# FINANCIAL ANALYSIS

## A. Introduction and Methodology

1. The Karnataka Integrated Urban Water Management Investment Program finances basic urban services improvement in selected urban local bodies (ULBs) in the state of Karnataka. This financial analysis appraises the financial sustainability and viability of water and sewerage subprojects under Tranche 1, including the water supply subprojects and the sewerage subprojects at three selected ULBs. The financial analysis was prepared in accordance with Financial Management and Analysis of Projects (2005), published by the Asian Development Bank (ADB).

2. The financial analysis assessed whether sufficient cash flows can be generated from each subproject to recover the subproject's capital investment as well as to fully meet its incremental operation and maintenance (O&M) requirement. A discounted cash flow analysis was conducted in real terms to determine the financial internal rate of return (FIRR) and the financial net present value of each subproject. The FIRR was then compared to the weighted average cost of capital to determine whether sufficient financial returns could be achieved. For the sewerage subprojects that do not generate adequate revenues to fully recover investment as well as O&M costs, the analysis assessed whether other resources from local government would be available to support the operating and maintenance requirements of such subprojects. The financial analysis therefore included projections of available municipal resources for the selected three ULBs under project 1.

## B. User Charges and Affordability Analysis

3. **Existing User Charges and Cost Recovery.** The state issued government order No. NAE 07 Urban Water Supply 2011, Bangalore dated 21 July 2011 to provide guidance to the ULBs on formulating volumetric water tariffs and flat sewer tariffs. All three ULBs have since revised their water tariffs, however, since the water tariff is calculated on a flat rate basis, it is not sufficient to cover O&M costs. The cost recovery ratio of the ULBs for provision of water supply services ranges from 47% to 66%, before adjusting for collection efficiency. None of the ULBs have introduced a sewerage tariff.

4. **Proposed User Charges and Cost Recovery.** It is proposed in the investment program Road Map that the ULBs will introduce volumetric water tariffs and flat sewerage tariffs effective on completion of the subprojects. These tariffs will be adjusted periodically taking into account the regular O&M requirement as well as capital and operational investment needs. The proposed water and sewerage tariffs are provided in Table 1.

**Table 1: Summary of Proposed Water and Sewerage Tariffs**

| ULB | | 2013 | Upon subproject completion |
|---|---|---|---|
| **Byadagi** | Connection fee (Rs) | 2,000 | 3,000 |
| | Domestic water tariff | 80 per month | 11/kl |
| | Non-domestic water tariff | 160 per month | 22/kl |
| | O&M cost recovery (%) | 50 | 110 |
| | Domestic sewerage tariff | (…) | 125/m |
| | Non-domestic sewerage tariff | (…) | 250/m |
| | O&M cost recovery (%) | (…) | 70 |
| **Davangere** | Connection fee (Rs) | 2,000 | 3,000 |
| | Domestic water tariff | 175 per month | 11/kl |
| | Non-domestic water tariff | 700 per month | 22/kl |
| | O&M cost recovery (%) | 47 | 351 |
| | Domestic sewerage tariff | (…) | 75/m |
| | Non-domestic sewerage tariff | (…) | 150/m |
| | O&M cost recovery (%) | (…) | 43 |
| **Harihar** | Connection fee (Rs) | 2,000 | 3,000 |
| | Domestic water tariff | 120 per month | 10/kl |
| | Non-domestic water tariff | 240 per month | 20/kl |
| | O&M cost recovery (%) | 66 | 110 |
| | Domestic sewerage tariff | (…) | 50/m |
| | Non-domestic sewerage tariff | (…) | 100/m |
| | O&M cost recovery (%) | (…) | 82 |

kl = kiloliter, m = meter, O&M = operation and maintenance, R = Indian rupee, (…) = no available
Source = Asian Development Bank estimates.

5. **Affordability Analysis.** The proposed water and sewerage user charges are combined to assess affordability by the households. In all three ULBs, the ratios of combined water and sewerage charges to household incomes range from 1.0% to 4.5% for all households. The lower income group in Byadagi has the highest cost exposure of 4.5%,[1] which is below the 5% affordability threshold.

