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REPORT OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA
on
PUBLIC SECTOR UNDERTAKINGS
for the year ended 31 March 2019

भारतीय लेखापरीक्षा और लेखा विभाग ✦ INDIAN AUDIT AND ACCOUNTS DEPARTMENT

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

GOVERNMENT OF KERALA

Government of Kerala

Report No. 2 of the year 2021

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Preface

This Report deals with the results of audit of Government companies, Departmental Undertakings and Statutory Corporations for the year ended 31 March 2019 and has been prepared for submission to the Government of Kerala under the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971, as amended from time to time.

2 The accounts of Government companies (including companies deemed to be Government companies as per the provisions of the Companies Act) are audited by the Comptroller and Auditor General of India (CAG) under the provisions of Section 619 of the Companies Act, 1956 and Sections 139 and 143 of the Companies Act, 2013. The accounts certified by the Statutory Auditors (Chartered Accountants) appointed by the CAG under the Companies Act are subject to supplementary audit by the officers of the CAG and the CAG gives his comments or supplements the reports of the Statutory Auditors. In addition, these companies are also subject to test audit by the CAG.

3 CAG also conducts audit of Kerala State Road Transport Corporation, Kerala Industrial Infrastructure Development Corporation, Kerala State Warehousing Corporation and Kerala Financial Corporation as per their respective legislations.

4 This Report has been divided into two parts. Part I deals with the analysis of the performance of the three Power Sector Undertakings and Part II deals with the analysis of the performance of the 137 State Public Sector Undertakings (other than Power Sector).

5 The instances mentioned in this Report are those, which came to notice in the course of audit during the year 2018-19 as well as those which came to notice in earlier years but could not be reported in the previous Audit Reports. The matters relating to the period subsequent to 2018-19 have also been included, wherever felt necessary.

6 The audit has been conducted in conformity with the Auditing Standards issued by the CAG.

Overview

Overview

Functioning of Public Sector Undertakings

Audit of Government Companies is governed by Sections 139 and 143 of the Companies Act, 2013. The financial statements of Government Companies are audited by the Statutory Auditors appointed by the Comptroller and Auditor General of India (CAG). These financial statements are also subject to supplementary audit by the CAG.

As on 31 March 2019, Kerala had 140 State Public Sector Undertakings (PSUs) consisting of four Statutory Corporations and 136 Government Companies (including 16 non-working Government Companies) under the audit jurisdiction of the CAG. The working PSUs registered a turnover of ₹31,507 crore during 2018-19 as per their latest finalised accounts. This turnover was equal to 4.07 *per cent* of the Gross State Domestic Product (GSDP) of Kerala. As on 31 March 2019, the investment (capital and long term loans) in 140 PSUs was ₹38,428.09 crore. The Power Sector received 58.58 *per cent* out of the total investment (₹18,494.89 crore) made during the period from 2014-15 to 2018-19.

1. Functioning of Power Sector Undertakings

Formation of Power Sector Undertakings

Kerala State Electricity Board (KSEB) was constituted (March 1957) for carrying out the business of Generation, Transmission and Distribution of electricity in the State of Kerala. KSEB continued as Transmission utility and Distribution licensee till 24 September 2008. Government of Kerala (GoK) vested (September 2008) all the functions, properties, interests, rights, obligations and liabilities of KSEB with the State Government till the same was re-vested (31 October 2013) to the successor entity, *i.e.*, Kerala State Electricity Board Limited (KSEBL). The KSEBL was incorporated (14 January 2011) under the Companies Act, 1956 and started operations as independent company with effect from 1 November 2013. The KSEBL functions through three strategic business units; one each for Generation, Transmission and Distribution. The KSEBL had two joint ventures[1] and two associate companies[2] in which it had an investment of ₹20.49 crore.

The State Government incorporated Kerala State Power and Infrastructure Finance Corporation Limited in 1998. Kerala Industrial Infrastructure Development Corporation, a Statutory Corporation, incorporated another Power Sector company, *i.e.*, KINESCO Power and Utilities Private Limited in 2008. Thus, there were three Power Sector companies in the State as on 31 March 2019. The financial statements

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[1]Baitarani West Coal Company Limited and Kerala Fibre Optic Network Limited.
[2]Renewable Power Corporation of Kerala Limited and Kerala State Power and Infrastructure Finance Corporation Limited.

of these companies are also audited by the Statutory Auditors appointed by the CAG, subject to supplementary audit by the CAG.

The Power Sector Undertakings registered a turnover of ₹12,383.93 crore during 2018-19 as per their latest finalised accounts. This turnover was equal to 1.60 *per cent* of the GSDP of Kerala indicating the role played by the Power Sector Undertakings in the economy of the State.

