

Financial Performance of APTRANSCO during 2014-15 to 2024-25

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DOI:10.37648/ijrssh.v16i01.020

¹ Received: 08 February 2026; Accepted: 26 February 2026 ; Published: 15 March 2026

Abstract

The Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) is the State Transmission Utility of Andhra Pradesh and the backbone of the State's bulk power system. This paper evaluates its financial performance over the eleven financial years 2014-15 to 2024-25, the first decade after the bifurcation of the State, using the time-series tables in the annexures of *Power Development in Andhra Pradesh (Statistics) 2024-25*. Capital expenditure, the pattern of financing, debt servicing, transmission efficiency, network growth and manpower are analysed with least-squares trend regressions, compound annual growth rates, the Mann-Kendall test and Sen's slope, and are placed against the State-wide transmission and distribution (T&D) revenue account and a standalone accounting snapshot of APTRANSCO for 2024-25. Capital expenditure peaked at Rs 2,300.44 crore in 2016-17 and fell to Rs 752.78 crore in 2022-23 (trend CAGR -6.5%), whereas debt repayments grew at 23.9% a year and, from 2021-22, exceeded annual capital expenditure. Loans from REC and PFC supplied 47.3% of all capital receipts, while depreciation-based internal accruals rose in every year. Transmission losses fell significantly from 3.37% to 2.60%, but the share of outsourced staff rose from 65.6% to 76.3%. In 2024-25 APTRANSCO earned a profit after tax of Rs 380.77 crore with an interest cover of 2.28, yet its debt repayments exceeded its cash accruals. The study concludes that the utility is operationally efficient but increasingly constrained by the cost and maturity profile of its debt.

Keywords: APTRANSCO; state transmission utility; financial performance; capital expenditure; debt servicing; trend analysis; Andhra Pradesh

JEL classification: L94; G32; H54; Q48

1. INTRODUCTION

A reliable and financially sound transmission system is the backbone of any power sector: it connects generating stations to distribution licensees, enables inter-State exchange and absorbs the variability of renewable generation. Under the Electricity Act, 2003 every State Government is required to notify a State Transmission Utility (STU) that plans and co-ordinates intra-State transmission and ensures an efficient, co-ordinated and economical transmission system. In Andhra Pradesh this role is performed by the Transmission Corporation of Andhra Pradesh Limited (APTRANSCO), which emerged from the unbundling of the erstwhile Andhra Pradesh State Electricity Board in the power-sector reforms of the late 1990s.

The decade examined here is unusual. The Andhra Pradesh Reorganisation Act, 2014 divided the State with effect from 2 June 2014, and APTRANSCO continued as the transmission utility of Residuary Andhra Pradesh. Within a few years it had to evacuate large volumes of wind and solar power, build a 400 kV backbone and keep pace with rapid load growth, while the finances of the distribution companies (DISCOMs), the principal users of its

¹ How to cite the article: Jyothsna M., Bavaiah M.D.; (March, 2026); Financial Performance of APTRANSCO during 2014-15 to 2024-25; *International Journal of Research in Social Sciences and Humanities*; Vol 16, Issue 1; 219-229, DOI: <http://doi.org/10.37648/ijrssh.v16i01.020>

network, came under strain. How a transmission utility finances such an expansion, services its debt and maintains operational efficiency is central to the sustainability of the State's power sector.

Scholarly attention in India has concentrated on distribution utilities and on the power sector in aggregate; the financial trajectory of individual State transmission utilities has been examined much less. This paper addresses that gap for APTRANSCO using the official time series published in the annexures of its annual statistical publication. Its contributions are threefold: (i) it assembles and cross-checks an eleven-year dataset from tables that are scattered across the publication and are not internally consistent in every year; (ii) it applies parametric and non-parametric trend methods to identify statistically supported movements rather than relying on end-point comparisons; and (iii) it supplements the time series with a standalone ratio analysis of APTRANSCO's 2024-25 accounts.

The remainder of the paper is organised as follows. Section 2 reviews the relevant literature and sets out the conceptual framework. Section 3 states the objectives and hypotheses. Section 4 describes data and methods. Section 5 presents the results. Section 6 discusses implications, Section 7 notes limitations, and Section 8 concludes.

2. REVIEW OF LITERATURE AND CONCEPTUAL FRAMEWORK

2.1 Regulation and financing of transmission

Transmission is a natural monopoly and is generally regulated on a cost-of-service basis, so that the revenue requirement covers operating costs, depreciation, interest and a regulated return on equity (Joskow, 1997). Under such a regime the financial health of a transmission utility depends less on commercial risk than on three factors: the quality and timeliness of regulatory determination, the pace and funding of capital investment, and the creditworthiness of the entities that pay transmission charges. Standard financial-management treatments classify these as questions of capital structure, liquidity and profitability (Pandey, 2015), which form the three analytical lenses of this paper.

