

## FINANCIAL ANALYSIS

### I. INTRODUCTION AND METHODOLOGY

#### A. Introduction

1. The financial analysis was conducted for both the current project and additional financing of the Jaffna and Kilinochchi Water Supply Project in accordance with the Asian Development Bank (ADB) *Financial Management and Analysis of Projects* guidelines.<sup>1</sup>

2. With the objective of enhancing health and human development in the Jaffna Peninsula by improving the water supply network infrastructure, ADB approved the Jaffna and Kilinochchi Water Supply and Sanitation Project in November 2010.<sup>2</sup> The current project has the following three outputs: (i) water supply infrastructure and service in the Jaffna Peninsula improved, (ii) headworks at Iranamadu Tank improved, and (iii) water resource management systems and capacity strengthened.

3. The current project needs to be restructured mainly due to the change of water source from Iranamadu Tank to a desalination plant. Some of the project components also need to be dropped so the project can focus on urgent challenges of water supply. In line with this, the following restructuring is proposed: (i) inclusion of a desalination plant using a design–build–operate contract, (ii) cancellation of the Agence Française de Développement-cofinanced (\$40 million) water treatment plant and bulk water transportation from Iranamadu Tank, and (iii) exclusion of the sewerage component. In addition to maintaining the restructured current project, the additional financing is also proposed to (i) finance the shortfall under the current project, (ii) support additional activities of a desalination plant and related works under output 1, and (iii) support the additional water resource management activities under output 3.

#### B. Methodology

4. The discounted cash flow analysis was conducted in real terms to calculate the financial internal rate of return (FIRR) and the financial net present value. The financial analysis examined whether the FIRR for the overall project can meet the weighted average cost of capital (WACC), calculated based on the cost of capital from different fund sources.

5. In addition, the financial analysis focused on the financial sustainability of the National Water Supply and Drainage Board (NWSDB) and whether it has sufficient resources to support the implementation and operation of the overall project, as well as repayment of associated loans. The financial analysis included (i) a review of the historical financial performance of the NWSDB, and (ii) a financial forecast to determine the financial strength of the NWSDB to continue to maintain and operate its assets.

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<sup>1</sup> ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

<sup>2</sup> ADB. 2010. Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Democratic Socialist Republic of Sri Lanka Jaffna and Kilinochchi Water Supply and Sanitation Project. Manila (Loan 2790-SRI).

## II. FINANCIAL ANALYSIS OF THE PROJECT

### A. Tariff and Cost Recovery

6. The National Drinking Water Policy focuses on the need to ensure financial sustainability through the adoption of an affordable and an acceptable tariff structure.<sup>3</sup> The tariff policy for water supply that the NWSDB follows is to recover operation and maintenance (O&M) costs and depreciation, and gradually recover full costs including interest and a reasonable rate of return. With the cross-subsidy policy and the affordability objective, the present water tariff has differential tariff rates ranging from SLRs5 per kiloliter for the below poverty line population to SLRs75 per kiloliter for commercial units, with the provision of tariff revisions once every 3 years.

### B. Affordability Analysis

7. With the proposed 30% increase in water tariff rates in the fiscal year (FY) of 2017 and every 3 years thereafter, the monthly water charges are estimated to be 1.1% of the monthly income of the low-income group (below poverty line) in the operation start year of 2021. On average, the monthly water bill will only be about 0.7% of total household income for all income categories, which is far below the affordability threshold of 5.0%.

**Table 1: Household Water Charges and Usage, and Average Household Income**

Item	Projected (2021) <sup>a</sup>
Average monthly consumption of low-income group (m <sup>3</sup> /household)	4.8
Average monthly consumption of all income groups (m <sup>3</sup> /household)	9.6
Water supply monthly bill of low-income group (SLRs/household)	130
Water supply monthly bill of all income groups (SLRs/household)	260
Average monthly income of low-income group (SLRs/household)	12,358
<b>Water supply monthly bill as share of monthly income of low income group (%)</b>	<b>1.1</b>
Average monthly income of all income groups (SLRs/household)	39,318
<b>Water supply monthly bill as share of monthly income of all income groups (%)</b>	<b>0.7</b>

m<sup>3</sup> = cubic meter.