Stake of Government of Kerala

As on 31 March 2019, the total investment (equity and long term loans) in the three Power Sector Undertakings was ₹18,059.73 crore. The investment consisted of 19.52 *per cent* towards equity and 80.48 *per cent* in long term loans. Government of Kerala did not advance any long term loans to the Power Sector PSUs. The entire long term loan of ₹14,533.71 crore was availed by the Power Sector PSUs from banks and financial institutions.

Performance of Power Sector Undertakings

The overall loss incurred by the three Power Sector companies was ₹1,853.80 crore in 2018-19 against profit of ₹144.95 crore earned in 2014-15. According to the latest finalised accounts of these three PSUs, Kerala State Power and Infrastructure Finance Corporation Limited (₹5.97 crore) and KINESCO Power and Utilities Private Limited (₹0.65 crore) earned profit while Kerala State Electricity Board Limited incurred loss (₹1,860.42 crore).

Out of three PSUs, GoK infused funds in two PSUs only. The overall accumulated losses of these two Power Sector companies were ₹4,933.31 crore as against the capital investment of ₹3,525.70 crore as on 31 March 2019. The net worth was eroded in Kerala State Electricity Board Limited to ₹(-)1,472.08 crore.

Financial Turnaround of KSEBL under Ujwal DISCOM Assurance Yojana (UDAY)

A tripartite Memorandum of Understanding (MoU) amongst Ministry of Power, Government of India, Government of Kerala (GoK) and Kerala State Electricity Board Limited (KSEBL) in order to achieve higher operational efficiency was entered into on 2 March 2017. The MoU envisaged reduction in Aggregate Technical & Commercial losses of KSEBL's electricity distribution business to 11 *per cent* by 2018-19. The MoU did not envisage takeover of any debt by GoK.

Quality of accounts

The quality of accounts of Power Sector companies needs to be improved substantially. During the year 2017-18, the Statutory Auditors issued qualified audit reports on three accounts. The Statutory Auditors pointed out 19 instances of non-compliance to the Accounting Standards during 2017-18. As the Power Sector companies had not forwarded their accounts for the year 2018-19, the level of compliance to the Accounting Standards during 2018-19 could not be commented upon.

2. Performance Audit relating to Power Sector Undertakings

Performance Audit included in this Report highlights Operational Performance of Major Hydro Electric Projects of Kerala State Electricity Board Limited.

The Kerala State Electricity Board Limited (KSEBL) manages the activities of transmission, generation and distribution of power in the State through three strategic business units (SBU), *viz*. SBU-Transmission, SBU-Generation and SBU-Distribution. The total installed capacity of KSEBL as on 31 March 2019 was 2,237.59 Megawatt (MW), of which 2,058.75 MW (92 *per cent*) was hydel. The total hydel power capacity was accounted for by 12 major Hydro Electric Projects (HEPs) (1,935 MW) and 23 small HEPs (123.75 MW). The Performance Audit covered the operational performance of three major HEPs of KSEBL, *viz*. Idukki, Sabarigiri and Kuttiyadi, for a period of five years from 2014-15 to 2018-19. The three major HEPs constituted 65 *per cent* of the total hydel generation capacity and 63.60 *per cent* of the total generation capacity of KSEBL.

Non-adherence to hydro generation policy

Failure of KSEBL to adhere to its hydro generation policy and step up the generation of power from the HEPs to meet the additional demand during the peak hours of summer months led to purchase of 86.40 MU of power incurring ₹25.31 crore.

Delay in rectifying defect due to bifurcation of penstock

Bifurcation of penstock of Kuttiyadi HEP for supplying water to the generating stations of Kuttiyadi Extension Scheme led to flow instabilities and consequent reduction of generation capacity by 10 MW. Though the problem was first noticed in 2003, delay in rectifying this led to generation loss of 178.70 MU of power and consequent purchase of power incurring ₹52.36 crore.

Runner erosion due to construction of weir across tail race

The construction of a weir across the tail race channel of Kuttiyadi Additional Extension Scheme led to lack of proper aeration in the runner housing of the generating unit. This forced KSEBL to reduce the generation capacity by 20 MW resulting in generation loss of 133.80 MU of power and consequent purchase of power incurring ₹39.20 crore.

Non-exploration of possibility of uprating

Failure to utilise the uprating potential of first stage units of Idukki HEP and of Units 1, 2, 3 and 5 of Sabarigiri HEP resulted in loss of generation capability of 212.04 MU of power *per annum*, which could have reduced the power procurement by KSEBL to that extent.

Plant Availability Factor

The Plant Availability Factor of the HEPs was affected by considerable amount of forced outages due to improper execution of maintenance works. This resulted in generation loss of 920.71 MU of power and additional expenditure of ₹269.77 crore towards purchase of power.

