revenues mobilized from SWM and drainage and/or flood protection services to increase financing for O&M. The proposed environmental sanitation fee in Kampong Chhnang and Pursat is in Table 2.

² Businesses may be classified as small, medium, and large based on the capitalization and nature of the business, the number of personnel employed by the business, the volume and type of solid wastes generated by the business, and the volume and type of wastewater discharged into the drainage system.

³ Tipping fees were also considered as they are typically associated with cost recovery mechanisms for landfill sites. However, a review of the literature and current practices of local governments suggested that charging tipping fees in developing countries has encouraged illegal dumping to avoid paying the tipping fees.

Table 2: Proposed Environmental Sanitation Fee in Kampong Chhnang and Pursat

Customer Category	Environmental Sanitation Fee			
	Monthly (\$)	Annual (\$)	Monthly (KR)	Annual (KR)
Kampong Chhnang				
1. Households				
Solid waste	1.05	12.60	4,200	50,400
Drainage	0.38	4.56	1,520	18,240
Total Fee	1.43	17.16	5,720	68,640
2. Business Establishments				
a. Small				
Solid waste	8.33	100.00	33,333	400,000
Drainage	8.33	100.00	33,333	400,000
Total Fee	16.67	200.00	66,667	800,000
b. Medium				
Solid waste	16.67	200.00	66,667	800,000
Drainage	16.67	200.00	66,667	800,000
Total Fee	33.33	400.00	133,333	1,600,000
c. Large				
Solid waste	25.00	300.00	100,000	1,200,000
Drainage	25.00	300.00	100,000	1,200,000
Total Fee	50.00	600.00	200,000	2,400,000
Pursat				
1. Households				
Solid waste	1.05	12.60	4,200	50,400
Drainage	0.38	4.56	1,520	18,240
Total Fee	1.43	17.16	5,720	68,640
2. Business Establishments				
a. Small				
Solid waste	6.25	75.00	25,000	300,000
Drainage	4.17	50.00	16,667	200,000
Total Fee	10.42	125.00	41,667	500,000
b. Medium				
Solid waste	25.00	300.00	100,000	1,200,000
Drainage	12.50	150.00	50,000	600,000
Total Fee	37.50	450.00	150,000	1,800,000
c. Large				
Solid waste	41.67	500.00	166,667	2,000,000
Drainage	16.67	200.00	66,667	800,000
Total Fee	58.33	700.00	233,333	2,800,000

Note: The exchange rate used is KR4,000 = \$1.

Source: Asian Development Bank.

10. Tables 3 and 4 present the results of the financial projections for each PIU. Initially, the PIUs will be financially dependent on the government for their funding needs (i.e., during project implementation and about 5 years thereafter). This will include financing for both capital and operating requirements. Gradually, they will be expected to mobilize their own revenues, starting modestly then accelerating their collection efforts. Within 10 years from commencing their revenue generation efforts in 2019, Pursat and Kampong Chhnang will have the capacity to cover their O&M cost and incremental administration for their SWM, drainage and flood control subprojects.

C. Affordability Analysis

11. The affordability of the proposed environmental sanitation fee to the households is a key consideration. The fee is about 1.65% of the average monthly household income of poor households (lowest 3% in Kampong Chhnang and lowest 6% in Pursat) in the two towns, and is considered affordable.

Table 3: Income and Expenditure Projections for Pursat Project Implementation Unit
(\$'000, in current prices for financial years ending 31 December)

Item	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
A. Sources of Funds																
1. Own Source Revenues																
Solid Waste Collection Fees	0	0	0	0	200	239	283	338	396	477	579	686	771	881	992	1,121
Drainage and Flood Protection Charges	0	0	0	0	103	122	143	169	198	235	281	331	375	429	487	554
Other Urban Service Fees	0	0	0	0	26	81	96	113	134	158	190	227	265	300	342	387
Subtotal (Recurrent Revenues)	0	0	0	0	330	442	522	620	728	869	1,050	1,244	1,411	1,610	1,821	2,062
2. Support for Infrastructure Subprojects																
ADB and PPCR Loan and Grant Proceeds Passed on as Grants	0	739	2,666	4,945	3,374	1,077	0	0	0	0	0	0	0	0	0	0
Subtotal (Support for Infrastructure Subprojects)	0	739	2,666	4,945	3,374	1,077	0	0	0	0	0	0	0	0	0	0
3. Other Government Grants and Subsidies	156	161	167	173	0	218	763	709	649	556	425	283	170	25	0	0
Total Sources of Funds	156	901	2,833	5,118	3,704	1,737	1,285	1,330	1,377	1,425	1,475	1,527	1,580	1,635	1,821	2,062
B. Uses of Funds																
1. Infrastructure Operations and Maintenance																
Subproject Flood Protection and Embankment	0	0	0	0	0	0	602	623	645	668	691	715	740	766	793	821
Subproject Solid Waste Management	0	0	0	0	0	475	491	508	526	545	564	583	604	625	647	669
Subtotal (Infrastructure Operations and Maintenance)	0	0	0	0	0	475	1,094	1,132	1,171	1,212	1,255	1,299	1,344	1,391	1,440	1,490
2. Administration and Overheads																
Incremental Administration	156	161	167	173	179	185	192	198	205	213	220	228	236	244	253	261
Subtotal (Administration and Overheads)	156	161	167	173	179	185	192	198	205	213	220	228	236	244	253	261
3. Investment																
Subproject Flood Protection and Embankment	0	487	1,504	4,018	3,102	1,077	0	0	0	0	0	0	0	0	0	0
Subproject Solid Waste Management	0	252	1,163	928	272	0	0	0	0	0	0	0	0	0	0	0
Subtotal (Investment)	0	739	2,666	4,945	3,374	1,077	0	0	0	0	0	0	0	0	0	0
4. Other Investments	0	0	0	0	151	0	0	0	0	0	0	0	0	0	128	310
Total Uses of Funds	156	901	2,833	5,118	3,704	1,737	1,285	1,330	1,377	1,425	1,475	1,527	1,580	1,635	1,821	2,062
D. Indicators																
1. Price Index	1.00	1.04	1.07	1.11	1.15	1.19	1.23	1.27	1.32	1.36	1.41	1.46	1.51	1.56	1.62	1.68
2. Own Source Revenue																
Collection Efficiency	20%	25%	30%	35%	40%	50%	60%	70%	70%	70%	70%	70%	80%	80%	80%	80%
Real Growth in Income						29%	15%	15%	13%	14%	15%	13%	9%	9%	8%	8%
As a Share of Total Income					9%	25%	41%	47%	53%	61%	71%	81%	89%	98%	100%	100%
As a Share of Direct Cost of Services and Maintenance						93%	48%	55%	62%	72%	84%	96%	105%	116%	126%	138%
3. Expenditure																
Real Growth in Recurrent Expenditure		3%	3%	3%	3%	61%	40%	3%	3%	2%	2%	2%	2%	2%	2%	2%

