

## FINANCIAL ANALYSIS

1. **Provincial Water Supply and Sanitation Project (PWSSP):** The government will grant the proceeds of the loans for water supply and sanitation subprojects in four provinces. The implementing agencies will be expected to fully cover operating and maintenance (O&M) costs from fees collected to ensure sustainability. Consistent with *Operations Manual G2: Financial Management, Cost Estimates, Financial Analysis and Financial Performance Indicators* (2014) of the Asian Development Bank (ADB), financial due diligence was undertaken, see Table 1.

Table 1: Provide Heading

Province	Implementing Agencies	Subprojects	Funds flow	Financial Analysis Undertaken		
				FIRR	Sustainability	Affordability
Battambang	Battambang PWW DPWT	Water supply	On-granted	No	Yes	Yes
		Wastewater system	On-granted	No	Yes	Yes
Kampong Cham	Kampong Cham PWW DPWT	Water supply	On-granted	No	Yes	Yes
		Septage treatment facilities	On-granted	No	Yes	Yes
Sihanoukville	DPWT	Wastewater system	On-granted	No	Yes	Yes
Siem Reap	DPWT	Replace interceptor sewer	On-granted	No	Yes	Yes

DPWT = Department of Public Works and Transportation; FIRR = financial internal rate of return; PWW = Provincial Waterworks.

2. **Urban Water Supply in Cambodia.** The Ministry of Industry and Handicrafts (MIH), through its General Department of Potable Water Supply, oversees all public water utilities: Phnom Penh Water Supply Authority (PPWSA) and Siem Reap Water Supply Authority (SRWSA), both of which are autonomous, and 11 provincial waterworks (PWWs).<sup>1</sup> After the civil war (year started–year ended), PPWSA underwent extensive reforms to become efficient and profit-making. MIH's financial and technical support helped the other utilities become profitable and provide better services, replicating PPWSA's success. MIH wants all autonomous by 2019. ADB's second project to improve urban water supply services in provincial towns, the Provincial Water Supply and Sanitation Project, will help achieve 100% 24-hour water supply coverage by 2025. The government is considering adjusting water tariffs every 5 years to ensure sustainability, and a 4-band tariff structure similar to PPWSA and SRWSA, to ensure low-income households (LIHs) can afford safe water.

3. **Battambang – Water Supply.** Two existing water treatment plants (WTPs) have a total capacity of 33,520 cubic meters per day (m<sup>3</sup>/day) and serve 14,249 service connections (about 31% of the population). A new 50,000 m<sup>3</sup>/day WTP and related facilities will increase access to piped water to about 98% by 2022. The PWW generated net income of KR428 million in 2014 and KR1,106 million in 2015 after losses of KR236 million in 2013. Projected financials indicate sustainability (Table 2).

Table 2: Battambang Provincial Waterworks – Current and Projected Tariffs

Customer	Year _____		Year 2020		Year 2025		Year 2030	
	Monthly m <sup>3</sup>	KR/m <sup>3</sup>	Monthly m <sup>3</sup>	KR/m <sup>3</sup>	Monthly m <sup>3</sup>	KR/m <sup>3</sup>	Monthly m <sup>3</sup>	KR/m <sup>3</sup>
Domestic	>0	1,500	0–7	1,500	0–7	1,650	0–7	1,815
			8–15	1,650	8–15	1,815	8–15	1,997
			16–50	1,800	16–50	1,980	16–50	2,178
			50+	2,000	50+	2,200	50+	2,420

<sup>1</sup> Cambodia has 25 provinces, including Phnom Penh, a special administrative area. Private companies (mainly small-scale providers) supply water to many unserved communities.

Non-domestic	>0	1,500	0–100	1,750	0–100	1,925	0–100	2,118
			101–200	1,850	101–200	2,035	101–200	2,239
			201–500	1,950	201–500	2,145	201–500	2,360
			500+	2,100	500+	2,310	500+	2,541
Overall Average		1,500		1,718		1,891		2,083

Provide list of all abbreviations used on the table in alphabetical order in this position.

Note: Key Assumptions: An tariff increase every 5 years to ensure sustainability, and a 4-band tariff structure to ensure affordability.

Source: PWW and ADB consultant's estimates

4. **Kampong Cham – Water Supply.** The total combined capacity of the two existing WTPs is 19,500 m<sup>3</sup>/day, with 7,371 service connections (about 37% of the population served). The new 11,600 m<sup>3</sup>/day WTP will increase access to piped water to about 97% by 2022. After incurring losses of KR183 million in 2013, the PWW generated net income of KR178 million in 2014 and KR191 million in 2015. Financial projections indicate sustainability (Table 3).

