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REPORT OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA ON PERFORMANCE OF KERALA STATE ELECTRICITY BOARD LIMITED DURING PRE AND POST UJWAL DISCOM ASSURANCE YOJANA

भारतीय लेखापरीक्षा और लेखा विभाग ✦ INDIAN AUDIT AND ACCOUNTS DEPARTMENT

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

Government of Kerala

Report No. 5 of the year 2022

(Performance Audit)

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PREFACE

This Report of the Comptroller and Auditor General of India for the year ended 31 March 2021 has been prepared for submission to the Government of Kerala as per provisions of Section 19-A of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971.

This Report contains the results of the Performance Audit on 'Performance of Kerala State Electricity Board Limited during pre and post Ujwal DISCOM Assurance Yojana' covering the period 2015-16 to 2020-21.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Audit wishes to acknowledge the cooperation received from Government of Kerala and Kerala State Electricity Board Limited at each stage of the audit process.

EXECUTIVE SUMMARY

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Introduction

With the objective of improving the health of State-owned DISCOMs, the Ministry of Power (MoP) of Government of India (GoI) launched the Ujwal DISCOM Assurance Yojana (UDAY) Scheme in November 2015. The Scheme envisaged reforms for realising affordable and accessible 24x7 power for all through financial turnaround and improving operational efficiency of DISCOMs. A tripartite Memorandum of Understanding (MoU) was signed amongst GoI, Government of Kerala (GoK) and Kerala State Electricity Board Limited (KSEBL) in March 2017, specifying the responsibilities of the respective parties for achieving the operational parameters only, and not for financial turnaround part under UDAY.

This Performance Audit was taken up to assess the performance of KSEBL for achieving the intended goals, *viz.*, better financial performance of DISCOM as well as the targeted operational improvement and intended outcomes envisaged in the Scheme and the tripartite MoU. Audit selected a sample of 12 out of 43 Restructured Accelerated Power Development and Reforms Programme (R-APDRP) towns for analysing the performance of KSEBL on reducing Aggregate Technical and Commercial (AT & C) loss, a key performance indicator under UDAY.

Planning

As per MoU, KSEBL was required to prepare a detailed action plan for various targeted activities focusing on AT & C loss reduction for its implementation. Audit noticed that though KSEBL prepared and submitted action plan to MoP, the works related to improving the HT:LT ratio, optimising Distribution Transformer capacity, constructing more unmanned 33 kV sub-stations etc. were not completed.

Financial Management

While executing the MoU, KSEBL did not opt for take-over of DISCOM debt by GoK stating that its debt position, financial loss and AT & C loss were relatively low when compared to other DISCOMs in the country. Nonetheless, the MoU envisaged that KSEBL would improve its financial performance and report profits for 2017-18 and 2018-19. The activities of KSEBL, however, resulted in financial losses, and its loss increased by 161.47 *per cent* from ₹696.96 crore in 2015-16 to ₹1,822.35 crore in 2020-21. The long-term debt of KSEBL increased substantially by 318.72 *per cent* from ₹3,753.51 crore in 2015-16 to ₹15,716.79 crore in 2020-21, mainly on account of employees' pension liability. As the MoU did not provide for the financial turnaround part, there was no takeover of debt of KSEBL by GoK under the Scheme.

The expenditure incurred by KSEBL on employee benefits and power purchase increased considerably during 2015-21, which could not be fully recovered through tariff as KSERC deducted the claim of KSEBL towards pay and allowances of 6,367 employees while issuing orders on truing up of accounts for 2017-18. The execution of MoU under UDAY for improving operational efficiency alone did not bring about the intended benefit of the Scheme to KSEBL as takeover of DISCOM debt was not envisaged in the MoU.

The total arrears of electricity charges recoverable from HT and LT consumers also increased during post-UDAY period by 10.40 *per cent* from ₹2,121.70 crore (March 2017) to ₹2,342.36 crore (March 2021).

Implementation

As per the Scheme, the gap between Average Cost of Supply (ACS) and Average Revenue Realised (ARR) should be eliminated by 2018-19. Instead of targeted reduction of gap between ACS and ARR, there was an increase in the gap from ₹0.31 per unit in 2015-16 to ₹0.72 per unit in 2020-21.

The MoU required KSEBL to file tariff petitions in time so that the envisaged tariff revision could be achieved. However, there was delay in filing of annual tariff petitions during 2015-18 for recovery of cost of power supply. There was also delay in filing of truing up petitions which led to an accumulated unbridged revenue gap of ₹6,778.74 crore.

As per UDAY MoU, KSEBL was required to reduce AT & C loss to 11 *per cent* and transmission loss to 4.40 *per cent* by 2018-19. KSEBL reported reduction in overall AT & C loss from 12.48 *per cent* in 2016-17 to less than 11 *per cent* during 2018-19 and 2019-20, and an increase in AT & C loss to 11.18 *per cent* during 2020-21. Transmission loss fell from 4.27 *per cent* in 2016-17 to 3.63 *per cent* in 2020-21. The targeted AT & C loss was not measurable and reportable at Electrical Divisions as ring fencing of Divisions was not complete. Further, some of the R-APDRP towns were unable to achieve the targeted reduction in AT & C loss due to data collection/ network communication issues.

UDAY MoU envisaged implementation of smart metering solution for consumers having monthly usage of more than 200 units. It also mandated implementation of Enterprise Resource Planning (ERP) system for improving efficiencies. KSEBL did not implement smart metering for consumers despite availability of GoI grant of ₹38.94 crore under the Integrated Power Development Scheme (IPDS) and selection of KPMG as Project Management Agency due to delay in deciding on the bidding process and the area/ locations to be served by the project. Implementation of ERP system with GoI grant of ₹22.76 crore under IPDS was also delayed as bidders were not willing to supply free-and-open-source based ERP software. KSEBL subsequently decided to develop the system in-house.

Demand side management (DSM) was one of the areas mentioned in UDAY MoU for augmenting energy efficiency. KSEBL distributed 1.41 crore LED bulbs in three lots to domestic consumers under the Domestic Efficient Lighting Programme of GoI. However, it collected an excess amount of ₹38.71 lakh from consumers due to incorrect fixation of selling price for the first lot of bulbs supplied during January – December 2016. KSEBL also charged DSM fund contribution of ₹7.77 crore and extra margin of ₹1.42 crore from consumers, which was improper as the scheme was not intended for generating profit. KSEBL did not implement DSM scheme for replacing at least 10 *per cent* of the estimated five lakh inefficient agricultural pump sets as envisaged in UDAY MoU.

KSEBL was required to meet the targets fixed for Renewable Purchase Obligations (RPOs) by Kerala State Electricity Regulatory Commission. Though it took efforts for development of renewable energy, it did not meet the target RPOs. The value of Renewable Energy Certificates to be purchased by KSEBL to meet the shortfall in achieving RPOs up to March 2021 was assessed at ₹495.95 crore.

Monitoring and Evaluation

The monitoring of the implementation of the scheme was found to be inadequate. As per MoU, review of performance of KSEBL was to be done by State Level Monitoring Committee (SLMC) with a representative from State Finance Department. However, there was no record of meetings of SLMC. The constitution of SLMC was without a nominee from the Finance Department.

KSEBL also did not devise Key Performance Indicators (KPIs) on areas of AT & C loss and metering/ billing/ collection efficiencies as envisaged in UDAY MoU. For other areas where KPIs were devised, there were no benchmarks for assessing the efficiency.

Conclusion

KSEBL could not achieve improvement in financial performance during UDAY and post UDAY periods as it was unable to curtail employee and power purchase costs. It did not consider the liabilities towards pension payments and pay revision of employees and power purchase committed under long-term contracts while projecting the financial targets in UDAY MoU. Moreover, KSEBL could not reap the full benefit of the Scheme by deciding to opt out of financial turnaround package and signing up for improvement of operational parameters only. As a result, the operations of KSEBL resulted in continuous losses in all financial years during 2015-21.

As regards operational parameters, KSEBL could not eliminate the ACS-ARR gap, implement smart metering and ERP projects and meet the target fixed for RPOs. Benchmarks were absent for KPIs formulated, and no KPIs were devised on areas of AT & C loss reduction and metering/billing/collection efficiency. Reduction in AT & C loss to less than 11 *per cent* was not sustained during 2020-21, which had a bearing on financial performance.

Recommendations

To ensure that the intended benefit of GoI schemes accrue in full to State Government and its undertakings/companies, Audit recommends that GoK may, in future, ensure that it fully analyses and takes advantages in all respects of schemes having financial and operational/other implications. It is also recommended that GoK may periodically monitor the progress of major projects/ works undertaken by KSEBL under various schemes/ programmes.

Audit recommends that KSEBL may take suitable steps to prune administrative and power procurement costs. Works related to ring fencing of Electrical Divisions and development of IT modules for data acquisition and energy auditing may be expedited and steps may be taken to monitor and contain AT & C losses of all R-APDRP towns. Further, KSEBL should strive to improve the HT:LT ratio, implement HVDS in more places, ensure GIS mapping and indexing of all consumers, and devise KPIs with benchmarks for improving efficiencies. It may also consider implementation of smart metering solutions for improving efficiency and collaborate with Bureau of Energy Efficiency and Energy Efficiency Services Limited for implementing energy efficiency programmes for deriving the best results in energy conservation. It is also recommended that KSEBL may analyse the reasons for increasing losses and plug them before they go awry, and also rationalise the manpower and bring down the employee costs to an efficient and sustainable level.

CHAPTER I

Introduction

CHAPTER I

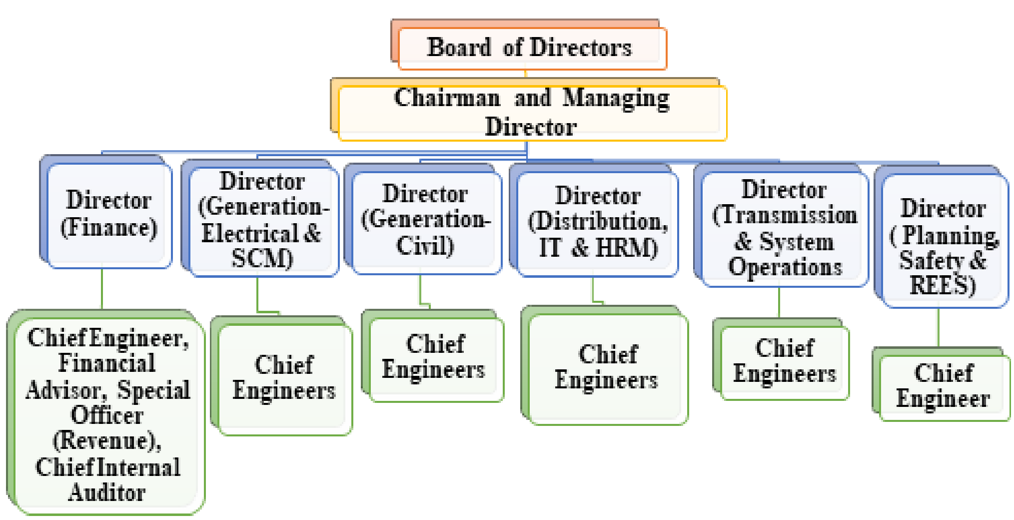
INTRODUCTION

1.1 Kerala State Electricity Board Limited (KSEBL) is the successor entity of Kerala State Electricity Board which was constituted by the Government of Kerala (GoK) in March 1957 under the Electricity (Supply) Act, 1948 for carrying out the business of generation, transmission and distribution of electricity in the State of Kerala. Through a notification issued by GoK on 31 October 2013 under Section 131 of the Electricity Act, 2003, all the assets, liabilities, rights and obligations of erstwhile Kerala State Electricity Board were vested into the new company. KSEBL was incorporated under the earlier Companies Act, 1956 on 14 January 2011 and started operations as an independent company with effect from 1 November 2013. It is the only State-owned power utility in Kerala and carries out the activities of generation, transmission and distribution of electricity through three Strategic Business Units (SBUs), *viz.*, SBU-Generation, SBU-Transmission and SBU-Distribution.

Organisational set up

1.2 The management of KSEBL is vested in the Board of Directors (BoD) headed by a Chairman and Managing Director (CMD). The BoD comprised six full-time Directors, who are assisted by Chief Engineers and other officers for managing the day-to-day affairs of the company. The organisational chart of KSEBL is given in **Chart 1**.

Chart 1: Organisational structure of KSEBL



(Source: KSEBL)

UDAY scheme and its salient features

1.3 With the objective of improving the health of State-owned electricity distribution companies or DISCOMs[1], the Ministry of Power (MoP) of Government of India (GoI) launched the 'Ujwal DISCOM Assurance Yojana' (UDAY) Scheme in November 2015. The Scheme envisaged reforms for realising affordable and accessible 24x7 power for all with the following main objectives:

- Financial turnaround of the DISCOMs, and
- Improving operational efficiency of the DISCOMs.

As prescribed in the Scheme, a tripartite Memorandum of Understanding (MoU) was signed by and amongst GoI, GoK and KSEBL on 02 March 2017 specifying the responsibilities of the respective parties for achieving the operational milestones. The salient features of the MoU, *inter alia,* included:

- Elimination of gap between Average Cost of Supply (ACS) and Average Revenue Realised (ARR) by 2018-19.
- Reduction of Aggregate Technical and Commercial (AT & C) losses to 11 *per cent* (2018-19) as against the All India target of 15 *per cent* by the financial year 2019.
- Undertake the targeted activities *viz.*, metering of feeders and Distribution Transformers, feeder segregation and improvement, installation of smart meters etc., for improving the operational efficiency.