2.2 Finances of the Indian power sector

A large Indian literature documents the financial distress of State distribution utilities: high aggregate technical and commercial losses, tariffs below cost-recovery levels, delayed subsidy payments and growing accumulated losses (Planning Commission, 2011; Tongia, 2007; Pargal and Banerjee, 2014). The UDAY scheme (Ministry of Power, 2015) and earlier restructuring measures were designed to relieve this stress. Distribution-level stress travels upstream through delayed payments to generators and transmission licensees, and therefore bears directly on APTRANSCO, whose revenue is recovered in the main from transmission and SLDC charges levied on the distribution companies and open-access users (Rs 2,799.72 crore, or 90% of revenue, in 2024-25).

2.3 Methodological precedents and research gap

Ratio analysis and trend analysis are the standard tools for appraising utility performance. For short, lumpy financial series, non-parametric procedures such as the Mann-Kendall test (Mann, 1945; Kendall, 1975) and Sen's (1968) slope estimator are robust to outliers and non-normality and are a useful check on regression results (Wooldridge, 2016, on the limitations of trend regressions in small samples). We are not aware of a study that combines these methods with the annexure data of the APTRANSCO statistical publication to assess the post-bifurcation decade; this paper does so.

3. OBJECTIVES AND HYPOTHESES

The study has four objectives:

- (1) to examine the trend and composition of APTRANSCO's capital expenditure;
- (2) to analyse how that expenditure was financed and the resulting debt-servicing burden;
- (3) to assess operational efficiency through transmission losses, throughput, network expansion and manpower; and

- (4) to place APTRANSCO's performance in the context of the State-wide T&D revenue account and to appraise its standalone 2024-25 position.

The following null hypotheses of no monotonic trend are tested against the alternatives indicated:

- **H₁:** Capital expenditure shows no trend (alternative: declining).
- **H₂:** Debt repayments show no trend (alternative: rising).
- **H₃:** The share of borrowings in capital receipts shows no trend.
- **H₄:** Transmission losses show no trend (alternative: declining).
- **H₅:** The share of outsourced staff shows no trend (alternative: rising).

4. DATA AND METHODOLOGY

4.1 Data

All data are taken from the annexure tables of *Power Development in Andhra Pradesh (Statistics) 2024–25* (APTRANSCO, 2025), covering the financial years (April–March) 2014-15 to 2024-25. Monetary values are in Rs crore at current prices.

4.2 Variables and ratios

Capital outgoings are capital expenditure plus debt repayment. The following derived indicators are used:

- *Borrowed share* = (loans received from Government, REC, PFC and banks) ÷ total capital receipts × 100;
- *Repayment-to-capex ratio* = total debt repayment ÷ capital expenditure × 100;
- *Net borrowing* = loans received – debt repayment;
- *Capital intensity* = capital expenditure ÷ EHV circuit-km added (Rs crore per ckm; a crude indicator because capex also funds sub-stations and augmentation);
- *Outsourced share* = outsourced staff ÷ (regular + outsourced staff) × 100;
- *Employee cost per unit* = (regular + outsourced employee cost) ÷ energy handled, in paise per kWh;
- *Interest cover (sector)* = (gross operating result – depreciation) ÷ interest, and for APTRANSCO in 2024-25 = (profit before tax + net interest) ÷ net interest.

4.3 Statistical methods

For each series Y_t ($t = 1, \dots, n$) the linear trend is estimated by ordinary least squares:

$$Y_t = \alpha + \beta t + \varepsilon_t$$

and the compound annual growth rate (CAGR) from the log-linear regression $\ln Y_t = a + b t$ as:

$$CAGR = [\exp(b) - 1] \times 100$$

The Mann–Kendall statistic $S = \sum \text{sgn}(Y_j - Y_i)$ ($i < j$), with tie-corrected variance and continuity-corrected Z , tests monotonic trend without distributional assumptions; Kendall's $\tau = S \div [n(n-1)/2]$ measures its strength, and Sen's slope, the median of all pairwise slopes $(Y_j - Y_i)/(j - i)$, gives a robust rate of change. Trendlines drawn in the figures are least-squares linear trendlines (exponential where geometric growth is the natural description), with R^2 displayed. Because $n = 11$ and financial series are serially correlated, p-values are indicative; a trend is treated as supported when the regression and Mann–Kendall results agree. The energy series have $n = 10$ because 2014-15 covers only ten months (June–March).

4.4 Data reconciliation

The available data are not free of printing and classification inconsistencies in the Annual Reports of APTRANSCO. They were reconciled by arithmetic cross-checks. For example, capital expenditure plus repayments equals capital outgoings and capital receipts in every year.

