

## DETAILED FINANCIAL ANALYSIS

### A. Introduction

1. A financial analysis was carried out in accordance with the relevant ADB guidelines for the project.<sup>1</sup> The project will improve climate resilience, and the health and living conditions in six districts of the RK by rehabilitating and expanding their water supply system. Originally established as an inter-regional bulk producer and supplier of water from the Tuyamuyun system to the water distribution agencies, the Department for Operation of Interregional Trunk Main Tuyamuyun-Nukus (Tuyamuyun-Nukus), also referred to as TN has recently become the state-owned enterprise solely responsible for providing water supply and sanitation in the RK. Although functioning, the state-owned enterprise is saddled with multi-faceted concerns and challenges. Primarily, its infrastructure is deteriorated and its services have become unreliable. Its leakage losses are climbing yet the quality of the water it produces is poor. Only about more than a third of the RK's population is connected to the TN's centralized water supply system on the average, with connectivity varying from 65% in the urban centers, to 22% in the surrounding outer settlements. Many households believe that the water supplied by TN is unhygienic, causing the increased incidence of water borne diseases in the project areas.

### B. Methodology and Key Assumptions

2. The financial analysis was undertaken from TN's perspective in two phases. The project, upon completion, would be operated to generate revenues from customers served. Hence, in the first phase, a financial benefit-cost analysis was conducted to assess the financial revenues and viability of the project. In conformity with ADB guidelines, this entailed the estimation of the project's financial internal rate of return (FIRR) followed by a comparison of the resulting FIRR with the calculated weighted average cost of capital (WACC) for the project. In the second phase of the analysis, the overall impact of the project on TN's financial sustainability was assessed. TN has for years been the recipient of transfers from the central government. The analysis demonstrates how the rehabilitation of RK's water supply systems in the project areas, coupled with improvements brought about by project interventions such as nonrevenue water management will impact TN's financial performance and sustainability over a ten-year period.

#### 1. Project Costs, Outputs and Implementation Schedule

3. The total estimated cost of the project is \$172.3 million. To be implemented over a 6-year period from 2018 to 2023, the project was envisioned to produce three major outputs. Output 1: water supply infrastructure rehabilitated, expanded and upgraded in the six selected districts of the RK includes infrastructure works for water treatment plants (WTPs), secondary trunk mains, water distribution centers, distribution mains, distribution networks and other components. Output 2: institutional capacity for performance efficacy and sustainability enhanced will enable TN to operate more effectively and efficiently in response to demand through an improved asset base, heightened climate change awareness considerations, more stringent corporate governance performance standards, and strengthened public accountability.

4. The project will be funded by a loan of \$145 million from ADB's concessional ordinary capital resources. The Government will contribute \$27.3 million in the form of taxes and duties. The executing agency is CSA, the government agency with oversight responsibility for the management of water utility services nationwide and the implementation of projects funded by international donors. The implementing agency is TN, operating under the guidance and supervision of CSA.

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<sup>1</sup> ADB. 2005. *Guidelines for the Financial Management of Projects*. Manila.

## 2. General Approach and Assumptions

5. For the two-phased analysis, two financial models were developed using cost and financial parameters derived from the project design and TN's 5-year audited financial statements. For the benefit-cost model, incremental net revenues were calculated based on an analysis of RK's tariff regime, population and water consumption projections for the selected districts, and project cost estimates. For the financial sustainability analysis, TN's past income and expenditure patterns, audited financial statements, and the project cost and design parameters were used to build a model covering revenue forecasts, the project implementation period, and the first 5 years of operation. The underlying assumptions used in both models are as follows:

- (i) The models are presented in SUM in mid-2017 prices.<sup>2</sup>
- (ii) Physical contingencies were computed at 3% of base cost estimates for civil works and equipment.
- (iii) Price contingencies were computed at an average of 1.6% on foreign exchange costs and 7.1% on local currency costs.
- (iv) The estimated costs include provisions for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
- (v) Interest during implementation was calculated for the ADB loan at 2% per annum.
- (vi) The projected water supply demand and production is based on the population growth forecast for the 6 selected districts as provided by the Design Institute of the MHCS.
- (vii) The water supply performance parameters including technical losses and unaccounted for water were provided by TN for the period 2012-2016.
- (viii) Current water consumption in the project areas was derived using the results of the social and poverty assessment survey conducted as part of the project preparatory technical assistance (PPTA).

## C. Financial Benefit-Cost Analysis

### 1. Sources and Estimation of Financial Revenues

6. The financial analysis was prepared based on an analysis of the tariff structure of the RK for water which shows that tariffs for residential, commercial and industrial users have been increased twice a year since October 2012. For residential consumers, the average nominal increase per annum is 19.2% (the average annual real rate of increase is 12.3%). For the commercial and industrial users, the increase has been more modest at the nominal rate of 3.8% but the rate is applied to higher tariff bases (the average real rate of increase is -0.4%). The current tariff rates for water are as follows: SUM675/m<sup>3</sup> for residential users, and SUM2,100/m<sup>3</sup> for commercial, industrial and institutional establishments. The financial revenues were derived primarily from tariffs to be charged to (i) domestic consumers; (ii) commercial users, and (iii) institutional establishments. Forecasts of the population to be covered by the project estimated that there would be 218,000 residents in the district centers by 2023, reaching 283,300 by 2042. Residents outside the district centers who will also benefit from the project were estimated at 175,449 by 2023, increasing to 228,000 by 2042.

