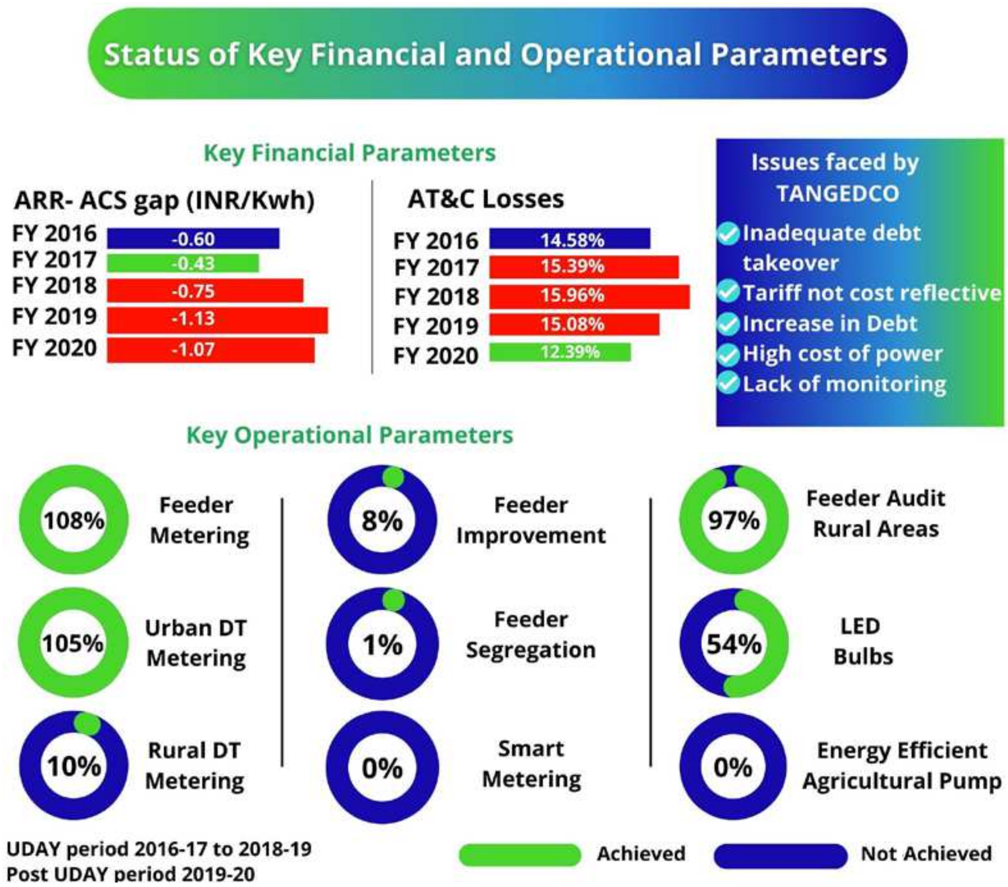
CHAPTER-2

Audit findings

Non-achievement of UDAY Scheme objectives

2.1 UDAY scheme/MoU envisaged twin objectives namely reduction of gap between Average Cost of Supply (ACS) and Average Revenue Realised (ARR) to zero by 2018-19 and reduction of Aggregate Technical and Commercial (AT&C) losses to 13.50 *per cent* by 2018-19. TANGEDCO failed to achieve the desired objectives and the status of achievement of key financial and operational parameters during 2015-16 to 2019-20 are depicted in the **Chart 2** below:

Chart 2: Chart showing the status of achievement of key financial and operational parameters



(Source: As per UDAY MoU and the details furnished by TANGEDCO).

It may be seen from the Chart 2 above that during 2015-16, the gap between ACS and ARR stood at ₹(-)0.60 per unit. As per the MoU, TANGEDCO was required to reduce the gap between the ACS and ARR and achieve a profit of ₹0.07 per unit by 2018-19. Against this envisaged outcome, the performance of TANGEDCO did not improve as enumerated below:

- The gap between ACS and ARR, increased from ₹(-)0.60 per unit in 2015-16 to ₹(-)1.07 per unit in 2019-20 (78.33 *per cent*).

- TANGEDCO was required to achieve financial turnaround with a profit during 2018-19, however, the Company on the contrary, reported loss of ₹12,623.41 crore during that year.

- As against the target of reducing AT&C loss from 14.58 *per cent* in 2015-16 to 13.50 *per cent* in 2018-19, the AT&C loss reported was 15.08 *per cent* in 2018-19 by TANGEDCO.

Since TANGEDCO could not achieve the desired key financial and operational parameters, the envisaged objective of turnaround could not be achieved. In fact, the structural issues like non-revision of tariff to match the cost/expenditure, increase in debt, high cost of power, etc., which were responsible for the poor performance of TANGEDCO during pre UDAY period (2015-16), remained unresolved, even after implementation of UDAY. The reasons for this are discussed below:

Planning

2.2 GoI approved (November 2015) the Scheme with an objective to improve the operational and financial efficiency of the State DISCOMs. Audit noticed deficiencies in the planning for implementation of the Scheme resulting in non-achievement of the envisaged benefits to TANGEDCO as discussed below:

Deficiencies in Action Plan

2.2.1 The MoU stipulated implementation of targeted activities focusing on reduction of gap between ACS and ARR and reduction of AT&C loss. As per Clause 1.3 (e) of MoU, TANGEDCO was required to prepare and submit a detailed action plan to achieve the projected trajectory for AT&C loss and ACS-ARR gap. Even though Action plan was submitted and attached as part of MoU, Audit noticed that TANGEDCO did not prepare any assessment to implement the various targeted activities as well as fund requirements based on budget estimates and sourcing of funds to execute the targeted activities. Consequently, there were shortfalls in respect of installation of meters at Distribution Transformers, installation of smart meters etc. The details of shortfall in respect of various operational parameters for reduction of AT&C Loss are discussed in paragraph 2.4.18.3. Absence of appropriate budget estimates made the implementation schedule directionless.

GoTN in its reply (October 2021) stated that the action plan was furnished to the MoP and was silent on the issues pointed out by Audit.

Financial Management

2.3 As per scheme, GoI and GoTN should facilitate TANGEDCO to take over debt of TANGEDCO, issue of bonds for replacement of high cost loans, takeover of future losses of TANGEDCO etc. However, Audit noticed deficiencies in facilitating above measure by GoTN and GoI for the financial turnaround of TANGEDCO. The deficiencies are discussed below:

Shortfall in takeover of debts of TANGEDCO by the GoTN

2.3.1 As per Clause 7.1 of UDAY Scheme, the State Government shall take over 75 *per cent*[1] of the debt of DISCOM as on 30 September 2015[2] by the year 2016-17. Funds for the takeover shall be raised by the State Government by issue of non-Statutory Liquidity Ratio (non-SLR[3]) bonds in the market or directly to the respective banks/ Financial Institutions (FIs) holding DISCOM debt, to raise funds for providing grant/ interest free loan to the TANGEDCO.

The total debt of TANGEDCO as on 30 September 2015 was ₹81,312 crore as detailed in **Table 1** below:

Table 1: Details of Loan/debts of TANGEDCO as on 30 September 2015

(₹ in crore)

Sl. No.	Particulars	Amount
1	Loans from banks	17,931
2	Loans from FIs	45,874
3	Bonds	4,616
4	Financial Restructuring Plan (FRP) Bonds	5,353
5	Scheme loans	1,315[4]
6	**Total Loans (excluding GoTN loans)**	**75,089**
7	GoTN loans	6,223
8	**Total debt of TANGEDCO**	**81,312**

(Source: Data provided by TANGEDCO)

It may be seen from Table 1 that the total debt of ₹81,312 crore as on 30 September 2015 includes loan from GoTN of ₹6,223 crore. Out of this GoTN loan, a sum of ₹3,352 crore was converted (February 2017) into equity and the balance amount of ₹2,871 crore was converted as non-interest bearing loans. After excluding this loan of GoTN, the debt amount qualified for takeover worked out to ₹75,089 crore. Accordingly, as per the Scheme, GoTN was obligated to takeover a sum of ₹56,317 crore, being the 75 *per cent* of ₹75,089 crore. Against this requirement, citing financial constraints, GoTN decided (December 2016) to take over[5] the debts to the extent of ₹22,815 crore and accordingly, the MoU was signed in January 2017. Apart from ₹22,815 crore, GoTN had assumed ₹3,000 crore (₹1,000 crore in February 2016 and ₹2,000 crore in August 2016), out of ₹5,353 crore of Financial Restructuring Plan (FRP) Bonds issued by TANGEDCO in 2013-14. Thus, total debts taken over by GoTN was ₹25,815 crore.

1 As per UDAY Scheme, States shall take over 50 *per cent* in 2015-16 and 25 *per cent* in 2016-17. As TANGEDCO joined the Scheme in January 2017, it was required to take over 75 *per cent* in 2016-17 itself.

2 The cutoff date for takeover of debt under UDAY Scheme.

3 SLR bonds are the bonds notified by RBI, which banks can purchase for maintaining Statutory Liquidity Ratio (SLR) fixed by RBI from time to time. Non-SLR does not qualify for maintaining SLR by banks.

4 Comprising RAPDRP Scheme loans of ₹1,150 crore (GoI: ₹670 crore and FIs:₹480 crore) and other scheme loans of ₹165 crore.

5 G.O. (Ms) No. 1 Energy (C2) Department dated 09 January 2017.

The details of debts of TANGEDCO taken over by GoTN, the resultant shortfall and additional interest burden on TANGEDCO during the period 2017-20 are given in **Table 2** below:

Table 2: Shortfall in takeover of debt by GoTN and the impact of shortfall

(₹ in crore)

Sl. No	Particulars	Amount
1	Total outstanding debts of TANGEDCO as on 30 September 2015	81,312
2	Loans[6] of GoTN	6,223
3	Total eligible debt excluding GoTN loans	75,089
4	Obligation of GoTN i.e., 75 *per cent* of the above debt	56,317
5	Debt amount considered in MoU for takeover	22,815
6	FRP Bonds taken over by GoTN after 30 September 2015 but before March 2017	3,000
7	Total debts taken over by GoTN (5+6)	25,815
8	Percentage of actual takeover to the eligible debts (7/3*100)	34.38
9	Shortfall in taking over of debts by GoTN (4 - 7)	30,502
10	Additional interest burden on TANGEDCO due to shortfall	9,150.60

(Source: MoU and Annual Accounts of TANGEDCO)

It may be seen from Table 2 that GoTN, against its obligation to take over 75 *per cent* of the debt, had agreed to take over only 34.38 *per cent* of total eligible debt under UDAY Scheme. On account of this shortfall, TANGEDCO continued with burden of loan to the extent of ₹30,502 crore, defeating the objective of the Scheme.

Audit observed that, out of GoTN loan of ₹6,223 crore, the non-interest-bearing loan of ₹2,871 crore, which was earlier excluded for arriving at takeover quantum, was subsequently converted by GoTN as interest bearing loan in February 2019 resulting in additional interest burden of ₹602.91 crore for the period 2018-20 with recurring interest liability till the tenure of the loan i.e., 12 years from February 2019.

The MoU (clause 1.2 (e)) stipulated that the borrowings made by the State to take over TANGEDCO debt during 2016-17 shall not be reckoned against the normal permissible net borrowings ceiling of the State. However, attributing (December 2016) the financial constraints like FRBM provisions, GoTN did not take over the debt of TANGEDCO to the full extent. It is also pertinent to note that GoTN had a leverage in FRBM provisions to the extent of 25.20 *per cent* of Gross State Domestic Product (GSDP) against which the actual debt of GoTN stood at 21.82 *per cent* of GSDP for the year 2016-17 and thus, GoTN was in position to take over additional debt to the extent of ₹43,890 crore i.e., 3.38 *per cent* of GSDP of ₹12,98,511 crore without violating provisions of

[6] Being the interest bearing loans of ₹3,352 crore converted into equity in 2016-17 and non-interest bearing loan of ₹2,871 crore.

