

FINANCIAL ANALYSIS

A. Introduction and Methodology

1. The Rajasthan Urban Sector Development Program finances the rehabilitation and expansion of water supply and wastewater systems in six project cities in the state of Rajasthan. The financial analysis appraises the financial sustainability and viability of the water supply and sewerage subprojects. The analysis was prepared in accordance with the *Financial Management and Analysis of Projects* (July 2005) of the Asian Development Bank (ADB).

2. The financial analysis assesses whether sufficient cash flow can be generated from each subproject to recover the subproject's capital investment, as well as to fully meet its operation and maintenance (O&M) and debt service 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 is compared to the weighted average cost of capital to determine whether sufficient financial returns can be achieved. Financial projections are prepared for the sample subprojects to assess the impact of the investments on the long-term sustainability of the municipal bodies.

B. User Charges and Affordability Analysis

3. **User charges and cost recovery.** The Rajasthan government sets the state water and sewer tariff to be followed by the Public Health Engineering Department (PHED). The existing water tariff has volumetric and fixed charges. The sewer tariff is linked to the water charges. If a city has only a sewer network, then the sewer charge is fixed at 20% of the water charge and if the city has a full sewer system including a sewerage treatment plant, then the sewer charge is 33% of the water charge. Income from the existing water tariff covers only about 16%–50% of the O&M costs of the water supply system. As none of the project cities have an operating sewerage system, no sewerage tariff is in place. The details of water tariffs are provided in Table 1.

Table 1: Summary of Notified Water Tariffs in Rajasthan

Item	Domestic	Nondomestic	Industrial
Gross rate per kiloliter (Rs)			
Up to 15 kiloliters	1.56	4.68	11.00
15 to 40 kiloliters	3.00	8.25	13.75
Above 40 kiloliters	4.00	11.00	16.50
Minimum Charges (Rs/month)			
For 15 mm service line	20.00	51.00	120.00
For 20 mm service line	120.00	120.00	240.00
For 25 mm service line	370.00	370.00	480.00
For 40 mm service line	870.00	870.00	875.00
For 50 mm service line	1,120.00	1,120.00	1,125.00
For 80 mm service line	2,245.00	2,245.00	2,250.00
For 100 mm service line	4,495.00	4,495.00	4,500.00
For 150 mm service line	11,245.00	11,245.00	11,250.00

Rs = Indian rupees, mm = millimeter.

Notes:

1. In addition to the charges in the table, a fixed charge of Rs10/month/connection and Rs5 for meter service charges is levied per connection.
2. Connection charges: New water connection charges will be equivalent to 1 month's net minimum charges for service connection of relevant size subject to a minimum of Rs100.
3. Sewer charges: 20% if only a sewer network exists; 33% if a sewer network and sewerage treatment plant exist.

Source: Government of Rajasthan notified water tariffs.

4. In most cases, the tariffs are currently collected based on minimum fixed charges. The subprojects include installation of water meters for all house service connections in the project cities. Thus, the cities can introduce volumetric water tariffs effective from the completion of the subprojects. As this is a critical component of the reform agenda supported by the \$250 million program loan, it is assumed for future analysis that the volumetric charges for water tariff would be applied and water and sewer tariffs will be adjusted periodically. Further, it is assumed that instead of the uniform tariff across the state, each city will have its own tariff based on its O&M expenses. Further, the proposed tariff assumes that the income generated should include progressively increasing tariffs to cover the O&M costs.¹ The details of the estimated proposed tariff for domestic connections are provided in Table 2. For nondomestic and industrial connections, the existing proportion will apply based on the proposed new tariff.

Table 2: Proposed Water and Sewer Tariff
(Gross rate per kiloliter [Rs] for water supply for domestic connections)

Item	Pali	Tonk	Jhunjhunu	Bhilwara ^a	Hanumangarh	Sri Ganganagar
Up to 15 kiloliters	3.7	5.9	8.5	...	4.7	2.5
15–40 kiloliters	7.1	11.3	16.3	...	9.0	4.8
For consumption above 40 kiloliters	9.5	15.1	21.8	...	12.1	6.4
The fixed charges will be applicable as per the existing rates with necessary escalation						
% of water charges for sewer tariff	33%	33%	33%	61%	38%	68%

... = data not available, Rs = Indian rupees.

^a The proposed Asian Development Bank assistance does not include a water supply project in Bhilwara. The tariff structure was analyzed based on current operation and maintenance and the sewer tariff determined accordingly.

Source: ADB Estimates based on policy matrix agreed between ADB and the Government of Rajasthan

5. **Affordability analysis.** The affordability analysis, explained in the economic analysis, indicates that the proposed tariff is within the acceptable 5% threshold for urban services, although in some cases a little higher than the households' willingness to pay.