5. RESULTS AND DISCUSSION

5.1 Capital expenditure

APTRANSCO incurred capital expenditure of Rs 14,975.01 crore over the eleven years, averaging Rs 1,361.36 crore a year (Table 2). Investment was front-loaded: the first three years (2014-15 to 2016-17) account for Rs 5,417.60 crore (36.2% of the total), and the last three (2022-23 to 2024-25) for only Rs 2,859.32 crore. Annual capex averaged Rs 1,759.33 crore in 2014-15 to 2018-19 against Rs 1,029.73 crore in 2019-20 to 2024-25. After the peak of Rs 2,300.44 crore in 2016-17 the series fell to a trough of Rs 752.78 crore in 2022-23 and recovered modestly to Rs 1,112.76 crore in 2024-25.

The fitted linear trend is –Rs 95.89 crore a year ($R^2 = 0.35$, $p = 0.057$), the trend CAGR is -6.46% ($p = 0.060$) and the Mann–Kendall test gives $\tau = -0.42$ ($p = 0.087$) with Sen's slope of –Rs 115.08 crore a year. The decline is therefore significant only at the 10% level and H_1 is rejected weakly; the coefficient of variation of 39.8% shows that the investment cycle, rather than a smooth decline, is the main feature. The project lists in Tables 5.12–5.14 indicate that the early peak was driven by the 400 kV backbone and by evacuation schemes, for example wind-power transmission (Rs 1,375.08 crore over the 12th Plan), the Krishnapatnam scheme (Rs 505.68 crore), evacuation from the Hinduja plant, the Garividi and Podili sub-station schemes in 2018-19, and the Rayalaseema scheme. Table 5.12 shows that 400 kV schemes took 46.5%, 66.5% and 27.2% of capex in 2014-15, 2015-16 and 2016-17 respectively. Later years are dominated by 132 kV and 220 kV sub-stations, power-transformer augmentation and scheme-wise funded works.

Table 1. Capital expenditure, debt repayment and capital outgoings of APTRANSCO (Rs crore)

Year	Capital expenditure	Govt. loans	REC	PFC	Banks & others	Total repayment	Capital outgoings
2014-15	968.71	2.14	51.87	84.94	80.76	219.71	1,188.41
2015-16	2,148.45	2.14	75.28	39.65	76.05	193.12	2,341.57
2016-17	2,300.44	2.43	100.31	48.58	235.04	386.36	2,686.80
2017-18	1,412.15	1.72	191.70	47.69	60.75	301.86	1,714.01
2018-19	1,966.89	4.73	363.04	39.99	323.17	730.93	2,697.82
2019-20	1,387.65	0.00	474.13	44.07	79.60	597.80	1,985.45
2020-21	1,077.89	15.73	683.50	166.60	52.27	918.10	1,995.99
2021-22	853.51	48.54	702.58	365.84	69.54	1,186.50	2,040.01
2022-23	752.78	60.25	703.38	278.41	69.38	1,111.42	1,864.20
2023-24	993.78	68.44	1,171.22	240.30	95.33	1,575.29	2,569.07
2024-25	1,112.76	75.58	698.79	336.09	236.98	1,347.44	2,460.20
Total	14,975.01	281.70	5,215.80	1,692.16	1,378.87	8,568.53	23,543.53

Source: APTRANSCO (2025); Column totals may differ due to rounding.

5.2 Source-wise composition of capital expenditure

From 2021-22 the scheme tables classify total capex by source (Table 3, Figure 2). REC is consistently the largest source, financing between 40.5% and 58.9% of capex; its share was 45.1% in 2024-25. Government-funded works peaked at 26.9% in 2022-23 and fell to 2.8% in 2024-25, while own funds (and, in 2021-22, the 'normal plan') rose from nil in 2022-23 to 39.9% of capex in 2024-25. The utility is thus moving from budget-supported and agency-funded investment towards one in which internal accruals carry a growing share.

Table 3. Source-wise financing of capital expenditure, 2021-22 to 2024-25 (Rs crore)

Source	2021-22	2022-23	2023-24	2024-25
REC funding	345.27	443.76	486.38	501.37
PFC funding	16.41	27.03	13.89	30.32
State Government funding	134.67	202.82	88.33	31.19

Source	2021-22	2022-23	2023-24	2024-25
DC / bulk-load works (lift irrigation and construction)	55.50	79.17	110.14	59.25
Normal plan / own funds	296.28	0.00	295.04	444.05
PSDF / HUDCO	5.38	0.00	0.00	46.58
Total	853.51	752.78	993.78	1,112.76

Source: Compiled and computed from APTRANSCO (2025): Annual Reports

5.3 Pattern of financing

Capital receipts, which by construction equal capital outgoings, totalled Rs 23,543.52 crore (Table 4, Figure 3). Loans from REC were the single largest source (Rs 8,769.48 crore, 37.2%), followed by contributions to depreciation reserve (Rs 6,150.02 crore, 26.1%), internal resources (16.8%), PFC loans (10.1%), State Government loans (3.9%), bank loans (3.2%) and grants and contributions (2.7%). Borrowing from the four lender groups together supplied 54.4% of receipts. Dependence on REC and PFC together is 47.3%, which exposes the utility to the pricing and tenor terms of two public-sector financiers.