**Table 3: Kampong Cham Provincial Waterworks – Current and Projected Tariffs**

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Customer <sup>a</sup>	Year ____		Year 2020		Year 2025		Year 2030	
	Monthly m <sup>3</sup>	KR/m <sup>3</sup>	Monthly m <sup>3</sup>	KR/m <sup>3</sup>	Monthly m <sup>3</sup>	KR/m <sup>3</sup>	Monthly m <sup>3</sup>	KR/m <sup>3</sup>
Domestic	0–6	900	0–7	1,000	0–7	1,100	0–7	1,210
	>6–15	1,250	8–15	1,350	8–15	1,485	8–15	1,634
	15+	1,600	16–50	1,450	16–50	1,595	16–50	1,755
			50+	1,650	50+	1,815	50+	1,997
Non-domestic			0–100	1,500	0–100	1,650	0–100	1,815
	>0	1,600	101–200	1,700	101–200	1,870	101–200	2,057
			201–500	1,850	201–500	2,035	201–500	2,239
			500+	1,950	500+	2,145	500+	2,360
Overall Average		1,297	1,452		1,564		1,721	

Provide list of all abbreviations used on the table in alphabetical order in this position.

Note: Key Assumptions: A water tariff increase every 5 years to ensure sustainability, and a 4-band tariff structure similar to PPWSA and SRWSA to ensure affordability.

<sup>a</sup> Currently, the same tariff applies for domestic and commercial; in 2020, 2025 and 2030, domestic refers to residential customers only, and non-domestic refers to commercial and government.

Source: PWW and ADB estimates.

5. **Urban Sanitation in Cambodia.** The Ministry of Public Works and Transport (MPWT) through its General Department of Public Works and provincial departments (DPWTs) is responsible for urban sanitation. In Siem Reap and Sihanoukville, semi-autonomous agencies were set up to enable ring-fencing of fee collections. PWSSP will improve and expand septage management services and piped wastewater systems in four towns. MPWT expects to replicate in Battambang and Kampong Cham initiatives that have worked in Siem Reap and Sihanoukville, including enhancing and/or establishing a semi-autonomous agency to collect and ring-fence sanitation fees and a tiered-fee structure based on property classification and expected usage.<sup>2</sup> To accelerate new sewerage connections, it will offer free connections for households.

6. **Siem Reap – Interceptor Sewer.** The pipeline of the existing interceptor sewer, commissioned in 2010, collapsed in 2011–2014 and is unable to function properly. The subproject will replace the failed sewer with the least-cost option (trenchless technology). In 2013, O&M costs were fully covered from fees collected; net profits earned in 2014 were KR23 million and KR11 million in 2015. A total of 539 properties (256 residential and 283 non-residential) are connected to the system. With the replacement, the project team estimates conservatively that about 73 more properties will be connected. Current and proposed fees are shown in Table 4,

<sup>2</sup> DPWTs do not record depreciation on their books, so references to profits below exclude depreciation.

and financial projections indicate sustainability assuming fees are reviewed and adjusted every 5 years (current practice) to cover O&M costs and ensure sustainability.

**Table 4: Siem Reap Department of Public Works and Transportation – Current and Projected Tariffs**

Item	Current (year)	2020	2025	2030
Sewer Fee (KR/per unit/month) <sup>a</sup>				
Domestic (average)	10,000	10,893	12,803	14,885
Non-domestic (average)	100,000	108,935	128,026	148,848
Desludging Fee (KR/per tank)				
Domestic	120,000	150,000	172,500	198,375
Non-domestic	200,000	250,000	287,500	330,625

Provide list of all abbreviations used on the table in alphabetical order in this position.

Note: Key Assumptions: A tariff increase every 5 years to ensure sustainability, and different tariffs for domestic and non-domestic accounts.

<sup>a</sup> Residential fees of KR4,000–KR35,000/unit; non-residential fees of KR11,000–KR1,260,000/unit depending on property classification.

Source: DPWT and ADB estimates.

7. **Sihanoukville–Wastewater System.** Of the existing 6,900 m<sup>3</sup>/day WWTP capacity, 5,900 m<sup>3</sup>/day was originally intended to serve 3,368 households, with the balance for the Cambrew factory. In reality, only approximately 3,000 m<sup>3</sup>/day is used for 1,767 households at [month] [year] (52% of original target), with the balance for Cambrew. Of the originally targeted households, 48% did not want to pay to connect to the system. DPWT owns only one vacuum truck. DPWT incurred losses of KR25 million in 2013 and KR20 million 2014 but earned net profits of KR101 million in 2015. The subproject will increase WWTP capacity to 20,500 m<sup>3</sup>/day and provide a new 6 m<sup>3</sup> vacuum truck. DPWT will provide free connections to households, including to those not connected in the existing service area. Total households served will increase by 8,000 (43,680 persons) by 2023. Fees need to be reviewed and adjusted every 5 years to fully cover O&M costs and ensure sustainability without subsidies. Current and proposed fees to achieve sustainability are shown in Table 5.

