

## FINANCIAL ANALYSIS

### A. Methodology

1. The Southeast Asia Urban Development and Water (SEUW) division conducted financial analysis for the Water Supply and Sanitation Investment Project in accordance with Asian Development Bank (ADB) guidelines.<sup>1</sup> The financial analysis usually assesses the ability of a project to meet its costs, including capital and operation and maintenance (O&M) expenditures, out of its revenue streams.

2. However, the tariff philosophy of the government for water supply and sanitation services is not premised on full cost recovery. Hence, the government will be responsible for covering O&M expenditure as well as repaying the ADB loan and providing counterpart funds during implementation. As per the existing structure, each project city's Municipal Water, Sanitation, and Environment Services (SMASA) will be responsible for O&M of the assets created under the project through tariff revenues and additional support from the government.

3. Against this background, SEUW conducted an incremental cost recovery analysis and sustainability analysis to assess the potential for O&M cost recovery for water supply and sanitation projects. The government's financial capacity was also assessed as it will be responsible for O&M shortfalls, loan repayment, and supporting the project cities during operation. The analysis is conducted in nominal terms reflecting the inflation rate.

### B. Proposed Tariff Rate

4. Timor-Leste established a national tariff structure for water use through Ministerial Diploma No. 1/2004 (11 February) of the Ministry of Transport, Communication, and Public Works. This order has been implemented in the capital city of Dili and the city of Manatuto, and it is expected that the same order will apply to the three project cities. The water tariff for domestic users is \$0.20 per cubic meter (m<sup>3</sup>) for up to 14 m<sup>3</sup> per month, and \$0.40 per m<sup>3</sup> for excess consumption. For the social sector (e.g., schools and hospitals), the water fee is a flat \$0.15 per cubic meter while commercial and industrial consumers pay \$0.60 per cubic meter.

5. The government is in the process of setting up a new state-owned water utility, Bee Timor-Leste (BTL), and is expected to review the water supply tariff. The government is considering adjusting water tariffs every 5 years to ensure sustainability. For the purpose of cash flow projections, a 15% increase every 5 years in the water tariff and connection charge has been assumed, after an initial increase of 20% in the first year of operations. The details of proposed tariff and connection charges for water supply are provided in Table 1 and Table 2.

**Table 1: Current and Projected Water Tariff**

Type of Consumer	Water Consumption	Water Tariff (\$ per m <sup>3</sup> )					
		FY2021	FY2027	FY2032	FY2037	FY2042	FY2051
Domestic	Up to 14 m <sup>3</sup> /month	0.20	0.24	0.28	0.32	0.37	0.42
	More than 14 m <sup>3</sup> /month	0.40	0.48	0.55	0.63	0.73	0.84
Social	unlimited	0.15	0.18	0.21	0.24	0.27	0.31
Commercial	unlimited	0.60	0.72	0.83	0.95	1.10	1.26

FY = fiscal year, m<sup>3</sup> = cubic meters.

Source: Asian Development Bank estimates.

<sup>1</sup> ADB. 2019. *Financial Analysis and Evaluation: Technical Guidance Note*. Manila.

**Table 2: Current and Projected Connection Charges for Water Supply**

	Connection Charges (\$)					
	FY2020	FY2027	FY2032	FY2037	FY2042	FY2051
Domestic (15mm pipe)	55	66	76	87	100	115
Domestic (20mm pipe)	100	120	138	159	183	210
Social (15mm pipe)	55	66	76	87	100	115
Social (20mm pipe)	100	120	138	159	183	210
Commercial (15mm pipe)	100	120	138	159	183	210
Commercial (20mm pipe)	200	240	276	317	365	420

FY = fiscal year, mm = millimetres.

Source: Asian Development Bank estimates.

6. The government does not apply charges for the use of sanitation systems, but it is expected that this will be reviewed when BTL becomes operational. The analysis assumes that a sanitation tariff will be charged on top of the water bill at 10% of the water tariff rate.

