FINANCIAL ANALYSIS

A. Introduction

1. O'zbekiston Temir Yo'llari (UTY) plans to implement a project to electrify an existing rail line of approximately 145.1 km along the route Pap–Namangan–Andijan (the project). The cost of the project is estimated at approximately $177.45 million, including finance charges during implementation. UTY and the government's funding obligation is $97.45 million, approximately 55% of the total project cost. The Asian Development Bank (ADB) will finance $80 million, or 45% of the total project cost, with an Ordinary Capital Resources (OCR) Loan. To ascertain the financial sustainability of the project, a (i) financial evaluation of UTY as an entity,[1] and (ii) a financial analysis of the project were conducted.

B. Financial Evaluation of UTY

2. UTY is rare among railway companies in the region, if not globally, for being a financially self-sustaining institution. Whereas most public railways operate under heavy subsidy from the government, UTY maintains a healthy financial status mainly due to its ability to maintain its profitable freight business.

3. UTY has benefited from Uzbekistan's strong GDP growth from 2011 to 2015.[2] Real GDP growth was slightly above 8% each year in this period, among the highest growth rates in Central Asia. Growth is expected to be lower and more variable over the period of 2016 to 2021, averaging 6.2% for the period and ending at 5.2% in 2021.[3]

4. UTY's freight tonnage grew by approximately 3.4% per year from 2011–2015 though growth fell to 2.3% in 2015. The primary commodities that UTY handles include oil and oil products (14.5% of 2015 volume), construction materials (9.8%), agricultural products (7.8%), ores (6.7%) and coal (5.9%). Other traffic as reported by UTY accounted for 32% of the 2015 volume.

5. A financial model was developed based on historical information on passenger and freight traffic, revenue, and operating expenses. This was used to forecast total revenue and operating income for the next 5 years, with the project. For the analysis, it was assumed that UTY grows freight and passenger volumes at a moderate pace (4% per year), increases freight tariffs by an average 3.0% per year and manages costs to minimize weakening of gross margins from 26.9% estimated for 2015 to 25.3% in 2021.

6. Long-term debt to equity ratio is expected to have peaked in 2016 at 102.5%, and gradually decrease to 80.8% in 2021. Operating income ratio, while decreasing from historic levels, are estimated to be sustained well above 10% for the duration of the project. Debt coverage ratios are acceptable ranging from an estimated 2.3X in 2017 to 2.8X in 2021.

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[1] In conjunction, a Financial Management Assessment was also conducted, and its results are available in the Project Administration Manual, available as a linked document.
[2] ADB. 2016. *Country Economic Indicators* (available as linked document). Manila.
[3] ADB. 2016. *Long Term Projections of Gross Domestic Product (GDP) for Developing Member Countries (DMCs)*. Manila.

7. In summary, the financial evaluation indicates that UTY would have the financial capacity to implement the project, fund its contribution to the project costs, repay the ADB loan and make required payments on its existing debt.

C. Financial Analysis of the Project

8. A financial analysis of the project was carried out in accordance with ADB guidelines to ascertain whether the project is financially viable.[4] The financial analysis was done on an incremental basis to compare cash flow with and without the project.

9. The current and forecast traffic with and without the project were assessed, as provided in the economic analysis of the project.[5] Revenue was calculated on a ton-kilometer and passenger-kilometer basis, applying realistic assumptions on likely origins and destinations throughout the project railway.

10. Tariffs were estimated based on the averages for UTY in 2014, increased to 2020 based on inflation. Freight tariffs were assumed to increase by 1.5% in 2022, the second full year of operation of the project railway. This assumes that after approximately 18 months of operation the quality and reliability of the electrified service compared with the diesel service will support the 1.5% increase. Given that real GDP growth for Uzbekistan from 2017 to 2022 is expected to average 5.8% per year, an assumption of a 1.5% increase in real freight tariffs is considered reasonable.[6]

11. Cost estimates were made for the "with project" and "without project" scenarios. To estimate operating expenses, the number of electric and diesel locomotives required was calculated based on estimated tonnage and number of passengers. Maintenance expenses were based on prior estimates for the Central Asia Regional Economic Cooperation Corridor 6 (Marakand–Karshi) Railway Electrification Project.[7] All costs were inflated to 2020 and validated against actual costs. The factors used are shown in Table 1.