**Table 5: Sihanoukville Department of Public Works and Transportation – Current and Projected Tariffs**

Item	Current	2020	2025	2030
Sewer Fee (KR/per unit/month) <sup>a</sup>				
Domestic (average)	5,200	6,500	7,475	8,596
Non-domestic (average)	25,000	31,250	35,938	41,328
Disposal Fee (KR/per entry)	0	7,500	8,625	9,919
Desludging Fee (KR/per tank)				
Domestic	120,000	150,000	172,500	198,375
Non-domestic	200,000	250,000	287,500	330,625

Provide list of all abbreviations used on the table in alphabetical order in this position.

Note: Key Assumptions: A tariff increase every 5 years to ensure sustainability, and different tariffs for domestic and non-domestic accounts.

<sup>a</sup> Residential fees of KR3,500–KR12,500/unit; non-residential fees of KR13,500–KR210,000/unit depending on property classification

Source: DPWT and ADB estimates.

8. **Battambang – Wastewater System.** The existing WWTP was originally designed for 1,000 m<sup>3</sup>/day to serve 3,125 households, but it now operates at only 450 m<sup>3</sup>/day and serves 1,400 households. DPWT does not have a vacuum truck. The new 10,625 m<sup>3</sup>/day capacity WWTP and a new 6 m<sup>3</sup> vacuum truck will serve an estimated additional 8,700 households (47,320 persons) by 2023. The project will provide free connections to households to accelerate new sewerage connections. DPWT incurred losses of KR3 million in 2014 but earned net profits of KR6 million in 2013 and KR16 million in 2015. Fees need to be reviewed and adjusted every 5 years to fully cover O&M costs and ensure sustainability. Table 6 shows current and proposed fees.

**Table 6: Battambang DPWT – Current and Projected Tariffs**

Item	Current	2020	2025	2030
Sewer Fee (KR/m <sup>3</sup> of water usage)	100	135	149	163
Disposal Fee (KR/per entry)	0	8,100	8,910	9,801
Desludging Fee (KR/per tank)				
Domestic	120,000	162,000	178,200	196,020
Non-domestic	200,000	270,000	297,000	326,700

Provide list of all abbreviations used on the table in alphabetical order in this position.

Note: Key Assumptions: A tariff increase every 5 years to ensure sustainability, and different tariffs for domestic and non-domestic accounts.

Source: DPWT and ADB estimates.

9. **Kampong Cham – Septage Treatment.** There is no reticulated wastewater collection system and septage treatment facility in Kampong Cham as of [month] [year]. DPWT does not own a vacuum truck. The subproject will provide a septage treatment facility and a 6 m<sup>3</sup> vacuum truck. Fees will be introduced once the facilities and equipment are operational. Fees need to be reviewed and adjusted every 5 years to fully cover O&M costs and ensure sustainability as presented in Table 7.

**Table 7: Kampong Cham – Current and Proposed Tariffs**

Item	Current	2020	2025	2030
Disposal Fee (KR/per entry)	0	9,900	11,385	13,093
Desludging Fee (KR/per tank)				
Domestic	0	198,000	227,700	261,855
Non-domestic	0	330,000	379,500	436,425

Provide list of all abbreviations used on the table in alphabetical order in this position.

Note: Key Assumptions: A tariff increase every 5 years to ensure sustainability, and different tariffs for domestic and non-domestic accounts.

Source: DPWT and ADB estimates.

10. **Affordability.** Many governments and international funding institutions have adopted an affordability benchmark for combined water and sanitation charges of 5% of monthly income of LIHs. The government will implement a tariff structure that ensures a lifeline tariff for water for the poor (7 m<sup>3</sup> average monthly household consumption) together with sanitation fee will remain below 5% (4% for water and 1% for sanitation) of the average LIH monthly income. The affordability analysis is summarized in Table 8 and Table 9 summarizes historical and projected financial performance.