Renovation, Modernisation and Uprating of Idukki HEP

Defective technical evaluation of the bids delayed the award of Renovation, Modernisation and Uprating (RMU) works of Idukki HEP by 21 months. The RMU works of three units of Idukki HEP was to be completed by July 2019. As of October 2019, the RMU works of only one unit was completed.

Renovation, Modernisation and Uprating of Sabarigiri HEP

Unit 4 of Sabarigiri HEP failed to perform in accordance with the parameters guaranteed by the contractor. The unit was under forced shut down due to technical problems for 1,366:49 hours during the defect liability period and for 5,221:18 hours after the defect liability period causing generation loss of 201.60 MU of power and additional expenditure of ₹59.07 crore towards purchase of power.

3. Compliance Audit Observations relating to Power Sector Undertakings

Compliance Audit Observations included in this Report highlight deficiencies in the compliance to the provisions of the guidelines/agreements. The gist of irregularities pointed out are broadly of the following nature:

- Non-adherence to the Model Standard Bidding Documents and guidelines issued by Ministry of Power led to purchase of 465 MW of power from other than lowest bidders and non-accordance of final approval for the power supply agreements by the Regulator. ***(Paragraph 3.1)***
- Non-adherence to the provisions of an agreement with Carborundum Universal Limited resulted in loss of revenue of ₹2.08 crore

(Paragraph 3.2)

4. Functioning of State Public Sector Undertakings (other than Power Sector)

As on 31 March 2019, Kerala had 137 State Public Sector Undertakings (other than Power Sector) consisting of 117 working companies, 4 working Statutory Corporations and 16 non-working PSUs. The working PSUs registered a turnover of ₹19,122.57 crore during 2018-19 as per their latest finalised accounts. This turnover was equal to 2.47 *per cent* of the Gross State Domestic Product indicating the role played by these State PSUs in the economy of the State.

Stake of Government of Kerala

As on 31 March 2019, the total investment (equity and long term loans) in these 137 PSUs was ₹20,368.36 crore. The investment consisted of 33.34 *per cent* towards equity and 66.66 *per cent* in long term loans. The long term loans consisted of 48.83 *per cent* (₹6,629.35 crore) from the State Government, 0.31 *per cent* (₹42.49 crore) from the Central Government and 50.86 *per cent* (₹6,905.47 crore) from financial institutions.

Performance of State PSUs (other than Power Sector)

The loss of ₹536.37 crore incurred by working PSUs in 2014-15 increased to ₹1,222.06 crore in 2018-19. According to the latest finalised accounts of the 121 working State PSUs, 53 PSUs earned profit of ₹574.49 crore, 58 PSUs incurred loss of ₹1,796.55 crore and two PSUs had no profit or loss. Eight working PSUs did not finalise (September 2019) their first accounts.

The major contributors to profit were The Kerala State Financial Enterprises Limited (₹144.41 crore in 2017-18), The Kerala Minerals and Metals Limited (₹104.46 crore in 2018-19), Kerala State Beverages (Manufacturing and Marketing) Corporation Limited (₹85.93 crore in 2016-17) and The Kerala State Cashew Development Corporation Limited (₹61.59 crore in 2013-14). The major PSUs which incurred loss were Kerala State Road Transport Corporation (₹1,431.29 crore in 2014-15), Kerala State Textiles Corporation Limited (₹53.17 crore in 2014-15), The Kerala State Civil Supplies Corporation Limited (₹25.91 crore in 2015-16) and Travancore Titanium Products Limited (₹23.63 crore in 2014-15)

Quality of accounts

The quality of accounts of State PSUs (other than Power Sector) needs to be improved substantially. During the year 2018-19, the Statutory Auditors issued qualified audit reports on 83 accounts, unqualified audit reports on 36 accounts, disclaimer on two accounts and adverse opinion on six accounts. Compliance to the Accounting Standards by the PSUs remained poor as the Statutory Auditors pointed out 141 instances of non-compliance to the Accounting Standards in 61 accounts.

Timeliness in preparation of accounts by the working State PSUs

Out of 121 working PSUs, 106 PSUs had arrears of 271 accounts as on 30 September 2019. The 16 non-working State PSUs had 183 accounts in arrears.

5. Compliance Audit Observations relating to State Public Sector Undertakings (other than Power Sector)

Compliance Audit Observations included in this Report highlight the non-compliance of directions/ guidelines, deficiencies in tendering, planning and implementation of projects *etc*.

Gist of some of the important audit observations is given below:

- Non-adherence to GoK Guidelines for implementing e-governance initiatives affected timely implementation of ERP systems in seven out of nine PSUs. Five PSUs could not derive any benefit even after incurring ₹1.15 crore due to non-completion of their ERP systems.

  (Paragraph 5.1)

- There was delay in conducting energy audit by eight PSUs. Failure to achieve specific energy consumption norms, non-availing of open access facility, non-implementation of solar energy plants and lack of energy requirement planning and efficiency improvement measures led to extra expenditure and non-achievement of energy savings amounting to ₹93.88 crore.