The borrowed share has no significant trend (mean 54.9%, slope -1.09 percentage points a year, $p = 0.464$; Mann–Kendall $p = 0.876$), so H_3 is not rejected, but it oscillates widely, from 24.0% in 2023-24 to 71.5% in 2024-25 (Figure 4). ‘Internal resources’ is the balancing item in Table 9.1 and turned negative in 2022-23 and 2024-25, which indicates drawdown of cash balances or recoveries rather than fresh internal generation.

Table 4. Capital receipts of APTRANSCO by source (Rs crore)

Year	Govt. loans	REC	PFC	Banks	Depreciation contribution	Grants & subsidies	Internal resources	Total	Borrowed share (%)
2014-15	0.00	511.87	35.33	151.05	251.22	1.67	237.27	1,188.41	58.8
2015-16	0.00	1,096.04	185.02	154.88	274.06	135.83	495.74	2,341.57	61.3
2016-17	0.00	1,002.21	214.26	236.19	335.95	-174.05	1,072.24	2,686.80	54.1
2017-18	268.14	758.14	64.40	73.67	468.55	78.74	2.37	1,714.01	67.9
2018-19	119.21	1,305.95	203.96	81.53	544.79	198.19	244.19	2,697.82	63.4
2019-20	0.00	917.03	37.87	18.73	613.88	235.77	162.17	1,985.45	49.0
2020-21	0.00	902.70	74.95	6.39	658.84	22.59	330.52	1,995.99	49.3
2021-22	297.66	425.48	18.03	0.00	676.76	34.11	587.96	2,040.00	36.3
2022-23	68.99	789.29	420.84	0.00	688.12	12.05	-115.09	1,864.20	68.6
2023-24	77.08	528.40	10.20	0.00	787.03	77.66	1,088.70	2,569.07	24.0
2024-25	94.89	532.37	1,103.16	28.30	850.82	9.23	-158.57	2,460.20	71.5
Total	925.97	8,769.48	2,368.02	750.74	6,150.02	631.79	3,947.50	23,543.52	54.4

Source: Compiled and computed from APTRANSCO (2025),

$$\text{Borrowed share} = (\text{Govt.} + \text{REC} + \text{PFC} + \text{Banks}) \div \text{Total}.$$

5.4 Debt servicing

Debt repayments are the most dynamic element of the financial picture. Total repayment rose from Rs 219.71 crore in 2014-15 to a peak of Rs 1,575.29 crore in 2023-24 and Rs 1,347.44 crore in 2024-25 (Figure 5), a trend CAGR of 23.9% ($p < 0.001$); the linear slope is Rs 139.08 crore a year ($R^2 = 0.91$) and Mann–Kendall $\tau = 0.82$ ($p < 0.001$). H_2 is therefore firmly rejected. REC repayments grew faster still (CAGR 35.1%) and made up 51.9% of 2024-25 repayments.

The consequence is a reversal of the investment–borrowing relationship. Repayments were only 9.0% of capex in 2015-16 but exceeded capex from 2021-22 (139.0%) and reached 158.5% in 2023-24 (trend slope 16.1 percentage points a year, $p < 0.001$). Net borrowing, which averaged more than Rs 1,000 crore a year in 2015-16 to 2017-18, turned negative in 2021-22 (Rs -445.33 crore) and 2023-24 (Rs -959.61 crore), with a significantly negative trend (slope Rs -139.74 crore a year, $p = 0.017$). The utility has, in effect, entered a phase in which new capex is financed by a mix of fresh loans, internal accruals and balances while legacy loans are being retired.

5.5 Internal accruals

Contribution to the depreciation reserve, a proxy for internally generated funds linked to the asset base, rose in every one of the eleven years, from Rs 251.22 crore to Rs 850.82 crore (CAGR 13.0%, $R^2 = 0.97$, Kendall $\tau = 1.00$, $p < 0.001$). As a ratio to capex, it increased from 25.9% to 76.5%, peaking at 91.4% in 2022-23. Depreciation accruals now almost match annual capex, which is a healthy sign of asset renewal capacity but also reflects the contraction of the capital programme.