Table 1: Maintenance Cost Factors

Cost Item (in SUM unless indicated)	**Unit** (a)	**With Project** (b)	**Without Project** (c)
Electrification	Capital Cost	0.44% of (a)	NA
Signal/Telecom	Capital Cost	3.0% of (a)	3.0% of (a)
Locomotive maintenance	Loco-km	537.49 / loco-km	893.96 of (a)
Freight wagons	Wagon-km	69.69 / wagon-km	69.69 / wagon-km
Passenger coaches	Coach-km	69.69 / coach-km	69.69 / coach-km
Track – fixed/year	Track-km	3,027,273 / track km	3,027,273 / track km
Track – variable	Gross tkm	0.3461 / gross tkm	0.3461 / gross tkm

km = kilometer, tkm = ton kilometer.
Source: ADB. 2011. *Report and Recommendations of the President: CAREC Corridor 6 (Marakand–Karshi) Railway Electrification Projec*t (RRP UZB 45067). Manila

[4] ADB. July 2005, *Financial Management and Analysis of Projects.* Manila.
[5] Economic Analysis, available as a linked document.
[6] ADB Memorandum, 22 August 2016: *Long-Term Projections of Gross Domestic Product (GDP) for Developing Member Countries (DMCs).* Manila.
[7] ADB. 2011. *Report and Recommendations of the President: CAREC Corridor 6 (Marakand–Karshi) Railway Electrification Project (RRP UZB 45067).* Manila.

12. Energy costs were estimated based on consumption factors from the Marakand–Karshi study. Unit costs were obtained from the Uzbekenergo website for electricity and for diesel from the Global Petrol Prices website.[8,9] All costs were inflated to the year 2020.

Table 2: Energy Use and Cost Assumptions

Cost Item	Freight	Passenger
Electricity	471.6 kWh/10,000 tkm	471.6 kWh/10,000 tkm
Diesel fuel	98.3 kg/10,000 tkm	98.3 kg/10,000 tkm
Electricity tariff	$0.04/kWh	$0.04/kWh
Diesel fuel	$0.61/kg	$0.61/kg

kg = kilogram; kWh = kilowatt-hour, tkm = ton kilometer.
Source: ADB. 2011. *Report and Recommendations of the President CAREC Corridor 6 (Marakand–Karshi) Railway Electrification Project* (RRP UZB 45067). Manila

13. The Weighted Average Cost of Capital (WACC) was calculated as 1.18% (Table 3).

Table 3: Weighted Average Cost of Capital

Cost Item	ADB Loan	UTY	Total
Capital	$80.00	$97.45	$177.45
Percent of total capital	45.1%	54.9%	100.0%
Nominal cost[a]	2.085%	11.50%	
Tax rate	4.5%	--	
Tax adjusted nominal cost	1.99%	11.50%	
Inflation rate[b]	1.48%	9.60%	
Real cost (tax adjusted cost/inflation rate)	0.50%	1.73%	
Weighted component of WACC	0.23%	0.95%	1.18%
Weighted average cost of capital (real)			**1.18%**

Source: Asian Development Bank estimates; Bain & Company. 2015. *Global Private Equity Report*. Boston.
a) The UTY nominal cost is the estimated cost of equity based on 2015-2016 average returns for Asia-Pacific regional investment funds with maturities of 20+ years.
b) The ADB inflation rate is assumed as equivalent of the international inflation rate as estimated by the World Bank; the UTY inflation rate is estimated for 2017.

14. The Financial Internal Rate of Return (FIRR) has been estimated based on the incremental cash flow estimated for the "with project" scenario versus the "without project" scenario. The FIRR has been estimated as 2.16%, exceeding the WACC and indicating the project is financially viable. Table 5 provides the detailed results of the financial analysis.