FRBM Act. Despite MoU provision and scope available under FRBM Act, the shortfall in takeover of debts of TANGEDCO to the tune of ₹30,502 crore, resulted in additional interest burden of ₹9,150.60[7] crore to TANGEDCO for three years from 2017-18 to 2019-20 and recurring interest liability till the repayment of the loan.

GoTN in its reply (October 2021) stated that as per UDAY Scheme, GoTN has to take over 75 *per cent* of the total debt of TANGEDCO's distribution activity only. GoTN further replied that TANGEDCO, to avail more benefits and reduce the interest burden, proposed for takeover of ₹56,317 crore (75 *per cent* of ₹75,089 crore being loans of both generation and distribution activity) by GoTN, but MoP refused to consider the proposal of TANGEDCO and hence, the loan amount has been arrived at ₹30,420 crore for distribution.

The reply is factually incorrect. GoTN had proposed (October 2016) to take over high interest bearing loans of TANGEDCO for which MoP agreed. But, it was the decision (December 2016) of GoTN to take over only certain portion of TANGEDCO's loan citing additional impact on the finances of the State Government. Thus, it is evident that only at the instance of GoTN, the MoU was finalised for partial takeover of debts of TANGEDCO, due to which TANGEDCO did not get the desired relief from the debt burden.

Failure to convert the 25 *per cent* debt into bonds resulted in additional interest burden

2.3.2 As per para 1.3 (a) of MoU, in respect of the remaining 25 *per cent* debt i.e., ₹7,605 crore, TANGEDCO was required to issue State Government guaranteed bonds or get them converted by Banks/FIs into loans or bonds, with interest rate not more than the bank's base rate plus 0.1 *per cent*.

In pursuance of this provision, TANGEDCO floated a short tender (May 2017) for engaging Arrangers/ Merchant Bankers to mobilise funds by issue of State Government guaranteed bonds to the tune of ₹7,605 crore. But, this tender was lodged in August 2017 with a view to issue afresh after improving the credit rating of this bonds issue. After protracted correspondence with GoTN, TANGEDCO requested (March 2020) GoTN to issue the irrevocable letter to RBI to authorize direct deduction from the State Government account in case of shortfall in payment of dues by TANGEDCO to bond holders. But GoTN did not agree to the above request and TANGEDCO could not raise funds through low cost bonds. Audit noticed that in a similar situation, DISCOMs in four[8] other States, which opted for UDAY Scheme, had successfully raised funds through issue of bonds under UDAY Scheme at a coupon rate ranging from 8.39 to 8.60 *per cent*. Thus, the issue of bonds by TANGEDCO got held up.

[7] As the number of loan accounts were voluminous carrying different rates ranging from 10.75 to 13.38 *per cent* with repayment schedule spread over many years, as a conservative approach, the loss of interest was calculated at 10 *per cent* which was considered by GoTN in G.O. No. 1 dated 09 January 2017 as interest savings for repayment of 25 *per cent* debt under UDAY scheme by issue of bonds.

[8] The coupon rates in (i) Uttar Pradesh: 8.48 and 8.60 *per cent* (February/March 2017), (ii) Bihar: 8.60 *per cent* (March 2017); (iii) Haryana: 8.51 *per cent* (February 2017) and (iv) Rajasthan: 8.39 to 8.55 *per cent* (February/March 2017).

Consequently, the loans to the extent of ₹7,605 crore which were carrying higher rate of interest ranging from 10.75 to 11.80 *per cent* continued against the anticipated interest rate of 6.35[9] *per cent* approved by TNERC. This, resulted in additional interest burden of ₹1,003.86 crore, being the differential interest[10], contributing to the loss to TANGEDCO during 2017-18 to 2019-20.

GoTN in its reply (October 2021) stated that it informed TANGEDCO to proceed to float the bonds on standalone basis since issuing letter to RBI was not feasible. Further, GoTN stated that due to outbreak of COVID -19, the process towards obtaining rating for issuance of bonds has been slowed down. However, COVID -19 started only in March 2020 i.e. after lapse of more than 3 years. Thus, due to lack of effective steps, TANGEDCO could not convert 25 *per cent* of debt into lesser interest bearing bonds and continued paying higher rate of interest on loans.

Increase in the debts/loans of TANGEDCO

2.3.3 As per Clause 2.0 of the Scheme, DISCOMs include combined generation, distribution and transmission undertaking and the objective of UDAY scheme was to reduce debt/ interest burden. Audit noticed that for takeover of debts, only lesser amount of debts were considered leaving the debt amounting to ₹30,502 crore to remain with TANGEDCO. Further, to meet the developmental works relating to ongoing generation plants, sub-stations works and other distribution works, TANGEDCO borrowed additional funds leading to increase in the overall debts. The position of the debts of TANGEDCO as on 30 September 2015 was ₹81,312 crore. However, at the end of 2019-20, the outstanding debt of TANGEDCO had increased further and stood at ₹1,23,895.68 crore representing an increase of 52.37 *per cent* over four-and-a-half years. The details of loans outstanding at the beginning of each year, new loans availed and the outstanding at the end of the years up to 2019-20 are given in **Table 3** below:

9 The rate of interest considered by TNERC in its Tariff order of August 2017 in respect of this loan.

10 Audit calculated the interest burden at the rate of 4.40 *per cent* on ₹7,605 crore for three years, based on the differential interest rate i.e. 10.75 *per cent*, being the least interest rate of the loan and 6.35 *per cent* interest rate considered by TNERC as bank rate as of August 2017 plus 0.1 *per cent* considered in para 5.6.17 of TNERC Tariff Order of August 2017.

Table 3: Details showing the debts/loans at the end of the year and interest pay outs during 2015-20

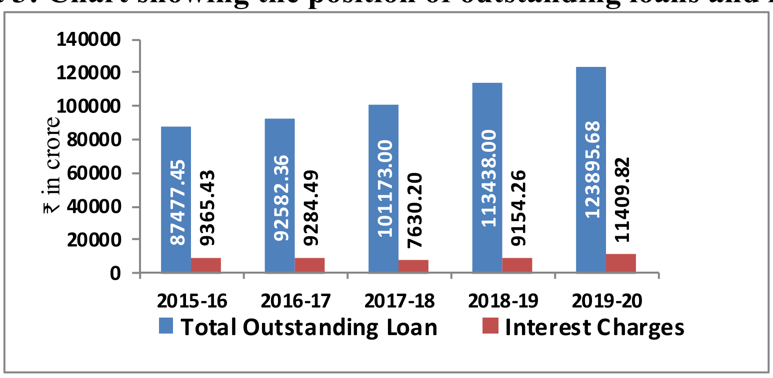
(Amount: ₹ in crore)

Year	Loan amount			Interest payout			
	At the beginning of the year	Net additions[11] during the year	At the end of the year	Interest capitalized	Interest on working capital	Interest on loans other than working capital loans	Total interest charges incurred
1	2	3	4	5	6	7	8(5+6+7)
2015-16	--	--	87,477.45	1,171.57	418.15	7,775.71	9,365.43
2016-17	87,477.45	5,104.91	92,582.36	1,540.34	475.35	7,268.80	9,284.49
2017-18	92,582.36	8,590.64	1,01,173.00	1,002.82	564.49	6,062.89	7,630.20
2018-19	1,01,173.00	12,265.00	1,13,438.00	1,809.40	547.71	6,797.15	9,154.26
2019-20	1,13,438.00	10,457.68	1,23,895.68	2,969.19	591.25	7,849.38	11,409.82

(Source: Annual Accounts of TANGEDCO).

Audit analysis indicated that at the end of March 2016, the outstanding debt was ₹87,477.45 crore which increased to ₹1,23,895.68 crore at the end of March 2020 represented an increase of 41.63 *per cent.* The increase in the debt was mainly on account of increase in capital loans for generation project by 87.05 *per cent* and working capital by 189.88 *per cent* during five years ending 2019-20. The increase in the working capital requirement was essentially on account of increase in the gap between the ACS and ARR. The position of outstanding loans and interest charges during the five years ending 2019-20 are depicted in **Chart 3** below:

Chart 3: Chart showing the position of outstanding loans and interest



(Source: Annual Accounts of TANGEDCO)

Audit observed that due to partial takeover of debt by GoTN and failure to convert 25 *per cent* debt into bonds under UDAY Scheme, the position of debt sourced from Banks and FIs continued to prevail in TANGEDCO resulting in increase in the interest charges. This indicated that no significant benefits had accrued to TANGEDCO on account of UDAY Scheme.

11 After adjusting the repayments during the year.

GoTN in its reply (October 2021) stated that the quantum of loan availed increased due to increased capital expenditure for projects and consequent to increase in borrowings, the interest commitments also increased. The reply confirms that TANGEDCO still continues with high cost loans and higher dependency on working capital loan also contributed for increase in the interest charges over the years.

Failure of GoTN to take over the loss of TANGEDCO

2.3.4 As per Clause 1.2 (h) of MoU and UDAY Scheme, GoTN was obligated to takeover a certain portion of future losses of TANGEDCO in a phased manner over a period of four years from 2017-21. The details of the losses to be taken over, actual losses taken over by GoTN and the shortfall are as given in **Table 4** below:

Table 4: Status of taking over of losses

(Amount: ₹ in crore)

Year	Percentage of previous year loss to be taken over as per MoU	Loss of previous year	Loss to be taken over	Loss actually taken over by GoTN	Shortfall	
					Amount	Percentage
2017-18	5 *per cent* of loss of year 2016-17	4,348.76	217.43	217.43	0	0
2018-19	10 *per cent* of loss of year 2017-18	7,760.78	776.08	776.08	0	0
2019-20	25 *per cent* of loss of year 2018-19	12,623.41	3,155.85	Nil	3,155.85	100
2020-21	50 *per cent* of loss of year 2019-20	11,964.94	5,982.47	Nil	5,982.47	100
	Total				**9,138.32**	

(Source: As per MoU and the Annual Accounts of TANGEDCO)

Audit observed that GoTN did not fulfil its obligation to take over 25 *per cent* of the loss of 2018-19 amounting to ₹3,155.85 crore in the year 2019-20 citing fiscal stress. Further, GoTN did not take over loss of 50 *per cent* amounting to ₹5,982.47 crore in the year 2020-21. Audit observed that, consequent to the failure of the GoTN in its obligation to take over the loss during these two years, the working capital requirement of TANGEDCO had increased to the tune of ₹9,138.32 crore which is evident from the fact that the working capital loan at the end of March 2018 amounting to ₹5,574.32 crore increased to ₹16,075.26 crore (188.38 *per cent)* at the end of March 2020. If the loss of TANGEDCO was taken over by GoTN as provided in the MoU, the working capital requirement could have been reduced to that extent.

GoTN in its reply (October 2021), attributing the delay for the takeover of losses to COVID-19 situation, stated that it had sanctioned (March 2021) a sum of ₹8,379.19 crore, of which a sum of ₹4,500 crore has been released (March - April 2021) to TANGEDCO. However, out of ₹4,500 crore released by GoTN, ₹3,000 crore was released only at the fag end of the financial year 2020-21 and the balance ₹1,500 crore was released in the next year. i.e., 2021-

22. Moreover, a sum of ₹4,638.32 crore was still (October 2021) to be released by GoTN. Had GoTN released the funds in time, it would have considerably reduced the dependency of TANGEDCO on working capital loans and savings in the interest charges to TANGEDCO.

Delay in conversion of Interest Free Loans into Grants

2.3.5 As per clause 1.2 (c) of MOU, GoTN was obligated to transfer the sum of ₹22,815 crore to TANGEDCO as a mix of grants and interest free loan (IFL). It was stipulated that a sum of ₹4,563 crore was to be given as grant and the balance ₹18,252 crore was to be transferred as IFL in year 2016-17. Further, this IFL should be transferred as grant over the subsequent four years at the rate of ₹4,563 crore per year, up to 2020-21.