5.6 Operational efficiency

Transmission loss fell from 3.37% in 2014-15 to 2.60% in 2024-25, touching 2.60% in 2020-21. The trend is a decline of 0.079 percentage points a year ($R^2 = 0.81$, $p < 0.001$; Mann–Kendall $\tau = -0.75$, $p = 0.002$; Sen's slope -0.082), so H_4 is rejected. The improvement coincided with a large increase in throughput: energy handled rose from 50,110 MU in 2015-16 to 79,836 MU in 2024-25, a CAGR of 5.1%, with setbacks in 2020-21 (pandemic year) and 2024-25. Combined T&D losses also fell, from 12.82% to 9.29% ($p = 0.017$). Losses have flattened near 2.6% since 2020-21, so further gains are likely to be smaller.

The EHV network (400, 220 and 132 kV) grew from 19,395 to 33,167 circuit-km (+71.0%, CAGR 4.9%) and EHV sub-stations from 246 to 375 (+52.4%) (Figure 10). Annual line additions were highest in 2017-18 (2,068 ckm) and lowest in 2019-20 (435 ckm) with no significant trend. Capex per circuit-km added averaged Rs 1.58 crore, ranging from Rs 0.68 crore (2017-18) to Rs 3.19 crore (2019-20), with no trend, i.e. no evidence of systematic deterioration or improvement in capital productivity; the 2019-20 figure reflects spending on sub-stations and augmentation rather than lines.

Table 5. Operational and network indicators of APTRANSCO

Year	Transmission loss (%)	T&D loss (%)	Energy handled (MU)	EHV lines (ckm)	EHV sub-stations (nos.)	EHV lines added (ckm)	Capex per ckm added (Rs crore)
2014-15	3.37	12.82	n.a.	19,395	246	701	1.38
2015-16	3.37	10.56	50,110	22,631	261	1,019	2.11
2016-17	2.92	11.65	54,771	24,247	285	1,616	1.42
2017-18	3.13	11.93	58,263	26,315	304	2,068	0.68
2018-19	3.10	13.04	63,622	27,979	320	1,665	1.18
2019-20	2.91	13.02	65,051	28,432	335	435	3.19
2020-21	2.60	9.49	63,072	29,078	340	646	1.67
2021-22	2.76	9.76	69,018	29,791	351	713	1.20
2022-23	2.61	9.39	72,497	31,665	360	465	1.62
2023-24	2.69	9.59	81,316	32,577	367	912	1.09
2024-25	2.60	9.29	79,836	33,167	375	590	1.89

5.7 Manpower and employee cost

Regular employees fell from 2,211 to 1,908 (-13.7%; $p < 0.001$), while outsourced staff rose from 4,223 to 6,128 (+45.1%; CAGR 4.2%) (Table 6, Figure 11). The outsourced share therefore increased by 1.10 percentage points a year, from 65.6% to 76.3% ($p < 0.001$; Mann–Kendall $\tau = 0.85$), and H_5 is rejected. Productivity per employee improved: energy handled per employee rose from 7.8 MU in 2015-16 to 9.9 MU in 2024-25 ($p = 0.010$).

Table 6. Manpower and employee cost of APTRANSCO

Year	Regular staff (nos.)	Outsourced staff (nos.)	Outsource d share (%)	Regular cost (Rs crore)	Outsourced cost (Rs crore)	Cost per unit (paise/kWh)	MU per employee
2014-15	2,211	4,223	65.6	497.36	87.96	n.a.	n.a.
2015-16	2,172	4,248	66.2	269.02	103.64	7.44	7.81
2016-17	2,150	4,516	67.7	302.33	108.28	7.50	8.22
2017-18	2,108	4,717	69.1	362.59	120.07	8.28	8.54
2018-19	2,102	5,007	70.4	444.37	189.94	9.97	8.95
2019-20	2,056	5,988	74.4	621.68	202.31	12.67	8.09
2020-21	2,138	6,067	73.9	1,043.04	203.75	19.77	7.69
2021-22	2,068	5,776	73.6	936.81	202.63	16.51	8.80
2022-23	2,019	5,842	74.3	932.59	196.32	15.57	9.22
2023-24	1,973	5,932	75.0	847.02	237.17	13.33	10.29
2024-25	1,908	6,128	76.3	974.11	246.61	15.29	9.93

Source: Compiled and computed from APTRANSCO (2025), 5.8 The State-wide T&D revenue account

Employee cost, however, rose faster than throughput. Total employee cost grew at a trend CAGR of 12.9%, and employee cost per unit handled climbed from 7.44 paise per kWh in 2015-16 to 15.29 paise in 2024-25 (CAGR 9.9%). Two features need care: regular employee cost of Rs 269.02 crore in 2015-16 is far below the Rs 497.36 crore of 2014-15, and the Rs 1,043.04 crore of 2020-21 includes Rs 627.13 crore of pension and gratuity provision (Rs 415.91 crore net), as the source itself notes.