7. For the FIRR estimation, the tariff adjustments assumed included a worst-case scenario that the local currency equivalent of the total project cost would increase by 112%, from SUM794 billion to SUM1,684 billion. For the residential consumers, this would mean an increase in tariffs

<sup>2</sup> In September 2017, the Central Bank of Uzbekistan devalued the SUM by 92.38% to SUM8,100=\$1. While it is acknowledged by the Government that this could affect the total project cost, a methodology for estimating the impact of the devaluation on construction prices, and more generally on inflation, has yet to be developed and agreed. Bids received on a recent procurement for a World Bank project reflected that the estimated contract costs in US\$ have remained unchanged from the pre-devaluation estimates as of November 2017.

of 180%, in real terms, from SUM675/m<sup>3</sup> to SUM1890/m<sup>3</sup> by 2023 when the benefit period of the project starts, increasing thereafter at the rate of 5% per annum. Nominally, this entails revising the tariff for residential users from the current rate of SUM675/m<sup>3</sup> to SUM2,786/m<sup>3</sup> over a span of 6 years. The assumed increase in tariffs requires an annual real rate of increase of 14.5 % which is more than 12.3%, the historical average of the real rate of tariff increases in the RK over the last five years. However, these tariff rates were discussed with the MOF and TN and both agreed they would still be reasonable given the high level of water demand in the project areas and the relatively low tariff rate increases in the last five years. The socioeconomic survey conducted under the PPTA further revealed that the targeted households had the willingness to pay for the potential tariff increases since most of them are only able to access clean and safe water through trucks or vendors at the significantly much higher cost of SUM5000/m<sup>3</sup>. For the commercial and industrial establishments, the same rate of tariff increase had been assumed, in real terms, from SUM2,100/m<sup>3</sup> to UZS5,880/m<sup>3</sup> by 2023, and thereafter increasing at the rate of 5% per annum. Nominally, this means revising the tariff rate from SUM2,100/m<sup>3</sup> to SUM\$8,731/m<sup>3</sup>. These assumed tariffs adhere to the principles of full cost recovery which aligns with the latest fiscal and economic reforms being pursued by the Government.

8. An affordability analysis was also conducted on the assumed tariffs. The poor households typically consume 50% of the average daily demand, resulting in water demand of about 60 lpcd. With the tariff adjustment assumed by 2023, the monthly household water bill would be SUM29,085 per month. This constitutes about 2.3% of the average monthly income of the poorest households in the region, and is well within the international standards of 3%-4% of household monthly income deemed affordable for water tariffs.

## 2. FIRR Calculation and Sensitivity Analysis

10. The resulting base case FIRR is 1.42%, which exceeds the estimated weighted average cost of capital (WACC) of 0.58% (**Table 1**). Details of the revenue estimation and FIRR calculation are in supplementary **Tables ST-1**<sup>3</sup> and **ST-2**. The derivation of the WACC is in **Table ST-3**. A sensitivity analysis, undertaken to further test financial viability, reconfirmed the financial viability potentials of the project under varying scenarios. The results of the sensitivity analysis conducted are in **Table ST-4**.

**Table 1: Summary of Financial Evaluation and Sensitivity Analysis**

Item	FIRR (%)	NPV <sup>a</sup>	Switching Value	Sensitivity Indicator
Base Case	1.42	165,789		
Case 1: 10% increase in capital cost	0.77	41,086	21.9	4.56
Case 2: 10 % increase in O&M	1.31	144,182	131.5	0.76
Case 3: 10 % decrease in tariff revenues	0.59	2,932	17.1	5.84
Case 4: 10 % increase in capital cost 10% decrease in tariff revenues	0.15	(143,319)		
Case 5: delay in tariff revenues by 1 year	0.59	3,404		

FIRR = financial internal rate of return; NPV = net present value; O&M = operation and maintenance

<sup>a</sup> Calculated using a discount rate equal to the estimated WACC of 0.58%.

## 3. Tariffs and Regulations

<sup>3</sup> Table ST-1 is a supplementary table that provides the details of the financial revenue projections based on the proposed tariff rates resulting from the project. Throughout this report, additional supplementary tables will be referenced to provide information more detailed than those provided in the main tables. All referenced supplementary tables cited have been appended at the end of this supplementary report as Annex A.

11. The Uzbekistan's government's policy is to revise tariffs twice a year, in line with increased costs of production. Prior approval by the MOF is required to implement any tariff revision. In accordance with government policy, MOF has allowed tariffs in RK to increase twice a year, at a nominal average of 19.2% per year.<sup>4</sup> However, these tariff increases have not been sufficient for TN to fully recover its operating and maintenance costs, as well as to service its existing debts, as demonstrated by its historical financial performance. Evidently, this has vital implications on the financial sustainability of TN and explains, to a large extent, its continued and persistent reliance on central government subsidies.