Audit observed that GoTN released (February/March 2017) the entire sum of ₹22,815 crore as IFL instead of mix of grant and IFL. Consequently, TANGEDCO could not get grant of ₹4,563 crore in the year 2016-17 itself as envisaged in the MoU. This resulted in delay in receipt of grant by one year.

During the Exit conference, it was stated that even if the loans were converted as grant in 2016-17 itself instead of 2017-18, TANGEDCO would continue to suffer the same cash loss. The reply is not acceptable for the reason that if the provisions of MOU was complied with, TANGEDCO would have reported a profit in the year 2016-17 which would have facilitated in upgrading the credit rating of TANGEDCO to raise lesser interest bearing bonds as discussed in Para 2.3.2.

Partial repayment of loan

2.3.6 As envisaged in the MoU, GoTN had taken over the debts to the tune of ₹22,815 crore by way of IFL to TANGEDCO for an equal amount with a view to discharge outstanding loan to that extent. As per clause 1.2(g) of MoU, the funds so received should be utilised by TANGEDCO to repay the loans already due and followed by pre-payment of debt with highest cost. GoTN released the IFL in two tranches (i) ₹14,000 crore on 22 February 2017 and (ii) ₹8,815 crore on 22 March 2017. Out of the funds of first tranche, TANGEDCO repaid the loans to the extent of ₹14,000.50 crore (Principal: ₹13,509.58 crore and Interest: ₹490.92 crore) on 23 February 2017. With the second tranche of ₹8,815 crore, TANGEDCO repaid the loans of ₹7,170.57 crore (Principal: ₹7,043.98 crore and Interest: ₹126.59 crore) on 23 March 2017 to various banks/FIs and the remaining amount of ₹1,643.93 crore was not utilised for the stated purpose.

At the time of repayment, TANGEDCO did not prioritize the high-cost loans. Audit observed that at the time of repayment high cost loans amounting to ₹10,765.33 crore having rate of interest ranging from 12.38 to 14.75 *per cent* remained unpaid, instead the loans of equal amount having interest rate ranging from 11.75 to 12.38 *per cent* was repaid. Due to non-prioritizing the repayment of high-cost loan, TANGEDCO incurred an additional interest of ₹158.43 crore. It was further observed that TANGEDCO did not utilise the remaining IFL ₹1,643.93 crore to reduce the high interest cost. This had resulted in avoidable interest payment to the tune of ₹690.45 crore from April 2017 to March 2020. The reasons for non-utilisation of UDAY funds for the stated purpose were not on record. This indicated lack of planning in utilisation of funds by duly prioritising the high-cost loan.

The CMD, TANGEDCO stated (August 2021) that TANGEDCO was facing liquidity crunch which forced it to utilize the amount for day-to-day operations. Further, GoTN stated (October 2021) in its reply that the balance amount of ₹1,643 crore was utilized for settlement of outstanding power purchase bills to avoid Late Payment Surcharge (LPSC) ranging from 15 to 18 *per cent* payable for delay in settlement of bills. However, the fact remains that the funds provided by GoTN was to discharge the interest bearing debts specified in the MoU and utilization of such funds for its day-to-day operations is a clear deviation of the stipulations of the Scheme and amounted to diversion of funds.

Payment of overdue and penal interest ₹503.28 crore to Banks/FIs against the provisions of UDAY MoU

2.3.7 As per MoU, GoI was obligated to facilitate with Banks/FIs to waive off any overdue interest/penal interest on TANGEDCO's debt and refund/ adjust any such overdue interest/penal interest paid since 01 October 2013 on ₹30,420 crore of loan amount covered under UDAY scheme. But, TANGEDCO had prepaid the outstanding loans of ₹21,171.07 crore which included a sum of ₹503.28[12] crore of overdue interest and penal interest paid to three FIs and 10 Banks. Audit observed that TANGEDCO did not approach the GoI for issue of suitable directions to Banks/FIs for waiver of the overdue and penal interest it had already paid. It also did not submit any request to Banks/FIs for waiver of the above overdue and penal interest paid and failed to deduct such amount while making the repayment of loan. The failure of TANGEDCO to adhere to the provisions of MoU had resulted in unwarranted payment of interest/penal interest of ₹503.28 crore resulting in non-availing the benefit of set off of loan to that extent.

GoTN in its reply stated that all the financial institutions refused to refund overdue interest as the amount of overdue interest paid was for the amount already due but not paid by TANGEDCO on the due dates. GoTN also stated that banks did not waive penal interest even though financial institutions waived the same. The reply lacked justification as TANGEDCO did not take up the issue with GoI, which had agreed in the MoU to facilitate waiver of penal and overdue interest as per Clause 1.1 (b).

Implementation

2.4 The Scheme envisaged that the participating States should undertake to achieve operational and financial turnaround of DISCOMs. The performance of TANGEDCO regarding various parameters of schemes is discussed below:

12 Being the over-due interest of ₹503.03 crore (Rural Electrification Corporation Limited: ₹161.60 crore, Power Finance Corporation Limited: ₹341.17 crore and Housing and Urban Development Corporation Limited:(HUDCO) - ₹0.26 crore and penal interest of ₹0.25 crore (HUDCO – ₹0.12 crore and 10 different banks:₹0.13 crore).

Failure to reduce the gap between ACS and ARR

2.4.1 As per the Scheme, the gap between the Average Cost of Supply (ACS) and Average Revenue Realised (ARR)[13] should be brought to zero by 2018-19. Accordingly, in the MoU it was projected to earn profit of ₹370.61 crore in 2018-19. Against this, TANGEDCO reported a loss of ₹12,623.41 crore in that year. The increase in loss during 2018-19 was mainly on account of non-accrual of revenue due to revision of tariff at the rate of six *per cent* (₹3,248.42 crore) as envisaged in the MoU, increase in the employee cost on account of revision of salaries and wages (₹1,329.54 crore), increase in power purchase cost by ₹2,487.44 crore on account of revision of rates for Central Generation Stations and recognition of interest charges for the past years payable to TANTRANSCO as well as increase in the borrowings towards capital expenditure on projects to the extent of ₹596.37 crore.

The details of Financial Performance of TANGEDCO during the years 2015-16 to 2019-20 are given in **Annexure-1.**

The non-achievement of the targeted profit had resulted in increase in the gap between the ACS and ARR over these years. The details of targeted ACS, ARR and the gap during 2015-20 are given in **Table 5.**

Table 5: Details showing year-wise ARR, ACS and its gap

Sl. No.	Particulars	Pre UDAY	UDAY period			Post UDAY
		2015-16 (Base Year)	2016-17	2017-18	2018-19	2019-20
1	Total Revenue (₹ in crore)	49705.39	56012.12	58581.08	61666.73	65177.10
2	Total cost (₹ in crore)	55492.21	60360.88	66341.86	74290.14	77142.03
3	**Deficit (₹ crore)**	**5786.82**	**4348.76**	**7760.78**	**12623.41**	**11964.93**
4	**Accumulated losses (₹ crore)**	**55820.83**	**61177.78**	**70991.88**	**87895.34**	**99860.32**
5	Units Input (Million Units)	96761	102545	104076	112111	111912
6	ARR (₹ per unit) (1) / (5)	5.13	5.46	5.63	5.50	5.82
7	ACS (₹per unit) (2) / (5)	5.73	5.89	6.38	6.63	6.89
8	**Gap between ARR and ACS (₹ per unit)** (6) - (7)	**-0.60**	**-0.43**	**-0.75**	**-1.13**	**-1.07**

(Calculated based on the guidelines issued by MoP).
Source: As per Annual Reports of TANGEDCO.

It is evident from the Table above that the ARR was lesser than ACS in all the years. Instead of targeted reduction of gap between ARR and ACS, this gap increased from ₹0.60 in 2015-16 to ₹1.07 per unit in 2019-20 (78.33 *per cent)*. This shows that rather the envisaged improvement in performance of TANGEDCO, it has deteriorated.

GoTN replied (October 2021) that as increase in Tariff would be tariff shock to consumers and would affect growth of the State, TANGEDCO took alternative method to reduce the gap between ACS and ARR through

[13] ACS is the average cost incurred per Unit and ARR is the average revenue realised per Unit.

reduction of cost of supply and increase the revenue with the present tariff such as replacement of mechanical meters with static meters, procurement of power by complying Merit Order Despatch (MoD), competitive bidding, decommissioning of old thermal plant at Ennore etc. The reply is not convincing as even after taking such measures, the gap between ACS and ARR had increased by 78.33 *per cent*.

Audit observed that the increase in the gap between ARR and ACS was mainly on account of the following reasons:

- Non-revision of tariff to reflect the cost of supply,
- Inefficiency of generating stations like., low Plant Load Factor, higher fuel cost,
- Higher cost in power purchase,
- Higher interest cost,
- Non-achievement of AT&C losses to the desired level.

The inefficiencies in achieving the above milestones are discussed in the following paragraphs:

Amortization of Regulatory Asset against the fund provided by GOTN

2.4.2 As per Regulation 13 of the Tariff Regulations of TNERC 2005, where a licensee (TANGEDCO) could not fully recover the revenue gap approved by TNERC due to natural calamities and force majeure conditions, the revenue gap may be converted into Regulatory Asset, which shall be recovered within three years as decided by the Commission. In line with the Tariff Regulations, TNERC in its order of August 2017 had approved the revenue gap of ₹33,749 crore towards Regulatory Assets pertaining to 2011-12 to 2016-17. However, this Regulatory Assets were amortized by TNERC against the debt of ₹22,815 crore taken over by GoTN under UDAY. Thus, the fund provided under UDAY Scheme was indirectly taken away by way of adjustment against Regulatory Asset and thus, the objective of the Scheme to reduce the interest burden was vitiated. Audit observed that the amortization of regulatory assets was in deviation from the objective of the Scheme which rendered no benefits accruing to TANGEDCO.

GoTN in its reply (October 2021) stated that the audit observation is noted.

Non revision of tariff to match the cost

2.4.3 The details of revenue and expenditure during the five years ending 2019-20 are given below in **Table 6**:

Table 6: Details showing revenue and expenditure during 2015-20

(Amount: ₹ in crore)

Particulars	Pre UDAY	UDAY period			Post UDAY	TOTAL
	2015-16	2016-17	2017-18	2018-19	2019-20	
Units Sold (in MUs)	68,629	68,055	69,214	76,126	77,391	359415
Revenue Received	49,705.39	56,012.12	58,581.08	61,666.73	65,177.10	2,91,142.42
Increase of revenue (in percentage)	16.93	12.69	4.59	5.27	5.69	--
Total Expenditure/cost	55,492.21	60,360.88	66,341.86	74,290.14	77,142.03	3,33,627.12
Increase of expenditure/cost (in percentage)	14.66	8.77	9.91	11.98	3.84	--
Deficit	**5,786.82**	**4,348.76**	**7,760.78**	**12,623.41**	**11,964.93**	**42,484.70**

(Source: As per Annual Accounts of TANGEDCO)

It may be seen from above table that

- the total revenue earned by TANGEDCO during the period 2015-20 was ₹2,91,142.42 crore which was not sufficient to meet the total expenditure of ₹3,33,627.12 crore incurred during the same period. This resulted in a shortfall of ₹42,484.70 crore.
- even though the revenue of TANGEDCO increased from ₹49,705.39 crore during 2015-16 to ₹65,177.10 crore during 2019-20, due to increase in number of units sold, the increase in the percentage of revenue had decreased from 16.93 *per cent* during 2015-16 to 5.69 *per cent* during 2019-20.