<sup>a</sup> 2021 is the operation start year of the desalination plant under the overall project.

Source: Asian Development Bank estimates.

### C. Financial Analysis

8. **Weighted average cost of capital.** The WACC is estimated at 2.7% shown in Table 2.

**Table 2: Estimated Weighted Average Cost of Capital (%)**

Item	Loan	Grant	Weighted average cost of capital
Weighting <sup>a</sup>	50.0	50.0	
Nominal cost <sup>b</sup>	6.0	11.1	
Tax rate	0.0	0.0	
Tax-adjustable nominal cost	6.0	11.1	

<sup>3</sup> "Financial sustainability need to be ensured for un interrupted services through adoption of an affordable and acceptable tariff system." Government of Sri Lanka, NWSDB. 2002. *National Drinking Water Policy*. [http://waterboard.lk/web/images/contents/organization/policies/national\\_drinking\\_water\\_policy.pdf](http://waterboard.lk/web/images/contents/organization/policies/national_drinking_water_policy.pdf)

Item	Loan	Grant	Weighted average cost of capital
Inflation rate <sup>c</sup>	5.7	5.7	
Real cost	0.3	5.2	
Weighted component of WACC	0.2	2.6	<b>2.7</b>

ADB = Asian Development Bank, NWSDB = National Water Supply and Drainage Board, WACC = weighted average cost of capital.

<sup>a</sup> The weighting of relending is based on the subsidiary loan agreement for the current project agreed by the government and NWSDB. The government will give 50% of the project investment as a grant, and the rest of 50% as a loan.

<sup>b</sup> The nominal cost for the loan at 6.0% is based on the interest rates under the subsidiary loan agreement for the current project agreed by the government and NWSDB. The nominal cost for the grant at 11.1% is based on 5 years of treasury bond rates of government securities. Government of Sri Lanka, Central Bank of Sri Lanka. Current Economic Indicators, Interest Rates, Rates on Government Securities. [http://www.cbsl.gov.lk/html/english/\\_cei/ir/i\\_3.asp](http://www.cbsl.gov.lk/html/english/_cei/ir/i_3.asp) (17/07/2017).

<sup>c</sup> The domestic inflation rate is in line with escalation rates published by the ADB Economic Research and Regional Cooperation Department. <http://lnadbg1.asiandevbank.org/erd0004p.nsf/>

Source: Estimates based on ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

9. The followings assumptions are made for the financial analysis of the overall project:
- All costs are in 2017 prices and were converted at an exchange rate of \$1 = SLRs152;
  - The analysis was conducted for a 40-year period, including 10 years of construction to cover both the current project (which started in 2011) and the additional financing (which will commence in 2018). Assets established are assumed to have an operation period of 30 years upon completion of construction in 2020;
  - For the current project, the costs spent during 2011–2016 were restated to 2017 prices using the appropriate inflation-based index along with the balance of the existing loan and the additional financing to 2017 prices;
  - Total project costs, including for both the restated current project and additional financing, are estimated at \$276.6 million. For the financial analysis, the financial cost of \$247.7 million was considered after removing price contingencies and all financial charges during the implementation;
  - O&M costs include costs for personnel, periodic maintenance, administration, chemicals, power, and establishment and exclude depreciation expenditure, which is a non-cash item. Estimates from the NWSDB were adopted;
  - Tariff adjustments are assumed to be 30% every 3 years, starting from FY2017 as proposed by the NWSDB; and
  - The collection efficiency is estimated at 95%.