**Table 2: Water and Sewerage Charges and Average Monthly Household Income**

| Item | Low Income Group Monthly Income (Rs) | Water Bills (Rs) | % to Monthly Income |
|---|---|---|---|
| Current water tariff | 5,000 | 80.0 | 1.6% |
| Current sewerage tariff | 5,000 | 0.0 | 0.0% |
| **Proposed water tariff** | **5,000** | **90.0**[a] | **1.8%** |
| **Proposed sewerage tariff** | **5,000** | **125.0**[b] | **2.5%** |

R = Indian rupee.
[a] Based on unit rate of Rs7 per kiloliter for the first slab of 8 kiloliters and Rs10 per kiloliter for the next slab of 7 kiloliters. Monthly consumption per household is assumed to be 10 kiloliters.
[b] Based on the highest proposed level of sewerage tariff for the three ULBs.
Source: Asian Development Bank estimates.

## C. Discounted Cash Flow Analysis and Subproject Viability

6. **Weighted Average Cost of Capital.** The weighted average cost of capital (WACC) is estimated at 0.68% (Table 3).

[1] For lower income groups in Davangere and Harihar, the combined water and sewerage charges will represent 2.4% and 2.5% of their monthly income.

**Table 3: Estimated Weighted Average Cost of Capital**

(%)

| Item | Government of Karnataka Relending | Government of Karnataka | ULB | WACC |
|---|---|---|---|---|
| Weighting | 50.00 | 40.00 | 10.00 | |
| Nominal cost | 8.50 [a] | 9.00 [b] | 10.00 [b] | |
| Tax rate | 0.00 | 0.00 | 0.00 | |
| Tax-adjusted nominal cost | 8.50 | 9.00 | 10.00 | |
| Inflation rate | 8.10 | 8.10 | 8.10 | |
| Real cost | 0.40 | 0.80 | 1.70 | |
| Weighted component of WACC | 0.18 | 0.33 | 0.17 | 0.68 |

ULB = urban local body, WACC = weighted average cost of capital.
[a] Based on relending rate to ULBs.
[b] Assumed for the cost of funding by the state and the local governments.
Source: Asian Development Bank estimates.

7. **Financial Analysis of the Water Supply Subprojects.** The FIRRs for the three water supply subprojects are indicated in Table 4. The FIRRs in the base case scenario range from 0.9% to 2.9%, higher than the WACC at 0.68%.

**Table 4: FIRRs of Water Subprojects**

| Description | | Byadagi | Davangere | Harihar |
|---|---|---|---|---|
| Base case | FIRR % | 2.9 | 0.9 | 1.3 |
| Capital overrun by 10% | FIRR % | 2.4 | 0.4 | 0.8 |
| | SV | 44.0 | 7.0 | 14.0 |
| O&M overrun by 10% | FIRR % | 2.5 | 0.6 | Negative |
| | SV | 56.0 | 19.0 | Negative |
| Reduction in revenues by 10% | FIRR % | 2.5 | Negative | Negative |
| | SV | 17.0 | Negative | Negative |
| 1-year delay in completion | FIRR % | 2.4 | Negative | Negative |
| | SV | 45.0 | Negative | Negative |
| Worst case scenario | FIRR % | 0.9 | 0.7 | 0.8 |

FIRR = financial internal rate of return, SV = Switching Value.
Source: Asian Development Bank estimates.

8. **Financial Analysis of the Sewerage Subprojects**. The FIRRs for the sewerage management subprojects are negative as the proposed sewerage tariff is based on O&M cost recovery, taking into account the affordability level of the households. The proposed sewerage tariffs are not sufficient to immediately recover the incremental O&M costs from the sewerage subprojects. However, with the proposed tariff increase and improved collection efficiency, incremental sewerage revenue will fully recover the incremental O&M costs on or before 2030 for all three ULBs.

9. Byadagi will gradually increase revenues from combined water and sewerage subprojects and achieve full O&M recovery effective from the fifth year following the completion of the subprojects. In the first 5 years, when combined incremental revenues from water supply and sewerage subprojects are insufficient to fully cover incremental expenditures, Byadagi will access other available municipal resources to fully support the operations of the subproject assets. Harihar and Davangere will achieve full O&M cost recovery for combined water and sewerage schemes upon project completion.

## D. Financial Performance of the State and ULBs

10. **State of Karnataka.** The gross revenue receipts of the state totaled Rs663 billion in FY2012, of which 82% comprised tax revenues, 6% non-tax revenues, and 12% grants from the central government. Tax revenues consisted of own tax revenues and a share of the central tax revenues. The main sources of the state's own tax revenue were taxes on commodities and services, which represented more than 87% of total tax revenue for FY2008 to FY2012. During this period, the state's own tax revenue grew at an estimated compound annual growth rate of 14%, demonstrating a sustained ability to raise tax revenues. The total expenditure for FY2012 was Rs650 billion, including 64% as development expenditures. The state achieved a revenue surplus from FY2005 to FY2012.