## D. Financial Sustainability Analysis

### 1. Historical Performance of Tuyamuyun-Nukus

11. The audited financial statements of TN indicate that its net sales from operation had been growing at an annual average rate of 20%. In 2016, TN's net sales reached SUM24.4 billion, more than double the SUM11.4 billion reported in 2012. Despite this record growth rate, TN's operating costs have increased at a much faster pace. While depreciation and interest expense take up the bulk of these operating costs, the analysis revealed that materials, fuel and salaries also constitute a large proportion of these costs. Hence, TN has been dependent on central government subsidies. Without these subsidies which are reported in their statements as other operating income to contribute to their debt servicing, TN's financial position would have deteriorated and suffered.<sup>5</sup> As of 2016, TN's total assets have reached SUM134.7 billion. Most of these assets have been financed from long-term debt which amounted to SUM43.7 billion. A summary of the historical performance of TN from 2012-2016 is presented in **Table 2**. A more comprehensive financial performance analysis, including common size and trend analyses, as well as the derivation of TN's key financial ratios is in **Table ST-5**.

**Table 2: Historical Performance of Tuyamuyun-Nukus, 2012-2016**  
(SUM million)

Description	2012	2013	2014	2015	2016
<b>Income Statement</b>					
Net Sales	11,422	13,741	19,366	21,100	24,452
Net income	(488)	(863)	13	304	364
<b>Balance Sheet</b>					
Current Assets	8,748	10,144	12,376	13,231	11,844
<b>Total Assets</b>	<b>68,069</b>	<b>80,836</b>	<b>85,524</b>	<b>84,315</b>	<b>134,731</b>
Current Liabilities	4,219	4,668	4,883	1,914	3,450
Long-term Liabilities	40,465	47,344	44,733	43,703	43,676
<b>Total Liabilities and Equity</b>	<b>68,069</b>	<b>80,836</b>	<b>85,524</b>	<b>84,315</b>	<b>134,731</b>
<b>Key Financial Ratios</b>					
Current ratio	2.07	2.17	2.53	6.91	3.43
Days in receivables	47	55	76	78	53
Operating Ratio	1.04	1.05	0.93	0.99	0.97
Debt service coverage ratio		0.13	0.12	0.16	1.32
Debt-equity ratio	1.91	1.80	1.38	1.18	0.54

Source: Audited Financial Statements of Tuyamuyun-Nukus.

<sup>4</sup> Water tariffs were reviewed by MOF and reset once a year until 2009 but thereafter, tariffs have been reset twice a year in April and October. Presidential Decree No. 5241, recently issued on 16 November 2017, has mandated the MOF, jointly with the MHCS and all other national and local authorities concerned, to review the current tariff setting procedure and to set up a mechanism for establishing flexible tariffs that ensure the profitability of water and sewerage organizations.

<sup>5</sup> Resolution 66 of the Cabinet of Minister dated 7 March 2012 stipulates that Government will subsidize an average of 93% of TN's debt servicing requirements until 2043.

## 2. Results of Financial Sustainability Analysis

13. The results of the financial sustainability analysis show that TN will generate SUM165.8 billion in net sales by 2027 with the additional revenues contributed by the project. The financial model forecasts that net income from 2017-2027 would be positive, ranging from SUM4.1 billion to SUM74.4 billion. In this scenario, government subsidies as a result of past debts and inefficiencies will continue but at a relatively declining trend. Selected indicators from the financial sustainability analysis are in **Table 3**. The analysis demonstrates that as long as the required subsidies are received by TN in the form of other operating income, and/or it is allowed to adequately increase its tariff rates, the TN can meet the minimum acceptable levels prescribed by the proposed covenanted ratios. The projected financial statements and financial ratios of TN are in **Tables ST-6 to ST-9**.

**Table 3: Tuyamuyun-Nukus: Financial Projections and Indicators, 2017-2027**  
(SUM million)

Description	2017	2020	2023	2025	2027
<b>Income Statement</b>					
Net Sales	30,537	50,986	100,136	135,922	165,870
Net income	4,144	19,212	50,333	47,889	74,354
<b>Balance Sheet</b>					
Current Assets	43,300	151,090	324,719	491,949	672,920
<b>Total Assets</b>	<b>140,937</b>	<b>776,927</b>	<b>1,645,524</b>	<b>1,649,281</b>	<b>1,690,910</b>
Current Liabilities	7,160	7,449	112,185	137,979	134,115
<b>Total Liabilities and Equity</b>	<b>140,937</b>	<b>776,927</b>	<b>1,645,524</b>	<b>1,649,281</b>	<b>1,690,910</b>
<b>Covenanted Ratios</b>					
Current ratio > 1	6.05	20.28	2.89	3.57	5.02
Days in receivables < 90 days	75	74	40	58	54
Operating ratio > 1	1.14	1.45	1.65	1.67	1.80
Debt service coverage ratio > 1.2	1.25	3.82	1.98	1.12	145