Table 3: Household Spending (Weighted Average Tariff) To Municipal Services

Urban Local Body	Current Average Tariff (Rs/month)			% of Average Household Income	Proposed Tariff to Cover 50% O&M (Rs/month)			% of Average Household Income
	Water	Sewer	Total		Water	Sewer	Total	
Pali	42	14	56	0.37	119	40	159	1.06
Tonk	48	16	64	0.43	198	66	264	1.76
Jhunjhunu	27	9	36	0.24	292	97	389	2.59
Bhilwara	33	11	44	0.29	196	120	316	2.11
Hanumangarh	39	13	52	0.35	137	52	189	1.26
Sri Ganganagar	59	20	79	0.52	79	54	133	0.89
	Breakeven Tariff to Cover Full O&M (Rs/month)			% of Average Household Income	Breakeven Tariff for Full Cost Recovery (Rs/month)			% of Average Household Income
	Water	Sewer	Total		Water	Sewer	Total	
Pali	263	108	371	2.47	395	498	893	5.95
Tonk	423	140	563	3.75	566	589	1,155	7.70
Jhunjhunu	597	215	812	5.41	751	744	1,495	9.97
Bhilwara	396	242	638	4.25	396	953	1,349	8.99
Hanumangarh	298	125	423	2.82	406	337	743	4.95
Sri Ganganagar	171	120	291	1.94	257	346	603	4.02

Rs = Indian rupees, O&M = operation and maintenance, ULB = urban local body.

Source: ADB Estimates

¹ As per policy matrix agreed between ADB and Government of Rajasthan.

C. Discounted Cash Flow Analysis and Subproject Viability

6. **Weighted average cost of capital.** The weighted average cost of capital (WACC) is shown in Table 4. The WACC is estimated as 2.62%.

Table 4: Estimated Weighted Average Cost of Capital

Item	ADB Lending	State Government	WACC
Amount weighting	69.45%	30.55%	
Nominal cost	4.00% ^a	10.0% ^b	
Tax rate ^c	0.00%	0.00%	
Tax-adjustable nominal cost	4.00%	10.00%	
Inflation rate	1.10% ^d	8.00% ^e	
Real cost	2.90%	2.00%	
Weighted component of WACC	2.01%	0.61%	2.62%

ADB = Asian Development Bank, WACC = Weighted Average Cost of Capital

^a Nominal cost for the ADB loan is based on 20-year forward LIBOR rate of 3.3% plus 0.7% fixed spread (ADB News Release, 6 May 2014: ADB Revises Charges on Sovereign Loans).

^b Prevailing fixed deposit rate in banks.

^c For Rajasthan government departments including Public Health Engineering Department and urban local bodies, there is no corporate tax impact; hence, not considered (ADB. 2005. *Financial Management and Analysis of Projects*. Manila).

^d Long-term international inflation rate for ADB loan portion is estimated based on the International Cost Escalation Factors published in Asian Development Bank.2013.*International Cost Escalation Factors*. Manila

^e Estimation of the long-term domestic inflation rate for the Rajasthan government financed portion is based on the Domestic Cost Escalation Factors for South Asia (2013–2017) published in Asian Development Bank .2013.*Domestic Cost Escalation Factors*. Manila

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

7. **Financial analysis.** The financial analysis was conducted for water supply and waste water subprojects. However, since the proposed tariff has not been computed to take into account capital cost recovery (apart from recovering only 50% of O&M expenses), the financial net present value is understandably negative for all projects and the WACC exceeds the FIRR in all cases. The financial indicators for the subprojects are shown in Table 5. The municipal financial analysis was conducted for one town (Pali) on a sample basis with the impact of the proposed project investment in sewers and water supply (Table 6).

8. The key assumptions used for cash-flow projections include
- (i) water and/or sewer tariff is the minimum charge required to cover 50% of O&M expenses;
 - (ii) 25% increase in tariff is assumed once in 5 years;
 - (iii) 90% of the households get connected to the water supply system in a maximum of 5 years upon commissioning of the proposed scheme and receive 135 liters per capita per day of water;
 - (iv) sewerage schemes are proposed to provide 72% coverage;
 - (v) collection efficiency would be improved and reach 90% in 5 years;
 - (vi) sewerage tariff is 33% of water charges except for Bhilwara (61%), Hanumangarh (38%), and Sri Ganganagar (68%); the percentages cover 50% of O&M expenses by keeping 33% as the minimum sewerage charge; and
 - (vii) treated wastewater would be sold for agriculture purpose in all cities at the rate of Re1/kiloliter, except in Pali where it is assumed to be sold for industrial purposes at the rate of Rs5/kiloliter.

9. The analysis indicates that the financial net present value is negative for all water supply and sewerage subprojects and the WACC exceeds the FIRR in all cases.

