

FINANCIAL ANALYSIS

A. Background

1. The proposed Urban Water Supply and Project of the Asian Development Bank (ADB) will support eight public waterworks (PWWs) in eight towns of Cambodia (Table 1) and one state-owned enterprise, the Siem Reap Water Supply Authority (SRWSA). The largest subprojects are located in the towns of Stung Treng, (55.9% of the project cost), Siem Reap (24.8%), Kampong Cham (5.4%), and Svay Rieng (5.4%).

Table 1: Summary of Subproject Costs for the Public Waterworks

Public Waterworks	Estimated Cost (\$ 000's)	Percentage of Total Project Cost
Kampong Cham	1,545	5.4%
Kampong Thom	974	3.4%
Kampot	114	0.4%
Pursat	385	1.4%
Sihanoukville	447	1.6%
Stoung	468	1.7%
Stung Treng	15,900	55.9%
Svay Rieng	1,545	5.4%
Total	21,378	75.2%

Source: ADB estimates

2. The government's national strategic development plan 2014-2018 aims to make all public waterworks financially autonomous by 2018. The SRWSA already operates as an autonomous entity, while the remaining eight project utilities are public waterworks under the Ministry of Industry and Handicraft. ADB loan funds will be onlent to SRWSA for its subproject at an interest rate of not less than the ADB loan to the Government. SRWSA's service tariff is expected to cover foreign exchange fluctuations related to its debt service obligations. The eight PWWs covered by this project operate at different levels of efficiency, autonomy, and cost recovery. ADB funding will be on-granted by the Government to the PWWs for their subprojects and foreign exchange risk will be borne by the national government. Each PWW has to cover at least the O&M and depreciation costs. For the benefits from the ADB project to become sustainable, most of these PWWs need to institute tariff adjustments and improve operating efficiency. The government will request each of the PWWs to commit to the following conditions:

- (i) adhere by 2018 to a tariff road map that will enable full recovery of O&M costs, plus depreciation (using a standardized policy for determining depreciation with specific asset lives assigned to defined asset categories);
- (ii) comply with maintenance standards and procedures to be established by the government for regular maintenance and periodic replacement;
- (iii) ring-fence reserves (e.g., from tariff recovery of depreciation and other non-cash expenses) for use for replacement and/or major maintenance;
- (iv) provide counterpart financing for household water connections;
- (v) offer a socialized or lifeline tariff¹ scheme for domestic tariffs to ensure access and affordability for the poor—based on a monthly consumption of about 7 cubic meters (m³); and

¹ A lifeline or social water tariff is a subsidized block tariff with a volume corresponding to the essential minimum consumption required for a household's basic needs. This is typically 7-8 m³ per month in Southeast Asia.

- (vi) monitor and report regularly to the Ministry of Industry and Handicraft on operating efficiency, based on nonrevenue water (NRW)² levels, staffing per 1,000 connections, and other key performance indicators.

3. Consistent with the requirements of the operations manual of the Asian Development Bank, financial analysis undertook the following due diligence: (i) a financial analysis and evaluation of SRWSA for its subproject, (ii) financial analyses of the eight other project waterworks to assess incremental recurrent costs associated with their respective subprojects and the tariff adjustments required to enable cost recovery and sustainability, and (iii) an analysis of the affordability of cost-recovery tariffs for all PWWs and SRWSA.

B. Siem Reap Water Supply Authority—Financial Analysis and Evaluation

4. **Historical financials.** SRWSA operated profitably during the 3-year period 2010-2012. SRWSA's tariffs were high enough to fully cover costs, including depreciation. Annual operating ratios were 57%–69% during this period. Table 2 provides a summary of key historical operating and financial information. In 2011, SRWSA's revenues increased by 18.9% from 2010. This followed the introduction of block water tariffs near the end of 2010. However, SRWSA's growth has been constrained by limited water supply capacity, limiting the amount of water it can supply to customers. It has fewer than 5,000 service connections, and the number has not grown in recent years and provides only about 16% service coverage in the town. SRWSA's customer profile has been gradually changing, with the proportion of commercial customers increasing. They accounted for 19.5% of all customers by 2012, compared with 16.2% in 2010. As of 2012, SRWSA's balance sheet indicated a strong financial position, with ample liquidity and no debt. Liabilities were mainly customer deposits.

