

FINANCIAL ANALYSIS

I. INTRODUCTION AND METHODOLOGY

A. Introduction

1. The Government of Bangladesh has requested additional financing from the Asian Development Bank (ADB) to scale up the ongoing Third Urban Governance and Infrastructure Improvement Project.¹ The current project has supported the strengthening of urban governance and improvements in urban infrastructure and service delivery in the project *pourashavas* (municipalities). The additional financing will expand the current project by supporting (i) additional priority infrastructure and governance improvements in *pourashavas* covered by the current project, and (ii) infrastructure and governance improvements in five more *pourashavas*.²

2. The goal of the additional financing is to increase economic potential through development of basic urban infrastructure in *pourashavas*. For achieving this goal, the additional financing, with a total investment of \$268.1 million, will have two outputs: (i) municipal infrastructure improved and made gender and climate responsive; and (ii) capacity of *pourashavas* in urban service delivery, planning, and financial management improved.

B. Methodology

3. A financial discounted cash flow analysis was conducted in real terms to determine the weighted average cost of capital (WACC), the financial internal rate of return (FIRR), and the financial net present value (FNPV) to assess the financial viability of revenue-generating subprojects. A financial analysis examined whether the FIRRs of revenue-generating subprojects can meet the WACC calculated based on the cost of capital from different financing sources. A sensitivity analysis was then conducted to assess the tolerance of the FIRRs and FNPVs to adverse movements in the underlying parameters, including increases in capital expenditures and operation and maintenance (O&M) costs, a reduction in revenues, and construction delays. For subprojects that do not generate revenue, the financial analysis focused on the *pourashavas*' financial capacity to meet incremental recurrent costs of the newly developed assets under the additional financing.

4. In addition, financial projections for the *pourashavas* were estimated to assess their overall financial capacity to support the O&M costs of newly developed assets under additional financing as well as repay its associated loans. The financial projections included (i) a review of historical financial performance of the *pourashavas*, and (ii) a financial forecast to determine the financial strength of the *pourashavas* to continue O&M for the developed assets.

C. Sample Subprojects

5. Under the sector loan modality, the government, with support of the project management unit (PMU), identified subprojects in the *pourashavas*. Detailed engineering designs of all subprojects have not been completed. Therefore, two sample *pourashavas*, Kishoreganj (under the current project) and Kushtia (under the additional financing)—for which

¹ ADB. 2014. *Report and Recommendations of the President to the Board of Directors: Proposed Loan to the People's Republic of Bangladesh for the Third Urban Governance and Infrastructure Improvement (Sector) Project*. Manila.

² Cox's Bazar, Faridpur, Gopalganj Kushtia, and Mymensingh.

detailed engineering designs have been finalized—were selected for financial analysis. The approach and methodology used for the sample *pourashavas* will be replicated for other *pourashavas* in the future. The financial analysis was prepared in accordance with ADB's *Financial Management and Analysis of Projects*.³

6. Table 1 shows the subproject investments proposed for two sample *pourashavas*.

Table 1: Project Costs for Subprojects of Two Sample Pourashavas
(\$ million)

Subprojects	Kishoreganj (Current)	Kushtia (New)	Reference
Drainage	1.1	13.9	Non-revenue generating
Road	2.7	9.2	Non-revenue generating
Water supply	0.7		Revenue generating
Market	1.3		Revenue generating
Solid waste	0.6		Non-revenue generating
Street lights		0.3	Non-revenue generating
Slums	0.5	0.6	Non-revenue generating
Total	6.9	24.0	

Source: Project Management Unit (PMU) estimates

II. FINANCIAL ANALYSIS OF SAMPLE SUBPROJECTS

A. General

7. **Weighted average cost of capital.** The WACC calculation considers the costs of various funding sources and the on-lending terms between the government and the *pourashavas*. The WACC of revenue-generating subprojects is estimated at 1.89% (Table 2).

Table 2: Weighted Average Cost of Capital
(%)

Parameters	Equity	Debt	Weighted Average Cost of Capital
Weighting	85.00	15.00	
Nominal cost	8.24 ^a	6.00 ^b	
Tax rate (no tax implication for <i>pourashavas</i>)			
Tax-adjusted nominal cost	8.24	6.00	
Inflation ^c	5.90	5.90	
Real cost	2.21	0.09	
Weighted	1.88	0.01	1.89

^a The government's long-term bond yield (20 years) is considered the cost of equity. (Source: The Bank of Bangladesh, <https://www.bb.org.bd/monetaryactivity/treasury.php>)

^b The expected rate of interest for the government's on-lending to the *pourashavas* is considered 6%, as the government and the *pourashavas* have agreed.