## 3. Deepening and Accelerating Water Tariff Regulatory Reforms

14. The financial sustainability analysis underscores why ongoing water tariff regulatory reforms in Uzbekistan should be deepened and accelerated. In the case of TN, there is a need to review policy and regulatory constraints that could impede its ability to charge higher tariff rates, even if these rates would still be affordable to the targeted household beneficiaries and even if the latter have expressed their willingness to pay for higher water tariff rates in exchange for cleaner, safer, and more reliable water supply systems in their districts. Policies enabling TN to charge higher tariff rates, particularly to client groups with higher affordable limits, will improve its ability to fully recover both capital and O&M costs, and to cover its debt servicing requirements as well as finance its planned and future investment requirements. Inevitably, all these would redound to improved financial sustainability, including a significant if not full reduction of its reliance on central government subsidies. Toward this end, a proposed ADB technical assistance (TA) on Uzbekistan's water and sanitation strategy development and capacity building has been designed to help the Government improve its water tariff regulatory framework.<sup>6</sup>

<sup>6</sup> To be financed by the People's Republic of China Regional Cooperation and the Poverty Reduction Fund, the proposed \$1 million grant-funded TA will prepare a medium-term urban wss sector development and investment strategy; (ii) strengthen the capacity of the training center Kommunalukuv; and (iii) improve the water supply and sanitation regulatory framework of Uzbekistan.

## **Annex A Supplementary Tables**

Table ST-1: Revenue Estimation

ITEM	Unit	1	2	3	4	5	6	7	8	9	10	15	20
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2037	2042
<b>1 Domestic Consumers</b>													
Water supplied with project	thousand m3/year	6,826	9,291	11,368	13,588	14,501	16,241	16,467	17,925	18,174	19,327	21,675	23,229
Water supplied without project	thousand m3/year	728	868	1,012	1,124	1,169	1,179	1,189	1,199	1,209	1,220	1,274	1,332
Project water supply	thousand m3/year	6,098	8,423	10,356	12,463	13,332	15,062	15,278	16,725	16,964	18,108	20,401	21,896
<b>Proposed tariff (1) @ USZ1,013/m3</b>	UZS/m3	1,013	1,063	1,116	1,172	1,231	1,292	1,357	1,425	1,496	1,571	2,100	2,942
<b>Proposed tariff (1) @ USZ1,890/m3</b>	UZS/m3	1,890	1,985	2,084	2,188	2,297	2,497	2,622	2,753	2,891	3,035	4,058	5,685
% Increase in tariff rate (1), real terms	%	50%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	10%
% Increase in tariff rate (2), real terms	%	180%	5%	5%	5%	5%	9%	5%	5%	5%	5%	5%	10%
<b>Project revenues (1)</b>	UZS million	6,174	8,955	11,560	14,608	16,408	19,464	20,729	23,829	25,377	28,442	42,846	64,412
<b>Project revenues (2)</b>	UZS million	11,525	16,716	21,579	27,269	30,628	37,613	40,059	46,048	49,040	54,963	82,797	124,474
<b>2 Commercial Establishments</b>													
Water supplied with project	thousand m3/year	1,365	1,858	2,274	2,718	2,900	3,248	3,293	3,585	3,635	3,865	4,335	4,646
Water supplied without project	thousand m3/year	146	174	202	225	234	236	238	240	242	244	255	266
Project water supply	thousand m3/year	1,220	1,685	2,071	2,493	2,666	3,012	3,056	3,345	3,393	3,622	4,080	4,379
<b>Proposed tariff (1)</b>	UZS/m3	3,150	3,182	3,213	3,245	3,278	3,311	3,344	3,377	3,411	3,445	3,621	3,806
<b>Proposed tariff (2)</b>	UZS/m3	5,880	6,174	6,483	6,807	7,147	7,769	8,157	8,565	8,994	9,443	12,626	17,686
% Increase in tariff rate (1), real terms	%	50%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
% Increase in tariff rate (2), real terms	%	180%	5%	5%	5%	5%	9%	5%	5%	5%	5%	5%	10%
<b>Project revenues (1)</b>	UZS million	3,842	5,360	6,655	8,090	8,740	9,973	10,217	11,297	11,573	12,477	14,774	16,665
<b>Project revenues (2)</b>	UZS million	7,171	10,401	13,427	16,967	19,057	23,404	24,925	1	30,514	34,199	51,518	
<b>3 Institutional Establishments</b>													
Water supplied with project	thousand m3/year	683	929	1,137	1,359	1,450	1,624	1,647	1,792	1,817	1,933	2,168	2,323
Water supplied without project	thousand m3/year	73	87	101	112	117	118	119	120	121	122	127	133
Project water supply	thousand m3/year	610	842	1,036	1,246	1,333	1,506	1,528	1,673	1,696	1,811	2,040	2,190
<b>Proposed tariff (1)</b>	UZS/m3	3,150	3,182	3,213	3,245	3,278	3,311	3,344	3,377	3,411	3,445	3,621	3,806
<b>Proposed tariff (2)</b>	UZS/m3	5,880	6,174	6,483	6,807	7,147	7,769	8,157	8,565	8,994	9,443	12,626	17,686
% Increase in tariff rate (1), real terms	%	50%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
% Increase in tariff rate (2), real terms	%	180%	5%	5%	5%	5%	9%	5%	5%	5%	5%	5%	10%
<b>Project revenues (1)</b>	UZS million	1,921	2,680	3,328	4,045	4,370	4,987	5,109	5,649	5,786	6,238	7,387	8,333
<b>Project revenues (2)</b>	UZS million	3,586	5,200	6,713	8,484	9,529	11,702	12,463	14,326	15,257	17,099	25,759	38,725
<b>Total Annual Financial Revenues</b>	UZS million	<b>22,282</b>	<b>32,317</b>	<b>41,720</b>	<b>52,719</b>	<b>59,214</b>	<b>72,719</b>	<b>77,447</b>	<b>60,374</b>	<b>94,810</b>	<b>106,261</b>	<b>160,075</b>	<b>163,199</b>