Table 5: FIRR and FNPV of Water and Sewer Subprojects

Cities	Water Supply			Sewerage		
	Project Cost (Rs million)	FIRR (%)	FNPV (Rs million)	Project Cost (Rs million)	FIRR (%)	FNPV (Rs million)
Pali	1,643	()	(2,527)	2,623	()	(2,754)
Tonk	981	()	(1,676)	1,892	()	(1,850)
Jhunjhunu	963	()	(2,026)	1,124	()	(1,039)
Bhilwara				3,652	()	(2,749)
Hanumangarh	896	()	(1,600)	606	()	(563)
Sri Ganganagar	1,701	()	(2,632)	2,723	()	(2,858)

... = data not available, () = negative value, FIRR = financial internal rate of return, FNPV = financial net present value, Rs = Indian rupees.

Source: Asian Development Bank estimates.

10 As the present tariff is not sufficient to cover full O&M and even the proposed tariff is intended to only cover 50% of O&M, the state government must implement a road map and rationalize the water tariff to recover the O&M costs, and continue to support the cities in operating and maintaining the subprojects until the water tariffs are revised.

D. Financial Performance of Rajasthan

10. Given that tariffs are not set with the intention of capital cost recovery, a cash-flow analysis of the cities is relevant and was conducted to assess whether the subproject investments can be sustained through overall revenue sources of the cities. This is summarized for Pali in Table 6.² An analysis of the cash flow indicates that while the city generates a revenue surplus (including the receipt of its share of tax collection every year from the Rajasthan government), it would not be able to meet its capital expenditure requirement unless the state government contributes grant funding. In the event the capital cost requirement is transferred as a loan, then the Pali municipal city would have difficulty meeting its debt service requirement unless water and sewerage tariffs are rationalized.

11. The state had gross revenue receipts of Rs773 billion in fiscal year (FY) 2014, of which 69% was tax revenues and the remaining comprised nontax revenues at 17% and grants from the central government at 13%. Tax revenues comprised own-tax revenues and a share of the central tax revenues. The main source of the state's own-tax revenue was taxes on commodities and services. During FY2010–FY2014, the state's own-tax revenue grew at an estimated compound annual growth rate of 20%, demonstrating sustained ability to raise tax revenues. The total revenue expenditure for FY2014 was Rs908 billion. The state achieved a revenue account surplus during FY2011–FY2013, however this dropped to a deficit during FY2014.

² The financial projections of the remaining cities show similar patterns.

Table 6: Cash Flow Analysis for Pali Municipal Council
(Rs million)

Year	Revenue Income					Revenue Expenses					Capital Expenditure: Water and Sewerage	Net Cash Flow
	Tax Income	Other Own Source Income	Water and Sewer Income	Grants (including compensation grant)	Total Revenue Income	Establishment	Operating Expenses	Administrative and Other Expenses	Additional Expenses: Water and Sewer	Total Revenue Expenses		
FY08	14	25	0	117	155	83	28	3	0	114		41
FY09	13	37	0	128	179	114	30	2	0	146		33
FY10	13	51	0	141	206	136	39	3	0	178		28
FY11	14	116	0	180	309	145	54	33	0	233		76
FY12	8	52	0	128	189	123	44	9	0	175		13
FY13	9	86	0	146	241	135	41	10	0	186		55
FY14	9	93	0	161	263	149	44	10	0	204		60
FY15	10	101	0	177	287	164	46	11	0	222	854	(789)
FY16	10	109	0	195	314	181	49	12	0	243	1,708	(1,637)
FY17	11	118	0	214	342	200	52	13	0	265	1,708	(1,631)
FY18	12	127	68	235	442	220	55	14	135	425		17
FY19	12	137	83	259	491	242	59	15	143	460		31
FY20	13	148	101	285	547	267	62	17	152	498		49
FY21	14	160	112	313	598	294	66	18	161	539		59
FY22	15	173	116	345	648	324	70	19	171	584		64
FY23	15	187	144	379	725	358	74	21	181	633		92
FY24	16	201	151	417	786	394	79	23	192	687		99
FY25	17	218	159	459	853	434	83	24	203	745		108
FY26	18	235	164	505	922	478	88	26	215	809		113
FY27	19	254	168	555	996	527	94	28	228	878		119
FY28	21	274	202	611	1,107	581	99	31	242	953		154
FY29	22	296	208	672	1,197	640	105	33	257	1,035		162
FY30	23	320	214	739	1,295	706	111	36	272	1,125		170
FY31	25	345	219	813	1,402	777	118	39	288	1,223		179
FY32	26	373	226	894	1,519	857	125	42	306	1,329		190
FY33	28	403	273	984	1,687	944	133	45	324	1,446		241
FY34	29	435	281	1,082	1,827	1,040	141	49	343	1,573		254

Source: ADB estimates