15. Sensitivity analysis was conducted to assess the impact of potential changes in key assumptions (Table 4). Financial returns were found to be most sensitive to changes in freight revenue. The relatively low sensitivity to passenger transport demonstrates the minor contribution to cash flow from passenger operations.

[8] Uzbekenergo. Electric Railway Tariffs. http://www.uzbekenergo.uz/en/activities/tariffs-electric-power/ (Accessed 7 November 2016).
[9] Global Petrol Prices. Uzbekistan Diesel Prices, Liter. http://www.globalpetrolprices.com/Uzbekistan/diesel_prices/ (Accessed 7 November 2016).

Table 4: Sensitivity Analysis

	FIRR (%)	Switching Value (%)
Base case	2.16	
Freight revenue reduced by 10%	0.02	-1.9
Passenger revenue reduced by 10%	1.92	-15.2
Operating expenses increased by 10%	1.78	25.1
Investment costs increased by 10%	1.55	5.5

Source: Asian Development Bank estimates.

Table 5: Results of the Financial Analysis
($ millions)

	With Project						Without Project	
Year	Capital	O&M	Total Cost	Revenue	Income Tax	Net Cash Flow	Net Cash Flow	Incremental Cash Flow
2017	38.7	-	38.7	-	-	(38.7)	-	(38.7)
2018	72.7	-	72.7	-	-	(72.7)	-	(72.7)
2019	38.0	-	38.0	-	-	(38.0)	-	(38.0)
2020	22.7	2.6	25.3	8.8	0.3	(16.8)	4.9	(21.7)
2021	-	3.6	3.6	19.5	0.7	15.2	11.1	4.1
2022	-	3.8	3.8	21.7	0.8	17.1	11.8	5.3
2023	-	4.0	4.0	23.5	0.9	18.7	12.5	6.1
2024	-	4.2	4.2	25.5	1.0	20.4	13.3	7.1
2025	-	4.4	4.4	27.3	1.0	21.9	14.2	7.6
2026	-	4.5	4.5	28.6	1.1	23.0	15.0	8.0
2027	4.5	4.7	9.2	30.1	1.2	19.8	15.9	3.9
2028	-	4.8	4.8	31.4	1.2	25.4	16.8	8.7
2029	-	4.9	4.9	32.7	1.3	26.5	17.8	8.8
2030	4.5	5.0	9.5	33.1	1.3	22.3	18.8	3.6
2031	-	5.1	5.1	34.2	1.3	27.8	19.4	8.4
2032	-	5.2	5.2	35.5	1.4	28.9	20.0	8.8
2033	-	5.4	5.4	36.7	1.4	30.0	20.7	9.3
2034	-	5.5	5.5	38.0	1.5	31.1	21.4	9.7
2035	-	5.6	5.6	39.4	1.5	32.3	22.1	10.1
2036	-	5.8	5.8	40.9	1.6	33.5	22.9	10.6
2037	4.5	5.9	10.4	42.3	1.6	30.3	23.7	6.6
2038	-	6.1	6.1	43.9	1.7	36.1	24.5	11.6
2039	-	6.3	6.3	45.5	1.8	37.5	25.3	12.2
2040	-	6.5	6.5	47.4	1.8	39.1	26.2	12.8
2041	-	6.5	6.5	47.4	1.8	39.1	26.3	12.8
2042	-	6.5	6.5	47.5	1.9	39.2	26.3	12.8
2043	-	6.5	6.5	47.6	1.9	39.2	26.4	12.8
2044	-	6.5	6.5	47.6	1.9	39.3	26.5	12.8
2045	-	6.5	6.5	47.7	1.9	39.3	26.5	12.8
2046	(6.2)	6.5	0.3	47.7	2.1	45.3	26.6	18.7
							FIRR	**2.16%**
							NPV	**$29.2**

Source: Asian Development Bank estimates