5. **Financial projections.** Water for the project will be supplied by a new treatment plant being developed under parallel financing by the Agence Française de Développement (AFD) and is planned for 2017.³ A project to be financed by the Japan International Cooperation Agency (JICA)⁴ will source water from the Tonle Sap lake and is planned for completion in 2019 to support the town's longer term needs. These are projected to raise the utility's water supply capacity from the current production capacity of 13,000 m³/day to 90,000 m³/day, allowing a ten-fold increase in the number of connections and improving service coverage to 90% of the Siem Reap's urban population by 2025. The project will complete the construction of a new distribution, serving Zone 1 and the APSARA area by 2019 and make provision for SRWSA to provide more than 13,000 of these new connections by 2025. SRWSA will continue implementing a full cost-recovery tariff to enable it to meet its debt service obligations and financial covenants. SRWSA currently implements an eight-tier tariff scheme under which higher commercial tariffs provide a cross-subsidy to allow lower tariffs for domestic consumption. Assuming that SRWSA will implement the tariffs needed to cover O&M and minimum debt service costs, based on current conditions, ADB projections indicate an increase in nominal tariffs of 89% by 2025. While operations are expected to become more efficient with greater economies of scale, tariff increases will be necessary due to the capital expenditures and debt service associated with the projects funded by AFD, JICA, and ADB. The projected minimum debt service coverage ratio is 1.2. The analysis has found that the projected tariff adjustments will remain affordable (para. 9).

² Nonrevenue water is defined as the difference between the amount of water put into the distribution system and the amount of water billed to consumers.

³ The AFD financed project is estimated to cost about \$9 million and will add 17,000 m³/day of water.

⁴ The JICA finance project is estimated to cost about \$93 million and will add 60,000 m³/day of water .

Table 2: Siem Reap Water Supply Authority—Summary Historical and Projected Financial Information, 2010–2025

Item	Actual			Projected				
	2010	2011	2012	2015	2018	2020	2023	2025
Operating Statistics:								
No. of Service Connections	4,842	4,805	4,805	4,897	11,537	25,937	43,906	47,806
Service coverage				14%	31%	63%	92%	90%
Billed Volume (m ³ million)	3.19	3.38	3.40	3.30	5.06	13.71	19.36	21.76
Productionn Volume (m ³ million)	3.55	3.72	3.78	3.88	5.96	16.12	22.78	25.60
Nonrevenue Water (%)	10%	9%	10%	15%	15%	15%	15%	15%
Financial Summary (KR millions):								
Revenues	6,017	7,156	7,383	6,450	14,764	33,924	67,155	74,924
O&M Costs	3,318	3,731	3,243	5,054	13,360	26,645	40,369	46,359
Depreciation	834	863	931	992	1,876	10,858	10,858	10,858
Operating Profit	1,865	2,562	3,209	404	(472)	(1,580)	15,928	17,706
Net Profit	1,626	2,193	2,758	323	(1,602)	(6,818)	8,741	10,407
Operating Cash Flow ^a	2,293	571	4,973	380	269	7,864	25,173	25,369
Debt Service	-	-	-	-	1,129	7,038	21,682	22,449
Cash	3,232	3,639	5,431	12,601	12,443	19,477	40,751	47,232
Current Assets	4,534	7,031	7,313	14,014	16,741	26,223	50,155	57,550
Net Fixed Assets	20,758	20,529	23,177	107,248	375,696	443,879	411,304	389,588
Liabilities	538	322	334	87,815	360,900	451,949	435,669	400,934
Reserves and Equity	24,754	27,238	30,156	33,446	31,538	18,153	25,791	46,204
Financial Indicators:								
Average Tariff (KR/m ³)	1,828	2,097	2,155	2,059	2,975	3,297	3,612	3,611
Projected Tariff Adjustment (%)		15%	3%	0%	17%	13%	10%	0%
Unit Cost (KR/m ³) (O&M + Depreciation)	1,301	1,358	1,228	1,835	3,010	3,384	2,646	2,630
Domestic Billed Volume (% of total)	-	-	-	34%	46%	49%	50%	50%
Operating Ratio	0.55	0.52	0.44	0.78	0.90	0.73	0.60	0.62
Operating Ratio (O&M + Depreciation)	0.69	0.64	0.57	0.94	1.03	1.05	0.76	0.76
Net Profit Margin (%)	27%	31%	37%	5%	-11%	-20%	13%	14%
Debt Service Cover Ratio	NA	NA	NA	NA	1.24	1.32	1.24	1.27

^a Operating cash flow is defined as earnings before interest and depreciation less taxes and changes in working capital.