Audit observed that the revenue growth got decreased for the reason that the increase in Tariff on all consumers of TANGEDCO was made only in the December 2014. In the subsequent revision made in August 2017, the tariff for domestic consumers was reduced at the request of TANGEDCO/GoTN and the tariffs for other consumers were kept unchanged. Thus, Tariff for power was either reduced (for domestic consumers) or kept frozen (for other consumers) since December 2014. Despite this shortfall and increase in the deficit, TANGEDCO and GoTN did not file tariff petition before TNERC to increase its revenue as explained in the following paragraphs:

Failure to seek tariff hike as stipulated in the MoU

2.4.4 As per Clause 4.1 of UDAY Scheme, DISCOMs shall make tariff revision on quarterly basis particularly to offset fuel price increase. It was also required in Clause 1.3 (i) of MoU that TANGEDCO shall prepare the Accounts and file Tariff Petitions on time. Further, as per Regulation 6 of the Tariff Regulations[14] read with Regulation 23 of the Multi Year Tariff (MYT)

[14] Tamil Nadu Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulation, 2005.

Regulations[15], TANGEDCO shall file application to TNERC for determination of tariff for each year of the Control Period (a period of three years) for retail supply of electricity along with the Aggregate Revenue Requirement[16] (ARR). However, as per the request (October 2016) from the State Government, the requirement of quarterly revision of tariff was dispensed with by MoP, GoI. As per the provisions of Tariff Regulations, 2005 (Regulation 6) the tariff petition should be filed before 30th November of the current year to take effect from the ensuing year. The same was reiterated in clause 1.3(i) of MoU. Further, MoU also envisaged a tariff hike of six *per cent* in 2018-19. Against this annual requirement of determination of tariff, TANGEDCO had filed tariff petition only once in January 2017. No tariff petition was filed thereafter.

Audit noticed that after joining the UDAY Scheme, TANGEDCO had filed the tariff petition only once in January 2017 seeking tariff revision for the control period i.e., FY 2016-17 to FY 2018-19. Despite increase in deficit of TANGEDCO, the tariff for domestic consumers was marginally reduced and the existing tariffs for the remaining categories of consumers were retained. Audit observed that though Regulation 23 of MYT Regulations, 2009 stipulated that the licensee shall file application for determination of tariff for each year of the control period, no annual tariff petition was filed for the subsequent periods i.e., for the years 2018-19 onwards (August 2021). Neither the GoTN nor TANGEDCO had elucidated the reasons for non-revision of tariff as required in the Tariff Regulations and stipulations in the UDAY scheme. In this connection, Audit observed that

- Despite the shortfall in revenue year after year, TANGEDCO did not file the tariff petition before TNERC seeking annual tariff hike. It did not approach the TNERC seeking for six *per cent* tariff hike envisaged in the MoU. No alternate plan was in place to augment the revenue to meet the cost of supply. This was against the basic principles of the UDAY scheme which envisaged the financial turnaround by 2018-19. The short fall in revenue on account of failure to seek the tariff hike stipulated in the MoU worked out to ₹6,574.97[17] crore (₹3,248.42 crore in 2018-19 and ₹3,326.55 crore in 2019-20).

- Considering the anticipated savings of interest charges under UDAY Scheme, TANGEDCO proposed to give up a portion of its savings to reduce the burden on the State Government on tariff subsidy and GoTN approved (December 2016) the proposal. Accordingly, TANGEDCO in its tariff petition filed before TNERC submitted (January 2017) a proposal for reducing subsidy portion of energy charges for domestic category of consumers and the same was approved by TNERC in its Tariff order of August 2017. Accordingly, TANGEDCO had foregone the subsidy receivable totalling ₹6,505.69 crore during the years 2017-18, 2018-19 and 2019-20. Audit observed

[15] TNERC (Terms and Conditions for Determination of Tariff for Intra State Transmission/Distribution of Electricity under MYT Framework) Regulations, 2009.

[16] Revenue required to meet expenses of the TANGEDCO which TNERC would permit to be recovered through tariffs and charges.

[17] Six *per cent* revenue earned during the years 2018-19 and 2019-20.

that the GoTN, indirectly taken away the anticipated benefit of saving of interest cost on account of takeover of debt of ₹22,815 crore by directing TANGEDCO to file tariff petition (January 2017) for reduction of tariff of domestic consumers in order to reduce the subsidy burden on GoTN, which is against the provisions of UDAY Scheme.

GoTN in its reply (October 2021) stated that the condition for quarterly revision was excluded while executing the MoU and stated that other points are noted.

Delay in submitting subsidy proposal

2.4.5 Subsidy is also one of the main sources of revenue to the DISCOMs. GoTN extends free supply / concessional tariff to six[18] categories of consumers. In such circumstances, as per Section 65 of Electricity Act, 2003, GoTN was required to pay the subsidy amount decided by TNERC in advance to TANGEDCO to compensate the concessional tariff. TNERC, in its subsidy orders, advised GoTN to release the subsidy amount in advance for Domestic category consumers on monthly basis, Places of Public Worship category on quarterly basis and others on half yearly basis. Tariff Regulations stipulated that TANGEDCO should file petition for Tariff revision by 30 November of every year so that TNERC could pass order for revision of tariff in the 01 April of the ensuing financial year. Considering above parameters specified for Tariff petition, TANGEDCO should have submitted request letter for subsidy at least by 30 November of every year so that TNERC could pass necessary orders for releasing the subsidy from the first month onwards of the ensuing year as envisaged in Section 65 of the Electricity Act, 2003. Details of request letters submitted by TANGEDCO as against due date and the amount passed by TNERC are given in **Table 7** below:

Table 7: Statement showing delay in submission of tariff subsidy letters

Sl. No.	Year	Due date for filing of petition	Date of request letter from TANGEDCO	Delay in days	Tariff Subsidy Order of TNERC	Tariff Subsidy Ordered (₹ in crore)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	2015-16	30-11-2014	20-07-2015	232	14-10-2015	6,698.20
2	2016-17	30-11-2015	13-06-2016	196	02-08-2016	8,131.56
3	2017-18	30-11-2016	25-09-2017	299	06-11-2017	7,626.46
4	2018-19	30-11-2017	15-10-2018	319	30-11-2018	7,731.67
5	2019-20	30-11-2018	21-08-2019	264	06-09-2019	8,430.13

(Source: TNERC orders for Tariff Subsidy)

Audit observed that during the UDAY period, TANGEDCO delayed the submission of request letters for subsidy each year and the delays were in the range of 196 to 319 days. Consequently, the orders passed by TNERC was also delayed, which resulted in delayed release of subsidy amounts by GoTN

[18] (i) Agricultural, (ii) Domestic (iii) Actual Places of Public Worship, (iv) Power loom (v) Handloom and (vi) Lift Irrigation Cooperative Societies for Agriculture from 2004.

beyond the due dates. The delay in receipt of subsidy had an impact on the working capital requirements of TANGEDCO. To tide over such working capital requirements, TANGEDCO had resorted to cash credit facilities from banks with interest rates ranging from 10.79 to 12.50 *per cent* during 2015-20. Audit worked out the additional interest cost incurred by TANGEDCO on this account to ₹123.62 crore, which could have been avoided by submitting request letters within the due dates and timely receipt of payment from GoTN.

GoTN in its reply (October 2021) stated there was no loss due to delay in receipt of subsidy order. The reply is factually incorrect for the reason that as against the possibility of receipt of subsidy amount from April onwards, the receipt was delayed beyond August onwards (please refer Table 7). Receipt of subsidy in advance as stipulated in the Tariff Regulations could have reduced the working capital requirement of TANGEDCO in the respective years and thus additional interest of ₹123.62 crore was avoidable.

Loss of revenue due to subsidy claim based on number of service connections instead of power consumed

2.4.6 As per Section 65 of the Electricity Act, 2003, if the State Government requires the grant of any subsidy to any consumer or class of consumers in the tariff determined by the State Commission under section 62, the State Government shall, notwithstanding any direction which may be given under section 108, pay, in advance and in such manner as may be specified, the amount to compensate the person affected by the grant of subsidy in the manner the State Commission may direct, as a condition for the licensee or any other person concerned to implement the subsidy provided for by the State Government.

Audit noticed certain deficiencies in calculating the subsidy receivable from the State Government which resulted in increase in the loss of TANGEDCO and also impacted on the working capital requirement of TANGEDCO. The details are discussed below:

i. Agricultural Service Consumers

As per Section 55 of the Electricity Act, 2003, TANGEDCO was required to provide meters to all the consumers. Further, TNERC in its order dated 31 July 2010 directed TANGEDCO to complete the process of providing meters to all the agricultural consumers by September 2012. TNERC in its tariff order (December 2014/August 2017), fixed a tariff rate of ₹3.22 per unit for agricultural consumers if the services are metered and for unmetered services, the tariff rate was fixed as ₹2,875 per Horse Power (HP) per annum. As the power supply to the agricultural consumers is free of cost, the entire tariff charges are to be collected as subsidy from GoTN. In pursuance of the above as well as the tariff notifications, TANGEDCO had submitted subsidy tariff letters every year to TNERC based on the total connected load of the agricultural consumers. Based on these petitions, TNERC had approved a total tariff subsidy of ₹18,339.50 crore during 2015-20.

Audit noticed that up to the end of March 2020, meters have been installed to 14.36 lakh agricultural services (total connected load 97.90 lakh HP) representing 67.56 *per cent* of the total number of service connections. Based on metered connection's consumption, TANGEDCO computed the consumption for un-metered connections also and as per TANGEDCO's annual accounts, the computed consumption for all agricultural consumers (metered and un-metered) was in the range of 11,250 to 13,812 MUs during 2015-20. Audit analysis revealed that the subsidy receivable based on the consumption pattern was higher than the subsidy claimed based on the connected load. The shortfall on this account worked out to ₹1,429.68 crore during 2015-20 as detailed in **Annexure-2 (a).**

Audit observed that in pursuance of the directives of TNERC, TANGEDCO had installed the meters at agricultural connection at a cost of ₹112.90 crore to assess the actual consumption. However, even after installation of meters to the extent of 67.56 *per cent* for agricultural services, TANGEDCO failed to calculate the subsidy based on the actual energy recorded in the meters. The subsidy receivable based on the actual meter reading was higher than the subsidy claimed based on connected load. Non-installation of meters to all the agricultural consumers was the violation of the directives of TNERC and consequent loss of revenue to TANGEDCO to the extent of ₹1,429.68 crore.

GoTN replied (October 2021) that all agricultural service connections could not be metered due to socio-political issues and opted for subsidy claim on the basis of connected load (HP). The fact remains that the directives of TNERC to complete the metering process by September 2012 was overdue by nine years. Compliance to such directives could have entitled TANGEDCO to receive additional subsidy from the Government though it may not affect the consumers. Government/TANGEDCO needs to evolve an action plan for accurate energy accounting and realise the revenue due to the TANGEDCO.

ii. Hut Service Connections

Similar to the agricultural connections, orders were issued (30 March 2012) to complete the installation of meters for hut service connections by June 2012. Though, TANGEDCO had installed meters at 8.62 lakh (representing 77.38 *per cent* of the total hut services) hut service connections up to March 2020, but it failed to take cognizance of the consumption recorded in these meters for calculating the subsidy receivable from GoTN.

As per the Tariff Orders (December 2014) the rate for hut consumption would be ₹4.95 per unit if the services are metered and ₹145 per month if the service are not metered for the period 2015-20. As the supply to the hut consumers are free of cost, TANGEDCO had preferred the subsidy claim based on the number of connections instead of the consumption. This had resulted in short claim of subsidy totaling ₹111.81 crore during 2019-20 as detailed in **Annexure-2 (b).**

Audit observed that, in pursuance of the directives of TNERC, TANGEDCO had installed the meters at hut service connections at a cost of ₹67.77 crore to assess the actual consumption. However, even after installation of meters to the extent of 77.38 *per cent* for hut services, it failed to calculate the subsidy based on the actual energy recorded in the meters. Non-installation of meters to all Hut consumers was the violation of the directives of TNERC and consequent loss of revenue to TANGEDCO to the extent of ₹111.81 crore being the entitled subsidy based on the actual supply of energy to hut service connections.

