FINANCIAL ANALYSIS

A. Introduction

1. A financial analysis was conducted for the proposed Greater Malé Environment Improvement and Waste Management Project and was prepared in accordance with the guidelines on the financial management and analysis of projects of the Asian Development Bank (ADB).[1]

2. The proposed project area suffers from severe environmental pollution and deteriorating livability because of inadequate collection and haphazard disposal of solid waste.[2] Open dumping and burning of garbage at the old dumpsites has caused an environmental and public health hazard posing a daily nuisance to residents and tourists in Malé, with plumes of smoke visible from surrounding resorts and the Velana International Airport.

3. The Government of Maldives has requested financing from the Asian Development Bank (ADB) for the project to ensure a healthy living environment in the Greater Malé capital region and its outer islands. The project aims to provide disaster- and climate-resilient solid waste management (SWM) services in the project areas, mainly benefiting the poor and women, with the following outputs: (i) improved and climate- and disaster-resilient waste collection, transfer, and disposal systems; (ii) enhanced community-based outer island waste management systems targeting the poor and women; and (iii) strengthened institutional capacity and public awareness in sustainable waste management.

B. Methodology

4. A financial analysis generally assesses the ability of a project to meet its costs, including capital and operation and maintenance (O&M) expenditure, out of its revenue streams. The project will generate revenues through collecting tariffs from customers. However, the tariff philosophy of SWM in Maldives is not premised on full cost recovery. The government will be responsible for counterpart funds during the implementation and O&M support to the Waste Management Corporation (WAMCO), the operator of SWM facilities under the Ministry of Environment and Energy (MEE), during the operation as needed.[3] WAMCO will be responsible for O&M of developed assets under the project through SWM tariffs and other revenues as well as additional support from the government, if required.

5. With this premise, the financial analysis focused on the cash flow of the project to assess its ability to cover incremental O&M costs from the tariff revenues. The analysis also included (i) a review of WAMCO's historical financial performance, and (ii) financial forecast of WAMCO to determine its financial strength to operate and maintain the assets created under the project. The analysis also covered the government's financial capacity, as it is responsible for (i) providing the counterpart funds during implementation and (ii) supporting WAMCO during the operation.

---

[1] ADB. 2005. *Financial Management and Analysis of Projects.* Manila.

[2] The project area encompasses the inhabited islands in the North Ari Atoll (Alifu Alifu Atoll), South Atoll (Alifu Dhaalu Atoll), Malé, Atoll (Kaafu Atoll), and Vaavu Atoll classified as zone 3 in the National Solid Waste Management Policy. The total population of the project area is 216,000 (nearly 51% of country) comprising the capital city Malé, 35 inhabited islands, 76 resorts, along with institutions and industry, and the country's main international airport.

[3] WAMCO, a government-owned corporation established in 2015, is responsible for the waste transfer and disposal functions of Greater Malé, including regional waste management centers.

C. Tariff Structure

6. The current waste collection service is predominantly controlled by the informal sector at a monthly charge of Rf100−Rf250 per household. Since 2015, WAMCO has entered the waste collection operation with a monthly charge of Rf150 per household. Though the current operations are performed by both WAMCO and the informal sector, the switchover from the informal sector to WAMCO is taking place at a faster rate because of inadequate service delivery by informal service providers.[4] Based on the market survey conducted in 2016, WAMCO is improving service delivery to match household requirements.

7. The waste collection operation by WAMCO is guided by the tariff-based revenue generation approach but in line with the existing policy framework under the National Solid Waste Management Policy (2015) and Solid Waste Management Regulations (2013).[5] However, no dedicated tariff policy for SWM is in practice at the national level. WAMCO has indicated in its 2016 strategic plan that the SWM tariffs would be set at affordable rates and competitive prices, providing "the best value-for-money service for waste management."[6] The present monthly household tariff of Rf150 levied by WAMCO is marginally higher than the average tariffs imposed by the informal sector (Rf125 per household) mainly because of minimal overhead costs of the informal sector, which mostly uses cycles for transportation.[7] Also, the present tariff levied by WAMCO is based on detailed market research on existing operations, including the tariff by the informal sector and households' willingness to shift and to pay. However, in line with the cost recovery principle, WAMCO plans to revise the tariff periodically in the future.