Revenue grew at a trend CAGR of 12.5% against 10.3% for expenditure, and the expenditure-to-revenue ratio improved from 100.6% in 2014-15 to 83.6% in 2024-25. Gross operating results turned strongly positive from 2019-20 (Rs 11,014.27 crore in 2024-25). Yet the net result was a deficit in 6 of the 11 years, with a cumulative net deficit of Rs 18,526.78 crore, dominated by Rs 11,864.25 crore in 2018-19, a year in which reported power-purchase cost jumped to Rs 39,036.79 crore from Rs 25,435.28 crore. Net results have been positive since 2022-23.

Three pressures stand out. First, interest charges rose from Rs 1,061.50 crore to Rs 7,124.08 crore (CAGR 19.8%), lifting their share of expenditure from 4.4% to 12.7%. Second, arrears of revenue grew from Rs 2,558.78 crore to Rs 20,857.00 crore in 2023-24 (CAGR 22.8%) before easing to Rs 15,137.47 crore; relative to sale of power they rose from 15.1% to 42.1% and stood at 36.0% in 2024-25. Third, State subsidy is a volatile and large component of revenue (25.2% in 2024-25 against 3.9% in 2023-24). Power purchase remains about four-fifths of expenditure (mean 82.0%). Two anomalies in the source should be borne in mind: 2023-24 revenue includes a 'capital contribution' of Rs 14,996.55 crore and a subsidy of only Rs 2,884.17 crore, which suggests classification differences between years.

Table 7. State-wide T&D revenue account (APTRANSCO and DISCOMs), selected items (Rs crore)

Year	Total revenue	Total expenditure	Power purchase	Subsidy	Interest	Net surplus / (deficit)	Arrears of revenue
2014-15	23,899.00	24,041.04	19,045.71	3,125.20	1,061.50	-2,349.54	2,558.78
2015-16	24,875.26	25,971.32	21,745.39	3,186.00	1,405.81	-3,816.29	2,992.70
2016-17	26,749.09	26,042.45	22,447.31	3,289.42	1,540.69	-2,237.50	4,288.72
2017-18	32,798.09	29,460.37	25,435.28	4,679.08	1,615.81	33.29	5,847.84
2018-19	37,805.56	45,889.36	39,036.79	6,193.74	1,948.61	-11,864.25	7,132.64
2019-20	42,938.44	38,389.34	31,084.39	9,700.88	2,443.59	-36.23	9,523.70
2020-21	47,642.07	42,476.98	33,290.56	10,265.44	2,760.53	260.60	11,348.97
2021-22	48,653.97	45,272.63	37,873.49	8,045.75	3,212.26	-2,215.50	12,819.30

Year	Total revenue	Total expenditure	Power purchase	Subsidy	Interest	Net surplus / (deficit)	Arrears of revenue
2022-23	61,686.78	54,326.06	46,405.29	8,677.36	3,977.58	2,355.10	15,652.13
2023-24	73,062.32	63,312.47	48,212.13	2,884.17	5,922.45	772.70	20,857.00
2024-25	67,124.43	56,110.16	42,871.51	16,924.79	7,124.08	570.84	15,137.47

Source: Compiled and computed from APTRANSCO (2025)

Table 8. Sector indicators derived from the T&D revenue account

Year	Expenditure ÷ revenue (%)	Power purchase expenditure (%)	Subsidy ÷ revenue (%)	Interest expenditure (%)	Interest cover (times)	Arrears ÷ sale of power (%)
2014-15	100.6	79.2	13.1	4.4	-1.19	15.1
2015-16	104.4	83.7	12.8	5.4	-1.68	16.0
2016-17	97.4	86.2	12.3	5.9	-0.47	21.1
2017-18	89.8	86.3	14.3	5.5	1.08	24.4
2018-19	121.4	85.1	16.4	4.2	-5.09	26.8
2019-20	89.4	81.0	22.6	6.4	0.98	34.2
2020-21	89.2	78.4	21.5	6.5	1.08	37.1
2021-22	93.1	83.7	16.5	7.1	0.33	37.7
2022-23	88.1	85.4	14.1	7.3	1.22	35.0
2023-24	86.7	76.1	3.9	9.4	1.17	42.1
2024-25	83.6	76.4	25.2	12.7	1.11	36.0

Source: Compiled and computed from APTRANSCO (2025)

5.9 Standalone position of APTRANSCO in 2024-25

Revenue of Rs 3,110.09 crore was 90.0% transmission and SLDC charges and 10.0% other income. Against expenditure of Rs 2,541.44 crore (after capitalisation of Rs 234.71 crore), the utility earned a profit before tax of Rs 568.65 crore (18.3% of revenue) and a profit after tax of Rs 380.77 crore (12.2%). Employee cost (35.1% of gross expenditure), depreciation (30.6%) and interest (20.4%) are its three main costs (Figure 16). Although APTRANSCO accounts for only 4.6% of the sector's revenue, it generated 66.7% of the T&D entities' combined net surplus, and holds 19.2% of their net assets.