11. **Financial Performance of Selected ULBs.** The financial statements from FY2009 to FY2013 of the three selected ULBs indicate that the ULBs were able to increase tax and non-tax revenues at an average compound annual growth rate of 12% to 25%. However, as the expenditures grew at a faster pace than revenues and the transfer from the state did not increase proportionally, the growth rate in surplus slowed from FY2009 to FY2013. A summary of the financial performance is in Table 5, indicating that revenues from water supply services in the three ULBs ranged from 3.6% to 5.5% of the total revenues, which was low compared to other ULBs in the state, whose water supply revenues comprised 12% to 18% of total revenues. The Karnataka Integrated Urban Water Management Investment Program will require the three ULBs to move from a flat water tariff to a volumetric water tariff and introduce a sewerage tariff. The program also includes a capacity strengthening component to assist the ULBs in assessing the current financial status and initiating measures to stabilize and enhance both tax and non-tax revenues.

**Table 5: Summary of Financial Performance, FY2009 to FY2013**

| | Byadagi | Davangere | Harihar |
|---|---|---|---|
| Annualized tax revenue growth | 11.2% | 13.2% | 12.1% |
| Annualized non-tax revenue growth | 31.3% | 11.1% | 20.9% |
| Annualized expenditure growth | 5.8% | 27.7% | 10.1% |
| % of water revenue to total revenue | 4.8% | 3.6% | 5.5% |
| % of sewer revenue to total revenue | (…) | (…) | (…) |
| Annualized growth in surplus (+/-) | 6.2% | 18.3% | 10.9% |
| Cost recovery for water supply | 50% | 47% | 66% |

(….) = not available
Source: Urban local body financial statements.

12. **Financial Projections of Selected ULBs.** With improved water supply and sewerage management services, the ULBs will be able to introduce a volumetric water tariff and flat sewerage tariff upon completion of the subprojects. The water and sewerage revenues will increase the non-tax revenue base for the ULBs. A financial projection was conducted from FY2017 to FY2033 for the three ULBs, incorporating impacts from the implementation of subprojects under project 1 as well as projected growth in tax and non-tax revenues. The financial projection shows that the ULBs will be able to generate sufficient tax and non-tax revenues to cover the incremental O&M expenditures and achieve a revenue surplus over the period analyzed.

**Table 6: Financial Projection of Investment Program ULBs**
**(Rs, million)**

| | 2014–2017 | 2017–2018 | 2022–2023 | 2027–2028 | 2032–2033 |
|---|---|---|---|---|---|
| **Byadagi** | Project 1 Implementation Period | | | | |
| Estimated opening balance | | 31.1 | 31.5 | 35.0 | 32.4 |
| Overall surplus without the project | | 32.0 | 37.4 | 40.4 | 38.1 |
| O&M due to the project | | 22.0 | 36.8 | 50.0 | 66.6 |
| User charges | | 15.4 | 39.4 | 58.0 | 77.3 |
| Overall surplus with the project | | 14.4 | 40.0 | 48.4 | 48.7 |
| Estimated closing balance | | 45.6 | 71.5 | 83.4 | 81.1 |
| **Davangere** | | | | | |
| Estimated opening balance | | 433.5 | 388.9 | 962.0 | 2,095.1 |
| Overall surplus without the project | | 180.3 | 43.8 | 114.0 | 236.8 |
| O&M due to the project | | 81.51 | 266.4 | 385.2 | 537.1 |
| User charges | | 41.8 | 392.1 | 525.1 | 702.5 |
| Overall surplus with the project | | 140.6 | 169.5 | 254.0 | 402.2 |
| Estimated closing balance | | 574.1 | 558.4 | 1,216.3 | 2,497.3 |
| **Harihar** | | | | | |
| Estimated opening balance | | 61.6 | 54.5 | 123.5 | 97.3 |
| Overall surplus without the project | | 61.5 | 83.6 | 130.3 | 91.2 |
| O&M due to the project | | 35.4 | 61.1 | 83.9 | 111.9 |
| User charges | | 46.3 | 74.1 | 110.6 | 142.4 |
| Overall surplus with the project | | 72.4 | 96.7 | 157.0 | 121.6 |
| Estimated closing balance | | 134.0 | 151.2 | 280.5 | 218.9 |

O&M = operation and maintenance, R = Indian rupee, ULB = urban local body.