D. Affordability Analysis

8. In 2017, poor households in Malé, where household waste collection is more critical because of the high population density, paid about 1.26% of their monthly income toward solid waste treatment. This is estimated to increase to 1.27% in 2023 when project operation starts (Table 1), while the waste collection charge for nonpoor households is estimated to increase from 0.63% in 2017 to 0.64%% in 2023. The tariff rate in 2017 followed by WAMCO and the proposed tariff in 2023 reflected in the analysis are in the range of $9.7−$11.7 per month and these rates are already found in practice by the informal sector and also in line with the global norms for SWM tariff.[8] This demonstrates the affordability for all income categories to meet the household waste collection tariff proposed in 2023.

9. To enable WAMCO to maintain affordable SWM tariffs, WAMCO needs to ensure that its waste management investments and operations are cost-efficient while maximizing revenues from the sale of recyclables and electricity. Periodic tariff revisions also need to be implemented by WAMCO in line with the cost recovery principle. If these are not realized, the government would

---

[4] 64% of households were willing to pay for the services of WAMCO (Source: WAMCO. 2016. *Market Survey Report*. Malé). Major problems with informal service providers include irregular waste collection (e.g., collecting waste stored in bags but leaving others), which has resulted in the accumulation of household waste causing environmental and health hazards (Source: ADB. 2017. *TA-9327 MLD: Baseline Socio Economic Survey*. Manila).

[5] The National Solid Waste Management Policy was formulated by the Ministry of Environment, Energy and Water in 2008 and subsequently improved in 2015. It includes a set of strategic and governance principles. The Solid Waste Management Regulation was drafted by the Ministry of Housing and Environment in 2010 and finalized in 2013 with the aim of implementing the National Solid Waste Management Policy (2008).

[6] Republic of Maldives, 2016, Waste Management Corporation Ltd (WAMCO), '*Strategic Plan 2016'.* Malé.

[7] The average household SWM tariff in 2016 is based on the market research survey (2016) conducted by WAMCO.

[8] UN-Habitat research (Habitat 2010) indicates that SWM tariffs should be 0.7%−2% of family income to be sustainable. Source: Republic of Maldives. 2010. Ministry of Housing, Transport, and Environment. '*User Pays Framework for Island Waste Management Services - Final Report*'. Malé.

need to provide sufficient subsidies to achieve financial sustainability of the assets established under the project.

Table 1: Solid Waste Charges, Usage, and Average Household Income

Item	Existing (2017)	Proposed (2023)[a]
Average monthly household waste generation (kilogram)[b]	114.6	114.6
Monthly solid waste tariff ($/household)[c]	9.7	11.7
Average monthly household income - poor categories ($/month)[d]	769.7	919.1
Solid waste bill as % of income - poor categories (%)	**1.26**	**1.27**
Average monthly household income - nonpoor categories ($/month)	1,535.3	1,833.2
Solid waste bill as % of income - nonpoor categories (%)	**0.63**	**0.64**

[a] 2023 is the operation start year for the project.
[b] Adopted from the SWM feasibility report (2017).
[c] Based on WAMCO tariff rate for 2017. Tariff increase of 20% every 5 years is assumed based on the discussion with WAMCO officials and their strategic plan (2016) objectives.
[d] Household income for 2017 is based on the 2017 baseline socioeconomic survey. Household income from 2018 to 2023 is updated using the gross domestic product growth rate of 3%.