### C. Affordability Analysis

7. An affordability analysis was undertaken to ensure that domestic consumers can afford the projected water supply tariffs. Such analysis was carried out for year 2027, when operation commences, and for year 2051—the last fiscal year of project life. It is assumed that (i) the proposed water supply tariff and sanitation tariff were adopted, (ii) water consumption for an average household was 120 liters per capita per day, and (iii) household income increased at the same rate as inflation. As the water supply and sanitation expenditure amounts to less than 5% of household income, which has been taken as the threshold for affordability, the proposed water supply tariffs are considered affordable. Detailed analysis is shown in Table 3.

**Table 3: Water Charges, Usage, and Average Household Income**

	Lospalos	Same	Viqueque
<b>FY2026</b>			
Water supply and sanitation bill (\$/HH/month)	7.3	7.8	7.1
HH income (\$/month)	373.1	378.5	346.7
<b>WSB as % of HH income</b>	<b>2.0%</b>	<b>2.0%</b>	<b>2.0%</b>
<b>FY2050</b>			
Water supply and sanitation bill (\$/HH/month)	12.7	13.6	12.4
HH income (\$/month)	600.2	608.8	557.7
<b>WSB as % of HH income</b>	<b>2.1%</b>	<b>2.2%</b>	<b>2.2%</b>

FY = fiscal year, HH = household, WSB = water supply bills.

Source: Asian Development Bank estimates.

### D. Incremental Cost Recovery Analysis

8. The cash flow projections of the project have been made with the following assumptions: (i) all costs were in 2020 prices and incurred in United States dollars; (ii) financial projections were calculated from fiscal year (FY) 2022 to FY2051, including 5 years of construction,<sup>2</sup> and assets established were assumed to have a 25-year life span; (iii) revenues included water supply tariffs and connection fees for water supply; (iv) water supply tariffs were assumed to increase by 15% every 5 years after an initial increase of 20% in FY2027, the first year of operations; (v) collection efficiency has been assumed at 80% of billed revenue and the opening balance of uncollected revenue; (vi) equipment and electrical installations for water supply projects and sanitation

<sup>2</sup> The project implementation period is 7 years (2022–2028). Construction will be completed in mid-2026 and the remaining 2 years will be for O&M of project-created assets by the contractors.

projects alike were assumed to have an operating life of 10 years, and would be replaced accordingly; and (vii) O&M costs included personnel, maintenance, administration, chemicals, and power, and excluded noncash items. Escalation of operating costs was assumed at the international inflation rate projected by ADB.

9. At the national level, the provision of urban water services in the project towns is the responsibility of the SMASAs, housed within each municipal administration under the Ministry of State Administration. SMASAs are responsible for day-to-day operation and management of the municipal capital water supply and sanitation systems. However, SMASAs do not have an independent revenue source and rely on central government transfers to cover recurring costs. Also, they have limited autonomy in decision-making, other than for basic operational matters.

10. In view of the above, SEUW conducted an incremental cost recovery analysis at the national level for water supply and sanitation services in the three cities. Cash flow was projected for 25 years of operation using forecasted tariff revenues and O&M costs. Debt service for the project was also taken into consideration.

11. The analysis shows that revenues from the project in all three cities are consistently lower than total expenditures during the entire 25-year period of analysis. The need to replace equipment and electrical installations every 10 years adds to the shortfall. The total O&M shortfall in FY2027 for the three cities is estimated at \$0.6 million, declining to \$0.3 million in FY2051. However, the replacement of equipment every 10 years (in FY2036 and FY2046) increases the shortfall to \$10.9 million in FY2036 and \$12.7 million in FY2046. Consequently, water supply and sanitation operations would need continuous financial support from the government.

12. Considering the debt repayment obligation of the government, the analysis also takes into account the debt service amount. The operating deficit gradually declines over the project period. However, periodic equipment replacement requires significant funding (para. 10). Total required annual financing, taking into account the O&M shortfall and debt service, is \$3.9 million in FY2027, increasing to \$15.1 million in FY2046. Detailed analysis is in Table 4.