**Table 8: Tariff Affordability**

Province	Subproject	Current Tariffs (KR)		2020 Tariffs (KR)		Ave. LIH Bill/ Month <sup>b</sup>	Ave. LIH Income/ Month	Total Bill as % of Income/Month <sup>h</sup>
		Domestic <sup>c a</sup>	Non-domestic	Domestic <sup>a</sup>	Non-domestic			
Battambang	Water supply	1,500	1,500	1,650	1,850	12,590	618,719	2.0
	Wastewater system	100	100	135	135			
Kampong Cham	Water supply	1,250	1,600	1,280	1,625	11,330	602,443	1.9
	Septage treatment	no facilities		3,300	5,500			
Sihanoukville	Wastewater system	5,200	25,000	6,500	31,250	17,820	646,774	2.8
Siem Reap	Interceptor replaced	10,000	100,000	10,893	108,935	14,020	643,262	2.2

KR = Cambodian Riel; LIH = Low Income Household.

<sup>a</sup> In Sihanoukville and Siem Reap, a wastewater fee is charged monthly per property, while in Battambang the wastewater fee is based on monthly water consumed; in Kampong Cham, the desludging fee is amortized over 60 months (i.e. 1/60 is paid each month)

<sup>b</sup> In Sihanoukville and Siem Reap, the monthly bill also includes expected water charges, assuming 7 m<sup>3</sup> of water consumed monthly calculated with the expected lifeline tariff for water and lowest wastewater/sanitation fee.

Sources: Government of Cambodia. *Cambodia Socio-economic Survey 2014*. Phnom Penh and ADB estimates.

11. **Loan Agreement Covenants.** To enhance the sustainability of the water supply and the sanitation investments to be funded under the project, various financial and operational covenants have been discussed with the government, the executing agencies, and the implementing agencies and have been included in the loan agreement.

**Table 9: Historical and Projected Financial Performance**

(KR million)						
Item	2013	Actual <sup>a</sup> 2014	2015	2020	Projected 2025	2030
<b>Battambang PWW</b>						
Revenue	4,249	4,969	5,751	10,968	24,036	37,822
O&M Expenses	3,570	3,560	3,893	7,031	16,735	27,403
Depreciation	914	1,002	1,079	1,047	4,300	3,253
Finance & Other Charges	0	-21	-328	21	39	61
Tax	0	0	0	574	592	1,421
Net Profit (Loss)	-236	428	1,106	2,295	2,370	5,684
Depreciation Recovered (%)	74%	100%	100%	100%	100%	100%
Internal Cash Generated	679	1,430	2,185	3,916	7,262	10,358
Debt Service Payment	0	0	0	0	0	0
Total Assets	13,694	16,643	17,452	186,671	190,983	207,314
Total Liabilities	1,016	1,283	709	1,182	1,508	1,925
Total Equity	12,678	15,360	16,743	185,490	189,475	205,390
<b>Kampong Cham PWW</b>						
Revenue	2,117	2,370	2,535	5,927	11,238	13,910
O&M Expenses	1,819	1,795	1,932	3,380	6,872	9,528
Depreciation	481	398	416	555	1,720	1,720
Finance & Other Charges	0	0	-5	7	11	13
Tax	0	0	0	397	527	530
Net Profit (Loss)	-183	178	191	1,588	2,108	2,119
Depreciation Recovered (%)	62%	100%	100%	100%	100%	100%
Internal Cash Generated	298	576	608	2,540	4,355	4,369
Debt Service Payment	0	0	0	0	0	0
Total Assets	9,859	9,863	10,062	72,913	79,450	88,179
Total Liabilities	260	29	36	18	23	29
Total Equity	9,600	9,834	10,025	72,895	79,427	88,150
<b>Battambang DPWT</b>						
Revenue	32	43	51	59	738	898
O&M Expenses	26	46	35	40	661	790
Net Profit (Loss)	6	-3	16	18	77	109
<b>Sihanoukville DPWT</b>						
Revenue	241	352	385	446	1,632	1,921
O&M Expenses	266	372	284	329	1,280	1,635
Net Profit (Loss)	-25	-20	101	117	352	286
<b>Kampong Cham DPWT <sup>b</sup></b>						
Revenue	0	0	0	0	150	172
O&M Expenses	0	0	0	0	132	153
Net Profit (Loss)	0	0	0	0	18	19
<b>Siem Reap DPWT</b>						
Revenue	276	272	289	525	617	717
O&M Expenses	276	249	278	477	561	652
Net Profit (Loss)	0	23	11	48	56	66

Provide list of all abbreviations used on the table in alphabetical order in this position.

<sup>a</sup> DPWTs do not record depreciation in their accounts; balance sheet accounts specific for wastewater and sanitation operations only are unavailable as the DPWTs combine them with the whole department's operations.

<sup>b</sup> No sanitation fees are being collected presently by Kampong Cham DPWT as the department does not provide wastewater and sanitation services.

Source: PWWs, DPWTs and PPTA consultant's estimates.