Source: (i) Ministry of Environment & Energy, 2017, '*Feasibility Report – Final Version'*, , (ii) Data on gross domestic product and per capita income were published by the MOFT, (iii) ADB. 2017. TA-9327 MLD. '*Baseline Socio Economic Survey*'. Manila.

E. Operation and Maintenance Cost Recovery Analysis

10. The cash flow of the project is projected for 15 years' operation considering the forecast tariff revenues and incremental O&M costs.[9] The general assumptions to calculate the cash flow of the project are as follows:

(i) The projection was carried from July 2018 to June 2038 including 5 years of implementation. Assets established were assumed to have 15 years' lifespan upon the completion.
(ii) All costs are in nominal prices and converted at $1 = Rf15.4.
(iii) The O&M costs included personnel, maintenance, replacement, administrative, and operation expenses and excluded depreciation, which is a non-cash item.

11. The cash flow projection shows that the proposed project could cover the full O&M costs from the operation start year of 2023 (Table 2). This underlines the sustainability of the project to be established under the project.

Table 2: Operation and Maintenance Cost Recovery Analysis

($ million)

Item	2024	2027	2030	2033	2036
Project revenue	10.2	11.0	14.3	18.2	22.1
Operating expenses	8.6	10.9	13.7	17.3	21.8
Net operating income	**1.6**	**0.2**	**0.6**	**0.9**	**0.3**
Operating ratio[a]	**0.85**	**0.99**	**0.96**	**0.95**	**0.99**

[a] Estimated by dividing operating expenditure by revenue.

Source: Asian Development Bank estimates.

F. Financial Performance and Projections of Waste Management Corporation

12. **Financial performance.** A financial analysis assessed the impact of the project on the overall financial capacity of WAMCO, which was established in 2015; hence, only FY2016

[9] Existing landfill site and the 15 acres landfill site under reclamation will cover the demand for solid waste management up to 15 years once the proposed project is completed (Source: Republlic of Maldives. 2017. Ministry of Environment & Energy. '*Feasibility Report – Final Version'*. Malé).

accounts are available. A financial performance analysis of WAMCO during FY2016 shows that it has significantly depended on government subsidies.

13. **Financial projections.** The following assumptions were considered for the financial projections of WAMCO: (i) during the implementation period of the project (July 2018−June 2023), the projection was based on the actual performance of 2016 using the growth rate of national gross domestic product for income and expenditure; (ii) during the operation period of the project from July 2023, the projected cash flow of WAMCO included income and expenditure from both the project and existing operations; (iii) present tariff with 20% increase was assumed to be implemented from FY2023 and to increase by 20% every 5 years;[10] (iv) O&M expenditure was based on all operating expenditures including periodic maintenance costs with 3% inflation;[11] and (v) 15% tax on profits was applied.[12]

14. The financial projections in Table 3 show that WAMCO is expected to cover the operating costs from its operating income. This underlines that WAMCO would need to implement the tariff revision periodically and improve the collection efficiency to maintain financial sustainability. ADB will also provide policy advice and capacity development support to help WAMCO achieve financial sustainability.

Table 3: Financial Performance and Projections of Waste Management Corporation
($ million)

	Actual	Projection					
Details	**2016**	**2017**	**2021**	**2023**	**2027**	**2032**	**2037**
Income							
SWM tariff income	3.0	3.1	3.4	10.3	11.6	16.7	22.8
Subsidies	6.3	6.6	8.0	0.0	0.0	0.0	0.0
Others	0.7	0.7	0.9	0.9	1.2	1.5	1.9
Total	**9.9**	**10.4**	**12.3**	**11.3**	**12.7**	**18.2**	**24.7**
Expenditure							
Operation and maintenance expenses	6.5	6.6	6.8	8.0	10.9	16.0	23.5
Others	0.5	0.5	0.5	0.5	0.6	0.6	0.7
Total	**7.0**	**7.0**	**7.3**	**8.5**	**11.5**	**16.6**	**24.2**
Net operating income	**2.9**	**3.3**	**5.0**	**2.7**	**1.2**	**1.6**	**0.5**
Tax	0.4	0.5	0.7	0.4	0.2	0.2	0.1
Net income	**2.5**	**2.8**	**4.3**	**2.3**	**1.1**	**1.4**	**0.4**
Operating ratio	**0.70**	**0.68**	**0.59**	**0.76**	**0.90**	**0.91**	**0.98**

Source: Asian Development Bank estimates based on the financial statement of Waste Management Corporation for FY2016 and the project income and expenditure estimated from the feasibility report (2017).