GoTN replied (October 2021) that Hut services were not metered and subsidy could not be claimed based on computed consumption made by consumers. However, reply of GoTN was factually incorrect as actual number of metered hut services as per the online Management Information System (MIS) report generated by TANGEDCO for a specific Audit Requisition was 8.62 lakh as on 23 February 2021. However, the fact remains that the directives of TNERC to complete the metering process was not complied with. Compliance to such directives could have entitled TANGEDCO to receive additional subsidy from the Government though it may not affect the consumers. Government/TANGEDCO needs to evolve an action plan for accurate energy accounting and realise the revenue due to the TANGEDCO.

Performance of generating stations of TANGEDCO

2.4.7 The UDAY Scheme envisaged reduction of cost of power generation for which improving the efficiency of the State Generating units was essential. The total expenditure on generation and a comparison of power generated from own units with total units of power available for sale are given in **Table 8** below:

Table 8: Comparison of generation and purchase and total units available for sale

(Amount: ₹ in crore)

Sl. No.	Particulars	Pre UDAY	UDAY Period			Post UDAY
		2015-16	2016-17	2017-18	2018-19	2019-20
1	Cost of generation	11,100.19	10,532.05	9,970.99	11,262.34	10,242.51
2	Units of generation (in MUs)	31,838	26,676	25,443	30,772	25,977
3	Cost per unit of generation (₹ per Unit)	3.49	3.95	3.92	3.66	3.94
4	Cost of power purchase	23,372.91	26,573.11	30183.34	32747.13	33,801.48
5	Units of power purchase (in MUs)	54,087	60,689	61,955	64,555	68,381
6	Cost per unit of purchase (₹ per Unit)	4.32	4.38	4.87	5.07	4.94
7	Total Units of generation and purchase – available for sale (in MUs)	85,925	87,365	87,398	95,327	94,358
8	Percentage of generation to total units (2)/(7) x 100	37.05	30.53	29.11	32.28	27.53
9	Percentage of purchase to total units (5)/(7) x 100	62.95	69.47	70.89	67.72	72.47

(Source: Annual Reports of TANGEDCO for the respective years)

From the Table above, it may be seen that the percentage of generation to total units showed a declining trend over the years except in year 2018-19. As the percentages of power generation was only in the range of 27.53 to 37.05 *per* *cent,* to meet the demand, TANGEDCO was depending mainly on power procured from other sources and the percentage of power purchase to total units of generation and purchase was in the range of 62.95 to 72.47 *per cent*. Details of cost of power purchase to sales are discussed in para 2.14.13.

Major source of generation of power by TANGEDCO was from its Thermal Power Plants (TPS) only and share of TPS out of total generation was in the range of 76.34 to 86.09 *per cent* during 2015-20. Analysis of performance of TPS are discussed below.

Low plant load factor in thermal power stations

2.4.8 TNERC prescribed a norm of 80 *per cent* Plant Load Factor (PLF)[19] for all TPS. The details of installed capacity of TPS and actual PLF against the target during 2015-20 are given in **Table 9** below:

Table 9: Details showing the PLF of TPS during 2015-20

Particulars	Pre UDAY	UDAY period			Post UDAY
	2015-16	2016-17	2017-18	2018-19	2019-20
Installed capacity (MW)	4,660	4,660	4,320	4,320	4,320
Targeted PLF (*per cent*)	80.0	80.0	80.0	80.0	80.0
Actual PLF (*per cent*)	64.9	57.0	60.4	68.7	56.8
Cost of TPS per unit (in Rupees)	3.87	4.17	4.35	4.30	4.70
Station wise PLF of TANGEDCO's TPS					
TTPS	76.80	60.30	57.00	68.56	57.50
MTPS-I	81.01	77.88	69.41	78.92	62.60
MTPS-II	74.49	65.57	46.63	59.99	49.26
NCTPS-I	80.39	67.23	76.19	72.46	61.00
NCTPS-II	61.65	60.71	55.73	63.85	53.81
ETPS[20]	14.81	10.23	--	--	--

Source: Statistics at a Glance of TANGEDCO for the respective years and Tariff regulations

It may be seen from above Table that TANGEDCO could not achieve the PLF targets fixed by TNERC. PLF of TPS did not show better performance than the year 2015-16 except in the year 2018-19, in which demand for power suddenly got increased by 9.99 *per cent* when increase in demand for other years was only in the range of 1.66 to 2.15 *per cent*. It may further be seen that the cost of power showed an increasing trend except in the year 2018-19 in which performance of TPS was better. TANGEDCO did not take effective steps to reduce cost of power by handholding with NTPC for improving efficiency of TPS. The Company could not get effective support from the GoI with regard to better supply of coal. Moreover inefficiencies were noticed

19 As per TNERC Regulations, 2005, PLF has been defined as the total sent out energy corresponding to scheduled generation during the given period, expressed as a percentage of sent out energy corresponding to installed capacity in that period

20 The generation from 340 MW Ennore Thermal Power Station was stopped from 16 November 2016 and the plant was shut down permanently from 31 March 2017.

regarding acceptance of lower grade of coal than the declared grade in the PA on Coal Management in TPS of TANGEDCO (Paragraph 2.9.8 of Audit Report (Public Sector Undertakings) for the year ended 31 March 2019). Issues regarding handholding of NTPC and facilitation committed by GoI in the MoU for supply of coal are discussed in the ensuing paragraphs.

GoTN in its reply (October 2021) attributed the increase in the cost of generation to location of TANGEDCO's plants far from the coal mines and frequent variation and operation of plants at partial load at the instance of State Load Despatch Centre (SLDC). The reply is not convincing for the reason that the operation of the plants with lower PLF could be avoided/reduced had TANGEDCO taken steps for improving performance of TPS and better supply of coal was made.

Failure to handhold with NTPC for improving performance of TPS

2.4.9 In order to improve the performance of generating stations of TANGEDCO, it was provided in the UDAY scheme vide Clause 5.3 (ii) that NTPC would handhold. However, TANGEDCO consulted (January 2017) NTPC for improving the efficiency of MTPS-I only and in respect of other TPS it has not consulted NTPC. In this regard, audit observed that the PLF of MTPS-I was better than the PLF of the other TPS in 2015-16 i.e. even before referring to NTPC and continued to be better than other TPS in the ensuing years also. The overall PLF of TPS of TANGEDCO showed a declining trend due to Reserved Shutdown Hours (RSH) enforced by SLDC for complying with principles of Merit Order Despatch (MOD). TANGEDCO could have approached NTPC to improve the performance of other TPSs also particularly TTPS, MTPS-II and NCTPS-II, which continued to show lower PLF. This indicated the failure of TANGEDCO to comply with the stipulations made in the MoU.

GoTN was silent on the audit observation about handholding of NTPC.

Lack of effective support from GoI with regard to supply of coal

2.4.10 Major obligations of GoI under UDAY Scheme were to facilitate with Ministry of Coal for increasing the supply of domestic coal, rationalization of coal price based on Gross Calorific value, etc.

Performance Audit on Coal Management in Thermal Power Stations of TANGEDCO was conducted to assess the efficiency in planning and procurement, transportation and handling, quality and quantity assessment, efficiency in consumption of coal during 2014–2019 and the outcome of audit has been included in the Report of the Comptroller and Auditor General for the year ended 31 March 2019 – Government of Tamil Nadu (Public Sector Undertakings). In the said Report various operational inefficiencies leading to excess expenditure were reported. Some of the observations, made in the report having a bearing on UDAY Scheme are given below:

i) Failure to make increased supply of coal: As per Clause 5.2 (i) of UDAY Scheme, GoI shall take steps for increased supply of domestic coal. Even though TANGEDCO had signed Fuel Supply Agreements (FSA) with the coal companies and a side agreement[21] with Eastern Coalfields Limited (ECL), the companies did not supply the annual agreed quantity of 22.60 Million Metric Tonnes (MMT) during the period 2017-19. Consequently, the TPS of TANGEDCO faced supercritical[22] stock position during the period 2017-19 for days ranging from 22 to 387 causing loss of generation. This has been discussed in detail in paragraph 2.7.1 and 2.7.5 of the Report of C&AG of India on PSUs for the year ended March 2019- GoTN (Report No. 2 of 2021).

GoTN in its reply stated that the shortfall in supply was on account of coal allocation by coal companies and rake allocation by the Railways based on the average consumption and not for the total normative coal consumption. It further stated that the shortfall was compensated through procurement of imported coal. The reply confirms that GoI did not fulfill its obligations for increased supply of domestic coal and the objective of the Scheme remained unfulfilled.

ii) Lack of benefit from coal linkage rationalization: As per Clause 5.2 (ii) of UDAY Scheme, GoI shall take steps for coal linkage rationalization. CIL invited (April 2020) Expression of Interest for rationalization of existing coal linkages and based on which, TANGEDCO requested (May 2020) Coal India Limited (CIL) for transfer of coal linkages from Central Coalfields Limited (CCL) and Eastern Coalfields Limited (ECL) to Mahanadi Coalfields Limited (MCL) to the extent of 4.605 MMTPA. In this regard, TANGEDCO expected that there would be cost savings of ₹1,255.36 crore per annum on account of differential prices between ECL/CCL and MCL as well as lesser transportation cost. However, CIL agreed (November 2020) for re-allocation of coal only to the extent of 2.105 MMT as it did not agree for 2.50 MMTPA under the side agreement. Thus, TANGEDCO was not in a position to reap benefits from above reallocation due to pre-existing short supply of coal by MCL and lesser allocation of wagons by Railways.

GoTN in its reply stated that TANGEDCO had entered an MoU with SCCL for supply of 4.20 MMT in February 2021 and so far received 1.86 MMT. However, the fact remains that actual benefits started accruing only during post UDAY period.

iii) Failure to ensure quality of coal by GoI: As per Clauses 5.2 (iv) to (vi) of UDAY Scheme, GoI shall take steps such as coal price rationalization based on Gross Calorific Value (GCV), correction in coal grade slippage through reassessment of each mine and 100 *per cent* washed coal. But the rationalization of coal price based on the GCV was not implemented up to August 2020. Further, in respect of correction in coal grade slippage through reassessment of each mine, TANGEDCO stated that it had taken up the matter to Coal Controller for appropriate action. Moreover, TANGEDCO did not get the 100 *per cent* washed coal for G10 Grade and above by 01 October 2018, as stipulated in the Scheme. Thus, receipt of

[21] An agreement entered into by TANGEDCO with ECL for supply of additional quantity of coal over and above the quantity agreed to in the Fuel Supply Agreement

[22] Coal stock for less than 4 days' usage.

required grade of coal by TANGEDCO remained unachieved. The impact on account of acceptance of lower grade of coal than the declared grade has been discussed in detail in paragraph 2.9.8 of the Audit Report (Public Sector Undertakings) for the year ended 31 March 2019.

GoTN in its reply, while confirming the non-receipt of washed coal stated that CIL informed (April 2018) that implementation of coal price rationalization based on GCV is kept in abeyance and the final decision of Coal Controller on the request of TANGEDCO to ensure the supply of quality coal is awaited. However, the fact remains that TANGEDCO is yet to attain the benefits envisaged in the Scheme in respect of coal price rationalization based on GCV.

Failure to achieve the target under PAT scheme for improving energy efficiency of power stations

2.4.11 GoI had enacted (October 2001) Energy Conservation Act, 2001 (EC Act) with the vision to enhance the efficiency of all the energy consuming sectors. The Bureau of Energy Efficiency (BEE), the designated agency for implementation of programmes under the EC Act, launched (2008) "Perform, Achieve and Trade" (PAT scheme). As per PAT, the Designated Consumers[23] (DC) were required to achieve the targets fixed for Station Heat Rate[24] (SHR) in order to reduce the energy consumption. DCs who have achieved the targets fixed[25] would be issued Energy Saving Certificates (ESC), which are tradable in the market and DCs who do not achieve the targets are required to purchase ESC in the market.