GoK and KSEBL joined UDAY for the operational efficiency part only and did not opt for financial turnaround part of the Scheme, stating that KSEBL's debt was low (₹5,800 crore as of September 2015), losses were minimum (₹313 crore for 2015-16) and AT & C loss (16 *per cent*) was one amongst the best in the country.

Audit objectives

1.4 The objectives of the Performance Audit were to assess the performance of KSEBL for achieving the intended goals under the following two aspects:

1. If targeted outcomes were achieved in implementing the operational efficiencies as envisaged in the tripartite MoU and the Scheme?
2. Whether the improvement in operational efficiencies of KSEBL resulted in better financial performance despite the decision to voluntarily opt out of financial turnaround package of the Scheme?

Audit scope and methodology

1.5 The UDAY Scheme/MoU envisaged financial turnaround and operational improvements, *viz.*, reduction of gap between ACS and ARR to zero by 2018-19

[1] DISCOMs for the purpose of UDAY included combined Generation, Transmission and Distribution Undertakings.

and reduction in AT & C loss to 11 *per cent* by 2018-19. In line with the overall objectives of the Scheme, year-wise action plan/target on various operational parameters were specified in the MoU for the year up to 2018-19. Financial Year (FY) 2015-16 being the base year and FY 2016-17 being the year of execution of MoU were considered as Pre-UDAY period. FY 2017-18 and FY 2018-19, when major activities were carried out, have been considered as UDAY period, and FY 2019-20 and FY 2020-21 have been considered as Post-UDAY period. Accordingly, the Performance Audit was conducted between January 2021 and September 2021 to analyse the effectiveness and efficiency in implementation of the Scheme *vis-à-vis* performance of DISCOM, pre and post implementation of UDAY covering the period from 2015-16 to 2020-21. In order to assess the efforts of DISCOM and the State Government to fulfil the obligations envisaged in the MoU, the records of the Department of Power, GoK and the Head Office of KSEBL were examined. Further, to check the operational achievements at field level, 12 out of 43 Restructured Accelerated Power Development and Reforms Programme (R-APDRP) towns were selected based on the targets set for reduction of AT & C loss, and the records of these R-APDRP towns were also examined in audit.

Before commencement of audit, the audit objectives, scope and methodology for the Performance Audit were discussed in an Entry Conference with the Secretary, Department of Power, GoK and the Chairman and Managing Director of KSEBL on 19 February 2021. The audit findings noticed by Audit were reported to GoK in December 2021. Further, audit findings were discussed in the Exit Conference held on 21 January 2022 with the Principal Secretary, Department of Power, GoK and the top/senior management of KSEBL. The views expressed in the Exit Conference and reply received (February 2022) from GoK were considered and incorporated, wherever found appropriate, while finalising the Report.

Audit criteria

1.6 The following criteria were adopted to measure the performance of KSEBL in the implementation of UDAY:

- Guidelines of the UDAY Scheme issued by MoP, GoI;
- Tripartite Memorandum of Understanding (MoU) executed between MoP, GoK and KSEBL for UDAY;
- Tariff Regulations and orders issued by the Kerala State Electricity Regulatory Commission (KSERC); and
- Directions issued by MoP, GoI and GoK from time to time.

Acknowledgement

1.7 Audit acknowledges the cooperation and assistance extended by the Department of Power, GoK and the management of KSEBL at various stages of conducting the Performance Audit.

Audit findings

1.8 The audit findings have been organised in the succeeding part of the Report as three chapters, *viz.*,

Chapter II - Audit Findings

Chapter III - Monitoring and Evaluation

Chapter IV - Conclusion and Recommendations

CHAPTER II

Audit Findings

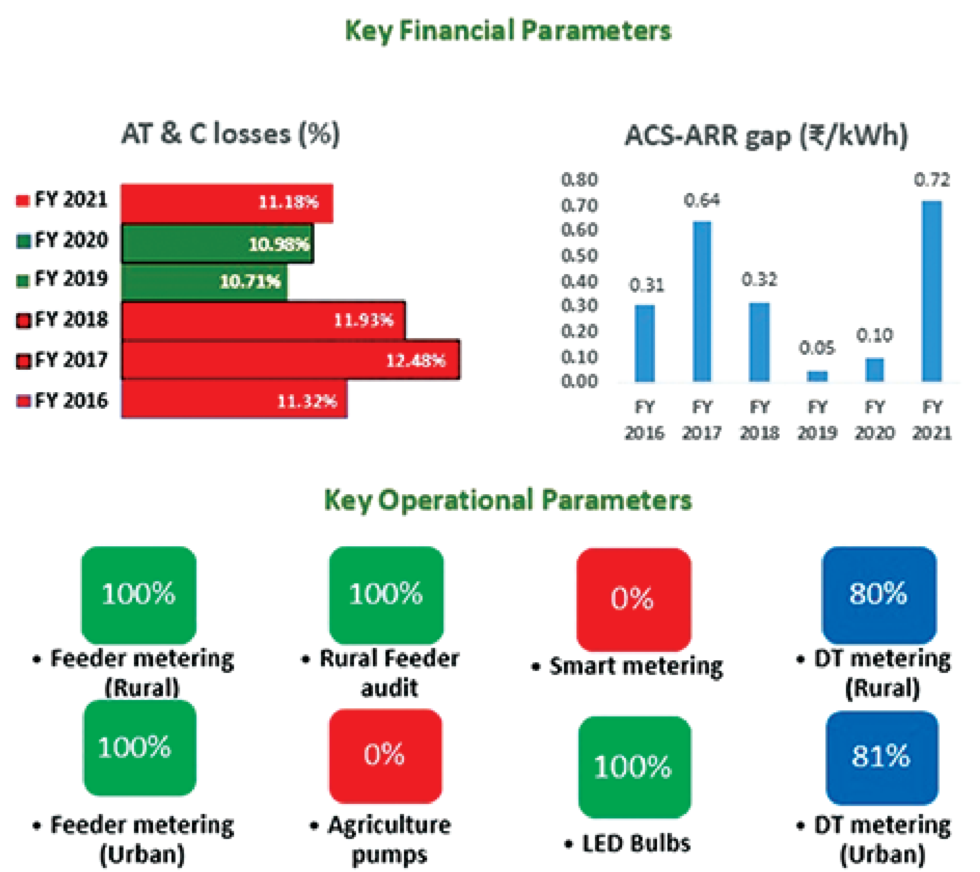
CHAPTER II

AUDIT FINDINGS

Non-achievement of UDAY Scheme objectives

2.1 UDAY scheme/MoU envisaged twin objectives, namely, elimination of ACS-ARR gap and reduction of AT & C losses to 11 *per cent* by 2018-19. While KSEBL achieved the desired objective on AT & C loss, it failed to reduce the ACS-ARR gap to zero. The status of achievement of key financial and operational parameters during 2015-16 to 2020-21 are depicted in **Chart 2**.

Chart 2: Status of key financial and operational parameters



(Source: UDAY MoU and details furnished by KSEBL)

It may be seen from the above **Chart** that during 2015-16, the ACS-ARR gap stood at ₹0.31 per unit. As per the MoU, KSEBL was required to eliminate the ACS-ARR gap and achieve an operating profit of ₹0.06 per unit by 2018-19. Against this envisaged outcome, the performance of KSEBL did not improve as outlined below:

- The gap between ACS and ARR increased from ₹0.31 per unit in 2015-16 to ₹0.72 per unit in 2020-21 (414 *per cent*).
- KSEBL was required to achieve financial turnaround with a profit during 2018-19; however, the Company reported a loss of ₹134.68 crore during that year.

As the desired key financial and operational parameters were not realised, the envisaged objective of turnaround of KSEBL could not be achieved. The issues of increase in debt, high cost of power and employee benefits etc., which were responsible for poor financial performance of KSEBL during UDAY and post-UDAY periods, are discussed below.

Planning

2.2 GoI approved the scheme with an objective to improve the operational and financial efficiency of State DISCOMs. Audit noticed deficiencies in the planning for implementation of the Scheme resulting in non-achievement of the envisaged benefits to KSEBL.

Action plan for reducing AT & C loss

2.2.1 Prior to UDAY, GoI had introduced various schemes/programmes for assisting States/DISCOMs to improve their operations. KSEBL submitted (July 2014/August 2016) a detailed action plan (DAP) containing 10-year trajectory for reducing AT & C loss from 16.15 *per cent* in 2011-12 to 11 *per cent* by 2018-19 and 10.38 *per cent* by 2021-22. The action plan emphasised the need for more rigorous action involving high level of investment for the future, as low-hanging options in loss reduction were already exhausted. The MoU signed for UDAY also enjoined [clause 1.3(c)] KSEBL to prepare an action plan for reducing AT & C loss and achieving other operational indicators[2].

The measures proposed in the DAP and the progress made by KSEBL in implementing them are mentioned below:

- **Improving HT:LT ratio –** Realising the difficulty in achieving the ideal HT:LT ratio of 1:1 in view of the State's demography (absence of an urban-rural divide and variation in population distribution across regions), KSEBL proposed (August 2016) to improve the ratio from the existing 1:4.88 to 1:3.88. This required a determined effort to undertake measures such as construction of equal length of High Tension (HT) line for every addition to Low Tension (LT) lines and implementing High Voltage Distribution System (HVDS) in maximum possible cases. However, there was no significant improvement in HT:LT ratio (1:4.44 in 2020-21) with increase in demand/addition[3] to LT lines, and HVDS was introduced in three locations only.

[2] Improvement in billing and collection efficiencies, completion of DT metering and 11 kV feeders, installation of smart meters, implementation of ERP system, providing LED bulbs to consumers etc.

[3] The length of HT lines in 2015-16 was 59,465.06 kilometres (km) and that of LT lines was 2,78,496.20 km, which increased to 66,663.50 km and 2,95,697 km respectively in 2020-21.

- **Optimising Distribution Transformer (DT) capacity** – As most transformers installed in DT network had a capacity of 100 kilo Volt Ampere (kVA) or above, it was necessary to optimise the size of existing transformers in rural areas based on load requirement to improve efficiency. KSEBL proposed to install more transformers with smaller capacity (25 – 50 kVA) along HT feeders for supply to small groups of consumers, thereby reducing the requirement of drawing more LT lines. During 2015-21, KSEBL installed 176 transformers of 25 – 50 kVA capacity in areas within 39 (out of 71) Electrical Divisions. Work in respect of the remaining Divisions were yet to be carried out.

- **Limiting the length of LT lines from DTs** – KSEBL planned to adopt a (new) norm of 0.5 kilometre (km) in towns/cities (one km in other areas) for the maximum allowable LT feeder length from DTs, depending on terrain and load requirement. It installed 11,197 new transformers and re-arranged LT lines during 2016-21, which helped in reducing the length of individual LT feeders.

- **Re-conductoring and total metering of DTs** – The DAP stressed on removal of all worn-out and high-loss lines from the distribution network and complete metering of DTs in a time-bound manner. During 2015-21, KSEBL undertook re-conductoring of 5,678 circuit-kilometre (c-km) of HT lines and 96,440 c-km of LT lines in areas within all Electrical Divisions. The target of metering of 14,999 DTs in urban area and 33,021 DTs in rural area by March 2018 was achieved by KSEBL only during 2020-21.

- **Constructing more unmanned 33 kV sub-stations** – The DAP suggested relocation of transformers in rural areas or installation of new transformers nearer to load centres/existing feeders (as unmanned 33 kilo Volt (kV) sub-stations) to increase efficiency and reduce loss. KSEBL installed 27 new sub-stations in areas within 13 Transmission Circles during 2015-21. Work in the remaining Circles were yet to be taken up.

It was also seen that REC Limited circulated (May 2017) a standard template for finalisation of action plans by DISCOMs for improving billing and collection efficiencies and eliminating/reducing the ACS-ARR gap. It guided DISCOMs to undertake 'cause – effect' analysis for each operational parameter, prepare action points, monitor and review implementation of action points, and enlist the challenges faced by them. However, KSEBL did not prepare and implement such detailed and separate action plans for each operational parameter at DISCOM and unit level.

GoK replied (February 2022) that KSEBL would take up works related to technical loss reduction and system strengthening by drawing Aerial Bunched Cables in high loss areas, replacing old/frayed conductors, drawing additional HT lines to improve quality of supply, and other distribution works under the newly announced (July 2021) Revamped Distribution Sector Scheme of MoP, which would help in improving the HT:LT ratio.

Financial Management

Increase in financial loss and borrowings

2.3 As per clause 1.3(b) and Annexure B to UDAY MoU, the operations of KSEBL were expected to generate net income/profit of ₹267.02 crore in 2016-17, ₹97.49 crore in 2017-18 and ₹148.36 crore in 2018-19. However, its performance resulted in net losses of ₹1,494.63 crore, ₹784.09 crore and ₹134.68 crore during 2016-17, 2017-18 and 2018-19 respectively. The losses continued through 2019-20 (₹269.55 crore) and 2020-21 (₹1,822.35 crore). The financial performance of KSEBL during 2015-21 is shown in **Appendix 1**.

The revenue from operations of KSEBL increased by 32.12 *per cent* from 2015-16 to 2020-21. The total cost of power generation decreased during the period by 95.40 *per cent* (i.e., from ₹104.26 crore in 2015-16 to ₹4.80 crore in 2020-21) due to reduction in generation of thermal power (from 145.52 Million Units (MU) in 2015-16 to 6.77 MU in 2020-21) and resultant saving in cost of fuel/oil consumption (fuel cost constituted 92.59 *per cent* of total cost of generation during 2015-16). The reduction in thermal power generation was made good by increased generation of hydel and solar power. Employee expenses and power purchase cost increased by 65.99 *per cent* (i.e., from ₹3,104.55 crore in 2015-16 to ₹5,153.17 crore in 2020-21) and 24.07 *per cent* (i.e., from ₹6,494.91 crore in 2015-16 to ₹8,057.93 crore in 2020-21) respectively. It was seen that the possible increase in liability towards purchase of thermal power under long-term agreements executed in the past, cost of servicing bonds to be issued to meet employees' pension payment, and implementation of pay revision for employees was known to KSEBL; those were, however, not factored in while fixing the annual targets for financial performance in UDAY MoU.