G. Financial Capacity of the Government of Maldives

15. In case of delays in implementing the regular revisions, the government needs to support WAMCO to cover O&M costs of assets established under the project. The financial performance of the government showed a revenue deficit from 2012−2016 (Table 4). The government is taking adequate steps to reduce the deficit through fiscal regulatory measures. The Fiscal Responsibilities Bill[13] came into force in May 2014 and set fiscal targets such as the ceiling on public debt and fiscal deficit.

[10] Although WAMCO does not have specific regulations on tariff revision, WAMCO's strategy plan (2016) suggests the periodic tariff revisions of 20% every 5 years.

[11] ADB. 2015. '*Asian Development Outlook 2015 - Financing Asia's Future Growth*'. Manila.

[12] The Business Profit Tax Act came into effect on 18 July 2011. Under the act, tax is imposed at the rate of 15% on profits exceeding Rf500,000 ($32,425) in a year.

[13] Republic of Maldives. 2015. Maldives Monetary Authority. '*Annual Report 2014*'. Malé.

16. The government's budget allocation for environmental protection has increased from $9.4 million in 2012 to $41.3 million in 2016. The increasing budget allocation underlines the government's commitment to support the creation and operation of SWM projects.

Table 4: Financial Performance of the Government of Maldives ($ million)

Details	2012[a]	2013[a]	2014[a]	2015[a]	2016[b]
Revenue					
Total current revenue (tax and nontax)	631.4	747.7	965.9	1,074.6	1,096.6
Capital revenue (sale of assets)	3.1	17.4	8.1	7.8	51.0
Grants	23.8	7.6	10.7	41.4	31.1
Total revenue	**658.3**	**772.8**	**984.7**	**1,123.8**	**1,178.7**
Expenditure					
Total current expenses	669.9	751.5	906.5	1,086.6	994.3
Total capital expenditure and net lending	181.4	127.1	159.6	298.9	462.5
Total expenditure	**851.3**	**878.6**	**1,066.1**	**1,385.5**	**1,456.8**
Surplus/(deficit)	**(193.0)**	**(105.9)**	**(81.4)**	**(261.7)**	**(278.1)**
Total debt outstanding	1,619.6	1,663.6	2,019.5	2,161.2	2,397.7
Environmental department budget	9.4	12.0	7.9	53.4	41.3
Nominal GDP	2,108.4	2,699.3	3,059.9	3,427.7	3,770.5
Indicators					
(Overall balance (deficit)[c]/GDP	9.4%	4.2%	2.9%	7.8%	7.4%
(Primary balance (deficit)[d]/GDP	6.0%	1.9%	0.8%	5.3%	4.6%
Total debt/GDP	76.8%	61.6%	66.0%	63.0%	63.6%
Environment budget/GDP	0.4%	0.4%	0.3%	1.6%	1.1%

( ) = negative, GDP = gross domestic product.

[a] Actual.

[b] Revised budget estimate.

[c] Overall balance is calculated by deducting total expenditure and capital expenditure from revenue and grants.

[d] Primary balance is calculated by deducting total expenditure, interest, and capital expenditure from revenue and grants.

Source: Republic of Maldives. Ministry of Finance and Treasury. '*Budget in Statistics Financial Year 2014', 'Budget in Statistics Financial Year 2015', and 'Budget in Statistics Financial Year 2016*'. Malé.