  (Paragraph 5.2)

- Non-procurement of adequate quantity of paddy by the PSUs led to underutilisation/ idling of paddy processing capacity established by incurring ₹21.85 crore. Further, only a meagre quantity of the total rice produced was channelled through Public Distribution System, leading to non-achievement of the objectives of providing fair price for paddy to the farmers and rice at reasonable rates to the consumers.

  (Paragraph 5.3)

- Deficiencies in planning and implementation of the Bus Terminals-cum-Shopping Complexes by Kerala State Road Transport Corporation led to delay in completion and inadequate collection of interest free security deposit (IFSD) for financing the construction. This also resulted in loss of license fee (₹25.59 lakh) in three BTSCs, refund of IFSD (₹50.95 lakh) in one BTSC, reduced realisation of IFSD (₹19.56 lakh) in one BTSC and extra expenditure (₹4.57 lakh) in one BTSC. Delay in conducting tender-cum-auction to rent out the vacant spaces in the completed BTSCs resulted in underutilisation of commercial area.

  (Paragraph 5.4)

- Delay in completing civil works, deficiency in tendering and unjustified denial of consultancy fee by Kerala State Poultry Development Corporation Limited resulted in avoidable delay in completing Hi-tech Commercial Layer Farm project and idling of investment amounting to ₹7.31 crore.

  (Paragraph 5.5)

- Stoppage of construction works of Office-cum-Shopping Complex due to non-obtaining of Government approval for revised estimate by The Plantation Corporation of Kerala Limited led to non-achievement of intended benefits even after 12 years from the initial sanction of the project despite incurring an expenditure of ₹5.62 crore.

  (Paragraph 5.6)

Introduction

Introduction

Functioning of State Public Sector Undertakings

General

1 State Public Sector Undertakings (PSUs) in Kerala consist of State Government Companies and Statutory Corporations. The State PSUs are established to carry out activities of commercial nature. As on 31 March 2019, there were 140 PSUs in Kerala. No company was listed on the stock exchanges as on 31 March 2019. The details of the State PSUs in Kerala as on 31 March 2019 are given in **Table 1.1**:

Table 1.1: Total number of PSUs as on 31 March 2019

Sl. No.	Type of PSUs	Working	Non-working	Total
1	Government Company	120	16	136
2	Statutory Corporation	4	0	4
	Total	**124**	**16**	**140**

The working PSUs registered a turnover of ₹31,507 crore as per their latest finalised accounts as of September 2019. This turnover was equal to 4.07 *per cent* of Gross State Domestic Product (GSDP) for the year 2018-19 (₹7,74,995 crore). The working PSUs incurred aggregate loss of ₹3,082.43 crore as per their latest finalised accounts. They employed 1.26 lakh employees at the end of March 2019.

As on 31 March 2019, there were 16 non-working PSUs having investment of ₹91.89 crore. They were non-functioning for the last 13 to 35 years. This was a critical area as the investments in non-working PSUs do not contribute to the economic growth of the State.

Accountability framework

2 The accounts of Government Companies are audited by the Comptroller and Auditor General of India (CAG) under the provisions of Section 619 of the Companies Act, 1956 and Sections 139 and 143 of the Companies Act, 2013 (Act). According to Section 2 (45) of the Act, Government Company means any company in which not less than fifty one *per cent* of the paid up share capital is held by the Central Government, or by any State Government or Governments, or partly by the Central Government and partly by one or more State Governments, and includes a company, which is a subsidiary company of such a Government Company.

CAG appoints the statutory auditors of a Government Company and Government controlled other company under Section 139 (5) and (7) of the Companies Act, 2013. Section 139 (5) of the Act provides that the Statutory Auditors in the case of a Government Company or Government controlled other Company are to be appointed by the CAG within a period of one hundred and eighty days from the commencement of the financial year. Section 139 (7) of the Act provides that in the case of a Government Company or Government controlled other company, the first auditor is to be appointed by the CAG within sixty days from the date of registration of the company and in case CAG does not appoint such auditor within the said period, the Board of Directors of the company or the members of the company have to appoint such auditor.

Further, as per Section 143 (7) of the Act, CAG may, in the case of any company covered under sub-Section (5) or sub-Section (7) of Section 139, if considered necessary, by an order, cause test audit to be conducted of the accounts of such company and the provisions of Section 19-A of CAG's (Duties, Powers and Conditions of Service) Act, 1971 shall apply to the report of such test audit. Thus, a Government Company or any other company owned or controlled, directly or indirectly, by the Central Government, or by any State Government or Governments or partly by the Central Government and partly by one or more State Governments, is subject to audit by CAG. An audit of the financial statements of a company in respect of the financial years that commenced on or before 31 March 2014 shall continue to be governed by the provisions of the Companies Act, 1956.