An analysis of borrowings (long-term/short-term loans and overdraft/cash credit) of KSEBL from banks/financial institutions and Central Public Sector Undertakings (PSUs) during pre and post UDAY periods for funding various projects/activities and liabilities indicated an increase of ₹12,177.29 crore (i.e., an increase of 205.51 *per cent* from ₹5,925.45 crore in 2015-16 to ₹18,102.74 crore in 2020-21), as shown in **Table 1**.

Table 1: Debt position of KSEBL during 2015-21

(₹ crore)

Period	Financial Year	Long-term/ Non-current borrowings (cumulative)	Short-term/ Current borrowings* (cumulative)	Total borrowings (cumulative)
Pre-UDAY	2015-16	3,753.51	2,171.94	**5,925.45**
	2016-17	4,266.57	2,767.46	**7,034.03**
UDAY	2017-18	15,934.54	2,737.59	**18,672.13**
	2018-19	14,525.15	3,829.02	**18,354.17**
Post-UDAY	2019-20	15,836.58	2,912.44	**18,749.02**
	2020-21	15,716.79	2,385.95	**18,102.74**

*Including current maturities of long-term debt.

(Source: Annual Financial Statements of KSEBL)

Audit observed that the long-term/non-current borrowings surged during UDAY and post-UDAY periods, due to issue (April 2017) of unsecured bonds by KSEBL to fund a Master Trust that was created/registered (February 2015) pursuant to the incorporation of KSEBL as a company, for disbursement of pension to employees of the erstwhile Kerala State Electricity Board. As per the actuarial valuation, the terminal benefits and pension liability of existing pensioners and personnel transferred from Kerala State Electricity Board to KSEBL was estimated at ₹12,419 crore, which formed the corpus of the Master Trust. To fund this, KSEBL issued (April 2017) unsecured bonds of ₹8,144 crore (with tenure of 20 years) and another tranche of 10-year bonds amounting to ₹3,751 crore. As per the Government Notification issued (January 2015) in this regard, GoK would fund ₹5,861 crore over a period of 10 years from the date of transfer of assets and liabilities of KSEB (Board) to KSEBL (Company), by way of retention of electricity duty payable by KSEBL to GoK. Further, a sum of ₹524 crore would be funded by GoK through budgetary provision over a period of 10 years from financial year 2012-13. GoK also allowed KSEBL to retain electricity duty of ₹1,522.53 crore collected by it for the period from 1 April 2008 to 31 March 2012.

The short-term/current borrowings registered an increase during UDAY period but declined in post-UDAY period. The interest burden on loans/deferred credits and working capital borrowings rose by 149.27 *per cent* from ₹632.76 crore in 2015-16 to ₹1,577.29 crore in 2020-21. During 2020-21, interest rate for term loans from banks ranged from 8.62 *per cent* (State Bank of India) to 10.00 *per cent* (South Indian Bank) while that for borrowings from other financial institutions varied from 6.25 *per cent* (National Bank for Agricultural and Rural Development) to 11.50 *per cent* (REC Limited). The mounting debt position buttressed the need for curtailment of costs and recovery of outstanding dues from consumers, including State Government departments and PSUs. The need for reducing operating expenses to improve cost efficiency also echoed (July 2021) in prescriptions of MoP in its review of performance of KSEBL.

GoK stated (February 2022) that the main reason for increase in financial loss was non-recovery of KSERC-approved revenue gap of ₹6,863 crore (for the period till 2017-18) from consumers through tariff. The increase in employee cost was due to increased actuarial valuation of pension liability. It was also stated that KSEBL joined UDAY Scheme only for improving the operational efficiency and not for financial improvement.

The reply is not acceptable, as it does not speak of any action plan to reduce operating costs. The non-recovery of approved revenue gap was due to failure of KSEBL to propose tariff revision for approval of KSERC from time to time. Though the participation of KSEBL under UDAY by opting out of the financial improvement part of the Scheme was a considered decision of GoK /KSEBL, it failed to consider the fact that UDAY was launched by GoI with the primary objective of enabling DISCOMs to achieve financial turnaround. As the increase in debt on account of pension liability was known to KSEBL at the time of executing MoU, signing up for the operational efficiency part alone was not beneficial to KSEBL. Thus, failure to cut down employee costs coupled with higher cost of purchase of power pushed KSEBL deeper into the red, with losses increasing from ₹696.96 crore (2015-16) to ₹1,822.35 crore (2020-21). The efforts at improving operational efficiencies did not have a positive effect on the financial status of KSEBL. Had KSEBL opted for the financial turnaround package also, the possibility of cutting inefficient costs and improving the financial health of KSEBL would have increased.

Increase in outstanding dues of electricity charges

2.4 As per clause 1.2 (c) of UDAY MoU, GoK committed itself to pay the electricity dues outstanding from various State Government departments to KSEBL by 31 March 2019.

The recoverability of electricity dues of major categories of HT and LT consumers during pre and post UDAY period is shown in **Table 2**:

Table 2: Total outstanding dues recoverable from HT and LT consumers

(₹ crore)

Consumer category	Outstanding electricity dues		Increase/decrease (-) in outstanding dues (percentage)
	As of March 2017 (pre-UDAY)	As of March 2021 (post-UDAY)	
Private Sector (including Captive Power Plants)	587.11	943.82	356.71 (60.76%)
Central PSUs	42.24	67.11	24.87(58.88%)
State Government Departments	136.34	90.35	- 45.99 (33.73%)
State PSUs (including Kerala Water Authority)	1,263.27	736.90	- 526.37 (41.67%)
Central Government Departments	0.26	3.15	2.89 (*)
Local Bodies	5.35	6.68	1.33 (24.86%)
Inter-State consumers	4.04	2.22	- 1.82 (45.05%)
Licensees	14.25	11.18	- 3.07 (21.54%)
Domestic consumers	68.81	436.17	367.36 (*)
Others (Self-governing Bodies and Public Institutions)	0.03	44.78	44.75 (*)
Total	**2,121.70**	**2,342.36**	**220.66 (10.40%)**

*The increase was more than 100 *per cent* in the case of three categories, i.e.,1,111.54 *per cent* for Central Government Departments 533.88 *per cent* for Domestic Consumers, and 1,49,166.67 *per cent* for Others (Self-governing Bodies and Public Institutions).

(Source: Information furnished by KSEBL)

It could be seen from the above **Table** that

- The total arrears of electricity charges recoverable from various categories of HT and LT consumers during post UDAY period increased by ₹220.66 crore (i.e., an increase by 10.40 *per cent*) from ₹2,121.70 crore in March 2017 to ₹2,342.36 crore in March 2021.

- The above dues constituted 18.91 *per cent* and 16.24 *per cent* of the revenue from operations for March 2017 and March 2021 respectively.
- Of the total recoverable dues of ₹2,342.36 crore as on 31 March 2021, a sum of ₹527.68 crore, i.e., 22.53 *per cent*, was entangled in litigation.
- The HT, LT dues under litigation constituted 15.05 *per cent* (₹319.23 crore) in March 2017 which increased to 22.53 *per cent* amounting to ₹527.68 crore in March 2021. Out of the total (HT and LT) collectibles as of March 2021, dues of ₹268.53 crore (11.46 *per cent*) were pending recovery for more than 15 years, ₹116.25 crore (4.96 *per cent*) was outstanding between 10 and 15 years, and ₹117.78 crore (5.03 *per cent*) was pending recovery between five and 10 years.
- Initiatives like one-time settlement scheme and holding of V*ydyuthi adalats* for realisation of dues could not significantly reduce the total collectibles. Further, GoK did not meet the commitment in UDAY MoU to pay the outstanding dues of State Government departments other than Kerala Water Authority (KWA). This underscored the need for taking urgent steps to recover the arrears to further improve collection efficiency and reduce AT & C loss.

GoK stated (February 2022) that KSEBL took special steps like one-time settlement scheme during the years 2016, 2018, 2019 and 2021 and recovered arrears of ₹192.18 crore (excluding KWA dues) from consumers. It also stated that action was being taken by KSEBL to collect arrears by implementing stringent measures like disconnecting the supply of defaulters.

The fact, however, remains that the initiatives undertaken by KSEBL were not sufficient to improve its collection efficiency and reduce AT & C loss. Further, the Committee on Public Undertakings (CoPU, 2019-21) of the Kerala Legislative Assembly had, in its ninety first report (June 2019) recommended (Recommendation to Para Number 2) for taking urgent steps to recover the arrear dues from all State/Central Government departments, institutions and PSUs within three months. However, the recovery of arrears from Central Government departments/PSUs, local bodies and public institutions did not show much improvement even after two years of CoPU recommendation, as indicated in **Table 2** above.

Implementation

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

Failure to reduce ACS-ARR gap

2.5.1 Clause 1.3(b) of MoU required KSEBL to eliminate ACS-ARR gap by 2018-19. Audit observed that the ACS-ARR gap of KSEBL, which stood at ₹0.31 per unit in 2015-16 and ₹0.64 per unit in 2016-17 (pre-UDAY period), narrowed to ₹0.05 per unit in 2018-19 and ₹0.10 per unit in 2019-20, but increased to ₹0.72 per unit in 2020-21 (post-UDAY period). The ACS-ARR gap could not be eliminated, as shown in **Table 3**.

Table 3: ACS-ARR gap of KSEBL during 2015-21

Sl. No.	Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
		Pre-UDAY period		UDAY period		Post-UDAY period	
1	Total revenue (₹ crore)	11,230.47	11,619.60	12,665.45	13,989.88	14,854.60	15,169.39
2	Total cost (₹ crore)	11,927.43	13,114.23	13,449.54	14,108.61	15,095.55	16,973.13
3	**Deficit (₹ crore)**	**696.96**	**1,494.63**	**784.09**	**118.73**	**240.95**	**1,803.74**
4	**Accumulated loss (₹ crore)**	**2,184.91**	**7,407.88**	**9,776.60**	**5,336.26**	**5,605.81**	**7,428.16**
5	Units input (Million Units)	22,727.33	23,763.57	24,340.80	24,849.15	26,226.08	25,132.93
6	ACS (₹ per unit) (2)/(5)	5.25	5.52	5.52	5.67	5.76	6.75
7	ARR (₹ per unit) (1)/(5)	4.94	4.88	5.20	5.62	5.66	6.03
8	**ACS-ARR gap as per accounts (₹ per unit) [(6)-(7)]**	**0.31**	**0.64**	**0.32**	**0.05**	**0.10**	**0.72**

(Source: Annual Reports of KSEBL)

As seen from the Table above, though the actual ACS-ARR gap decreased in 2018-19, it however started increasing from 2019-20 onwards.

The cost of power purchase and expenses on establishment and operation and maintenance (O & M) constituted major components of ACS. Power procurement cost increased by 24.07 *per cent* from ₹6,494.91 crore in 2015-16 to ₹8,057.93 crore in 2020-21 while the total expenses on repairs and maintenance, employee benefits and administration rose by 62.60 *per cent* from ₹3,694.63 crore to ₹6,007.61 crore during the period. The expenses on repairs and maintenance remained steady at about ₹260.50 crore during 2015-16 as well as 2020-21, but employee expenses rose from ₹3,104.55 crore in 2015-16 to ₹5,153.17 crore in 2020-21, and administrative expenses increased from ₹329.58 crore to ₹593.86 crore during the period. Timely filing of tariff petitions would have ensured recovery of these costs but there was considerable delay in filing of tariff petitions by KSEBL, which is discussed in **Paragraph 2.5.2** of the Report. The increase in these components of cost during 2015-21 resulted in widening of ACS-ARR gap.

Incidentally, KSERC, in its order dated 25 June 2021 on truing up[4] of accounts for 2017-18 had deducted the claim of KSEBL amounting to ₹232.76 crore towards pay and allowances of 6,367 employees as KSEBL was unable to provide any realistic justification in support of the claim. KSERC observed that the number of employees per 1,000 consumers did not include temporary/ contract staff employed by KSEBL, and the ratio of employees per circuit-kilometre was high and not comparable with other similarly placed States. While determining the tariff for 2018-22, KSERC deducted an amount of ₹403.78 crore claimed by KSEBL towards employee expenses for the same reason. KSERC had directed (April 2017) KSEBL to optimise employee expenses on the

[4] A process to firm up the revenue surplus/gap of DISCOM for a financial year based on audited accounts.

basis of recommendations (2015/2017) of the Indian Institute of Management Kozhikode (IIMK) by re-deploying excess/under-utilised staff, computerisation of major functions/activities, training/re-skilling of employees, job enrichment and redesigning of job content, undertaking technical consultancy etc. It also asked KSEBL to address the concern expressed by the Additional Chief Secretary (Finance), GoK over the creation of 27 new Electrical Section offices at an estimated cost of ₹29.00 crore. MoP also cited (May 2017/ July 2018/ October 2019/ July 2021) high employee cost and O & M expenses as a key concern in its review of financial and operational performance of KSEBL. The recommendations of IIMK were, however, yet to be implemented.

GoK replied (February 2022) that implementation of recommendations of IIMK was delayed due to Covid-19 pandemic situation and a final decision on re-deployment of employees was yet to be taken. GoK further stated that available manpower was utilised for special projects (Oorja Kerala Mission, Soura, Kerala – Fibre Optic Network etc.), and the possibility to conserve water of hydel stations for peak time usage and availing of low-cost power from market in lieu of hydel energy generation was being explored to reduce power purchase cost.