6. **Financial evaluation.** The financial internal rate of return was calculated in real terms on after-tax incremental cash flows from the subproject to be 26.3%, higher than the weighted average cost of capital (WACC) of 0.75%.⁵ This shows the SRWSA subproject to be financially viable. Sensitivity analysis was also undertaken in accordance with ADB's guidelines. The results showed that the subproject remains viable under the scenarios evaluated. Table 3 provides summary results of the financial evaluation.

Table 3: Financial Internal Rate of Return and Sensitivity Analysis

Item	Base Case	Sensitivity Analysis Scenarios					
		Capital	+20%	-	-	-	+20%
		O&M	-	+10%	-	+10%	+10%
Revenues	-	-	-10%	2-yr delay	-10%		
FIRR (%)	26.3%	-	22.49%	21.3%	13.1%	21.2%	4.3%
FNPV (in KR million)	181,036	-	176,749	141,294	69,312	127,856	18,832

⁵ WACC is calculated to be 0.75%, using the estimated onlending rate of 1.75% p.a. to SRWSA as the nominal cost of the ADB facility. Cost of government funds is estimated at 9.50%, a premium for Cambodia (B/B2) of about 2.30% vis-à-vis Vietnam's (B+/B1) 10-year USD sovereign bond which yields 7.20% p.a. (as of September 2014), to account for longer tenor and lower risk rating.

C. Public Waterworks – Financial Analysis and Evaluation

7. **Current tariff and cost recovery.** Table 4 provides information on current tariffs and levels of cost recovery for each of the eight PWWs included in the project. During 2012, operating profits have been either marginal or negative. Although revenues have been sufficient to recover O&M costs, tariffs often do not cover depreciation. For many of the PWWs, low operating cash flow has led to inadequate maintenance of equipment and facilities. Ensuring that revenues cover O&M and depreciation, a non-cash expenditure, will provide funds for asset replacement, expansion, and debt service. Table 5 provides a summary of operating and financial information for three of the project waterworks.

Table 4: Public Waterworks—Tariff and Cost Recovery

	2012 Average Tariff (KR/m ³)	2012 Cost Recovery ^a	
		O&M	O&M + Depreciation
Kampong Cham	876	1.10	0.90
Kampong Thom	1,500	1.20	0.90
Kampot	1,400	1.41	0.95
Pursat	1,600	1.20	0.80
Sihanoukville	1,897	1.23	1.03
Stoung	1,800	1.06	0.99
Stung Treng	1,500	1.08	1.01
Svay Rieng	1,200	1.60	0.80

^a Calculated with total revenues as numerator.

Table 5: Public Waterworks—Summary Projections

Item	Actual	Projected				
	2012	2015	2019	2021	2023	2025
Kampong Cham						
No. of Service Connections	5,714	6,602	8,433	8,773	8,813	8,813
Service Coverage (%)	42%	48%	62%	64%	64%	64%
Billed Volume (m ³ millions)	1.95	2.16	2.64	2.80	2.83	2.84
O&M Costs	1,740	1,763	2,391	2,639	2,846	3,025
Depreciation	510	513	861	861	861	874
Operating Profit	(314)	4	20	0	7	4
Operating Cash Flow	273	209	409	773	785	804
Average Tariff (KR/m ³)	876	1,104	1,291	1,317	1,382	1,449
Projected Tariff Adjustment (%)	-	30%	15%	2%	2%	2%
Operating Ratio	0.90	0.77	0.73	0.75	0.77	0.77
Operating Ratio (O&M + Depreciation)	1.16	1.00	0.99	1.00	1.00	1.00
Stung Treng						
No. of Service Connections	2,215	2,638	4,060	5,870	6,630	7,230
Service Coverage (%)	33%	36%	53%	76%	84%	90%
Billed Volume (m ³ millions)	0.53	0.74	1.25	1.81	2.10	2.27
O&M Costs	734	1,003	6,070	3,136	3,603	4,020
Depreciation	51	38	38	1,722	1,722	1,722
Operating Profit	6	24	(3,742)	28	323	354
Operating Cash Flow	97	46	(4,526)	1,657	1,962	1,969
Average Tariff (KR/m ³)	1,500	1,500	1,950	2,819	2,819	2,819
Projected Tariff Adjustment	-	0%	30%	11%	0%	0%
Operating Ratio	0.93	0.94	2.56	0.64	0.64	0.66
Operating Ratio (O&M + Depreciation)	0.99	0.98	2.58	0.99	0.94	0.94
Svay Rieng						
No. of Service Connections	1,741	2,376	4,138	5,168	5,198	5,198
Service Coverage (%)	19%	26%	45%	57%	57%	57%
Billed Volume (m ³ millions)	0.58	0.73	1.17	1.44	1.55	1.56
O&M Costs	479	653	1,394	1,760	1,932	2,057