^c The domestic inflation rate is in line with escalation rates published by the Economic Research and Regional Cooperation Department of the Asian Development Bank (Source: <https://lnadbg1.adb.org/erd0004p.nsf/>).

Source: Estimated based on Asian Development Bank. 2005. *Financial Management and Analysis of Projects*. Manila.

8. The followings are the general assumptions for the analysis of two revenue-generating subprojects:

- (i) All costs are expressed in 2017 prices and converted at an exchange rate of \$1 = Tk78.4.

³ ADB. 2005. *Financial Management and Analysis of Projects*. Manila

- (ii) The analysis is conducted from 2017 to 2041, including 5 years of implementation. Assets established are assumed to operate for 20 years upon.
- (iii) Total project costs for revenue-generating subprojects (e.g., water supply, market development) are estimated as \$0.7 million for water supply subproject and \$1.3 million for market subproject in Kishoreganj. For the financial analysis, financial cost of \$0.6 million for water supply subproject and \$1.2 million for market subproject in Kishoreganj are considered after removing the price contingencies and all financial charges.
- (iv) O&M costs include personnel, periodic maintenance, administration, chemicals, power, and establishment costs. They exclude depreciate, which is a noncash item, and estimates from the PMU and project *pourashavas* are adopted.

B. Water Supply Subproject

9. The financial analysis of a water supply subproject in Kishoreganj assumes that 50% of population is currently served and connected to the system. The existing water supply system, which uses groundwater for its water supply, has 4,737 domestic service connections and 122 commercial connections.

10. The subproject will install three tube wells and two pump houses, and replace 6 kilometers of pipelines, 1 kilometer of new transmission line, and 600 service connections. The additional financing aims to meet the future demand by 2030. By 2022, 70% of population in Kishoreganj is projected to be served and connected to the system.

11. Specific assumptions for the proposed subproject are as follows:

- (i) Current volumetric tariffs are Tk7 per cubic meter (m³) for domestic and Tk9 per m³ for nondomestic connections. Monthly flat rates of tariffs for nonmetered connections are Tk200–Tk800 per month for domestic connections and Tk400–Tk2,500 per month for nondomestic connections depending on the diameter of the pipe. All existing connections and 7,547 new service connections will be metered. On completion of the subproject, volumetric tariffs are assumed at Tk12 per m³ for domestic connections, Tk7 per m³ for slum connections, and Tk25 per m³ for nondomestic connections from 2022. An inflation rate of 6% every year has been assumed from FY2022 onwards;
- (ii) The current consumption is about 70 liters per capita per day. Water demand and consumption are expected to be 100 liters per capita per day in first year of operation;
- (iii) Nonrevenue water is currently about 20%. On completion of the subproject, nonrevenue water is assumed at 15%; and
- (iv) The collection efficiency, currently about 70%, is assumed to be 85% in the first year of operation.

12. Based on these parameters and assumptions, the FIRR of the water supply subproject was estimated at 4.22%, higher than the weighted average cost of capital of 1.89%. The results of the sensitivity analysis are satisfactory against (i) an increase of capital cost of 10%, and (ii) a delay in operation by 1 year (Table 3).

Table 3: Financial Internal Rates of Return for Water Supply in Kishoreganj

Scenarios	Financial Internal Rate of Return (%)	Financial Net Present Value (\$ million)	Switching Value (%)
Base Case	4.22	0.15	
Capital cost (+10%)	3.15	0.09	39.3
O&M cost (+10%)	1.86	(0.01)	17.9
Revenue (-10%)	0.39	(0.08)	11.0
1-year delay	4.22	0.15	
All combined	(4.03)	(0.28)	

(-) = negative, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

13. **Affordability of proposed water tariff.** Given the projected tariff in 2022 (the first year of project operations), the monthly water charges are estimated to be 1.03%–1.50% of monthly household income (Table 4). If affordable water tariffs are considered to be no more than 5% of household income, the proposed water tariffs are affordable for all income groups, including low-income groups.