The reply is not tenable as IIMK had submitted their recommendations in 2015/2017 but KSEBL did not take any initiative till date, despite insistence of KSERC and MoP for reduction of employee cost since 2017. The fact remains that KSEBL was unable to reduce employee and power purchase costs and delayed the filing of tariff petitions during 2015-18, which prevented it from eliminating the ACS-ARR gap.

Delay in filing tariff and truing up petitions

2.5.2 As per clause 1.2(e) of the MoU, GoK was required to ensure a tariff hike of five *per cent* during 2018-19, and KSEBL was required to undertake quarterly tariff revision to offset fuel price increase by filing tariff petitions in time.

The process of tariff determination involves filing of tariff application/petition and truing up petition by KSEBL before KSERC for each financial year on or before stipulated dates. The Tariff Regulations, 2014 prescribed that an application for determination of tariff for the ensuing financial year should be filed along with the application for truing up of accounts for the previous financial year on or before 30 November of each financial year till 31 March 2018. For example, tariff petition for 2017-18 was to be filed along with truing up petition for 2015-16 on or before 30 November 2016. For financial years commencing from 1 April 2018, the deadline for filing petition was fixed as 31 October.

KSEBL filed (March 2015) tariff petition for 2015-16 without rendering SBU-wise accounts and application for bridging the projected revenue gap through tariff revision. The petition was, therefore, not approved (March 2017) by KSERC. Subsequently, it filed (April 2018) truing up petition for 2015-16 along with separate accounts for the three SBUs, which was approved (August 2018) for a revenue gap of ₹202.97 crore. KSEBL did not file applications for determination of tariff for 2016-17 and 2017-18, which led KSERC to issue (April 2017) orders for tariff revision of 4.77 *per cent* in *suo motu* proceedings.

Another tariff revision of 7.32 *per cent* was ordered in the petition filed (October 2018) by KSEBL for the period 2018-22.

Audit observed delay (502 days for 2015-16 and 207 days for 2016-17) in filing of truing up petitions by KSEBL, which led to accumulated unbridged revenue gap of ₹6,778.74 crore till finalisation (June 2021) of truing up of accounts for 2016-17. For 2017-18, KSEBL filed (December 2019) petition for approval of truing up of accounts of three SBUs with a delay of 11 months, which was approved for net revenue gap of ₹84.13 crore. KSERC allowed carrying cost for the approved revenue gap besides ordering recovery of revenue gap of ₹4,140.92 crore for 2017-18 and 2018-22.

GoK stated (February 2022) that KSEBL did not file tariff petitions for 2015-17 in time as decision of the Hon'ble High Court of Kerala in a Writ Petition filed by KSEBL against the norms specified in Tariff Regulations, 2014 was pending. KSEBL felt that the normative values specified in the Tariff Regulations, 2014 for recovery of operation and maintenance expenses were unscientific and would result in under-recovery of genuine expenses. The Hon'ble High Court disposed of (February 2018) the Writ Petition with directions to KSERC to pass orders on applications for truing up of accounts for 2015-16, 2016-17 and 2017-18, having regard to the findings and consequential orders (of KSERC) from 2010-11 onward. KSEBL also stated that there was significant delay in getting the accounts of KSEBL audited and in pronouncement of orders by KSERC, which delayed the filing of truing up petitions.

The reply is untenable as timely submission of tariff and truing up petitions as per extant Tariff Regulations was the responsibility of KSEBL. The certification of annual (standalone as well as consolidated) accounts by the statutory auditors of KSEBL took considerable time, i.e., 10 months in 2015-16 and17 months in 2018-19 after the close of the respective financial years. MoP also highlighted (July 2021) the requirement of timely issuing of tariff/truing up orders as a key actionable point for improving the operations and efficiency of KSEBL.

Delay in filing petitions to offset fuel price hike

2.5.3 The Tariff Regulations required KSEBL to submit applications and relevant details for approval of fuel surcharge to be adjusted from consumers within 30 days after the end of each quarter of a financial year. Further, the Kerala State Electricity Regulatory Commission (Fuel Surcharge Formula) Regulations, 2009 prescribed filing of petition to recover additional cost due to change in costs of fuel and power purchase within 30 days of the close of a financial year.

KSEBL did not file petition for recovery of fuel surcharge for 2015-16 and 2016-17 citing absence of approved Aggregate Revenue Requirement (ARR) and Expected Revenue from Charges (ERC) for the respective periods (KSEBL had not filed tariff petitions for 2015-18 in time). Audit observed that KSEBL submitted (August 2017 – July 2018) applications for recovery of fuel surcharge for each quarter of 2017-18 with delay ranging from 18 to 64 days. It filed applications within the specified time during 2018-19, 2019-20 and 2020-21 (except for delay of 42 days for the first quarter of 2020-21). In respect of quarterly petitions submitted for 2018-19, KSERC approved (August 2018) recovery of ₹81.65 crore towards fuel surcharge during August – November 2018. The applications for the first and second quarters of 2019-20 were approved (February 2020/April 2020) for ₹62.26 crore and ₹52.68 crore respectively but recovery was deferred due to outbreak of Covid-19 pandemic. KSERC was yet to issue orders for 2020-21 though public hearings were completed.

Ascribing the delay in filing fuel surcharge petitions for the period till 2017-18 to the absence of approved ARR and ERC, GoK stated (February 2022) that there was delay in receiving invoices from Central Generating Stations and other suppliers for power supplied by them to KSEBL. It was also stated that the time period for filing fuel surcharge petition has since been revised to 45 days after the close of each quarter, as per the recently notified (November 2021) Tariff Regulations.

The reply is not tenable as KSEBL was required to file fuel surcharge petitions within 30 days after the end of each quarter during 2015-21 in accordance with Tariff Regulations then in force. KSEBL, however, delayed filing of fuel surcharge petitions during 2015-18 as explained in the above paragraph.

Reduction of AT & C loss

2.6 AT & C loss is an important yardstick for measuring the performance and efficiency of DISCOMs. It is a measure of the total technical and commercial loss of electricity occurring in distribution network. Technical loss refers to network loss inherent in delivery of electrical energy and includes losses in conductors, transformers, switchgears and measurement system. Commercial loss represents energy loss caused by external factors such as power theft, deficiencies in metering, billing and collection system, etc. Metering of energy input points, ring fencing of electricity network, segregation of rural loads by installing separate feeders, and billing and revenue collection systems are pre-requisites for measuring AT & C loss. Leveraging information technology[5] (IT) for measuring input energy and sales and improving billing and collection efficiencies can significantly enhance accuracy in determination and reporting of AT& C loss.

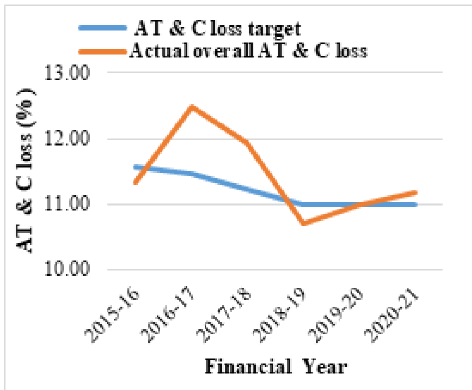
As per clause 1.3(a) of MoU, one of the key obligations for improving operational efficiency was to reduce AT & C loss to 11 *per cent* by the end of the financial year 2018-19. To achieve this, KSEBL had agreed [clause 1.3(e)(ii)] to formulate a detailed action plan, prepare loss reduction targets at Division level, make officers responsible for achieving the targets, and monitor the performance on loss reduction. The MoU also envisaged reduction of transmission loss, i.e., the loss of power or voltage of a transmitted current in passing along a transmission line, to 4.40 *per cent* by 2018-19.

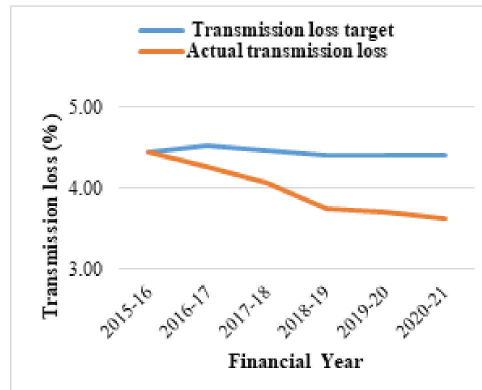
The overall AT & C loss was calculated and uploaded by KSEBL to UDAY web portal at the end of each quarter of a financial year. The AT & C loss declined from 11.32 *per cent* in 2015-16 to 10.71 *per cent* in 2018-19 and 10.98 *per cent* in 2019-20. At the same time, transmission loss decreased from 4.45 *per cent* to

[5] 'Energy Audit' software module enabled automatic computation of AT & C loss directly from the system.

3.74 *per cent* and 3.70 *per cent*. By the end of 2020-21, the overall AT & C loss increased to 11.18 *per cent* while transmission loss fell further to 3.63 *per cent*. The increase in AT & C loss was on account of fall in collection efficiency due to restrictions imposed on disconnection of electricity supply of defaulters after the outbreak of Covid-19 pandemic. The performance of KSEBL on AT & C loss and transmission loss *vis-à-vis* MoU targets can be gauged from **Chart 3**.

Chart 3: AT & C and transmission losses of KSEBL during 2015-21





(Source: Information provided by KSEBL, and UDAY MoU)

Audit observed that reduction in AT&C loss during UDAY period, i.e., from 2017-18 to 2018-19, helped in improving the financial performance of KSEBL, as witnessed from the decline in its deficit (excess of total cost over revenue from operations) from ₹1,494.63 crore in 2016-17 to ₹784.09 crore in 2017-18, and further to ₹118.73 crore in 2018-19. During post UDAY period, when AT & C loss increased to 10.98 *per cent* in 2019-20 and to 11.18 *per cent* in 2020-21, the deficit widened to ₹240.95 crore and to ₹1,803.74 crore respectively.

Audit observed that AT & C losses calculated and reported by KSEBL to MoP under UDAY varied with that submitted to REC Limited for the period 2015-19 for claiming additional grant for projects completed under Deen Dayal Upadhyaya Grameen Jyoti Yojana (DDUGJY), as shown in **Table 4**.

Table 4: Variation in AT & C losses reported under UDAY and DDUGJY

Financial Year	AT & C loss reported under UDAY	AT & C loss reported under DDUGJY
2015-16	11.32	10.44
2016-17	12.48	10.26
2017-18	11.93	11.17
2018-19	10.71	9.10

(Source: KSEBL records)

The discrepancy was due to re-working of AT & C losses by KSEBL (for declaration/reporting under DDUGJY) by treating the entire electricity dues of KWA and other State Government departments as fully received/recovered, when GoK had agreed to settle only the dues of KWA in instalments over a period of four years. While the calculation and reporting of AT & C loss by

KSEBL under UDAY was in accordance with the methodology approved by the Central Electricity Authority, MoP, AT & C losses calculated and declared/ reported under DDUGJY was incorrect and done with a view to avail additional grant (15 *per cent* of project cost) for works completed under that scheme.

An assessment of performance of KSEBL on AT & C loss revealed shortcomings that are discussed below.

Absence of data on AT & C loss of Electrical Divisions

2.6.1 KSEBL specified (Annexure A to MoU) targets for AT & C loss reduction in respect of each of its 71 Electrical Divisions for 2017-18 and 2018-19 under UDAY. However, KSEBL could not provide the basis of fixation of MoU targets. It informed (March/April 2021) Audit that ring fencing and metering works involved huge investment, and that Division-wise MoU targets were finalised on the insistence of MoP and in anticipation of financial assistance from GoI. Audit noticed that the actual AT & C loss data was not available for any Electrical Division as the work of boundary/ring fencing of Electrical Divisions by installing border and feeder meters was incomplete and the IT modules for enabling data acquisition and energy auditing were under development. Consequently, the performance of Electrical Divisions was not assessable in terms of this vital parameter.

GoK replied (February 2022) that KSEBL had started installation of border meters based on the targets fixed under UDAY but there was slippage in the schedule due to floods during 2018-20 and nation-wide lockdown associated with Covid-19 pandemic. Asserting that the overall AT &C loss for 2020-21 was 7.76 *per cent* as per audited accounts, GoK stated that Division-wise AT & C loss targets are only of ancillary nature and assumed importance only when overall targets were not met. GoK, however, added that installation of border meters would be completed under the Revamped Distribution Sector Scheme announced (July 2021) by MoP, to facilitate Division-wise AT & C loss calculation.

The reply is not tenable as KSEBL had specified Division-level targets, knowing the fact that ring fencing, border metering and associated works entailed considerable investment (₹523.85 crore as per Annexure C to MoU). The expectation of financial support from GoI defied logic as grant of financial assistance was not envisaged under UDAY, and GoK/KSEBL had executed MoU for operational efficiency part only. The exclusion of financial turnaround package in the MoU signed by GoK/KSEBL was a lost opportunity as KSEBL could not derive the intended financial benefit from the Scheme.

The overall AT&C loss target should be reflective of the achievement at Electrical Division/R-APDRP town level. The AT & C loss claimed by KSEBL as per audited accounts for 2020-21was unreliable as it reported a collection efficiency of 77.41 *per cent* for 2020-21 (due to Covid-19 pandemic situation), and based on it, the actual AT & C loss should have been 22.72 *per cent* instead of 7.76 *per cent* claimed by KSEBL.