Statutory Audit

3 The financial statements of the Government Companies (as defined in Section 2 (45) of the Act) are audited by Statutory Auditors, who are appointed by CAG as per the provisions of Section 139 (5) or (7) of the Act. They shall submit a copy of the Audit Report to CAG including financial statements of the company under Section 143 (5) of the Act. These financial statements are subject to supplementary audit to be conducted by CAG within sixty days from the date of receipt of the Audit Report as per the provisions of Section 143 (6) of the Act.

Audit of Statutory Corporations is governed by their respective legislations. Out of four Statutory Corporations, CAG is the sole auditor for Kerala State Road Transport Corporation and Kerala Industrial Infrastructure Development Corporation. In respect of Kerala State Warehousing Corporation and Kerala Financial Corporation, the audit is conducted by Chartered Accountants and supplementary audit is done by CAG.

Submission of accounts by PSUs

Need for timely finalisation and submission

4 According to Section 394 and 395 of the Act, Annual Report on the working and affairs of a Government Company is to be prepared within three months of its Annual General Meeting (AGM) and as soon as may be after such preparation, laid before the House or both the Houses of State Legislature together with a copy of the Audit Report and any comments upon or supplement to the Audit Report, made by the CAG. Almost similar provisions exist in the respective Acts regulating Statutory Corporations. This mechanism provides the necessary legislative control over the utilisation of public funds invested in the companies from the Consolidated Fund of the State.

Section 96 of the Act requires every company to hold AGM of the shareholders once in every calendar year. It is also stated that not more than 15 months shall elapse between the date of one AGM and that of the next. Further, Section 129 of the Act stipulates that the audited financial statements for the financial year has to be placed in the said AGM for their consideration. Section 129 (7) of the Act provides for levy of penalty like fine and imprisonment on the persons including directors of the company responsible for non-compliance with the provisions of Section 129 of the Act.

Role of Government and Legislature

5 The State Government exercises control over the affairs of these PSUs through its administrative departments. Government appoints the Chief Executive and the Directors to the Board.

The State Legislature also monitors the accounting and utilisation of Government investment in the PSUs. For this, the Annual Reports together with the Statutory Auditors' Report and comments of CAG, in respect of State Government Companies and Separate Audit Reports in the case of Statutory Corporations are to be placed before the Legislature under Section 394 and 395 of the Act or as stipulated in the respective Acts. The Audit Reports of the CAG are submitted to the Government under Section 19A of the CAG's (Duties, Powers and Conditions of Service) Act, 1971.

Stake of Government of Kerala

6 The State Government's stake in the PSUs is of mainly three types:

- **Share Capital and Loans -** In addition to the share capital contribution, State Government also provides financial assistance by way of loans to the PSUs from time to time.

- **Special Financial Support -** State Government provides budgetary support by way of grants and subsidies to the PSUs as and when required.

- **Guarantees -** State Government also guarantees the repayment of loans with interest availed by the PSUs from financial institutions.

Investment in State PSUs

7 As on 31 March 2019, the investment (capital and long term loans) in 140 PSUs was ₹38,428.09 crore as per details given in **Table 1.2**:

Table 1.2: Total investment in PSUs

(₹ in crore)

Sl. No.	Type of PSUs	Government Companies			Statutory Corporations			Grand Total
		Capital	Long Term Loans	Total	Capital	Long term loans	Total	
1	Working PSUs	8,684.90	22,091.66	30,776.56	1,606.87	5,952.77	7,559.64	38,336.20
2	Non-working PSUs	25.30	66.59	91.89	0.00	0.00	0.00	91.89
	Total	**8,710.20**	**22,158.25**	**30,868.45**	**1,606.87**	**5,952.77**	**7,559.64**	**38,428.09**

(Source: Data furnished by PSUs)

As on 31 March 2019, of the total investment in State PSUs, 99.76 *per cent* was in working PSUs and the remaining 0.24 *per cent* in non-working PSUs. This total investment consisted of 26.85 *per cent* towards capital and 73.15 *per cent* in long term loans. The investment increased by 92.78 *per cent* from ₹19,933.20 crore in 2014-15 to ₹38,428.09 crore in 2018-19.