ADB = Asian Development Bank, PPCR = Pilot Program for Climate Resilience.
Source: Asian Development Bank.

Table 4: Income and Expenditure Projections for Kampong Chhnang Project Implementation Unit
(\$'000, in current prices for financial years ending 31 December)

Item	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
A. Sources of Funds																
1. Own Source Revenues																
Solid Waste Collection Fees	0	0	0	0	101	124	151	185	222	275	341	410	463	534	606	702
Drainage and Flood Protection Charges	0	0	0	0	41	50	61	79	94	111	139	167	194	233	269	311
Other Urban Service Fees	0	0	0	0	8	30	37	46	56	67	83	102	121	70	161	183
Subtotal (Recurrent Revenues)	0	0	0	0	150	204	249	310	371	452	564	679	778	837	1,036	1,196
2. Support for Infrastructure Subprojects																
ADB and PPCR Loan and Grant Proceeds Passed on as Grants	0	1,330	4,359	10,481	7,800	2,655	0	0	0	0	0	0	0	0	157	286
Subtotal (Support for Infrastructure Subprojects)	0	1,330	4,359	10,481	7,800	2,655	0	0	0	0	0	0	0	0	157	286
3. Other Government Grants and Subsidies	184	191	197	204	61	263	419	381	343	289	203	114	43	13	0	0
Total Sources of Funds	184	1,521	4,556	10,685	8,011	3,122	668	691	715	741	766	793	821	850	1,193	1,482
B. Uses of Funds																
1. Infrastructure Operations and Maintenance																
Subproject Flood Protection	0	0	0	0	0	0	184	191	198	204	212	219	227	235	243	251
Subproject Solid Waste Management	0	0	0	0	0	248	257	266	275	285	295	305	316	327	338	350
Subtotal (Infrastructure Operations and Maintenance)	0	0	0	0	0	248	441	457	473	489	507	524	543	562	581	602
2. Administration and Overheads																
Incremental Administration	184	191	197	204	211	219	226	234	242	251	260	269	278	288	298	308
Subtotal (Administration and Overheads)	184	191	197	204	211	219	226	234	242	251	260	269	278	288	298	308
3. Investment																
Subproject Flood Protection	0	1,165	3,598	9,875	7,623	2,655	0	0	0	0	0	0	0	0	157	0
Subproject Solid Waste Management	0	165	761	606	178	0	0	0	0	0	0	0	0	0	0	0
Subtotal (Investment)	0	1,330	4,359	10,481	7,800	2,655	0	0	0	0	0	0	0	0	157	286
4. Other Investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	156	287
Total Uses of Funds	184	1,521	4,556	10,685	8,011	3,122	668	691	715	740	766	793	821	849	1,192	1,483
D. Indicators																
1. Price Index	1.00	1.04	1.07	1.11	1.15	1.19	1.23	1.27	1.32	1.36	1.41	1.46	1.51	1.56	1.62	1.68
2. Own Source Revenue																
Collection Efficiency	20%	25%	30%	35%	40%	50%	60%	70%	70%	70%	70%	70%	80%	80%	80%	80%
Real Growth in Income						30%	18%	19%	15%	16%	18%	14%	10%	5%	15%	9%
As a Share of Total Income					2%	7%	37%	45%	52%	61%	74%	86%	95%	98%	87%	81%
As a Share of Direct Cost of Services and Maintenance						82%	56%	68%	79%	92%	111%	130%	143%	149%	178%	199%
3. Expenditure																
Real Growth in Recurrent Expenditure		3%	3%	3%	3%	46%	24%	3%	3%	2%	2%	2%	2%	2%	2%	2%

ADB = Asian Development Bank, PPCR = Pilot Program for Climate Resilience.

Source: Asian Development Bank.