As a part of improving the efficiency of power plant, UDAY scheme incorporated Clause 1.3.h.iv in the MoU and mandated TANGEDCO to implement PAT in its power stations.

Audit noticed that during the PAT Cycle I from the year 2012 to 2015, due to non-achievement of the notified target level, TANGEDCO had to procure 60,269 ESCs and incurred an expenditure of ₹6.02 crore which was avoidable. Despite incurring such avoidable expenditure under PAT Cycle I, no corrective action was taken to improve the SHR during PAT Cycle II, which was in force for the years 2016 to 2019 resulting in the necessity for purchase of ESC. The details of the station wise target for SHR notified by BEE, achievement and the shortfall during PAT Cycle II is given in **Table 10** below:

[23] This denotes large energy intensive industries and includes thermal power plants.

[24] Is a measure of the efficiency of power plant that convert fuel into heat and electricity i.e., the fuel used to generate one Kilowatt hour of electricity.

[25] MoP had prescribed (March 2012) energy consumption norms and standards for all the DCs which are legally binding on them.

Table 10: Details of target for SHR and achievement during PAT Cycle II

Sl. No.	Station	Notified SHR (Kcal/Kwh)	Projected Unit Net SHR (Kcal/Kwh)	Actual Deviation/Unit SHR (Kcal/Kwh)	Net Generation during baseline year (MU)	Number of ESCs to be procured
1	2	3	4	5= 3-4	6	7
TANGEDCO's TPS which have achieved the targets						
1	MTPS-I	2,751.27	2,717.88	33.39	5,697.40	19,024
2	NCTPS-I	2,739.23	2,701.73	37.50	3,864.00	14,492
3	VGTPS-I	2,133.19	2,101.38	31.81	1,014.87	3,228
					Total - A	**36,744**
TANGEDCO's TPS which have not achieved the targets						
1	TTPS	2,756.32	2,797.12	(-) 40.8	7,043.33	- 28,737
2	KGTPS	2,345.32	2,451.21	(-) 105.89	452.73	-4,794
3	T(K)GTPS	2,475.17	3,534.24	(-) 1,059.07	373.32	-39,537
					Total - B	**- 73,068**
Number of Energy Saving Certificates to be procured (A) –(B)						**36,324**

Source: Data provided by TANGEDCO

Audit observed that while three power stations *viz.,* MTPS I, NCTPS I and VGTPS I had achieved the notified SHR level and earned 36,744 ESCs, the other three Stations *viz.,* TTPS, KGTPS and T(K)GTPS did not achieve the targets and were required to buy 73,068 ESCs. Thereby, on account of non-achievement of the targets, TANGEDCO has become liable to procure 36,324 ESCs (net) from Power Exchanges. The estimated expenditure on this account worked out to ₹3.63 crore, which was avoidable.

GoTN in its reply stated that in TTPS it could not achieve the SHR due to condenser vacuum problem in Unit I and non-acceptance of calculation for TTPS by BEE. In respect of T(K)GTPS, TANGEDCO had obtained exemption from the purview of PAT cycle II citing inadequate availability of gas and poor quality and scarcity of raw water. However, the fact remains that despite specific mandate under UDAY Scheme, TANGEDCO did not comply with the requirement of SHR in overall perspective. The credit earned from its three power stations was lesser than the compensation payable on account of other three stations and thus the expenditure on this account was avoidable.

Failure to include Reserved Shutdown hours in calculation of Plant Availability Factor

2.4.12 As per Tariff Regulations, expenses of generating stations would be segregated into variable charges (i.e., fuel costs) and fixed charges. As per Regulation 42 of Tariff Regulations, the entire fixed charges of TPS would be considered for inclusion in Tariff, if the Plant Availability Factor (PAF) of 80 *per cent* is achieved. If PAF of 80 *per cent* is not achieved, fixed charges would be considered on pro rata basis. Based on the true-up petition filed by TANGEDCO for the year 2015-16, TNERC disallowed fixed charges to the tune of ₹56.55 crore for not achieving 80 *per cent* PAF. A detailed examination of the reasons for the above disallowance revealed in Audit that TANGEDCO had excluded Reserved Shutdown Hours (RSH) for calculation of PAF and reported lesser PAF resulting in disallowance of fixed charges for not achieving the prescribed 80 *per cent.*

Audit noticed that, to comply with Merit Order Despatch[26] (MOD) criteria, State Load Despatch Centre (SLDC)[27] issues directions to TANGEDCO to put its power stations on shutdown mode for a specific duration, such period is commonly called as Reserved Shutdown Hours (RSH). As the RSH was on account of forced situation, the scheduled generation capacity should be considered as deemed PAF by including the RSH for arriving at the PAF. This would enable TANGEDCO to receive the fixed charges on its deemed PAF. But, TANGEDCO had excluded RSH for calculation of PAF and reported lesser PAF resulting in disallowance of fixed charges for not achieving the prescribed 80 *per cent*.

TANGEDCO in its tariff petition for the control period of 2016-17 to 2018-19 did not consider the RSH for calculation of PAF and showed the PAF at lower level. Thereby it lost the claim towards fixed charges. Audit worked out the loss on account of this failure to ₹1,276.38 crore.

GoTN in its reply (October 2021) accepted the audit observation and stated that Reserve Shut Down Hours will be considered for arriving plant availability factor to recover the fixed cost at the time of filing tariff petition and true-up for the FY from 2016-17 to 2018-19.

Procurement of Power

2.4.13 As per Clause No. 1.3 (l) of Tripartite MOU, "TANGEDCO shall continue to procure power through the transparent process of competitive bidding". The details of power purchased by TANGEDCO during 2015-20 are given in **Table 11** below:

[26] Under MOD, energy available from 'must run' plants, *viz*., nuclear, wind and solar would be scheduled first followed by other plants based on merit order by considering increasing level of variable cost

[27] The Apex Body formed under section 32 of Electricity Act, 2003 to ensure integrated operation of the Power system and responsible to monitor grid operation in the State. SLDC function under Tamil Nadu Transmission Corporation Limited (TANTRANSCO), a sister PSU of TANGEDCO.

Table 11: Details of power purchase during 2015-20

(Amount: ₹ in crore)

Sl No.	Particulars	Pre UDAY	UDAY Period			Post UDAY
		2015-16	2016-17	2017-18	2018-19	2019-20
1	Total expenditure for the year excluding wheeling charges	47,247.49	49,549.40	55,453.42	62,858.97	63,797.62
2	Purchase of power	23,372.91	26,573.11	30183.34	32747.13	33,801.48
3	Percentage of power purchase cost to total cost (2)/(1)x100	49.5	53.6	54.4	52.1	53.0
4	Average cost of power purchase per unit (in Rupees)	4.32	4.38	4.87	5.07	4.94
5	Total Units sold in MUs	68629.32	68055.09	69214	76126	77391
6	Power purchase in MUs	54087.32	60689.09	61955	64555	68381
7	Percentage of Power purchased to total sales (6)/(5)x100	78.81	89.18	89.51	84.80	88.36

(Source: TANGEDCO's annual report for the respective years)

Power purchase cost is one of the major expenditure and constituted 49.5 to 54.40 *per cent* of the total expenditure during 2015-20. It is evident from the above table that the expenditure on power purchase was increasing year after year and TANGEDCO's dependence on power purchase ranged from 78.81 to 89.51 *per cent.* The cost per unit of power purchase during the UDAY period was increasing and stood at ₹5.07 and ₹4.94 during 2018-19 and 2019-20 respectively, against ₹4.32 during pre UDAY level during 2015-16.

Performance Audit to assess the efficiency of TANGEDCO in power purchase during April 2013 to March 2018 was conducted and the outcome of audit has been included in the Report of the Comptroller and Auditor General for the year ended 31 March 2018 – Government of Tamil Nadu (Public Sector Undertakings). In the said Report various operational inefficiencies leading to excess expenditure were reported. In addition, the present audit revealed the following instances of avoidable expenditure in purchase of power which was one of the contributing factor for increase in the ACS.

Non-compliance with the principle of Merit Order Despatch

2.4.14 As per Clause 8 of the Tamil Nadu Electricity Grid code, SLDC shall have the responsibility for optimum scheduling and dispatch of electricity which ensures availability of power for each block of 15 minutes for the day. SLDC operates round the clock for the purpose of managing the operation of the transmission system and coordination of generation and drawal on real time basis. These operations of SLDC are guided by the principle of Merit Order Despatch (MOD) in power procurement, whereby the energy sourced from 'must run[28]' power plants should be given priority. Hence, priority would be given to cheaper power except in case of 'must run' plants.

Audit observed that the principle of MOD was not scrupulously followed in scheduling of power by SLDC and TANGEDCO procured costlier power though cheaper source was available by then. Illustratively, TANGEDCO had entered into agreement with NTPC for procuring power at the rate of ₹1.65 per unit from Talcher TPS- Stage II, Orissa which declared an availability of 3,207.35 MUs during 2019-20. Against the above declared availability, SLDC had scheduled only 3,045.81 MUs (representing 94.96 *per cent*). The shortfall was sourced from high cost source at an average rate of ₹2.55 per unit during 2019-20.

During 2018-19 and 2019-20, TANGEDCO procured 44.53 MUs (from nine Long Term Open Access[29] (LTOA) and two Medium Term Open Access[30] (MTOA)) and 280.71 MUs (from ten LTOA and one MTOA) of costlier power respectively though cheaper power was available from other sources. The additional expenditure incurred by TANGEDCO on this account worked out to ₹28.45 crore. TANGEDCO did not bring the impact of additional expenditure to the notice of Tamil Nadu Transmission Corporation Limited (TANTRANSCO), the sister PSU under the same Energy Department of GoTN engaged in management of SLDC which was responsible to schedule the power purchase based on MOD through continuous monitoring of the demand-supply position for each 15 minutes block, for appropriate action.

GoTN in its reply stated that the Audit calculation was based on schedule utilized for the year 2018-19 and 2019-20 on annual basis whereas SLDC is following MOD in 15 minutes block wise. It further stated that even though high cost power was surrendered, it may bounce back to original beneficiary if it is not availed by the other States. Reply lacked justification as SLDC which was responsible for monitoring the demand-supply position for each 15 minutes' block should put in a robust system to optimize the procurement of power from cheaper source first. TANGEDCO may put in place a mechanism to review the system of exercising the MOD on daily basis to minimize the avoidable expenditure on this account.

Failure to renew the PPA at reduced offer rate

2.4.15 TANGEDCO signed (June 2012) Power Purchase Agreements (PPA) with Adani Enterprises Limited (M/s Adani) for supply of 200 MW power for five years from September 2012 to August 2017 at a levelised tariff rate of ₹4.99 per unit. M/s Adani requested (February 2017) for renewal of PPAs for a further period of two years (from September 2017 to August 2019) at the rate of ₹3.50 per unit. TANGEDCO did not take final decision on this proposal and the offer was not pursued further.

[28] Under MOD, energy available from 'must run' plants, *viz*., nuclear, wind and solar would be scheduled first followed by other power plants based on the order of increasing level of variable cost.

[29] LTOA is the right to use the inter-state transmission system for a period exceeding 12 years but not exceeding 25 years.

[30] MTOA is the right to use the inter-state transmission system for a period equal to or exceeding three months but not exceeding five years.

Audit observed that during 2017-20 TANGEDCO was purchasing power at exchanges, which ranged from ₹4.10 to ₹5.48 per unit. But it did not consider the request from M/s Adani for supply at lesser rate of ₹3.50 per unit. Failure to renew the PPA with M/s Adani at an offered rate of ₹3.50 per unit resulted in additional expenditure of ₹149.02 crore during September 2017 to August 2019.