8 The sector-wise summary of investment in the State PSUs as on 31 March 2019 is given in **Table 1.3**:

Table 1.3: Sector-wise investment in PSUs

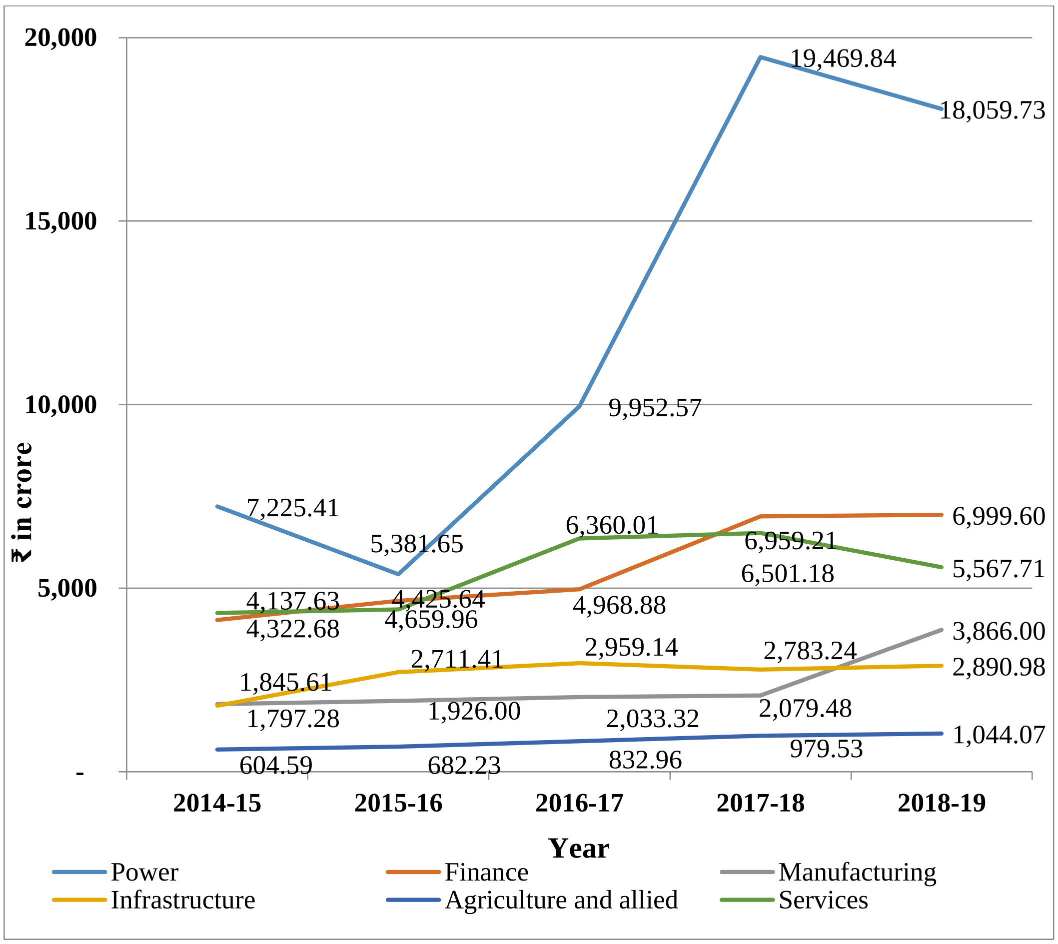
Sl. No.	Name of sector	Government Companies	Statutory Corporations	Total	Investment (₹ in crore)		
					Equity	Long term loans	Total
1	Power	3	…	3	3,526.02	14,533.71	18,059.73
2	Finance	17	1	18	1,011.14	5,988.46	6,999.60
3	Manufacturing:						
	Working	35	…	35	1,160.86	2,614.06	3,774.92
	Non-working	15	…	15	24.80	66.28	91.08
4	Infrastructure	19	1	20	1,602.02	1,288.96	2,890.98
5	Agriculture and allied	18	1	19	627.01	417.06	1,044.07
6	Services:						
	Working	28	1	29	2,364.72	3,202.18	5,566.90
	Non-working	1	…	1	0.50	0.31	0.81
	Total	**136**	**4**	**140**	**10,317.07**	**28,111.02**	**38,428.09**

(Source: Data furnished by PSUs)

The investment in PSUs increased by 18,494.89 crore (92.78 *per cent*) from 2014-15 to 2018-19 and the thrust of investment was mainly on Power Sector during the last five years. The power sector received investments of ₹10,834.32 crore (58.58 *per cent*) out of the total investment of ₹18,494.89 crore made during the period from 2014-15 to 2018-19.

9 The investment in various sectors at the end of 31 March 2015 to 31 March 2019 are indicated in the **Chart** below:

Chart 1: Sector-wise investment in PSUs



Keeping in view the huge investment in Power Sector, we are presenting the results of audit of three Power Sector PSUs in Part I[1] of this Report and of 137 PSUs (other than Power Sector) in the Part II[2] of this Report.

[1] The Part I includes Chapter-I (Functioning of Power Sector Undertakings) and Chapter-II (Performance Audit relating to Power Sector Undertakings), Chapter-III (Compliance Audit Observations relating to Power Sector Undertakings).