Unreliable data on AT & C loss of R-APDRP towns

2.6.2 Though IT-enabled, the determination of input energy – a key integrant in computation of AT & C loss – for R-APDRP towns was not reliable as modems of Distribution Transformer meters, feeder meters and border meters at several locations did not communicate real-time data due to defective equipment, incomplete and inaccurate consumer indexing/mapping, and communication network related problems. Audit observed infirmities in AT & C loss data of R-APDRP towns for 2015-16 and 2016-17, which led to reporting of erroneous AT & C loss and spike/dip in monthly figures. As many as 19 (out of 43) R-APDRP towns in 2015-16 and 30 R-APDRP towns in 2016-17 showed negative, zero or 100 *per cent* AT & C loss due to multiple data integrity issues such as non-communicating feeder/border meters, partially complete consumer indexing/mapping, missing HT consumers in asset data, inaccurate consumer indexing etc. The problem persisted in UDAY period for 23 R-APDRP towns, due to unresolved data sanitisation and stabilisation issues.

Negative AT & C loss was logged for at least one month in five[6] (out of 12) selected R-APDRP towns in 2018-19 and three[7] towns in 2019-20, with Thiruvananthapuram R-APDRP town reporting negative AT & C loss in seven months during 2018-19. Inconsistency/disparity in monthly AT & C losses was manifest in all selected R-APDRP towns. For example, Palakkad R-APDRP town reported AT & C loss of two *per cent* in August 2018, 24.57 *per cent* in December 2018 and 10.36 *per cent* in March 2019; Ernakulam/Kochi R-APDRP town recorded AT & C loss of 4.36 *per cent* in July 2018, 10.17 *per cent* in January 2019 and 45.28 *per cent* in March 2019; and Kozhikode R-APDRP town logged AT & C loss of 31.71 *per cent* in May 2018, 89.33 *per cent* in July 2018 and 4.09 *per cent* in January 2019. As AT & C loss data held at R-APDRP towns were unreliable, measurement and reporting of AT & C loss was done with manual intervention.

GoK admitted (February 2022) that AT & C loss reports are still not completely reliable mainly due to feeder re-arrangements and SIM communication failures, and other practical difficulties such as non-capturing of dynamic changes in distribution network, unsynchronised meter reading dates for border meters (monthly) and consumer meters (monthly/bi-monthly), and failure of communication network service, which were not considered by GoI while formulating R-APDRP (under which the works were carried out). GoK also stated that KSEBL was taking steps to resolve the communication issues.

The fact, however, remains that KSEBL did not achieve the intended benefit of monitoring AT&C losses in R-APRDRP towns due to non-resolution of technical issues on priority, which resulted in erroneous data being recorded in five selected R-APDRP towns during 2018-19 and three selected towns in 2019-20.

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[6] Mattannur, Thodupuzha, Thiruvananthapuram, Thiruvalla and Thaliparamba.

[7] Koyilandy, Ottappalam and Thodupuzha.

Inconsistent performance of R-APDRP towns

2.6.3 Audit analysis revealed that five[8] (out of 12) selected R-APDRP towns achieved the annual[9] AT & C loss target (11 *per cent*) during the financial year 2018-19 and only three[10] R-APDRP towns achieved the target in 2019-20. While none of the selected R-APDRP towns achieved the target in 2020-21, three[11] towns had AT & C loss above 15 *per cent*, the national-level threshold envisioned in UDAY (by Financial Year 2019). **Appendix 2** shows the inconsistency in performance (on AT & C loss reduction) of 12 selected R-APDRP towns during 2017-21.

Three[12] (out of 12) selected R-APDRP towns attributed (July 2021) their inability to contain AT & C loss during 2020-21 to drop in collection efficiency due to restrictions imposed on disconnection of electricity supply of defaulters after the outbreak of Covid-19 pandemic. Ernakulam/Kochi R-APDRP town cited data integrity issues and damaged meters/modems for failure to reduce AT & C loss. On the other hand, seven[13] R-APDRP towns which reported reduction (over the previous financial year) in AT & C loss in at least one financial year during 2018-21, credited the achievement to replacement of faulty meters, improved collection efficiency and re-conductoring works.

GoK attributed (February 2022) the inconsistency in AT&C losses to multiple data integrity issues such as non-communicating feeder/border meters, partially complete consumer indexing/mapping, missing HT consumers in asset data, inaccurate consumer indexing, and dip in collection efficiency on account of Covid-19 pandemic situation.

The fact remains that none of the R-APDRP towns showed consistency in maintaining the targeted AT&C loss. Further, KSEBL did not analyse the reasons for inconsistent performance of R-APRDP towns.

Billing and collection efficiencies of R-APDRP towns

2.6.4 Billing and collection efficiencies of DISCOMs play a vital role in reduction of AT & C loss. While billing efficiency is the proportion of the total energy billed to consumers with reference to energy supplied, collection efficiency denotes the proportion of revenue collected with reference to amount billed. In the MoU [Clause 1.3(h)(ii) and Annexure C thereto], KSEBL committed itself to achieve billing efficiency of 90.17 *per cent* and collection efficiency of 98.70 *per cent* by 2018-19.

Audit observed that KSEBL improved its billing efficiency from 89.56 *per cent* in 2015-16 to 99.83 *per cent* in 2020-21 but collection efficiency shrunk from 99.02 *per cent* to 77.41 *per cent* during the same period. **Table 5** shows billing and collection efficiencies of KSEBL for pre- and post-UDAY periods.

[8] Ottappalam, Punalur, Thaliparamba, Thiruvalla and Thodupuzha.
[9] Calculated by Audit for each financial year based on monthly data provided by KSEBL on input energy, energy sold, billed energy and amount collected.
[10] Koyilandy, Ottappalam and Thodupuzha.
[11] Ernakulam/Kochi, Mattannur and Punalur.
[12] Kollam, Paravur and Thaliparamba.
[13] Kollam, Koyilandy, Ottappalam, Mattannur, Paravur, Punalur and Thaliparamba.

Table 5: Billing and Collection Efficiencies of KSEBL during 2015-21

Period		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
		Pre-UDAY		UDAY		Post-UDAY	
Billing Efficiency (*per cent*)	Target	90.12	89.78	90.03	90.17	Not Available*	Not Available*
	Actual	89.56	89.74	90.52	90.92	91.25	99.83
Collection Efficiency (*per cent*)	Target	98.12	98.50	98.60	98.70	Not Available*	Not Available*
	Actual	99.02	97.53	97.29	98.12	98.18	77.41

*Not Available as no target was fixed in UDAY MoU for the period beyond 2018-19.

(Source: Information provided by KSEBL and UDAY MoU)

At the national level, billing and collection efficiencies for 2015-16 were 79.65 *per cent* and 95.44 *per cent* respectively, and that for 2019-20 (data for 2020-21 was unavailable) were 85.36 *per cent* and 92.64 *per cent* respectively. Data analysis for 12 selected R-APDRP towns revealed that five[14] towns attained the targeted billing efficiency by 2018-19 and sustained their performance in subsequent period (their number rose to seven[15] by the end of 2020-21). On the other hand, the number of R-APDRP towns that achieved the targeted collection efficiency declined from seven[16] in 2018-19 to five in 2019-20. None of the selected R-APDRP towns achieved the collection efficiency target in 2020-21.

GoK ascribed (February 2022) the dip in collection efficiency during recent years to the restrictions imposed on disconnection of electricity supply of defaulters after the outbreak of Covid-19 pandemic.

The reply is untenable as collection efficiency had dropped in all years during 2015-21; it improved only during 2018-19 (over previous year 2017-18). The dip in collection efficiency during earlier years (prior to 2020-21) cannot be attributed to Covid-19 pandemic situation. This reflects in the collection inefficiency of KSEBL.

Thus, the achievement of KSEBL on reduction of overall AT & C loss and improvement in billing/collection efficiencies was not visible at R-APDRP towns, as most of them recorded higher losses. It indicated the lack of progress in achieving the envisioned operational efficiency. Further, as Electrical Divisions had no mechanism to measure and monitor AT & C loss, AT & C loss was not assessable for areas other than R-APDRP towns which constituted only urban areas.

Grant of undue financial benefit to specified consumers

2.7 In order to minimise the difficulties due to Covid-19 pandemic, MoP directed (March 2020) the Central Electricity Regulatory Commission (CERC) to specify various concessions/relief such as reduced late payment surcharge for delayed payments, deference of capacity charges for unscheduled power (to

[14] Ottappalam, Punalur, Thiruvalla, Thodupuzha and Thiruvananthapuram.

[15] Kollam, Palakkad and Paravur were new addition to the list.

[16] Ernakulam/Kochi, Koyilandy, Mattannur, Palakkad, Thaliparamba, Thiruvalla and Thiruvananthapuram.

be paid in instalments without interest after the lockdown period) and granting of rebate on power billed (fixed cost) and inter-State transmission charges. The directions were communicated to all State Governments with a request to issue similar directions (under section 108 of the Electricity Act, 2003) to the respective State Electricity Regulatory Commissions and DISCOMs to pass on the benefit to end consumers.

Accordingly, GoK issued (June 2020) an Order with directions to KSERC for allowing 25 *per cent* rebate on fixed charges for the lockdown period and granting time to consumers for remitting the balance amount of fixed charges till December 2020. KSEBL filed (June 2020) petition before KSERC for approval of grant of concessions extended to industrial/commercial consumers and private hospitals (specified consumers) in compliance of State Government's directives. The concessions included grant of rebate of 25 *per cent* on fixed charges, exemption of surcharge applicable for delayed payment of balance fixed charges, deferment of demand for additional security deposit in the first quarter of 2020-21, 'pass through' of additional burden (during truing up process), exemption of application fee for new connections for one year, passing the financial impact by way of additional interest and finance charges for all consumers during lockdown period and deferment of fixed charges during truing up of 2020-21, and 'pass through' of rebate of five *per cent* of the total bill (subject to a maximum of ₹100) for promotion of online payment facility for first-time users.

KSEBL received ₹54.89 crore during 2020-21 from Central PSUs in pursuance of concessions announced by GoI/MoP. Likewise, capacity charges of ₹63.38 crore were deferred by NTPC Limited and was payable in three equal instalments without interest from August 2020. On its part, KSEBL allowed rebate of ₹72 crore to consumers for three months (March – May 2020) and deferred capacity charges amounting to ₹229.86 crore.

KSERC approved (December 2020) relief/concessions from 24 March 2020 and directed that any additional liability for extending the concession from 1 March 2020 (as proposed by KSEBL) should be borne by KSEBL. It held that allowing the financial impact of relief/concessions for a specified category of consumers as 'pass through' during truing up of accounts was improper as it would adversely impact the tariff of other consumers. Audit noted that the measures announced by GoI and GoK were meant to alleviate the difficulties faced by consumers during the period of complete lockdown from 24 March 2020 to 31 May 2020 in the wake of the pandemic. Therefore, rebate/concessions granted by GoK/KSEBL to consumers should have been made effective from the date of commencement of lockdown. The decision of KSEBL to grant rebate/concessions to specified consumers for full month in March 2020 instead of a period of seven days in March 2020 (24 –31 March 2020) was, therefore, not proper. There was nothing on record to establish that the specified consumers or their businesses were distressed due to pandemic during the pre-lockdown period. The financial health of KSEBL and the unbridged revenue gap also did not favour such a move. Eventually, operational revenue of ₹17.11 crore[17] was forgone by KSEBL by

[17] ₹72.00 crore – ₹54.89 crore.

way of rebate granted to specified consumers in excess of the concession it had received from Central PSUs.

GoK replied (February 2022) that KSEBL allowed rebate to consumers as per its orders and the additional rebate granted to consumers would be recovered through tariff. It was further replied that in case of disallowance of the same by KSERC, the matter would be taken up by KSEBL with GoK to compensate the shortfall by way of subsidy.

Non-implementation of smart metering project

2.8 As per clause 1.3(e)(ix) of UDAY MoU, KSEBL was required to install smart meters for all consumers with monthly energy usage above 500 kilo Watt hour (kWh) by 31 December 2017 and for consumers with monthly usage between 200 and 500 kWh by 31 December 2019.

KSEBL submitted (November 2017) a Detailed Project Report (DPR) for installation of smart meters in 63 Integrated Power Development Scheme (IPDS) towns, which was approved by the IPDS Monitoring Committee at a cost of ₹64.36 crore. GoI grant for the project constituted ₹38.94 crore[18], and the balance amount was to be arranged by KSEBL. The work was to be awarded within six months from the date of sanction letter and completed within 30 months, i.e., by September 2020, failing which the project would be recommended for closure by Power Finance Corporation Limited (PFC Limited). KSEBL conveyed (April 2018) acceptance to the sanction letter and received (March – May 2020) GoI grant of ₹3.89 crore for the project.

KSEBL selected (July 2018) KPMG Advisory Services Private Limited (KPMG) as Project Management Agency (PMA) and invited Request for Proposal (RfP) for execution of the project. However, based on PMA's recommendation to adopt Radio Freqency-based technology and area-specific implementation for better monitoring of energy parameters, KSEBL decided (August 2018) to implement the project within geographically adjacent Electrical Sections in six Municipal Corporations only. Accordingly, it re-invited (June 2019) RfP for implementing the project through reverse bidding process[19]. Only one bidder participated (August 2019) in the tender, but as it did not meet pre-qualification criteria, KSEBL decided (October 2019) to re-tender after considering changes suggested by various bidders.

The timeline for the project was extended by the IPDS Monitoring Committee till March 2020 but KSEBL did not initiate re-tendering. Consequently, PFC Limited cancelled (August 2020) the project, and grant of ₹3.89 crore was adjusted (January/April 2021) against other approved works[20] under IPDS.

[18] ₹38.62 crore (60 *per cent* of the approved cost) for capital expenditure and ₹0.32 crore (0.5 *per cent*) for fee payable to Project Management Agency.

[19] Proposed on the premise that implementation of smart metering was in an evolution stage and assessment of total cost for a complete solution may not be feasible.

[20] ₹0.94 crore for Real Time Data Acquisition System project and ₹2.95 crore for sub- transmission and distribution system strengthening project.