Capital structure and liquidity are less comfortable. Long-term borrowings of Rs 6,351.48 crore are 2.23 times net worth of Rs 2,847.06 crore. Interest cover is 2.28, but repayments of Rs 1,347.44 crore in the year exceeded cash accruals (profit after tax plus depreciation) of Rs 1,231.59 crore, a cover of 0.91, so that the gap had to be met from borrowings or balances. The current ratio is 0.69 (0.60 including working-capital borrowings), and sundry receivables of Rs 2,287.10 crore equal 73.5% of annual revenue; this may include non-operating items but is high. Net fixed assets are 52.4% of gross block, indicating a moderately mature asset base, and depreciation is 4.5% of gross block. Return on capital employed (profit before interest and tax over net assets) is 7.7%, and return on net assets after tax is 2.9%.

Table 9. Standalone financial snapshot and ratios of APTRANSCO, 2024-25

Item	Value
Total revenue (Rs crore)	3,110.09
of which transmission and SLDC charges	2,799.72
Total expenditure after capitalisation (Rs crore)	2,541.44

Item	Value
Profit before tax (Rs crore)	568.65
Profit after tax (Rs crore)	380.77
EBITDA (gross operating result) (Rs crore)	1,865.22
EBITDA margin (% of revenue)	60.0
Profit before tax margin (%)	18.3
Profit after tax margin (%)	12.2
Interest cover (times)	2.28
Long-term borrowings (Rs crore)	6,351.48
Net worth (equity + reserves) (Rs crore)	2,847.06
Debt ÷ net worth (times)	2.23
Debt repayment in 2024-25 (Rs crore)	1,347.44
Cash accruals (PAT + depreciation) (Rs crore)	1,231.59
Cash accruals ÷ repayment (times)	0.91
Current ratio (times)	0.69
Return on capital employed (%)	7.7
Net fixed assets ÷ gross block (%)	52.4

Source: Compiled and computed from APTRANSCO (2025),

5.10 Summary of trend statistics and hypothesis tests

Table 10. Descriptive and trend statistics

Variable	Mean	CV (%)	OLS slope (per year)	p (OLS)	R ²	CAGR (%)	Kendall τ	p (M-K)	Sen's slope
Capital expenditure	1,361.36	39.8	-95.89	0.057	0.35	-6.5	-0.42	0.087	-115.08
Total debt repayment	778.96	61.9	139.08	0.000	0.91	23.9	0.82	0.001	138.11
Repayment ÷ capex (%)	72.87	80.4	16.05	0.000	0.83	32.5	0.78	0.001	15.09
Borrowed share (%)	54.93	26.6	-1.09	0.464	0.06	-3.2	-0.05	0.876	-1.58
Depreciation contribution	559.09	36.4	60.34	0.000	0.97	13.0	1.00	0.000	59.96
Transmission loss (%)	2.915	10.1	-0.079	0.000	0.81	-2.7	-0.75	0.002	-0.082
Energy handled (MU)	65,755	15.5	3,265	0.000	0.95	5.1	0.87	0.001	3,394
EHV lines (ckm)	27,753	15.5	1,263	0.000	0.95	4.9	1.00	0.000	1,190
Regular employees	2,082.3	4.3	-25.0	0.000	0.85	-1.2	-0.85	0.000	-26.0
Outsourced employees	5,313.1	14.5	212.9	0.000	0.83	4.2	0.78	0.001	202.4
Outsourced share (%)	71.52	5.3	1.10	0.000	0.91	1.6	0.85	0.000	1.09
T&D total revenue	44,294	38.8	5,048	0.000	0.95	12.5	0.96	0.000	4,904
T&D total expenditure	41,027	32.9	3,843	0.000	0.89	10.3	0.85	0.000	3,758
T&D interest	3,001	65.3	543	0.000	0.84	19.8	1.00	0.000	414
Arrears of revenue	9,833	60.0	1,696	0.000	0.91	22.8	0.93	0.000	1,648

Source: Compiled and computed from APTRANSCO (2025), Authors' computations. n = 11 (n = 10 for energy handled). Slope and Sen's slope are in the units of the variable. M-K = Mann-Kendall.

Table 11. Outcome of hypothesis tests

Hypothesis	Evidence	Decision
H1: no trend in capex	OLS $p = 0.057$; M-K $p = 0.087$; CAGR -6.5%	Rejected only at 10%
H2: no trend in repayments	OLS $p < 0.001$; M-K $p < 0.001$; CAGR 23.9%	Rejected
H3: no trend in borrowed share	OLS $p = 0.464$; M-K $p = 0.876$	Not rejected
H4: no trend in transmission loss	OLS $p < 0.001$; M-K $p = 0.002$	Rejected (declining)
H5: no trend in outsourced share	OLS $p < 0.001$; M-K $p < 0.001$	Rejected (rising)

Source: Compiled and computed from APTRANSCO (2025), Authors' computations.