TANGEDCO replied (May 2021) that before issuing LOA to M/s Adani, TANGEDCO had approved an offer from Goa Industrial Development Corporation (GIDC) for supply of power at the rate of ₹3.17 per unit from its proposed pithead TPS in Chhattisgarh State. In view of the above, renegotiation was called for, for which M/s Adani did not respond and hence the power was not availed from M/s Adani. The reply is not tenable as the offer from GIDC was from the proposed power station which will take few years to come up whereas the supply from M/s Adani was the readily available source. TANGEDCO did not purchase any power from GIDC as on date. Further, the offered rate of ₹3.50 per unit was already approved by TNERC and was lesser than the prevailing market rate which ranged from ₹4.10 to ₹5.48 per unit. Under the situation, instead of accepting the offered rate of ₹3.50 per unit which was competitive then, inviting M/s Adani for renegotiation to reduce the rate further lacked financial prudence. However, to meet the power requirement, it procured power at higher cost i.e., ₹4.10 to ₹5.48 per unit from power exchange. Thus, non-renewal of contract with lesser rate which was already approved by TNERC lacked justification.

GoTN in its reply (October 2021) stated that it had noted the above audit observation.

Procurement of costlier power under STOA

2.4.16 TANGEDCO placed (December 2018) orders on four suppliers for procurement of power ranging from 615 MW to 815 MW under Short Term Open Access (STOA)[31] during February to May 2019 at the variable rate of ₹5.20 per unit based on Tender No.10 and procured 2,000.85 MUs at a total cost of ₹1,040.44 crore.

Similarly, TANGEDCO placed (January 2020) orders for procurement of power ranging from 300 MW to 750 MW under STOA during February to May 2020 at an average variable rate of ₹4.01 per unit (Tender rates were in the range of ₹3.80 to ₹4.15 per unit) based on Tender No.11 and procured 1,289.47 MUs at a total cost of ₹524.04 crore.

Audit analysis indicated that there was an unutilised quantum of power contracted under LTOA and such unutilised quantum was 24.28 *per cent* (2,012 MUs) and 16.47 *per cent* (1365 MUs units) during February to May 2019 and February to May 2020 respectively. The contracted variable cost for unutilised quantum was ₹2.57 and ₹2.71 per unit respectively which was much lesser than the contracted price finalised under Tender 10 and 11. But, while indenting the monthly requirement, TANGEDCO did not consider the

[31] STOA refers to the right to use the inter-state transmission system for a period up to one month at one time.

unutilised quantum already available under LTOA and procured the power during the above period at a higher cost as given in **Table 12** below:

Table 12: Wasteful expenditure on procurement of power under STOA

Year	LTOA				STOA		Difference in rates under LTOA and STOA	Additional cost (₹ in crore)
	Contracted Quantum (in MU)	Units Purchased (in MU)	Unutilised (in MU)	Variable Cost per Unit (in ₹)	Quantum procured from STOA in MU	Rate paid under STOA contract		
1	2	3	4 = (2-3)	5	6	7	8 = (7 – 5)	9= (6x8)
Tender 10: February 2019 to May 2019	8,286	6,274	2,012 (24.28%)	2.57	2,000.85	5.20	2.63	526.22
Tender 11: February 2020 to May 2020	8,286	6,921	1,365 (16.47%)	2.71	1,289.47	4.01	1.30	167.63
Total								**693.85**

(Source: Data provided by TANGEDCO)

Note: Figures in brackets indicate the percentage of un-utilised quantum

From the Table above, it is evident that there was adequate/substantial quantum of unutilised quantum of power under LTOA during the peak demand period of February – May, but TANGEDCO did not assess the demand in both the years and procured power under STOA resulting in additional cost of ₹693.85 crore which was avoidable.

GoTN in its reply (October 2021) stated that, Audit has worked out unutilised quantum of energy based on contracted quantum instead of Declared Capacity given by the generator and if Declared Capacity had been considered, energy backed down was only 243 MU and 458 MU respectively in 2019 and 2020 respectively. Reply lacked justification as TANGEDCO should have insisted the suppliers to supply the agreed quantum.

Incorrect fixation of percentage of transmission loss

2.4.17 TNERC in its Tariff Order (August 2017) had approved Transmission loss as 3.81 *per cent* for the year 2018-19 which the suppliers are required to bear. Against this directive, TANGEDCO in the Tender No. 10 had fixed the transmission loss at 2.34 *per cent.* It was however seen that the actual transmission loss during 2018-19 and 2019-20 was 3.97 *per cent* and 3.93 *per cent* respectively which was much higher than the rates prescribed by TNERC. Thus, the payment to the suppliers based on lesser rate of transmission loss at 2.34 *per cent* instead of 3.81 *per cent* was against the directives of TNERC which resulted in undue benefit to the private suppliers to the extent of ₹22.89 crore.

GoTN in its reply (October 2021) stated that, as per TNERC direction, the revised (March 2018) transmission loss components have been indicated as 2.34 *per cent* only and the same quantum of transmission loss was adopted. The reply is not acceptable for the reason that as per the purchase order, the power was to be delivered at TANGEDCO's periphery level i.e., at 33 KV level only and TNERC had approved a transmission loss of 3.81 *per cent* for 33 KV for the year 2018-19 *vide* Transmission Tariff order of August 2017. Thus, the payment to the suppliers considering the transmission loss of 2.34

per cent was an undue benefit to the private suppliers for which responsibility needs to be fixed.

2.4.18 Operational turnaround

Aggregate Technical and Commercial Loss

2.4.18.1 Aggregate Technical and Commercial Loss (AT&C Loss) is combination of technical loss, inefficiency in billing, theft and inefficiency in collection of revenue. As per Clause 1.3 (b) of MoU, TANGEDCO shall endeavour to reduce AT&C losses from 14.58 *per cent* in 2015-16 to 13.50 *per cent* in 2018-19. To achieve the above targets, annual trajectory for containing the AT&C loss under each Divisions of TANGEDCO were also specified and the concerned Executive Engineers and Superintending Officers in charge of Operation and Maintenance Divisions/Circles were made responsible for reducing the same.

Central Electricity Authority (CEA) prescribed (June 2017) uniform methodology for calculation of AT&C Losses from the year 2016-17 onwards for all DISCOMs. CEA in its further clarification (August 2018), stated that the wheeling[32] units should not be included in net input energy and power sold for the purpose of calculation of AT&C losses. But, TANGEDCO included the wheeled units under Open Access both in the net input energy as well as the power sold and reported the AT&C Losses for the years 2015-16 to 2019-20. Consequently, AT&C loss reported by TANGEDCO was lesser than the AT&C losses calculated as per the methodology prescribed by CEA.

Hence, Audit worked out the actual AT&C Loss as per CEA methodology, compared the same with the targets set in the MoU and worked out the value of energy lost for not achieving the targets. The value of energy lost so worked out was ₹6,547.25 crore. Calculations made by Audit in this regard are given in **Annexure-3**.

In this connection, Audit observed that as TANGEDCO was not adopting the method prescribed by CEA, it was under-reporting the AT&C losses in the range of 2.24 to 3.41 *per cent* during 2015-20 as calculated in **Annexure-3**. Adding the units wheeled by the private generators under open access to input and output energy units was incorrect for the reason that wheeling units are not part of TANGEDCO's purchased quantity of power.

Audit further observed that

(i) The energy accounting for Agriculture and Hut service connections was computed based on number of connections and not on actuals.

(ii) Energy delivered by TANTRANSCO to the grid of TANGEDCO did not match with the energy accounted by TANGEDCO. Differences for the same, ranged between 1,353.18 MUs to 5,216.42 MUs during the years 2015-16 to 2019-20, which remained unreconciled while arriving at the AT&C loss.

[32] Wheeling means the operation whereby the distribution system and associated facility of a transmission licensee or distribution licensee are used by another person for conveyance of electricity on payment of charges.

(iii) During the Field Audit, out of 12[33] Circles test checked, Audit noticed that in 330 distribution feeders under eight Circles, the input energy was lesser than the output energy. This indicated that the meters installed in the feeders were not fool proof to calculate the actual AT&C losses.

TANGEDCO in its reply (August 2020) admitted that the EEs and SEs were made responsible to contain the AT&C losses within the target and further stated that AT&C losses were not calculated at Circle and Division levels as the feeder meters were not installed at boundaries of Divisions. TANGEDCO's reply confirms that there was no robust system in place for calculating the AT&C losses on actual basis which forced it to calculate the AT&C loss on adhoc basis.

Audit further observed that TANGEDCO did not achieve the targets set in the MoU for AT&C loss reduction measures such as Distribution Transformers (DT) metering, feeder improvement, slow progress in implementation of Integrated Power Development Scheme (IPDS) and Deen Dayal Upadhaya Gram Jyoti Yojna (DDUGJY) schemes and monitoring of UDAY Scheme as discussed in paragraphs 2.4.18.3, 2.4.20 and 3.1.3 of this Report.

TANGEDCO replied (March 2021) that CEA has proposed to incorporate few changes in the methodology already suggested by them to include the units wheeled under open access category for calculation of T&D losses as the network of DISCOMs are being utilized for wheeling purpose. TANGEDCO attributed non-achievement of target for the year up to 2018-19 to diversion of resources for restoration of electricity in the areas affected by Chennai Flood and other cyclones in Tamil Nadu. Further, it stated that the target for the year 2019-20 was achieved with a reported AT&C loss of 12.39[34] *per cent.* The reply is not acceptable as CEA instructions for calculating AT&C losses were not adhered to and the wheeling units are taken as input and sales and no energy loss on wheeling units was considered for calculation of AT&C loss. Further, the instructions (June 2017) of CEA is binding on all DISCOMs and the fact remains that TANGEDCO did not achieve the targets envisaged in the MoU.

GoTN in its reply (October 2021) stated that the target value of AT&C loss of 13.50 *per cent* for the year 2018-19 was fixed based on the baseline value of 14.58 *per cent* for the year 2015-16 which is inclusive of wheeling units and the loss on this account was only ₹1,664 crore. The reply is not acceptable as the methodology prescribed by CEA was applicable to all DISCOMs and also binding on TANGEDCO.

Billing and Collection Efficiencies

2.4.18.2 Billing efficiency refers to efficiency of DISCOM in billing energy input into grid and calculated as total Unit of energy billed divided by net input energy. Collection efficiency refers to efficiency of DISCOM to

33 Out of the 44 EDCs of TANGEDCO.

34 As per CEA methodology, AT&C loss in 2019-20 was 15.31 *per cent*, not 12.39 *per cent* as reported by TANGEDCO.

collect the billed revenue (including Tariff Subsidy) and calculated as the total revenue collection divided by billed revenue. Overall AT&C losses are calculated based on the formula[35] prescribed by CEA. The details of target and actual Billing and Collection efficiency during 2015-20 are given in **Table 13** below:

Table 13: Details of Billing Efficiency and Collection Efficiency

(Figures in percentage)

Year	Billing Efficiency (*per cent*)		Collection Efficiency (*per cent*)	
	Target	Achievement	Target	Achievement
2015-16 (Base year)	100	85.62	99.76	99.76
2016-17	100	84.60	99.96	100.02
2017-18	100	85.95	99.94	97.78
2018-19	100	86.20	99.87	98.51
2019-20[36]	100	88.23	99.87	99.29

(Source: As per MoU, Annual Accounts and the data provided by TANGEDCO)

The billing efficiency was found satisfactory which was in the range of 84.60 to 88.23 *per cent* during 2015-20. Similarly, the collection efficiency was also good with more than 97 *per cent* in all the years of UDAY period.

GoTN in its reply stated that it had noted the above audit observation.