Audit noticed that KSEBL was aware of the high cost involved in executing the project and had estimated an expenditure of ₹2,192.15 crore in UDAY MoU (Annexure C) for its implementation. The project execution was, therefore, tied to availability of financial assistance/borrowing from GoI/Central PSUs and other agencies like Japan International Cooperation Agency, as specified in the DPR submitted by KSEBL. Though the UDAY Monitoring Committee had advised (January 2018) KSEBL to implement smart metering project through Energy Efficiency Services Limited (EESL)[21], KSEBL did not explore such an option to reduce the cost of procurement of smart meters. Thus, the target of implementing smart metering system as envisaged in UDAY MoU was not achieved.

In this regard, it is pertinent to mention that 22 States/Union Territories have installed (as on 24 December 2021) 34.25 lakh smart meters under the Smart Meter National Programme[22] of GoI through various agencies like EESL, REC Power Development and Consultancy Limited, and PFC Consulting Limited. The installation of smart meters in nine States/Union Territories through EESL resulted in an average increase of 20.50 *per cent* in revenue (₹264 crore *per annum*), improvement of 21 *per cent* in billing efficiency, and reduction of 11 – 36 *per cent* in AT & C loss of DISCOMs.

GoK confirmed (February 2022) the facts but did not spell out future plan, if any, to implement the smart metering project.

The fact remains that KSEBL could not reap the benefits of improving operational efficiency from smart metering, such as reduction of theft, implementation of Demand Side Management activities and consumer engagement, as envisaged in UDAY Scheme. Also, the cost savings in terms of possible reduction in commercial loss did not accrue to KSEBL. In the absence of a definitive plan of action, Audit could not derive an assurance that the smart metering project would be implemented at all, rendering the objective of the MoU unfulfilled.

Delay in implementation of ERP system

2.9 In UDAY MoU [clause 1.3(e)(xi)], KSEBL agreed to implement Enterprise Resource Planning (ERP) system for better and effective inventory management, personnel management, accounts management etc. by March 2018 to reduce costs and increase efficiencies.

KSEBL decided (September 2016) to avail of financial assistance from GoI under IPDS or use its own funds (in case of non-receipt of IPDS grant) for executing ERP project. It appointed (October 2016) KPMG as PMA for a period of 21 months (up to October 2018) at a fee of ₹60 lakh (additional fee of ₹five lakh per month for extended engagement) for the purpose. The expected date

[21] A joint venture PSU of NTPC Limited, Power Grid Corporation of India Limited, REC Limited and PFC Limited, which tenders and procures on behalf of several States/Union Territories, thereby ensuring substantial saving in cost of purchase.

[22] Implemented under 'Build, Own, Operate and Transfer' model wherein all capital and operational expenditure was borne by implementing agencies, and States/DISCOMs had no upfront investment.

of implementation and declaration of go-live of the project was 28 May 2018. As per the approved DPR, the estimated cost of the project was ₹42.64 crore[23], which included modules for human resource management, finance/accounts and material management.

KSEBL invited (November 2018) RfP from eligible bidders for implementation of a Free and Open Source Software (FOSS)-based ERP system but did not receive any bid even after re-tendering. Consequently, it decided (May 2019) to develop and implement FOSS-based ERP system on partial turnkey basis with in-house expertise[24] by availing (March 2020 – November 2021) GoI grant of ₹22.76 crore.

GoK replied (February 2022) that customisation/development activities for the implementation of ERP, which were progressing as per schedule for completion within the scheduled project completion timeline, came to a standstill due to restrictions imposed with respect to Covid-19 pandemic from March 2020.

The fact, however, remains that the project was completed (December 2021) after a delay of more than three years, and the benefits of improving efficiencies through an integrated ERP system were yet to accrue to KSEBL.

Energy efficiency and conservation

2.10 Development and conservation of renewable energy was an important objective of UDAY. As per clause 1.3(f) of UDAY MoU, KSEBL was required to take measures for Demand Side Management (DSM) and energy efficiency such as distribution of light emitting diode (LED) bulbs under the Domestic Efficient Lighting Programme (DELP), launched (January 2015) by GoI for replacement of conventional household bulbs with LED bulbs which have longer lifespan, energy efficiency and improved environmental performance. The DELP scheme was re-launched (May 2015) as 'Unnat Jyoti by Affordable LEDs for All' (UJALA) scheme and envisaged an energy saving of 950 MU *per annum* with an expected peak load saving of 670 mega Watts (MW). The MoU also mandated [clause 1.3(f)(ii)] KSEBL to undertake consumer awareness programmes for optimum utilisation of resources and fostering long-term behavioural changes.

Distribution of LED bulbs to consumers

2.10.1 KSEBL envisaged (February 2015) distribution of 1.50 crore LED bulbs under DELP (through EESL, the implementing agency) to 71.53 lakh domestic consumers having monthly consumption of 120 kWh or less. It decided to recover the cost of LED bulbs from electricity bills of consumers over a period of two years. As per MoU executed (March 2015) with EESL for this purpose, EESL agreed to provide project management consultancy (PMC), carry out competitive bidding, and supply and store LED bulbs, at a fee of 1.5 *per cent* of the project cost and distribution and handling charges of ₹10 per bulb. The MoU was subsequently amended (March 2016) to delete storage and distribution

[23] ₹29.00 crore for developing ERP application, ₹9.84 crore for implementation, and ₹3.80 crore for procuring server, storage, UPS, computers, printers etc.

[24] By constituting a special IT project team of 118 software developers/analysts/domain experts for the purpose and claiming their monthly expenses under IPDS.

activity from the scope of EESL, and the PMC fee payable was accordingly reduced to one *per cent* of the project cost. The supply of LED bulbs was to be completed by 30 September 2016.

The MoU with EESL was extended till January 2018, and KSEBL paid (May 2016 – August 2018) ₹77.40 crore for 1.41 crore LED bulbs supplied in three lots. Accomplishment of target resulted in saving of 20.03 lakh mega Watt hour of energy and reduction of 16.23 lakh tons of carbon dioxide emission *per annum*.

KSEBL fixed selling price[25] of LED bulbs by taking into account the procurement price communicated by EESL, PMC fee, distribution and handling charges, DSM fund contribution and applicable tax. Audit observed that the fixation of selling price of ₹95 for the first lot of 73.04 lakh LED bulbs distributed during January – December 2016 was faulty as KSEBL reckoned PMC fee of ₹1.25 instead of the MoU-specified fee of ₹0.72 (one *per cent* of the procurement price of ₹72.37 per bulb). This resulted in an excess collection of ₹38.71 lakh[26] from consumers. KSEBL also collected DSM fund contribution of ₹7.77 crore[27] and an extra margin of ₹1.42 crore[28] from consumers though it was entitled to levy only distribution and handling charges of ₹10 per LED bulb in terms of MoU executed with EESL. The collection of DSM fund contribution and extra margin from consumers was, therefore, improper, and tantamount to earning undue profit from the scheme (DELP).

GoK, however, did not reply on the above issues.

Failure to meet Renewable Purchase Obligations

2.11 The Ministry of New and Renewable Energy, Government of India (MNRE) launched several initiatives for reducing consumption of coal and other fossil fuels for generation of electricity by installing renewable energy capacity of 175 gigawatts[29] (of which 100 gigawatts from solar source) by 2022. In UDAY, DISCOMs were required to comply with Renewable Purchase Obligations (RPOs) outstanding since 1 April 2012.

KSERC specified solar RPOs ranging from 0.25 *per cent* to 5.25 *per cent* and non- solar RPOs ranging from 3.58 *per cent* to 9.00 *per cent* to be met by KSEBL during 2013-21. In quantitative terms, the total RPOs to be achieved by KSEBL up to March 2021 was 9,728.18 MU (2,293.87 MU of solar RPOs and 7,434.31 MU of non-solar RPOs). Default in meeting the RPOs attracted penalty and/or entailed deposit of an amount (calculated at forbearance price determined by CERC) into a separate fund to purchase Renewable Energy Certificates (RECs) to meet the shortfall.

KSEBL formulated (December 2015/February 2016) an action plan for accounting maximum solar generation (off-grid as well as grid-tied) towards

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[25] At ₹95 (January 2016) for the first lot of 73.04 lakh LED bulbs, ₹60 (January 2017) for the second lot of 22.18 lakh bulbs, and ₹65 (October 2017) for the last lot of 46.42 lakh bulbs.

[26] (₹1.25 – ₹0.72) x 73.04 lakh bulbs.

[27] (73,04,532 bulbs x ₹5 per bulb) + (68,59,633 bulbs x ₹6 per bulb).

[28] 46,41,503 bulbs x ₹3.07 per bulb.

[29] 1 gigawatt (GW) = 1 lakh MW.

RPOs by providing generation-based incentive (GBI) to off-grid solar power generators, which was approved (September 2016) by KSERC at the rate of ₹one per kWh. It also undertook projects/programmes[30] for development of roof top and solar power projects and purchase of cheaper renewable energy through MNRE. However, RPO targets could not be met due to land availability issues (for ground-mounted solar generation), feasibility and forest clearance issues (for floating solar projects), lack of participation of bidders in tender (for ground-mounted and roof-top solar projects), and non-materialisation of projects for which contracts were entered into. KSEBL achieved RPOs of 6,107.16 MU (62.78 *per cent*) against the target of 9,728.18 MU for the period up to 2020-21, leaving a shortfall of 3,621.02 MU[31]. The value of RECs to meet the shortfall in achieving RPOs was assessed at ₹495.95 crore[32].

GoK stated (February 2022) that the value of RECs to meet the shortfall in meeting RPOs was estimated at ₹335.10 crore. The estimation in the reply is, however, based on the calculation of shortfall in achieving RPOs for the period 2015-21 only and not for total RPOs outstanding since 2013-14. Further, the reply was silent on the strategy to be adopted for achieving the targets fixed for RPOs and meeting the shortfall in purchase of RPOs.

Passive efforts to conserve power

2.12 Clause 1.3 (e)(i) of UDAY MoU required KSEBL to undertake 'name and shame' campaign for controlling power theft. Further, clause 1.3(f)(iii) of the MoU mandated replacement of at least 10 *per cent* of conventional agricultural pump sets with energy-efficient ones for improving efficiency.

Loss due to theft and misuse of energy

2.12.1 The Anti-Power Theft Squad (APTS)/Vigilance Department of KSEBL carried out 1,72,674 inspections during 2015-21 (average of 28,779 inspections in a year) and detected 38,154 cases of irregularities/theft/short-assessment / malpractices in consumption of power by consumers. The number of annual inspections witnessed a steady decrease (from 34,313 in 2015-16 to 23,155 in 2020-21), which resulted in a decline in the number of cases detected and reported (from 8,651 in 2015-16 to 3,629 in 2020-21). The total amount of loss due to irregularities/theft/short-assessment/malpractices during 2015-21 was assessed at ₹205.62 crore while the recovery thereagainst aggregated to ₹112.47 crore (54.70 *per cent*). KSEBL, however, discounted the need for undertaking 'name and shame' campaign stating that instances of theft/malpractices in the State were very low as consumers were law-abiding and their electricity connections were completely metered. This statement did not hold good in the light of cases of theft/irregularities reported by APTS/Vigilance Department during 2015-21.

GoK replied (February 2022) that the decline in number of annual inspections and detection of cases of theft and other irregularities during 2015-21 was due to floods and Covid-19 pandemic situation.

[30] Energy Savings & Coordination Team, Soura, and Oorja Kerala Mission.
[31] Non-solar RPOs of 2,282.54 MU and solar RPOs of 1,338.48 MU.
[32] {(2,282.54 MU * 1,000 kWh)* ₹1,000 per non-solar REC} + {(1,338.48 MU * 1,000 kWh) * ₹2,000 per solar REC}.

The reply is not tenable as the decrease in loss assessed on account of theft and other malpractices was due to lesser number of inspections carried out during 2020-21. The loss assessed for the period prior to Covid-19 pandemic, i.e., till 2019-20, was substantial (₹190.77 crore or 92.78 *per cent*), which underscored the need for undertaking 'name and shame' campaign as envisaged in UDAY MoU.

Non-replacement of inefficient pump sets

2.12.2 The agriculture Demand Side Management (Ag-DSM) scheme[33] of Bureau of Energy Efficiency (BEE) offered an opportunity to reduce overall energy consumption, cut down energy bill to farmers, reduce subsidy burden on States/DISCOMs and mitigate energy shortage by efficiency upgradation of agricultural pump sets. Implementation of energy efficiency measures was also mandated in UDAY.

A study conducted (June 2018) by the Kerala State Productivity Council (KSPC) revealed that most agricultural pump sets in the State were inefficient[34], leading to higher power consumption and carbon emission. KSPC identified savings potential of 69 MU *per annum* through replacement of inefficient pump sets at an estimated cost of ₹315 crore. The savings in terms of revenue was estimated at ₹13.67 crore *per annum* for agricultural consumers and ₹42.38 crore *per annum* for KSEBL.

Audit observed that KSEBL proposed to replace only 25 (instead of 0.50 lakh) out of the existing five lakh agricultural pump sets in the State and did not devise any action plan for implementing Ag-DSM scheme through EESL. This deprived it of substantial gains in terms of energy conservation/ efficiency and revenue, as projected by KSPC.

GoK replied (February 2022) that KSEBL had implemented an energy-efficient agricultural dewatering submersible pumping system with financial support of GoK and developed a web portal in which suppliers and consumers could register themselves by providing information on technical specifications and star-rating of desired products.

The reply, however, glosses over the fact that KSEBL did not fulfil its commitment under UDAY MoU regarding replacement of inefficient agricultural pump sets.