Table 4: Water Charges, Usage, and Average Household Income

Household Monthly Bill for Water and Sewer	Existing (2016)	Proposed (2022) ^a
Average Household Monthly Consumption (KL)	10.1	14.4
Water Supply Rate (Tk/KL)	7.0 ^b	12.0 ^b
Water Supply Monthly Bill (Tk/Household)	70.8	216.0
Water Bill with VAT 15% (Tk/Household)	81.4	248.4
Average Household Monthly Income: Low-Income Group ^{b, c} (Tk)	8,000	12,000
% of Water Bill - Low Income Group	1.02%	1.03%
Average Household Monthly Income: All Categories ^{b, c} (Tk)	11,000	16,540
% of Water + Sewer Bill - All Categories	0.74%	1.50%

KL = kiloliter, VAT = value-added tax.

^a First year of operation.

^b Project management unit and *pourashava* estimates.

^c Tariff for slum household connection is assumed at 50% of non-slum household connection.

Source: Project management unit estimates.

C. Market Development Subproject

14. The proposed market development subproject in Kishoreganj would be spread over 4,800 square meters. The number of shops proposed to be constructed is 176. The market is projected to fetch one-time *salami* (possession money) and monthly rentals. The rates of *salami* and rent vary from town to town based on the location of the markets. The base rates⁴ are estimated on a conservative basis in consultation with the *pourashavas*. Monthly rent is assumed to increase 10% every 2 years.

15. The FIRR of the market development subproject was estimated at 4.41%, higher than the weighted average cost of capital of 1.89%. The results of the sensitivity analysis are satisfactory against all downside risks except the all combined case (Table 5).

Table 5: Financial Internal Rates of Return for Markets

Scenarios	Financial Internal Rate of Return (%)	Financial Net Present Value (\$ million)	Switching Value (%)
Base Case	4.41	0.22	
Capital cost (+10%)	2.94	0.10	30.1
O&M cost (+10%)	4.36	0.22	896.3

⁴ A monthly rate of Tk3,000 per shop and *salami* of Tk500,000 per shop are assumed in the analysis (Source: *Pourashavas* estimates).

Scenarios	Financial Internal Rate of Return (%)	Financial Net Present Value (\$ million)	Switching Value (%)
Revenue (-10%)	2.74	0.07	26.4
1-year delay	3.60	0.17	
All combined	1.04	(0.08)	

() = negative, O&M = operation and maintenance.
Source: Asian Development Bank estimates.

III. FINANCIAL PROJECTIONS

16. A sustainability analysis was carried out for both revenue- and nonrevenue-generating subprojects to assess the financial capacity of the sample *pourashavas* to sustain the O&M of all assets developed under the additional financing. Cash flow projections of the sample *pourashavas* were made to 2041.

17. The financial projections take into account the analysis of the financial performance of the sample *pourashavas* in the previous 3 years, growth trends, and assumptions for revenue mobilization.

18. Assumptions for the analysis of the sample *pourashavas* are as follows:

- (i) The increases in taxes and charges will be 5% a year during implementation; and the inflation rate will be 6% during operation;
- (ii) Establishment expenditure and O&M costs will increase at the same rate as taxes and charges;
- (iii) O&M expenses for the developed assets under the additional financing are included in the projections, as estimated by the PMU;
- (iv) O&M expenses for the developed assets, in respect of drainage subprojects in Kishoreganj under the current project, as estimated by the PMU, are included in the projections; and
- (v) Repayment of the existing loans from the Bangladesh Municipal Development Fund as well as for the proposed project is included.

19. Based on these assumptions, the financial projections for the two sample *pourashavas* indicate that both will have sufficient financial capacity to undertake the O&M expenses of the assets built by the additional financing (Table 6).

Table 6: Financial Projections of Sample Pourashavas (\$ million)

Particurs	Kishoreganj				Kushtia			
	2015	2020	2025	2030	2015	2020	2025	2030
1. Opening balance	(0.1)	0.3	0.0	0.0	0.0	0.4	0.0	0.0
2. Revenues								
Tax	0.2	0.4	0.5	0.8	0.3	0.3	0.4	0.6
Nontax	0.8	1.1	1.8	2.4	1.0	1.3	1.7	2.3
Government grants								
Total	1.0	1.5	2.3	3.2	1.3	1.6	2.1	2.9
3. Expenses								
Salaries and allowances	0.4	0.6	1.4	2.0	0.7	0.8	1.0	1.5
O&M expenses	0.5	0.5	0.8	1.1	0.3	0.3	1.0	1.3
Others			0.1	0.1		0.1	0.1	0.1
Total	0.9	1.1	2.3	3.2	1.0	1.3	2.1	2.9
4. Surplus / (Deficit)	0.1	0.7	0.0	0.0	0.3	0.7	0.0	0.0

() = negative, O&M = operation and maintenance.
Source: Asian Development Bank estimates.