10. **Financial internal rate of return.** The FIRR is higher than the WACC. The results of the sensitivity analysis indicated that the overall project is sensitive to changes in parameters such as an increase in capital costs, a reduction in revenue, and a 1-year delay in implementation. Summary results are presented in Table 3.

**Table 3: Sensitivity Analysis**

Scenario	Financial Internal Rate of Return (%)	Financial Net Present Value (\$ million)	Switching Value (%)
Base case	2.9%	6.8	
Capital cost increase (+10%)	2.5%	(12.7)	3.5%
O&M cost increase (+10%)	2.8%	2.7	16.5%

Revenue decrease (–10%)	2.3%	(17.5)	2.8%
1-year delay in implementation	2.6%	(5.1)	
Combined worst-case scenario	1.4%	(51.9)	

( ) = negative, FIRR = financial internal rate of return, FNPV = financial net present value, O&M = operation and maintenance, WACC = weighted average cost of capital.  
Source: Asian Development Bank estimates.

### III. FINANCIAL PROJECTIONS OF NATIONAL WATER SUPPLY AND DRAINAGE BOARD

#### A. Overview of National Water Supply and Drainage Board

11. The NWSDB under the Ministry of Water Supply and Drainage was established in 1975 by an act of Parliament. It is responsible for providing safe drinking water and facilitating the provision of sanitation in Sri Lanka. Its mandate includes the following: (i) develop, operate, and control an efficient, coordinated water supply system, and distribute water for public, domestic, and industrial purposes; (ii) establish, develop, operate, and control an efficient and coordinated sewerage system; (iii) take over and continue any water supply or sewerage treatment undertaking of any local authority either by a voluntary or compulsory transfer order; and (iv) supply water and distribute or sell water in bulk (or otherwise) to authorities, government departments, institutions or organizations, or any individual. Currently, it has about 10,700 employees and serves approximately 2.1 million connections, including 1.9 million domestic connections. It produces an average of 1.65 million cubic meters per day and sells 1.20 million cubic meters per day of water. The NWSDB is the implementing agency for the overall project and the asset owner and operator.

#### B. Financial Performance of National Water Supply and Drainage Board

12. The financial performance of the NWSDB was analyzed based on audited financial data from FY2011 to FY2015 (Table 4). Before 2009, water tariffs were set at a low level and even O&M cost recovery was not achieved. With tariff revisions in 2009 and 2012, the NWSDB was able to achieve full O&M cost recovery and its financial performance was significantly improved. However, the NWSDB's gross income has increased by a compounded annual growth rate of 11.6% per annum while direct operating expenses have increased by 11.9% from FY2011 to FY2015. If these increases continue, the NWSDB may face losses in future years. The NWSDB and the government need to take adequate measures to increase the revenue growth as well as review its expense structures.

**Table 4: Financial Performance of the National Water Supply and Drainage Board**

Particulars	2011	2012	2013	2014	2015
<b>1. Income</b>					
a. Water and sewerage (\$ million)	95.8	113.3	123.1	128.8	155.2
c. Other (\$ million)	10.4	7.9	9.1	11.0	9.7
<b>Total</b>	<b>106.2</b>	<b>121.1</b>	<b>132.2</b>	<b>139.8</b>	<b>164.9</b>
<b>2. Expenditure</b>					
a. Salaries and wages (\$ million)	26.8	30.1	30.5	38.3	40.9
b. Power (\$ million)	17.8	20.0	25.0	23.1	25.2
c. Administration (\$ million)	38.5	38.4	39.4	56.4	60.1
d. Chemicals (\$ million)	3.0	3.3	4.2	4.0	4.6
e. Other (\$ million)	0.4	3.7	2.2	3.1	4.6
<b>Total</b>	<b>86.4</b>	<b>95.5</b>	<b>101.2</b>	<b>124.8</b>	<b>135.4</b>
<b>Surplus or Deficit</b>	<b>19.8</b>	<b>25.6</b>	<b>31.0</b>	<b>15.0</b>	<b>29.5</b>