**Table 4: Incremental Cost Recovery Analysis**  
(\$ '000)

	<b>FY2027</b>	<b>FY2031</b>	<b>FY2036</b>	<b>FY2041</b>	<b>FY2046</b>	<b>FY2051</b>
<b>Revenues</b>						
<b>(Water supply plus sanitation)</b>	<b>884.1</b>	<b>1,420.5</b>	<b>1,917.6</b>	<b>2,489.8</b>	<b>2,856.6</b>	<b>3,285.1</b>
Lospalos	371.1	602.9	822.0	1,075.2	1,233.4	1,418.4
Same	273.1	442.8	590.4	760.1	872.5	1,003.4
Viqueque	239.9	374.9	505.1	654.4	750.7	863.3
<b>O&amp;M expenses</b>						
<b>(Water supply)</b>	<b>1,476.3</b>	<b>2,076.2</b>	<b>2,473.1</b>	<b>2,924.2</b>	<b>3,197.0</b>	<b>3,495.3</b>
Lospalos	619.3	928.5	1,130.8	1,359.6	1,486.5	1,625.2
Same	467.5	619.1	721.0	837.1	915.2	1,000.6
Viqueque	389.5	528.6	621.2	727.5	795.4	869.6
<b>O&amp;M expenses</b>						
<b>(Sanitation)</b>	<b>61.1</b>	<b>65.6</b>	<b>71.7</b>	<b>78.4</b>	<b>85.7</b>	<b>93.7</b>
Lospalos	24.1	25.9	28.3	30.9	33.8	36.9
Same	18.7	20.1	22.0	24.0	26.3	28.7
Viqueque	18.3	19.6	21.5	23.5	25.6	28.0
<b>Operating deficit</b>	<b>(653.3)</b>	<b>(721.3)</b>	<b>(627.2)</b>	<b>(512.8)</b>	<b>(426.1)</b>	<b>(303.9)</b>

	FY2027	FY2031	FY2036	FY2041	FY2046	FY2051
Equipment replacement	0	0	10,310.0	0	12,323.6	0
<b>Total O&amp;M shortfall</b>	<b>(653.3)</b>	<b>(721.3)</b>	<b>(10,937.2)</b>	<b>(512.8)</b>	<b>(12,749.7)</b>	<b>(303.9)</b>
Debt service	(3,266.5)	(3,078.5)	(2,843.5)	(2,608.5)	(2,373.5)	0
<b>Total deficit</b>	<b>(3,919.8)</b>	<b>(3,799.8)</b>	<b>(13,780.7)</b>	<b>(3,121.3)</b>	<b>(15,123.2)</b>	<b>(303.9)</b>

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

Source: Asian Development Bank estimates.

## E. Sustainability Analysis

13. Since SMASAs do not generate any income, and financing O&M costs is fully dependent on the central government budgetary allocation, the financial capacity of the government has been assessed to verify the project's sustainability.

14. Timor-Leste's economy depends almost entirely on the petroleum industry. Timor-Leste has substantial offshore oil and gas reserves, from which it has been generating revenue in the form of royalties and taxes. A surplus from these revenues has led to the creation of the Petroleum Fund, which, as of the beginning of FY2020, had a corpus of \$17.7 billion. Timor-Leste's interest earnings from Petroleum Fund investments and petroleum revenues are the main sources of income for Timor-Leste. The Petroleum Fund corpus is expected to yield adequate financial returns to enable the government to offset its annual fiscal deficits in years going forward. A summary of the Petroleum Fund's financial performance during FY2018–FY2020 is in Table 5.