Procurement of power without tendering

2.13 Transparency in purchase is ensured through competitive bidding/ tendering, centralised procurement from PSUs, e-bidding/e-reverse auction through Discovery of Efficient Electricity Price[35] and electronic system-based

[33] Implemented through EESL for 11 DISCOMs in eight States. Installation of 0.78 lakh energy-efficient pump sets in two States resulted in energy saving of 202.91 MU and peak load demand of 38 MW, reduction of 1.50 tons in carbon dioxide emission, and cost saving of ₹101 crore per year.

[34] The overall (average) efficiency of pump sets was 27.60 *per cent*, and only 11 *per cent* of the total pump sets operated above 40 *per cent* of the overall efficiency.

[35] Discovery of Efficient Electricity Price or DEEP is an e-bidding and e-reverse auction portal of MoP for procurement of short-term power by DISCOMs.

power trading exchanges. The requirement for transparency in procurement of power was reinforced in clause 1.3(j) of UDAY MoU.

KSEBL decided (January 2016) to provide grid connectivity for four wind power projects of 8.40 MW capacity from Ahaliya Alternate Energy Private Limited (AAEPL). On a petition filed (June 2016) by AAEPL for approval of PPA and determination of tariff, KSERC ordered (February 2017) a generic tariff of ₹5.34 per unit for energy supplied from the said projects and approved the PPA for 13 years from March 2016. KSERC, however, clarified that the tariff was a ceiling price and the parties were free to negotiate a lower price on mutual agreement.

Audit observed that KSEBL did not impress upon AAEPL to file petition before KSERC for project-specific tariff before granting grid connectivity. It was only on directions (August 2017) of GoK that KSEBL approached (October 2017) AAEPL for filing a petition before KSERC for project-specific tariff. KSERC maintained (December 2017) that it could not re-determine the tariff which was fixed after following the due procedure/regulations.

Audit further noticed that the generic tariff approved by KSERC was higher than the price of ₹3.46/₹2.64 per unit discovered (February/December 2017) by MNRE through competitive bidding. Though KSEBL agreed for a negotiated (January 2018) tariff of ₹5.23 per unit, the average cost of power purchased by it during 2017-18 was only ₹3.53 per unit. As wind power procured from AAEPL could be used to meet RPOs and Renewable Energy Certificates were available at a nominal price of ₹one per unit (to meet RPO shortfall), the effective cost of purchase from AAEPL worked out to ₹4.23 per unit.

The procurement of power from AAEPL without inviting tender lacked transparency and resulted in an additional expenditure of ₹6.60 crore[36] and liability of ₹10.30 crore[37] for the remaining period of PPA.

GoK replied (February 2022) that KSEBL was not directed to go for competitive bidding for purchase of renewable energy until July 2017. It also cited non-availability of market rate of wind energy at the time of concluding the PPA with AAEPL. It was further stated that KSEBL had very limited scope for negotiation of tariff with AAEPL but steps were taken for petitioning KSERC for revising the generic tariff based on actual capacity utilisation factor, post execution of PPA.

The reply is not tenable as KSEBL/AAEPL did not approach KSERC for project-specific tariff at the time of entering into the contract or commencing the purchase of renewable energy. Further, best practices of procurement prescribe competitive bidding for ensuring transparency and discovering the lowest rate/tariff, and no specific direction is required for adopting the best practice.

[36] {(₹5.23 – ₹1.00) – ₹3.53} * 94.22 MU purchased during 2016-21 * 10,00,000 kWh.

[37] 8.4 MW * 8.76 conversion factor for MU * 25 *per cent* plant generation capacity * 8 years * ₹0.70 * 10,00,000 kWh.

Conclusion

UDAY was launched by GoI with the primary objective of ensuring financial turnaround of DISCOMs through takeover of their debt by State Governments. However, GoK/KSEBL did not opt for the financial turnaround component of UDAY and instead entered into the MoU for improving operational efficiency only.

The expenditure incurred by KSEBL on employee benefits and power purchase increased considerably during 2015-21, which could not be fully recovered through tariff as KSERC deducted the claim of KSEBL towards pay and allowances of 6,367 employees while issuing orders on truing up of accounts for 2017-18. The long-term debt of KSEBL increased substantially by 318.72 *per cent* from ₹3,753.51 crore in 2015-16 to ₹15,716.79 crore in 2020-21, mainly on account of employees' pension liability.

The achievement of reduction in overall AT & C loss helped KSEBL to reduce operational losses during 2017-18 and 2018-19 but the performance was not sustained during 2020-21. The achievement in AT & C loss reduction was not visible in select R-APDRP towns, and lack of a mechanism to measure and report AT & C loss at Electrical Divisions rendered the fixation of Division-wise targets in the MoU redundant. The gap between cost of power supply and revenue earned could not be eliminated due to increase in employee expenses, power purchase and O & M costs. Smart metering project did not take off due to high cost involved in implementation.

Thus, the gains in operational efficiency due to implementation of UDAY Scheme did not translate into improved financial performance for KSEBL. By not opting for the Financial Scheme, the KSEBL lost an opportunity to make a stitch in time to arrest its plunging losses.

Recommendations

GoK may

- in future, ensure that it fully analyses and takes advantages in all respects of schemes having financial and operational/other implications for State Government undertakings/companies.

KSEBL may

- take suitable steps to prune administrative and power procurement expenses and ensure recovery of costs through efficient management of resources and further reducing AT & C losses.
- expedite works of ring fencing and development of IT modules for data acquisition and energy auditing for enabling measurement of AT & C loss at Electrical Divisions.
- take steps to improve HT:LT ratio, implement HVDS in more places, ensure GIS mapping and indexing of all consumers.
- consider implementation of smart metering solutions for improving efficiency of electricity distribution operations and increasing revenue.

- collaborate with BEE and EESL for implementing DSM/Ag-DSM scheme and other energy efficiency programmes for deriving the best results in energy conservation.
- analyse the reasons for increasing losses and plug them before they go awry.
- also rationalise the manpower and bring down the employee costs to an efficient and sustainable level.

CHAPTER III

Monitoring and Evaluation

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MONITORING AND EVALUATION

Monitoring

3.1 Clauses 1.2 (f) and 1.2 (g) of UDAY MoU mandated that GoK should endeavour to ensure that all operational targets enumerated in the MoU are achieved and a review of KSEBL's performance should be done on monthly basis at the State Government level in the presence of State Finance representative.

Ineffective monitoring by State Government

3.1.1 The Monitoring Committee of UDAY (UDAY-MC) headed by Secretary (Power), GoI periodically reviewed the progress made by States/Union Territories in implementation of UDAY. At the persistence of UDAY-MC, GoK constituted (September 2017) a State Level Monitoring Committee (SLMC), with Additional Chief Secretary in the Department of Power as Chairperson and eight other members for developing monitoring framework under the Scheme. Audit, however, observed that the SLMC did not have a representative from State Finance Department though UDAY MoU mandated such a condition. The first meeting of SLMC was scheduled in December 2017 but details regarding meetings held and minutes thereof were not made available to Audit.

GoK stated (February 2022) that special efforts are being taken for effective monitoring of Centrally Sponsored Schemes and projects.

It is, however, pertinent to note that KSEBL did not achieve the targets on implementation of ERP and smart metering systems, RPOs and ACS-ARR gap elimination, as discussed in the preceding Chapter.

Not fixing responsibility

3.1.2 In UDAY MoU [Clause 1.3(h)(ii)], KSEBL had agreed to devise Key Performance Indicators (KPIs) for each officer in-charge on areas of AT & C loss reduction and improvement in metering/billing/collection efficiency and monitor and incentivise/penalise the officer in-charge for his/her performance in achieving KPIs.

KSEBL devised KPIs on the following areas of customer service and quality of service but did not specify benchmarks for measurement and assessment of KPIs. **Table 6** shows the achievement of KSEBL on KPIs it had devised.

Table 6: Achievement on KPIs during pre-UDAY and post-UDAY periods

KPI	Achievement
Customer complaint redressal	Resolution of customer complaints improved from 94.49 *per cent* in 2017 to 97.20 *per cent* in 2021
Effecting new service connections	Percentage of new service connections by KSEBL improved from 92.03 in 2017 to 98.05 in 2021
Implementinge-payment service	Use of electronic means for receiving payments increased from 6.31 *per cent* in 2017 to 54.70 *per cent* in 2021
Enhancing safety with zero fatality	Reduction in number of accidents was stable, at 41.63 *per cent* in 2017 and 41.77 *per cent* in 2021
System Average Interruption Frequency Index (SAIFI)	Average power interruptions experienced by consumers in a year increased from 7.51 times in 2017 to 12.27 times in 2021
System Average Interruption Duration Index (SAIDI)	Average duration of power interruptions experienced by consumers in a year increased from 61.77 hours in 2017 to 63.18 hours during 2021.

(Source: Information provided by KSEBL)

As could be seen from the above **Table**, KSEBL improved its performance in areas of customer complaint redressal, effecting new service connections and implementing e-payment service. It, however, did not fare well in reducing power interruptions in the distribution system.

Audit observed that KSEBL assessed the performance of its various offices/units on the basis of year-on-year achievement of the above-stated KPIs. However, as benchmarks for KPIs were not fixed, the performance of offices and officers was not assessable for incentivising/penalising them as envisaged in UDAY MoU.

GoK stated (February 2022) that supply interruptions due to falling of trees/ branches during rains/winds had resulted in low SAIFI values. It expected to improve SAIFI and SAIDI values by drawing covered cables, underground cables and Aerial Bunched Cables as part of the next multi-year plan and the Revamped Distribution Sector Scheme.

The reply is, however, silent on the need for fixing benchmarks for monitoring performance through KPIs and on devising KPIs for reducing AT & C loss.

3.1.3 Clause 1.3(e)(ii) of UDAY MoU required that KSEBL shall prepare loss reduction targets at Division/Circle/Zonal level and make officers concerned responsible for achieving the loss reduction targets. Moreover, Division-wise targets have been specified in the MoU itself (Annexure A to MoU).

KSEBL did not devise any action plan to implement the same but stated (April 2021) that the calculation of Division-wise AT & C loss was not feasible as ring fencing of Electrical Divisions was incomplete and data acquisition modules were still under development. As AT & C losses were not calculated Division-wise, fixing responsibility on the officials at Division level was not possible. The reply of KSEBL is not tenable for the reason that as per MoU, they need to fix loss reduction targets for Division/Circle/Zonal level. Also, no KPIs have been devised for the officer in charge enabling to fix responsibility in case of shortfall. This indicated lack of concerted action to minimise AT & C loss.

GoK replied (February 2022) that it plans to install additional border meters to facilitate Division-wise loss calculation under the Revamped Distribution Sector Scheme announced by MoP.

Incomplete indexing and mapping of consumers

3.1.4 Geographic Information System (GIS)-based asset mapping and consumer indexing identifies and registers the electrical connectivity and geographical position of every electrical asset and identifies all consumer connections within the power distribution network. UDAY required DISCOMs to achieve consumer indexing and GIS mapping by 30 September 2018.

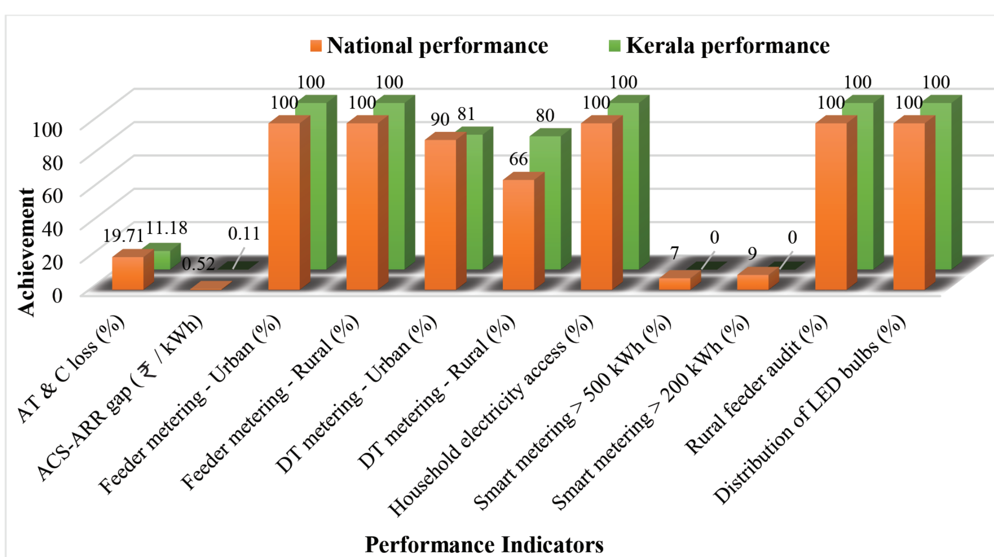
Information provided by KSEBL indicated that it completed pole-level consumer indexing and GIS mapping in geographical areas within 252 (out of 776) Electrical Sections till March 2021 under R-APDRP and IPDS. KSEBL completed mapping of 32.47 *per cent* consumers in R-APDRP towns while the mapping of consumers in rural areas was yet to commence.

Evaluation

Achievement *vis-à-vis* national indicators

3.2 The national dashboard in UDAY portal showed (as on 31 March 2021) that Kerala was ranked fourth[38] among 32 States/Union Territories while KSEBL occupied the 15th place among 48 DISCOMs/utilities in terms of the progress/ performance in achieving UDAY parameters. Though billing efficiency and energy sale of KSEBL improved in 2020-21, there were slippages in overall AT & C loss and ACS-ARR gap over the previous years. The performance of KSEBL *vis-à-vis* national barometer as at the end of financial year 2020-21 is shown in **Chart 4**.

Chart 4: Performance of KSEBL as on 31 March 2021



(Source: www.uday.gov.in, accessed on 31 July 2021)

[38] The top three positions were occupied by Gujarat, Karnataka and Andhra Pradesh on the basis of marks awarded by MoP for progress made in respect of 14 key indicators.