<b>3. Capital Cost</b>					
a. Principal repayment (\$ million)	10.5	9.5	10.6	12.4	3.1
b. Interest (\$ million)	1.5	1.4	1.5	1.8	0.4
<b>Total</b>	<b>12.0</b>	<b>10.9</b>	<b>12.1</b>	<b>14.2</b>	<b>3.5</b>
<b>Surplus or Deficit</b>	<b>7.8</b>	<b>14.7</b>	<b>18.9</b>	<b>0.8</b>	<b>25.9</b>
Operating ratio (%)	81.3	78.8	76.5	89.3	82.1
Current ratio	1.2	1.3	1.8	3.7	6.0
Debt–equity ratio	0.1	0.1	0.1	0.1	0.1
Debt service coverage ratio	1.6	2.3	2.6	1.1	8.3

Note: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates based on National Water Supply and Drainage Board annual reports from FY 2011 to FY 2015.

### C. Financial Projections of the National Water Supply and Drainage Board

13. The analysis developed the NWSDB's financial projections for 25 years of the operation period upon the completion of the overall project, based on the following assumptions: (i) tariff revisions by 30% every 3 years agreed by the government and NWSDB; (ii) repayment period of 20 years with a 6% interest rate for the NWSDB's current and future loans; (iii) sales growth at 5% per annum; and (iv) increase of salaries and wages at 5% per annum.

14. The projections indicate that the NWSDB will have sufficient income to recover its O&M costs and debt service for 25 years of the operation period upon the completion of the overall project. This underlines the need for the adequate implementation of the recommended tariff rate increases. Thus, the government and NWSDB need to take necessary actions for adequate tariff revisions, and ADB will provide continued policy advice and capacity development support to facilitate the NWSDB's financial sustainability. The progress of tariff revisions will be closely monitored through continuous dialogue with the government and NWSDB.

**Table 5: Financial Projections of the National Water Supply and Drainage Board**

Particulars	2021	2024	2029	2034	2039
<b>1. Income</b>					
a. Water and sewerage (\$ million)	202.1	234.6	300.8	385.1	496.4
b. Other (\$ million)	10.2	10.5	11.1	11.6	12.2
<b>Total</b>	<b>212.4</b>	<b>245.1</b>	<b>311.9</b>	<b>396.8</b>	<b>508.6</b>
<b>2. Expenditure</b>					
a. Salaries and wages (\$ million)	52.2	60.4	77.1	98.4	125.6
b. Power (\$ million)	35.4	43.3	60.8	85.3	119.6
c. Administration (\$ million)	76.7	88.8	15.3	17.6	20.6
d. Other (\$ million)	5.0	5.2	113.3	144.7	184.6
<b>Total</b>	<b>169.3</b>	<b>197.8</b>	<b>266.5</b>	<b>346.0</b>	<b>450.4</b>
<b>Surplus or Deficit</b>	<b>43.1</b>	<b>47.3</b>	<b>45.4</b>	<b>50.8</b>	<b>58.2</b>
<b>3. Capital Cost</b>					
a. Principal repayment (\$ million)	14.2	22.1	25.3	25.3	5.9
b. Interest (\$ million)	20.6	16.6	13.3	5.8	0.6
<b>Total</b>	<b>34.8</b>	<b>38.7</b>	<b>38.6</b>	<b>31.1</b>	<b>6.5</b>
<b>Surplus or Deficit</b>	<b>8.3</b>	<b>8.6</b>	<b>6.8</b>	<b>19.7</b>	<b>51.6</b>
Operating ratio (%)	79.7	80.7	85.4	87.2	88.6
Current ratio	8.7	10.3	12.7	15.7	19.7
Debt–equity ratio	0.2	0.2	0.2	0.1	0.1
Debt service coverage ratio	1.2	1.2	1.2	1.6	8.9

Note: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates based on National Water Supply and Drainage Board annual reports from FY 2011 to FY 2015.