[2] The Part II includes Chapter-IV [Functioning of State Power Sector Undertakings (other than Power Sector)] and Chapter-V [Compliance Audit Observations relating to PSUs (other than Power Sector)].

Part I

Power Sector

Chapter I

Functioning of Power Sector Undertakings

Part I

Chapter I

Functioning of Power Sector Undertakings

Introduction

1.1 The Power Sector Companies play an important role in the economy of the State. Apart from providing critical infrastructure required for development of the State's economy, the sector also adds significantly to the Gross Domestic Product (GDP) of the State. A ratio of Power Sector undertakings' turnover to Gross State Domestic Product (GSDP) shows the extent of activities of PSUs in the State economy. **Table 1.1** provides the details of turnover of the Power Sector Undertakings and GSDP of Kerala for a period of five years ended March 2019:

Table 1.1: Details of turnover of Power Sector Undertakings *vis-à-vis* GSDP of Kerala

(₹ in crore)

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Turnover	5,063	5,316	10,976	12,383	12,384
GSDP	5,12,564	5,61,994	6,16,357	6,86,764	7,74,995
Percentage of Turnover of State PSUs (Power Sector) to GSDP	0.99	0.95	1.78	1.80	1.60

(Source: Compiled based on turnover figures of PSUs and GSDP figures as per State Finance Report of GoK)

The turnover of Power Sector Undertakings has recorded continuous increase over the previous years. The increase in turnover ranged between 0.01 *per cent* and 106.47 *per cent* during the period 2014-19, whereas the increase in GSDP of Kerala ranged between 9.64 *per cent* and 12.85 *per cent* during the same period. The turnover of Power Sector Undertakings recorded compounded annual growth of 25.05 *per cent* during the last five years which was higher than the compounded annual growth of 10.88 *per cent* of the GSDP. This resulted in increase in share of turnover of these Power Sector Undertakings to the GSDP from 0.99 *per cent* in 2014-15 to 1.80 *per cent* in 2017-18. During 2018-19, the share of turnover to GSDP decreased to 1.60 *per cent* as there was no substantial increase in turnover of these PSUs.

Formation of Power Sector Undertakings

1.2 Kerala State Electricity Board (KSEB) was constituted (March 1957) for carrying out the business of Generation, Transmission and Distribution of electricity in the State of Kerala. KSEB continued as Transmission utility and Distribution licensee till 24 September 2008. In pursuance of the provisions of Section 131 and 133 of the Electricity Act, 2003, Government of Kerala vested (September 2008) all the functions, properties, interests, rights, obligations and liabilities of KSEB with the State Government till the same were re-vested in a corporate entity through the Kerala Electricity First Transfer Scheme. The Kerala Electricity Second Transfer Scheme (Re-vesting) 2013 was notified on 31 October 2013. Through this notification all the assets, liabilities, rights and obligations of erstwhile KSEB vested into State Government by first transfer scheme of September 2008 were re-vested to the successor entity, *i.e.*, Kerala State Electricity Board Limited (KSEBL). The KSEBL was incorporated under the Companies Act, 1956 on 14 January 2011 and started operations as independent company with effect from 1 November 2013. The KSEBL functions through three strategic business units; one each for Generation, Transmission and Distribution. The KSEBL has two joint ventures[3] and two associate companies[4] in which there was total investment of ₹20.49 crore.

The State Government incorporated Kerala State Power and Infrastructure Finance Corporation Limited in March 1998. Kerala Industrial Infrastructure Development Corporation, a Statutory Corporation, incorporated another Power Sector company, *i.e.*, KINESCO Power and Utilities Private Limited in 2008. As on 31 March 2019, equity capital of these two PSUs was ₹26.65 crore and ₹0.32 crore respectively. Thus, there were three Power Sector companies in the State as on 31 March 2019.

Disinvestment, restructuring and privatisation of Power Sector Undertakings

1.3 In the State PSUs (Power Sector), there was no disinvestment, restructuring and privatisation by the State Government during the year 2018-19.

Investment in Power Sector Undertakings

1.4 The activity-wise summary of investment in the Power Sector Undertakings as on 31 March 2019 is given in **Table 1.2**:

Table 1.2: Activity-wise investment in Power Sector Undertakings

Activity	Number of government undertakings	Investment (₹ in crore)		
		Equity	Long term loans	Total
Generation of Power Transmission of Power Distribution of Power	1	3,499.05	14,525.15	18,024.20
Others[5]	2	26.97	8.56	35.53
Total	**3**	**3,526.02**	**14,533.71**	**18,059.73**

(Source: Compiled based on information received from PSUs)

[3] Baitarani West Coal Company Limited and Kerala Fibre Optic Network Limited.

[4] Renewable Power Corporation of Kerala Limited and Kerala State Power and Infrastructure Finance Corporation Limited.

[5] Kerala State Power and Infrastructure Finance Corporation Limited and KINESCO Power and Utilities Private Limited.