Action Plan for Reduction of AT&C Loss

2.4.18.3 Apart from financial turnaround measures, the MoU stipulated implementation of various targeted activities focusing AT&C loss reduction measures. The details of activity-wise target and achievements of TANGEDCO during the UDAY period are given in **Annexure-4.**

Audit noticed that TANGEDCO did not achieve the targeted levels in certain major activities for AT&C loss reduction. The detailed analysis on such major activities stipulated in the MoU and the deficiencies in execution thereon are discussed below:

i. Ineffective use of Device Language Message Specification (DLMS) compliance Feeder Meters

At the beginning of UDAY period, 7,266 feeders were fitted with meters which did not have the communication facilities. As per the directions of TNERC vide Clause 7.1.1 (m) of its Tariff order of August 2017, TANGEDCO procured 8,050 DLMS[37] compliance feeder meters with communication facility at a cost of ₹5.15 crore between April 2018 and August 2019. During the UDAY period, TANGEDCO installed 7,994 meters including the replacement of existing meters.

[35] AT&C Loss = (1 – (billing efficiency x collection efficiency) x 100.

[36] As target has not been given in MOU, target of 2018-19 has been adopted

[37] DLMS is a standard for structured modelling and meter data exchange with applications like remote meter reading, remote control etc.,

Audit observed that TANGEDCO did not procure the related Modems and Data Concentrator Unit (DCU)[38] for these meters to facilitate online collection of data from these meters. Further, the required Data Centers for facilitating the processing of data was also not established. Consequently, readings from the meters were taken manually as was done in the past. Hence, the very purpose of installing DLMS compliance feeder meters was not achieved and the expenditure incurred for procurement of DLMS enabled meters have become infructuous as of now. Thus, the feeder meters were not effectively utilized for energy accounting and AT&C loss reduction measures even though the target of meter installation was achieved as envisaged in the UDAY Scheme. This indicated lack of planning in preparation of bill of material required to make a particular task functional.

TANGEDCO replied (April 2021) that DCUs would be provided in sub-stations for collection of data from feeders and about 200 feeders were communicating in April 2021. The fact remains that even after spending ₹5.15 crore, TANGEDCO is yet to derive benefit out of such expenditure. GoTN in its reply (October 2021) stated that establishment of communication for feeder meters is proposed to be completed in Revamped Distribution Sector Scheme.

ii. Installation of energy meters at Distribution Transformers

For accurate energy accounting and effective monitoring of the AT&C loss, provision of meters at DT was envisaged in the Scheme. TANGEDCO had achieved the target set in MOU and installed meters at 69,261 DTs in urban areas. Whereas, in the rural areas, it had installed only 18,035 meters representing 9.98 *per cent* of the target of 1,80,748 meters up to March 2020.

TANGEDCO had placed (December 2018) orders with four firms at a total cost of ₹81.01 crore for supply of 46,000 DLMS compliance meters along with modems. Audit observed that the tender specification stipulated *inter alia* that the modem should support 4G technology with backward compatibility to 2G and 3G and should support both Internet Protocol Version 4 (IPV4) and IPV6. However, the suppliers have submitted the bids offering modems which would support 2G technology and IPV4. But, TANGEDCO finalized the tender based on the offers received. Further, the suppliers did not submit the Type Test Report for IS 13779 with latest amendments (i.e. up to amendment 5) as required under the Tender Condition.

Audit further observed that TANGEDCO not only violated tender conditions but also modified the specifications relating to the features of meters and performance of modems while issuing the purchase orders. These modifications made post tender was an undue benefit to the suppliers. Even though, TANGEDCO installed 87,296 (both urban and rural) by March 2020, the meters could not be utilized during UDAY period as works relating to installation of Automatic Meter Reading (AMR) was not complete even by February 2021. Thus, the purpose of energy accounting by installation of meters at DTs was not achieved during the Scheme period. Audit further observed that for procuring the balance requirement of 1,62,713 meters,

[38] DCUs are capable of receiving and communicating data from more than one meter.

TANGEDCO requires an estimated cost of ₹286.57 crore (at the rate of ₹17,612 per meter) for which TANGEDCO had not prepared any action plan.

GoTN in its reply (October 2021) stated that suppliers requested to accept type test reports excluding solar radiation test as solar radiation test facility was not available in NABL Labs at that time and the urgency dispatch instructions were given. GoTN further stated that if the 2G technology becomes obsolete, suppliers shall provide 3G support at their cost. The reply is not acceptable for the reason that as per the tender specification modem should support 4G with backward compatibility with 2G and 3G. The fact remains that even after spending ₹183.69[39] crore, TANGEDCO is yet to derive benefit out of such expenditure.

iii. Separation of agriculture load from the feeders

The main objective of separation of agricultural load was to provide regulated supply to agricultural consumers and continuous supply to non-agricultural consumers in rural areas. This also facilitates AT&C loss reduction through better energy accounting of agricultural load. For segregation of agriculture load on feeder, a target of 1920 feeders at the rate of 640 feeders in each of the three years during 2017-20 were fixed in the MoU (clause 1.3 (g)(viii) read with Annexure C). Against this target, TANGEDCO reported a completion of segregation of agriculture load only in 22 feeders (1.15 *per cent* of the target) up to March 2020 at a cost of ₹95.60 crore.

Audit noticed that performance of TANGEDCO during UDAY period was very poor and the feeder separation work is being executed through separately funded GoI scheme viz., DDUGJY. The fact remains that though the targeted period under UDAY was over by March 2020, TANGEDCO could not take action for separation of agriculture load in the remaining 1,891 feeders. This indicated lackadaisical approach in executing the operational turnaround activities.

During the Exit Conference (August 2021), while the Principal Secretary to Government, Energy Department stated that feeder separation would enable better supply of power to domestic industries and this would help to improve the GDP of the State by 4 - 5 *per cent* and a focused action would be made on this issue, however, GoTN in its subsequent reply (October 2021) stated that the feeder separation was not proposed further as the cost involved in feeder separation is very high. Audit is of the view that considering the benefits, TANGEDCO should explore the possibility of feeder segregation.

iv. Energy Efficient Agricultural Pumps

As per the MoU (clause 1.3 (h)(iii) read with Annexure C), a target for replacement of 80,970 number of energy efficient agricultural pumps was fixed to be completed by March 2019 in a phased manner for Demand Side Management by reducing subsidy element and energy intensity in consumption by agriculture consumers. Audit observed that TANGEDCO did

[39] Including the amount of ₹77.89 crore spent up to February 2017 under earlier RAPDRP scheme.

not install any pumps so far (May 2021). Even it did not prepare a time bound action plan for replacement of existing agricultural pumps. It is pertinent to mention that TANGEDCO had reported in the UDAY dashboard that up to 31 March 2020, it had installed 91,205 energy efficient agricultural pumps, which was factually incorrect.

During the Exit conference, it was stated that Government tried to implement the Scheme during 2009, but faced resistance from consumers on installation of energy efficient agricultural pumps and farmers are being sensitized regarding the benefits of energy efficient agricultural pumps. Further, GoTN in its reply stated that 78,580 new agricultural services were energized with energy efficient agricultural pumps as on 31 March 2020. However, the fact remains that GoTN/TANGEDCO did not formulate any scheme for replacement of existing agricultural pumps during UDAY period.

With regard to non-achievement of target for sale of LED bulbs as pointed out in **Annexure-4**, GoTN stated that the target could not be achieved due to minimum difference between the prices of LED bulbs in the open market and the kiosks set up by Energy Efficiency Services Limited (Agency for sale of Energy Efficient appliances).

Non-achievement of Transmission Loss targets as per UDAY Scheme

2.4.19 As per clause 1.2 (o) of the MoU, GoTN will endeavor to reduce the transmission losses from 4.11 *per cent* in 2015-16 to 3.89 *per cent* in 2019-20. The details of year-wise target and actual transmission losses during 2015-20 are given in **Table 14** below:

Table 14: Details showing the transmission loss during 2015-20

Year	Target as per MOU *(per cent)*	Actual *(per cent)*	Excess Transmission Loss (MU)	Value of excess transmission loss (₹ in crore)
2015-16	4.11	4.11	--	--
2016-17	4.06	4.08	24.33	9.64
2017-18	4.00	4.02	20.54	8.81
2018-19	3.95	3.97	27.39	12.12
2019-20	3.89	3.93	43.78	19.52
		Total	**116.05**	**50.09**

(Source: As per MoU and Annual accounts of TANTRANSCO)

It may be seen from the above Table that, the excess over the targeted transmission loss was worked out at 116.05 MUs valuing ₹50.09 crore. Detailed workings are given in **Annexure-5**. Audit observed that the target of 3.89 *per cent* by 2019-20 was not achieved mainly on account of delay in commissioning of sub-stations and transmission lines as planned. Though TANTRANSCO had planned for commissioning of 17 and 39 sub-stations of 400 KV and 230 KV respectively during 2016-20, it commissioned only 10 (58.8 *per cent*) and 19 (48.7 *per cent*) sub-stations of 400 KV and 230 KV respectively. Further, it had planned commissioning of three 765 KV sub-stations during the above years for which the work is still in progress (May 2021). Audit observed that the non-achievement of the target was mainly due to lack of co-ordination and synchronization in taking up sub-station and transmission line works, land acquisition, Right of Way issues for line works and slow progress of work by contractors for which the Management should make all efforts to complete the planned works to minimize the transmission losses.

GoTN replied (October 2021) that TANTRANSCO is taking extra efforts to execute transmission system as planned despite poor performance of contractors, ROW issues etc. However, Audit noted that there were delays in completion of transmission projects which adversely affected in reducing the transmission losses as planned.

Loss of additional grant due to delay in completion of IPDS and DDUGJY

2.4.20 GoI launched (December 2014) two schemes namely Integrated Power Development Scheme (IPDS) for urban areas and DDUGJY for rural areas. IPDS was aimed at (a) strengthening of sub-transmission and distribution networks (b) metering of DTs, feeders and consumers and (c) Information and Technology (IT) enablement of distribution sector. DDUGJY Scheme was aimed at (a) separation of agriculture and non-agriculture feeders (b) strengthening and augmentation of sub-transmission and distribution network (c) to complete outlay of rural electrification, which was envisaged in earlier scheme of GoI called as Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY).

UDAY Scheme also emphasized the achievement of operational milestones specified in IPDS and DDUGJY. These projects are to be funded by 60 *per cent* grant from GoI, 30 *per cent* loan from REC and the balance 10 *per cent* from own funds or loan from FIs. The UDAY Scheme also envisaged an additional grant of the project cost from MoP, GoI, if the project works are completed within the time schedule. The details of project cost and the completion schedules are given in **Table 15** below:

Table 15: Details showing the project implementation of IPDS and DDUGJY

Sl. No.	Particulars	IPDS	DDUGJY
1	Project cost (₹in crore)	1,695.86	919.52
2	Eligible grant – 60 *per cent* of project cost (₹in crore)	1,017.52	551.71
3	Original targeted completion period	September 2018	June 2018
4	Extended completion period	December 2020	December 2020
5	Project Areas to be covered	37	27
6	Project areas completed within the scheduled time	27	21
7	Pending project areas	10	6
8	Loss of additional grant (₹in crore)	254.38	137.92

(Source: Data provided by TANGEDCO)

Audit observed that though Clause 10 of UDAY scheme read with Clause 1.3 (f) of the MoU had indicated an entitlement of additional grant/priority funding through IPDS and DDUGJY, in case of timely completion of the milestones specified thereunder, TANGEDCO did not make an effective plan to complete the work within the time schedule. The works were executed slowly and were pending in 10 and six project areas respectively in respect of IPDS and DDUGJY. Consequently, it lost the opportunity to avail the additional grant of ₹392.30 crore (IPDS: ₹254.38 crore and DDUGJY: ₹137.92 crore).

GoTN in its reply stated that all the projects were completed within the extended time limit up to December 2020 approved by MoP and additional grant would be claimed. However, Audit noted that the projects were completed beyond the original targeted completion period and TANGEDCO did not fulfil the condition of claiming tariff subsidy based on metered consumption which is also one of the conditions for granting additional grant.