6. IMPLICATIONS

The evidence supports a picture of an operationally efficient but financially tightening utility. Five implications follow.

- (1) **Debt re-profiling.** With repayments above capex since 2021-22 and above cash accruals in 2024-25, APTRANSCO should explore refinancing, longer tenors and a smoother maturity ladder for its REC and PFC loans, so that repayment peaks do not crowd out investment.
- (2) **Diversifying funding.** REC and PFC supplied more than half of capital receipts. Expanded use of regulatory recovery of capital cost, private participation through competitive bidding for large evacuation lines, and multilateral or green-finance sources could widen the funding base.
- (3) **Collection discipline in the sector.** Arrears of revenue rose to 42% of sale of power in 2023-24. Because APTRANSCO's receivables are large relative to its revenue, timely payment of transmission and SLDC charges by the DISCOMs is critical to its liquidity.
- (4) **Sustaining efficiency.** Transmission loss has flattened near 2.6%; the next efficiency frontier lies in capital productivity, asset health and employee cost per unit, not further loss reduction.
- (5) **Transparency.** The statistical publication gives standalone APTRANSCO accounts for one year only. Publishing multi-year standalone balance sheets and profit-and-loss accounts would allow regulators, lenders and researchers to monitor solvency directly.

7. LIMITATIONS AND SCOPE FOR FURTHER RESEARCH

The study rests on eleven annual observations, so the statistical results are indicative. All values are nominal; deflating by an appropriate construction-cost index would reduce the apparent growth of costs and sharpen the decline in real capex. The sector revenue account is consolidated and cannot be decomposed into APTRANSCO and DISCOM components before 2024-25. Data in the source have been compiled by the utility, are unaudited in presentation and contain printing inconsistencies. Future work could use audited standalone statements and regulatory (APERC) true-up orders to build a full multi-year DuPont and cash-flow analysis, compare APTRANSCO with other State transmission utilities, and test the relationship between investment and loss reduction with panel methods.

8. CONCLUSION

Over 2014-15 to 2024-25 APTRANSCO built a substantially larger network (EHV lines +71%, EHV sub-stations +52%) while cutting transmission losses to 2.6% and handling 59% more energy than in 2015-16. These operating gains were financed largely by loans from REC and PFC, and the debt contracted in the investment peak of 2014-19 is now being repaid at a rate that exceeds new capital expenditure. In 2024-25 the utility is profitable and covers its interest 2.28 times, but its repayments exceed its cash accruals and its liquidity ratios are thin. The principal financial challenge of the coming years is therefore not operational efficiency but the cost, maturity and sources of capital, together with the payment discipline of the distribution companies on which its revenue depends.

REFERENCES

- APTRANSCO (2025). *Power Development in Andhra Pradesh (Statistics) 2024–25*. Vijayawada: Transmission Corporation of Andhra Pradesh Limited.
- Government of India (2003). *The Electricity Act, 2003* (Act 36 of 2003). New Delhi.
- Government of India (2014). *The Andhra Pradesh Reorganisation Act, 2014* (Act 6 of 2014). New Delhi.
- Joskow, P. L. (1997). Restructuring, competition and regulatory reform in the U.S. electricity sector. *Journal of Economic Perspectives*, 11(3), 119–138.
- Kendall, M. G. (1975). *Rank Correlation Methods* (4th ed.). London: Charles Griffin.
- Mann, H. B. (1945). Nonparametric tests against trend. *Econometrica*, 13(3), 245–259.
- Ministry of Power, Government of India (2015). *Ujwal DISCOM Assurance Yojana (UDAY): Scheme Document*. New Delhi.
- Pandey, I. M. (2015). *Financial Management* (11th ed.). New Delhi: Vikas Publishing House.
- Pargal, S., & Banerjee, S. G. (2014). *More Power to India: The Challenge of Electricity Distribution*. Washington, DC: World Bank.
- Planning Commission (2011). *Report of the High Level Panel on Financial Position of Distribution Utilities* (Chair: V. K. Shunglu). New Delhi: Government of India.
- Sen, P. K. (1968). Estimates of the regression coefficient based on Kendall's tau. *Journal of the American Statistical Association*, 63(324), 1379–1389.
- Tongia, R. (2007). The political economy of Indian power sector reforms. In D. G. Victor & T. C. Heller (Eds.), *The Political Economy of Power Sector Reform* (pp. 109–174). Cambridge: Cambridge University Press.
- Wooldridge, J. M. (2016). *Introductory Econometrics: A Modern Approach* (6th ed.). Boston: Cengage Learning.