**Table ST-2: Estimation of Financial Internal Rate of Return  
SUM Million**

Year	Financial Costs		Financial Revenues	After Tax
	Capital Cost	Incremental Operation & Maintenance	After Tax Water Sales Revenues	Incremental Net Financial Revenues
2018	6,537	-	-	(6,537)
2019	143,223	-	-	(143,223)
2020	372,758	-	-	(372,758)
2021	361,948	-	-	(361,948)
2022	353,220	-	-	(353,220)
2023	36,507	11,786	20,766	(27,527)
2024	-	11,786	27,996	16,210
2025	-	11,786	34,798	23,013
2026	-	11,786	42,725	30,940
2027	-	11,786	47,529	35,744
2028	-	11,786	57,447	45,662
2029	-	11,786	61,061	49,276
2030	-	11,786	45,688	33,903
2031	-	11,786	73,844	62,058
2032	-	11,786	82,189	70,403
2033	-	11,786	91,530	79,745
2034	-	11,786	101,696	89,910
2035	-	11,786	108,142	96,356
2036	-	11,786	114,999	103,214
2037	-	11,786	122,295	110,510
2038	-	11,786	136,233	124,447
2039	-	11,786	144,885	133,100
2040	-	11,786	154,091	142,305
2041	-	11,786	163,885	152,100
2042	-	11,786	177,655	165,870
			<b>FIRR =</b>	<b>1.42%</b>

**Table ST-3: Derivation of Weighted Average Cost of Capital**

Item	ADB Loan		Total
	Passed as Subloan	Govt Share	
A. Amount of Loan (US\$ Million)	145.00	27.33	172.33
B. Weight	84.1%	15.9%	100.00%
C. Nominal Cost	2.00%	14.00%	
D. Tax Rate	14.90%	14.90%	
E. Tax Adjusted Nominal Rate	1.70%	11.91%	
F. Inflation Rate	1.61%	8.50%	
G. Real Cost	0.09%	3.15%	
H. Weighted Component of WACC	0.08%	0.50%	
<b>Weighted Average Cost of Capital (Real)</b>	<b>0.58%</b>		

ADB= Asian Development Bank, WACC = weighted average cost of capital.

Note: Cost of government financing is based on the official published lending rate of the government.



**Table ST-4: Sensitivity Analysis Results****Sensitivity Analysis Scenarios**

Case 1:	10% Increase in Capital Cost
Case 2:	10% Increase in O & M
Case 3:	10 % decrease in benefits
Case 4:	10 % increase in capital costs + O&M; 10 % decrease in benefits
Case 5:	delay in project benefits by one year

Year	After Tax Incremental Net Revenues (SUM'000)					
	Base Case	Case 1	Case 2	Case 3	Case 4	Case 5
2018	(6,537)	(7,190)	(6,537)	(6,537)	(7,190)	(6,537)
2019	(143,223)	(157,545)	(143,223)	(143,223)	(157,545)	(143,223)
2020	(372,758)	(410,034)	(372,758)	(372,758)	(410,034)	(372,758)
2021	(361,948)	(398,143)	(361,948)	(361,948)	(398,143)	(361,948)
2022	(353,220)	(388,542)	(353,220)	(353,220)	(388,542)	(353,220)
2023	(27,527)	(31,178)	(28,705)	(29,603)	(34,433)	(48,293)
2024	16,210	16,210	15,032	13,411	12,232	8,980
2025	23,013	23,013	21,834	19,533	18,354	16,210
2026	30,940	30,940	29,761	26,667	25,489	23,013
2027	35,744	35,744	34,565	30,991	29,812	30,940
2028	45,662	45,662	44,483	39,917	38,738	35,744
2029	49,276	49,276	48,097	43,170	41,991	45,662
2030	33,903	33,903	32,724	29,334	28,156	49,276
2031	62,058	62,058	60,880	54,674	53,495	33,903
2032	70,403	70,403	69,225	62,185	61,006	62,058
2033	79,745	79,745	78,566	70,592	69,413	70,403
2034	89,910	89,910	88,732	79,741	78,562	79,745
2035	96,356	96,356	95,178	85,542	84,363	89,910
2036	103,214	103,214	102,035	91,714	90,535	96,356
2037	110,510	110,510	109,331	98,280	97,102	103,214
2038	124,447	124,447	123,269	110,824	109,646	110,510
2039	133,100	133,100	131,921	118,611	117,433	124,447
2040	142,305	142,305	141,127	126,896	125,718	133,100
2041	152,100	152,100	150,921	135,711	134,533	142,305
2042	165,870	165,870	164,691	148,104	146,925	152,100
<b>FIRR</b>	<b>1.42%</b>	<b>0.77%</b>	<b>1.31%</b>	<b>0.59%</b>	<b>0.15%</b>	<b>0.59%</b>
<b>NPV</b>	<b>165,759</b>	<b>41,086</b>	<b>144,182</b>	<b>2,932</b>	<b>(143,319)</b>	<b>3,404</b>
<b>SV</b>		<b>21.9</b>	<b>131.5</b>	<b>17.1</b>		
<b>SI</b>		<b>4.56</b>	<b>0.76</b>	<b>5.84</b>		