Depreciation	514	492	772	772	772	772
Operating Profit	(217)	(61)	25	158	157	55
Operating Cash Flow	273	401	652	895	890	804
Average Tariff (KR/m ³)	1,200	1,560	1,943	1,943	1,943	1,943
Projected Tariff Adjustment	-	30%	21%	0%	0%	0%
Operating Ratio	0.62	0.60	0.64	0.65	0.68	0.71
Operating Ratio (O&M + Depreciation)	1.28	1.06	0.99	0.94	0.95	0.98

D. Tariff Affordability Analysis

8. Table 6 provides a summary of the tariff affordability analysis for all nine of the project waterworks. Current tariff levels are affordable, with monthly water bills ranging from 0.7% to 2.2% of the income of low-income households.

Table 6: Tariff Affordability Analysis (in KR)

Public Waterworks	2012			2025		
	Low Income Household Monthly Income	Monthly Household Water Bill ^a	Water Bill as % of Income	Room for Affordable Tariff Adjustment	Cumulative projected adjustment in tariff ^b	Water Bill as % of Income
Siem Reap	761,000	7,700	1.0%	+295%	+3%	0.7%
Kampong Cham	634,000	3,850	0.6%	+559%	+75%	0.7%
Kampong Thom	670,000	10,500	1.6%	+155%	+39%	1.3%
Kampot	720,000	9,800	1.4%	+194%	+53%	1.4%
Pursat	700,000	11,200	1.6%	+150%	+48%	1.4%
Sihanoukville	700,000	10,500	1.5%	+167%	+53%	1.4%
Stoung	650,000	12,600	1.9%	+106%	+66%	2.2%
Stung Treng	665,000	10,500	1.6%	+153%	+110%	2.0%

^a Assumes monthly consumption per household of 7 m³, multiplied by the corresponding tariff per m³.

^b Represents the projected adjustment to tariff, corresponding to the first 7 m³ of household monthly consumption, from 2015–2025.

9. Only Siem Reap, Kampong Cham, and Sihanoukville have block tariff schemes and a lifeline tariff. Siem Reap's lowest tariff is KR100 per m³ for the first 7 m³ of water consumed monthly. The government will require all PWWs to implement a socialized tariff scheme and to offer a lifeline tariff to ensure that low-income families can afford to pay it. The use of socialized tariffs will allow for progressive charging by consumption and cross-subsidies between customer categories. This will serve to enhance financial sustainability while maintaining affordability for low-income households. Further analysis of consumption patterns is recommended to refine block tariff programs. Assuming that the tariff affordability threshold is 4% of the monthly income of low-income households, acceptable tariff increases from the current project utilities' tariffs range from 106% in Stoung to 559% in Kampong Cham. The analysis indicated that projected tariff adjustments will remain comfortably below the assumed affordability threshold of 4% of monthly income.

E. Main Conclusions

10. SRWSA should be able to repay the onlent funds, provided that it continues to adhere to a full cost-recovery tariff policy. Due to the large projects to be undertaken by SRWSA, with ADB, AFD, and JICA financing, it will need to increase tariffs to meet its debt service obligations (para. 5). The eight PWWs will need to increase their tariffs to allow for recovery of O&M and depreciation costs (para. 7). To ensure the sustainability of the PWWs, the government should establish (i) key performance standards, (ii) a cost-recovery tariff policy, and (iii) standardized guidelines for determining depreciation.