**Table 5: Petroleum Fund's Financial Performance**  
(\$ million)

	FY2018	FY2019	FY2020
<b>Opening Balance</b>	<b>16,799</b>	<b>15,804</b>	<b>17,692</b>
Petroleum revenue	447	756	306
Petroleum Fund interest	(460)	2,101	1,032
Total withdrawals	983	969	964
<b>Closing Balance</b>	<b>15,804</b>	<b>17,692</b>	<b>18,066</b>

( ) = negative, FY = fiscal year.

Source: Government of Timor-Leste, Ministry of Finance. *State Budget Books 2019 to 2021*. Dili.

15. The other main revenue sources for Timor-Leste are taxes and fees. The country's fiscal deficit is financed by transfers from the Petroleum Fund every year. However, with growing fiscal deficits requiring increased funding from the Petroleum Fund, the government is taking action to increase domestic revenues moving forward. A summary of the government's budget statement is in Table 6.

**Table 6: Budget Statement of Government of Timor-Leste**  
(\$ million)

	FY2018 Actual	FY2019 Actual	FY2020 Budget	FY2021 Budget	FY2022 Budget
<b>Expenditure</b>	<b>1,172.7</b>	<b>1,237.3</b>	<b>1,497.0</b>	<b>1,895.1</b>	<b>2,433.3</b>
<i>Recurrent</i>					
Salaries and Wages	197.2	203.0	206.7	239.3	248.8
Goods and Services	319.1	380.4	499.3	421.5	438.3
Public Transfers	312.5	339.3	568.7	699.1	727.1
<i>Capital</i>					
Minor Capital	7.8	27.8	8.9	61.2	63.6
Capital and Development	336.1	286.8	213.4	474.0	955.5
<b>Revenues</b>	<b>741.0</b>	<b>727.6</b>	<b>716.7</b>	<b>738.5</b>	<b>728.7</b>

	<b>FY2018 Actual</b>	<b>FY2019 Actual</b>	<b>FY2020 Budget</b>	<b>FY2021 Budget</b>	<b>FY2022 Budget</b>
Domestic Revenues (Taxes and Fees)	190.6	198.6	172.3	190.6	202.1
Estimated Sustainable Income (Transferred from Petroleum Fund)	550.4	529.0	544.4	547.9	526.6
<b>Fiscal Balance</b>	<b>(431.7)</b>	<b>(509.7)</b>	<b>(780.3)</b>	<b>(1,156.6)</b>	<b>(1,704.6)</b>
<b>Financing</b>	<b>771.5</b>	<b>529.9</b>	<b>780.2</b>	<b>1,156.5</b>	<b>1,749.1</b>
Excess Withdrawal from Petroleum Fund	432.1	440.0	419.5	829.7	1,686.2
Use of Cash Balance	300.2	33.4	290.1	247.0	
Borrowing/Loans	39.2	56.5	70.6	79.8	62.9
<b>Net Balance</b>	<b>339.8</b>	<b>20.2</b>	<b>(0.1)</b>	<b>(0.1)</b>	<b>45.5</b>

( ) = negative, FY = fiscal year.

Source: Government of Timor-Leste, Ministry of Finance. *State Budget Books 2019 to 2021*.

16. As indicated earlier, at existing water tariff levels, the project would require continuous financial support from the government. With the Petroleum Fund corpus of \$17.7 billion expected to generate adequate returns to fund the government's fiscal deficits, the government can financially support the O&M shortfall.

## F. Conclusion

17. The financial sustainability of the project depends on the government's O&M budget allocation to SMASAs in each city, since tariff revenues are not ring-fenced and SMASAs lack other independent income resources. Hence, the financial capacity of the government and its commitment to allocate sufficient O&M budget to SMASAs are essential to ensuring the project's financial sustainability.

18. This analysis confirms the government's capacity to cover O&M shortfalls for the project facilities, and provisions requiring the government to assume responsibility for financing project O&M are included in the loan covenants.

19. The project will support development of an institutional development roadmap for each project city. The institutional development roadmaps will cover tariff reform, billing systems, financial management, and O&M to build the operational capacity of local staff and guide the transition of urban water services to the new autonomous state-owned water utility, BTL.