FIRR = financial internal rate of return; NPV = net present value; SV = switching value; SI = sensitivity indicator



Table ST-5.2: Tuyamuyun-Nukus Income Statements, 2012-2016

Income Statement (SUM million)						Common Size Analysis (in %)					
Item	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016	Average
Net Sales	11,422	13,741	19,366	21,100	24,452	100.00	100.00	100.00	100.00	100.00	100.00
Cost of Goods Sold	10,733	16,185	18,441	21,870	29,548	93.97	117.78	95.22	103.65	120.84	106.29
<b>Gross Profit (Loss)</b>	<b>689</b>	<b>(2,443)</b>	<b>925</b>	<b>(770)</b>	<b>(5,096)</b>	6.03	-17.78	4.78	-3.65	-20.84	-6.29
Operating Expenses	1,399	2,195	2,527	4,819	5,629	12.25	15.97	13.05	22.84	23.02	17.43
Other Operating Income	249	3,787	3,223	5,893	11,731	2.18	27.56	16.64	27.93	47.98	24.46
<b>Operating Income (Loss)</b>	<b>(461)</b>	<b>(851)</b>	<b>1,621</b>	<b>304</b>	<b>1,006</b>	-4.03	-6.20	8.37	1.44	4.11	0.74
Income from Financial Activities	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Expenses for Financial Activities	18	12	1,585	0	641	0.16	0.09	8.18	0.00	2.62	2.21
<b>Net Income (Loss)</b>	<b>(478)</b>	<b>(863)</b>	<b>36</b>	<b>304</b>	<b>364</b>	-4.19	-6.28	0.19	1.44	1.49	-1.47
Extraordinary gains and losses	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
<b>Net Income (Loss) Before Tax</b>	<b>(478)</b>	<b>(863)</b>	<b>36</b>	<b>304</b>	<b>364</b>	-4.19	-6.28	0.19	1.44	1.49	-1.47
Income Tax	9	0	22	0	0	0.08	0.00	0.11	0.00	0.00	0.04
Other Taxes and Fees	0	0	1	0	0	0.00	0.00	0.01	0.00	0.00	0.00
<b>Net Income After Taxes</b>	<b>(488)</b>	<b>(863)</b>	<b>13</b>	<b>304</b>	<b>364</b>	-4.27	-6.28	0.07	1.44	1.49	-1.51

**Table ST-5.3: Tuyamuyun-Nukus Financial Ratios Analysis, 2012-2016**

Item	2012	2013	2014	2015	2016
<b>Liquidity Indicators</b>					
Current Ratio	2.07	2.17	2.53	6.91	3.43
Quick Ratio	0.73	0.92	1.72	4.97	2.29
Days in Receivables	47	55	76	78	53
Accounts Receivables Turnover	7.72	6.50	4.75	4.62	6.81
Days in Accounts Payables	50	43	44	12	11
Accounts Payable Turnover	7.21	8.30	8.22	31.24	31.92
<b>Operating Indicators</b>					
Operating Ratio	1.04	1.05	0.93	0.99	0.97
Return on Assets (%)	-0.72	-1.16	0.02	0.004	0.003
Return on Equity (%)	-2.09	-3.31	0.04	0.82	0.58
Percentage Growth in Revenues		20.30	40.94	8.95	15.89
Gross Profit Margin	6.03	-17.78	4.78	-3.65	-20.84
<b>Capital Adequacy Indicators</b>					
Debt Service Coverage Ratio		0.13	0.12	0.16	1.32
Debt Equity Ratio	1.91	1.80	1.38	1.18	0.54
	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Free Cash Flow Estimation</b>					
Net Income After Taxes	(488)	(863)	13	304	364
Interest		261	258	255	641
Depreciation		3,894	4,283	4,671	8,199
Change in Working Capital					
Decrease/(Increase) in Current Assets - Cash		(2,545)	(3,670)	(709)	1,742
Increase/(Decrease) in Current Liabilities		449	214	(2,969)	1,536
Change in Working Capital Other than Cash		(2,096)	(3,456)	(3,678)	3,278
<b>Total</b>		1,197	1,098	1,552	12,483
<b>Annual Debt Service</b>	9,371	9,420	9,478	9,420	9,466