KSEBL surpassed/equalled the national barometer in reduction of overall AT & C loss, implementation of DT metering in rural area, feeder metering, electricity access to unconnected households, rural feeder audit and distribution of LED bulbs under DELP. Based on its performance on key financial and operational parameters, MoP assigned[39] (July 2021) 'B+' rating to KSEBL, signifying moderate financial and operational performance capability with room for further improvement.

Conclusion

The monitoring of performance of KSEBL lacked effectiveness as there were no regular meetings of SLMC to assess the progress made in implementing various projects/programmes. KSEBL did not devise KPIs for AT & C loss reduction and fix any benchmark for existing KPIs. There was scope for improving the performance by taking steps for elimination of ACS-ARR gap and implementation of smart metering and energy conservation programmes.

Recommendation

GoK may periodically monitor the progress of major projects/works undertaken by KSEBL under various Government schemes/programmes.

[39] DISCOMs with a score between 50 and 65 were rated 'B+' based on their current level of performance and relative improvement on operational and reform parameters (43 *per cent* weightage), financial parameters (42 *per cent* weightage) and external parameters (15 *per cent* weightage).

CHAPTER IV

Conclusion and Recommendations

CHAPTER IV

CONCLUSION AND RECOMMENDATIONS

Conclusion

GoI launched UDAY for ensuring a sustainable solution to the problem of legacy debts and address potential future losses of DISCOMs through reforms in sectors of generation, transmission, distribution, and energy efficiency. The primary objective of UDAY was to enable financial turnaround of DISCOMs through takeover of their debt by State Governments.

However, GoK/ KSEBL executed MoU for UDAY for improving operational efficiency only and not for achieving financial turnaround. The long-term debt of KSEBL increased substantially by 318.72 *per cent* from ₹3,753.51 crore in 2015-16 to ₹15,716.79 crore in 2020-21, mainly on account of employees' pension liability. As the MoU did not provide for financial turnaround part, there was no takeover of debt of KSEBL by GoK under the Scheme.

The expenditure incurred by KSEBL on employee benefits and power purchase increased considerably during 2015-21, which could not be fully recovered through tariff as KSERC deducted the claim of KSEBL towards pay and allowances of 6,367 employees while issuing orders on truing up of accounts for 2017-18. The execution of MoU under UDAY for improving operational efficiency alone did not bring about the intended benefit of the Scheme to KSEBL as takeover of DISCOM debt was not envisaged in the MoU.

KSEBL achieved the key operational parameters in respect of AT&C losses it had committed itself to under UDAY. However, the achievement of reduction in AT&C loss was not sustained in post UDAY period. The performance on reduction in AT & C loss was not noticeable at select R-APDRP towns while there was no mechanism to measure and report AT & C loss at Electrical Divisions. Distribution network strengthening and DT metering works progressed well during post-UDAY period, and total electrification of households and supply of LED bulbs to consumers were significant strides.

The ACS-ARR gap continued to increase in the post UDAY period mainly on account of increase in employee expenses, power purchase cost and O &M costs, which offset the advantages of total consumer metering and adequate power supply. KSEBL also could not eliminate the gap between cost of power supply and revenue earned, which impacted its financial performance. Non-availability of funds limited the implementation of projects such as smart metering and ring-fencing of Electrical Divisions, depriving KSEBL of the benefits of automation and technology-driven process. All major projects/activities for improving operational efficiency were carried out/continued under other schemes such as R-APDRP, IPDS, DDUGJY etc. which helped KSEBL to achieve most of the performance indicators under UDAY.

Thus, while KSEBL achieved some of the operational parameters envisaged in UDAY MoU, implementation of UDAY *per se* did not have a profound impact on improving the financial and operational performance of KSEBL. By not opting for the financial turnaround, the KSEBL lost an opportunity to improve its finances.

Recommendations

To ensure that intended benefit of GoI schemes accrue in full to State Government undertakings/companies, GoK may

- in future, ensure that it fully analyses and takes advantages in all respects of schemes having financial and operational/other implications for State Government undertakings/companies; and

- periodically monitor the progress of major projects/works undertaken under various schemes/programmes.

To improve operational efficiency and financial performance, KSEBL may

- take suitable steps to prune administrative and power procurement expenses and ensure recovery of costs through efficient management of resources and further reducing AT & C losses.

- expedite works of ring fencing and development of IT modules for data acquisition and energy auditing for enabling measurement of AT & C loss at Electrical Divisions.

- take steps to improve HT:LT ratio, implement HVDS in more places, ensure GIS mapping and indexing of all consumers, and devise KPIs with benchmarks.

- consider implementation of smart metering solutions for improving efficiency of electricity distribution operations and increasing revenue.

- collaborate with BEE and EESL for implementing DSM/Ag-DSM scheme and other energy efficiency programmes for deriving the best results in energy conservation.

- analyse the reasons for increasing losses and plug them before they go awry.
- also rationalise the manpower and bring down the employee costs to an efficient and sustainable level.

Thiruvananthapuram,	**(Dr. BIJU JACOB)**
The 29 July 2022	**Principal Accountant General**
	(Audit II), Kerala

Countersigned

New Delhi,	**(GIRISH CHANDRA MURMU)**
The 17 August 2022	**Comptroller and Auditor General of India**

APPENDICES

APPENDIX 1

(Referred to in Paragraph 2.3)

Financial performance of KSEBL during 2015-21

(₹ in crore)

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Revenue from operations	10,914.44	11,218.82	12,318.17	13,837.02	14,644.44	14,420.63
Other income	316.03	400.78	347.28	152.86	210.16	748.76
Total income	**11,230.47**	**11619.60**	**12,665.45**	**13,989.88**	**14,854.60**	**15,169.39**
Purchase of power	6,494.91	7,393.32	7,526.03	7,873.39	8,680.00	8,057.93
Generation of power	104.26	23.45	2.08	3.28	5.71	4.80
Employee benefit expenses	3,104.55	3,360.77	2,638.06	2,912.88	3,047.48	5,153.17
Other expenses	2,223.71	23,36.69	3,283.37	3,319.06	3,362.36	3,757.23
Total expenses	**11,927.43**	**13,114.23**	**13,449.54**	**14,108.61**	**15,095.55**	**16,973.13**
Exceptional items	0	0	0	15.95	28.60	18.61
Profit/ (Loss)*	**(696.96)**	**(1,494.63)**	**(784.09)**	**(134.68)**	**(269.55)**	**(1,822.35)**

*Including changes in fair valuation and other adjustments.

(Source: Audited Annual Financial Statements of KSEBL)

APPENDIX 2

(Referred to in Paragraph 2.6.3)

AT & C loss and billing and collection efficiencies of 12 select R-APDRP towns during 2017-21

Sl. No.	R-APDRP town	AT & C loss (*per cent*)				Billing Efficiency (*per cent*)				Collection Efficiency (*per cent*)			
		2017-18	2018-19	2019-20	2020-21	2017-18	2018-19	2019-20	2020-21	2017-18	2018-19	2019-20	2020-21
1	Thiruvananthapuram	97.57	-5.11	13.44	14.41	2.45	**106.05**	87.68	90.07	99.17	**99.11**	**98.73**	95.03
2	Ernakulam/Kochi	98.65	23.39	30.98	17.00	1.35	77.17	69.92	89.94	99.78	**99.27**	**98.71**	92.29
3	Kollam	95.20	14.91	11.98	13.64	4.88	86.28	89.05	**90.53**	99.27	98.62	**98.85**	95.39
4	Paravur	12.38	14.28	11.12	13.55	88.28	86.88	90.14	**90.21**	99.24	98.66	98.61	95.84
5	Koyilandy	3.06	19.42	**9.55**	13.95	97.11	81.52	**90.69**	89.16	99.82	**98.84**	**99.73**	96.51
6	Punalur	26.40	**9.85**	35.34	24.46	83.40	**91.62**	**90.84**	**90.38**	88.25	98.39	71.19	83.58
7	Palakkad	99.71	13.30	12.10	12.38	0.30	87.78	**90.56**	**91.34**	97.94	**98.77**	97.07	95.93
8	Thodupuzha	40.70	**10.98**	**8.39**	14.75	61.55	**90.68**	**96.13**	**91.87**	96.34	98.17	95.30	92.79
9	Ottappalam	10.75	**7.11**	**10.91**	14.74	90.79	**94.40**	**92.15**	**91.61**	98.30	98.40	96.69	93.08
10	Thaliparamba	7.29	**10.90**	11.69	14.25	92.96	90.04	88.74	88.60	99.73	**98.96**	**99.51**	96.78
11	Thiruvalla	11.73	**8.39**	12.08	13.17	91.71	**92.78**	**91.42**	**91.38**	96.26	**98.73**	96.17	95.02
12	Mattannur	36.86	18.14	42.31	27.94	80.68	82.64	84.59	88.91	78.26	**99.05**	68.20	81.05
	DISCOM target (as per UDAY MoU)		**11.00 →**				**90.17 →**				**98.70 →**		

(Source: Information provided by KSEBL and UDAY MoU)

GLOSSARY OF KEY TERMS AND DEFINITIONS

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Aggregate Revenue Requirement	The annual revenue requirement comprising of allowable expenses and return on equity share capital/ return on net fixed assets pertaining to the distribution business/ licensee for recovery through tariffs.
Aggregate Technical & Commercial (AT & C) loss	A measure of total technical and commercial loss of electricity occurring in distribution network. Technical loss refers to network loss inherent in delivery of electrical energy and includWWes losses in conductors, transformers, switchgears and measurement system. Commercial loss represents energy loss caused by external factors such as power theft, deficiencies in metering, billing and collection system etc.
Average Cost of Supply (ACS)	Ratio of total expenditure (including cost of power generation, establishment, interest charges, depreciation etc.) to total input energy (excluding transmission loss and energy traded/ sold).
Average Revenue Realised (ARR)	Ratio of revenue earned from sale of power and other income to the total input energy
Carrying cost	Cost of funds incurred by DISCOM for funding the revenue gap.
Consumer indexing	Identification and codification of consumers in electrical network and relating it to network assets.
Demand Side Management (DSM)	Involves planning, implementation and monitoring of activities to encourage consumers to amend their electricity consumption patterns and help them use electricity more efficiently.
Distribution Transformer (DT)	A final voltage transformation in the distribution system to step down voltage to the level used by consumer
Expected Revenue from Charges (ERC)	An estimate of revenue at the prevalent tariff. A tariff revision may be permitted when ARR exceeded ERC unless the gap could not be met by other means.
Geographic Information System (GIS)	A tool for development of geo-referenced consumer and network maps for DISCOMs, which helps in network planning and providing better services to consumers.
HT:LT ratio	Ratio of the length of High Tension lines in a distribution network to the length of Low Tension lines.

High Tension (HT) consumer	A consumer who is supplied with electrical energy at high voltage (higher than 650 Volts but not exceeding 33,000 Volts) by KSEBL.
High Voltage Distribution System (HVDS)	A method used to improve quality (voltage profile) of electric supply and reduce losses by extending 11 kV lines up to or as nearer to the load centre as possible and installing small-size transformers ranging from 10 kVA to 100 kVA (depending on load requirement) to supply power to consumers.
Hydel energy	A form of renewable energy that uses the power of moving water to generate electricity.
Key Performance Indicators (KPIs)	Parameters or yardsticks used to measure the operational and financial performance of entities, units/ teams and/ or employees. They are used to provide required information to those charged with oversight as well as line managers and allow management to track the progress of improvement programmes.
Low Tension (LT) consumer	A consumer supplied with electrical energy at low voltage (not exceeding 250 Volts) or medium voltage (higher than 250 Volts but not exceeding 650 Volts).
R-APDRP towns	Areas in which the Restructured Accelerated Power Development & Reforms Programme (R-APDRP) of GoI, for establishing automated systems for collection of base line data and energy accounting/ auditing and distribution network strengthening, was implemented.
Radio Frequency (RF)	A technology that uses electromagnetic radiation between circuits that have no direct electrical connection.
Renewable energy	Energy generated from sources such as wind, solar, biomass, bio-fuel, urban or municipal waste, small, mini and micro hydro-electric sources, and includes such other sources as approved by MNRE.
Renewable Energy Certificate (REC)	A market-based instrument issued by State nodal agency to eligible renewable energy generators for promoting renewable energy and facilitating RPO compliance. One REC was equivalent to 100 MU of renewable energy.
Renewable Purchase Obligations (RPOs)	Targets assigned to obligated entities (distribution licensees/ open access consumers/ captive users), legally binding them to consume renewable energy as a share of the total energy they consume in a year.

Ring fencing	Installing import/ export meters at the boundary of a distribution area and on dedicated feeders and 33 kV/ 11 kV sub-station lines to measure net input energy.
Smart metering system	A bi-directional communication network to gather real-time information on energy usage and analysis, which enables Time-Of-Day/ Time-Of-Use billing, prediction and management of peak demand, consumer control over power consumption, prepaid billing facility, remote connection/ disconnection of load, accurate billing etc.
System Average Interruption Duration Index (SAIDI)	The average duration of interruptions experienced by consumers during a year and expressed as a ratio of the annual duration/ hours of sustained interruptions to the total number of consumers served.
System Average Interruption Frequency Index (SAIFI)	A measure of distribution system reliability or quality of power distributed by DISCOM to consumers, it is the ratio of number of customer-interruptions in a year to total number of customers served.
Tariff	A schedule of charges for generation, transmission or supply of electricity together with the terms and conditions for application thereof proposed by the licensee or generating company or approved by appropriate regulatory commission.
Truing up	A process to firm up the revenue surplus/ gap for a financial year based on audited accounts.

https://cag.gov.in/ag2/kerala/en