**Table ST-6: Tuyamuyun-Nukus Projected Income Statements, 2017- 2027 —  
Derivation of Revenues**

ITEM	Unit	2017	2020	2023	2024	2025	2027
<b>TN Water Sold WITHOUT PROJECT</b>							
Domestic Consumers	thousand m3/yr	19,851	20,452	21,072	21,282	21,495	21,927
Commercial/Industrial Establishments	thousand m3/yr	2,913	3,001	3,092	3,123	3,154	3,218
<b>Sewerage Services WITHOUT PROJECT</b>							
Domestic Consumers	thousand m3/yr	2,913	3,001	3,092	3,123	3,154	3,218
Commercial/Industrial Establishments	thousand m3/yr	2,913	3,001	3,092	3,123	3,154	3,218
<b>TN Water Sold (PROJECT)</b>							
Domestic Consumers	thousand m3/yr	0	0	6,098	8,423	10,356	13,332
Commercial Establishments	thousand m3/yr	0	0	1,220	1,685	2,071	2,666
Institutional Establishments	thousand m3/yr	0	0	610	842	1,036	1,333
<i>Cumulative Price Index</i>		1.08	1.36	1.57	1.63	1.69	1.81
<i>Price Index</i>		1.08	1.08	1.035	1.035	1.035	1.035
<i>Tariff Increase (nominal rate)-Domestic Consumers</i>		22.6%	22.6%	22.6%	8.5%	8.5%	8.5%
<i>Tariff Increase (real rate)-Domestic Consumers</i>		14.60%	14.6%	19.1%	5.0%	5.0%	5.0%
<i>Tariff Increase (nominal rate)-Commercial, etc</i>		22.6%	22.6%	22.6%	8.5%	8.5%	8.5%
<i>Tariff Increase (real rate)-Commercial, etc</i>		14.6%	15%	19%	5.0%	5%	5%
<b>Water Tariff Rates</b>							
Domestic Consumers I(increase in nominal terms)	UZS/m3	828	1,524	2,786	3,022	3,279	3,860
Domestic Consumers (increase in real terms)	UZS/m3	774	1,164	1,890	1,984	2,084	2,297
Commercial/Industrial Establishments (Increase in nominal terms)	UZS/m3	2,575	4,743	8,731	9,474	10,279	12,101
Domestic Consumers (increase in real terms)		2,407	3,621	5,880	6,174	6,483	7,147
<b>Sewer Tariff Rates</b>							
Domestic Consumers	UZS/m3	505	550	600	550	550	600
Commercial/Industrial Establishments	UZS/m3	1,325	1,444	1,574	1,444	1,444	1,574
<b>Water Sales GROSS REVENUES</b>							
Domestic Consumers I(increase in nominal terms)	UZS million	16,427	31,179	58,702	64,330	70,498	84,661
Commercial/Industrial Establishments	UZS million	7,010	10,866	28,938	34,882	40,588	51,582
<b>Sewer Sales GROSS REVENUES</b>							
Domestic Consumers I(increase in nominal terms)	UZS million	1,471	1,652	1,855	1,719	1,736	1,931
Commercial/Industrial Establishments	UZS million	3,860	4,334	4,868	4,510	4,555	5,065
<b>Total WSS GROSS REVENUES</b>							
<b>Other related Income (@ 5-10% of WSS GR)</b>	UZS million	2,877	4,803	9,436	21,088	23,475	28,648
<b>Total GROSS REVENUES</b>	UZS million	31,645	52,835	103,799	126,530	140,852	171,886
<b>Total WSS REVENUES (net of taxes)</b>	UZS million	<b>30,537</b>	<b>50,986</b>	<b>100,166</b>	<b>122,102</b>	<b>135,922</b>	<b>165,870</b>

**Table ST-7: Tuyamuyun-Nukus Projected Income Statements, 2017-2027**

Item	2017	2020	2023	2024	2025	2027
Net Sales	30,537	50,986	100,166	122,102	135,922	165,870
Cost of Goods Sold	32,169	45,370	109,714	110,849	112,013	107,796
<b>Gross Profit (Loss)</b>	<b>(1,632)</b>	<b>5,616</b>	<b>(9,548)</b>	<b>11,253</b>	<b>23,909</b>	<b>58,074</b>
Operating Expenses	6,080	6,264	21,643	22,246	24,525	30,046
Other Operating Income	13,016	23,985	117,050	93,130	92,222	82,070
<b>Operating Income (Loss)</b>	<b>5,305</b>	<b>23,337</b>	<b>85,859</b>	<b>82,137</b>	<b>91,607</b>	<b>110,097</b>
Expenses for Financial Activities	436	761	26,713	25,862	24,970	22,725
<b>Net Income (Loss) Before Tax</b>	<b>4,869</b>	<b>22,575</b>	<b>59,146</b>	<b>56,274</b>	<b>66,636</b>	<b>87,372</b>
Income Tax	725	3,364	8,813	8,385	9,929	13,018
<b>Net Income After Taxes</b>	<b>4,144</b>	<b>19,212</b>	<b>50,333</b>	<b>47,889</b>	<b>56,708</b>	<b>74,354</b>

**Table ST-8: Tuyamuyun-Nukus Projected Balance Sheets, 2017-2027**

Item	2017	2020	2023	2024	2025	2027
<b>ASSETS</b>						
<b>Fixed Assets</b>	173,550	338,636	1,485,580	1,485,580	1,485,580	1,485,580
<b>Total Fixed Assets</b>	<b>114,633</b>	<b>651,867</b>	<b>1,348,816</b>	<b>1,274,059</b>	<b>1,207,202</b>	<b>1,069,712</b>
Cash	26,305	125,059	296,708	374,253	442,079	621,197
Accounts Receivable	12,663	21,014	22,234	11,098	44,078	50,130
Inventories	4,333	5,016	5,806	6,097	5,792	1,593
<b>Total Current Assets</b>	<b>43,300</b>	<b>151,090</b>	<b>324,749</b>	<b>391,448</b>	<b>491,949</b>	<b>672,920</b>
Other Non Current Assets	12	12	12	12	12	12
<b>Total Assets</b>	<b>140,937</b>	<b>776,927</b>	<b>1,645,524</b>	<b>1,648,312</b>	<b>1,649,281</b>	<b>1,690,910</b>
<b>LIABILITIES AND EQUITY</b>						
Equity	10,595	10,595	10,595	10,595	10,595	10,595
Retained Earnings	(15,546)	3,267	63,664	113,998	161,887	294,804
Other	102,212	136,044	189,306	208,236	229,060	277,163
<b>Total Equity</b>	<b>97,261</b>	<b>149,907</b>	<b>263,566</b>	<b>332,830</b>	<b>401,543</b>	<b>582,562</b>
Long-term Debt	<b>43,676</b>	<b>627,020</b>	<b>1,290,077</b>	<b>1,223,219</b>	<b>1,155,112</b>	<b>1,015,051</b>
Accounts Payable	5,362	5,338	18,286	17,054	17,780	14,972
Other Current Liabilities	1,158	1,340	1,551	1,629	1,710	1,886
Taxes Payable	641	771	466	26,713	25,862	23,962
Current Portion of Long-term Debt	0	0	91,882	92,263	92,626	93,296
<b>Total Current Liabilities</b>	<b>7,160</b>	<b>7,449</b>	<b>112,185</b>	<b>137,658</b>	<b>137,979</b>	<b>134,115</b>
<b>Total Liabilities</b>	<b>43,676</b>	<b>627,020</b>	<b>1,381,959</b>	<b>1,315,483</b>	<b>1,247,738</b>	<b>1,108,347</b>
<b>Total Liabilities and Equity</b>	<b>140,937</b>	<b>776,927</b>	<b>1,645,524</b>	<b>1,648,312</b>	<b>1,649,281</b>	<b>1,690,910</b>

**Table ST-9: Tuyamuyun-Nukus Projected Financial Ratios, 2017-2027**

Item	2017	2020	2023	2024	2025	2027
<b>Liquidity Indicators</b>						
Current Ratio	6.05	20.28	2.89	2.84	3.57	5.02
Quick Ratio	5.44	19.61	2.84	2.80	3.52	5.01
Days in Receivables	75	74	40	16	58	54
Accounts Receivables Turnover	4.82	4.85	9.01	22.00	6.17	6.62
Days in Accounts Payables	30	21	30	28	29	25
Accounts Payable Turnover	12.00	17.00	12.00	13.00	12.60	14.40
<b>Operating Indicators</b>						
Operating Ratio	1.14	1.45	1.65	1.62	1.67	1.80
Percentage Growth in Revenues	24.89	24.56	42.96	21.90	11.32	8.56
<b>Capital Adequacy Indicators</b>						
Debt Service Coverage Ratio	1.25	3.82	1.98	1.66	1.12	1.45
Debt Equity Ratio	0.45	4.18	5.24	3.95	3.11	1.90
<b>Free Cash Flow Estimation</b>						
Net Income After Taxes	4,144	19,212	50,333	47,889	56,708	74,354
Interest	436	761	26,713	25,862	24,970	22,725
Depreciation	8,242	15,229	74,842	74,757	74,659	67,781
Change in Working Capital						
Decrease/(Increase) in Current Assets - Cash	(5,875)	(18,987)	(38,576)	10,845	(32,674)	(3,325)
(Increase)/Decrease in Current Liabilities	3,711	(378)	106,463	25,473	320	(721)
<b>Change in Working Capital Excluding Cash</b>	<b>(2,164)</b>	<b>(19,364)</b>	<b>67,887</b>	<b>36,319</b>	<b>(32,354)</b>	<b>(4,045)</b>
<b>Total Free Cash Flow</b>	<b>10,657</b>	<b>15,837</b>	<b>219,776</b>	<b>184,827</b>	<b>123,983</b>	<b>160,814</b>
<b>Annual Debt Service</b>	<b>8,552</b>	<b>4,141</b>	<b>110,726</b>	<b>111,019</b>	<b>111,019</b>	<b>111,289</b>