As on 31 March 2019, the total investment (equity and long term loans) in these Power Sector Undertakings was ₹18,059.73 crore. The investment consisted of 19.52 *per cent* towards equity and 80.48 *per cent* in long term loans.

The Government of Kerala did not advance any long term loan to the Power Sector PSUs. The entire long term loan of ₹14,533.71 crore was availed by the Power Sector PSUs from banks and financial institutions.

Budgetary Support to Power Sector Undertakings

1.5 The Government of Kerala (GoK) provides financial support to Power Sector Undertakings in various forms through the annual budget. The summarised details of budgetary outgo towards equity, loans, grants/ subsidies, loans written off and loans converted into equity during the year in respect of Power Sector Undertakings for the last three years ended March 2019 are given in **Table 1.3**:

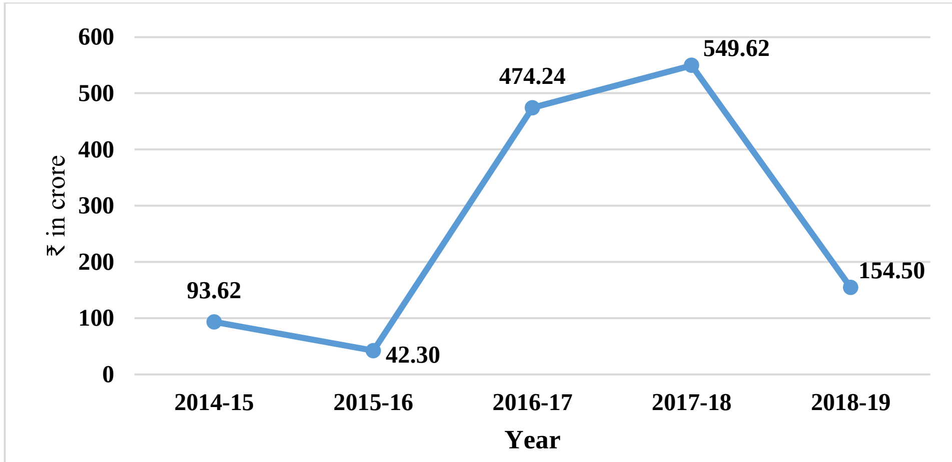
Table 1.3: Details regarding budgetary support to Power Sector Undertakings from 2016-17 to 2018-19

Sl. No.	Particulars	2016-17		2017-18		2018-19	
		No. of PSUs	Amount (₹ in crore)	No. of PSUs	Amount (₹ in crore)	No. of PSUs	Amount (₹ in crore)
1	Equity Capital outgo from budget	-	-	-	-	-	-
2	Loans given from budget	1	17.98	1	44.22	-	-
3	Grants/Subsidy given	1	456.26	1	505.40	1	154.50
4	**Total outgo (1+2+3)**	**-**	**474.24**	**-**	**549.62**	-	**154.50**
5	Loans written off and interest waived	-	-	-	-	-	-
6	Guarantees issued	-	-	-	-	-	-
7	Guarantee commitment	-	-	-	-	-	-

(Source: Compiled based on information received from PSUs)

The details regarding budgetary outgo towards equity, loans and grants/ subsidies for the last five years ending March 2019 are given in **Chart 1.1**:

Chart 1.1: Budgetary outgo towards equity, loans and grants/ subsidies



The budgetary assistance received by these PSUs ranged between ₹42.30 crore and ₹549.62 crore during the period 2014-15 to 2018-19. The budgetary assistance of ₹154.50 crore received by KSEBL during 2018-19 was in the form of grants. The Ministry of Power (MoP), Government of India also launched (20 November 2015) Ujwal DISCOM Assurance Yojana (UDAY Scheme) for operational and financial turnaround of State owned Power Distribution Companies (DISCOMs). The provisions of UDAY Scheme and the status of implementation of the scheme by KSEBL are discussed further under ***Paragraph No. 1.18*** of this Chapter.

GoK provides guarantee under the Kerala Ceiling on Government Guarantee Act, 2003 for PSUs, subject to the limits prescribed by the Constitution of India, for which guarantee commission is being charged. The Government would charge a minimum of 0.75 *per cent* as guarantee commission, which shall not be waived under any circumstances. There was no guarantee commitment for the period from 2016-17 to 2018-19. As of March 2019, guarantee commission of ₹0.02 crore was payable by one PSU (Kerala State Electricity Board Limited) for guarantee availed in previous years.

Reconciliation with Finance Accounts of Government of Kerala

1.6 The figures in respect of equity, loans and guarantees outstanding as per records of State PSUs should agree with that of the figures appearing in the Finance Accounts of the Government of Kerala. In case the figures do not agree, the PSUs concerned and the Finance Department should carry out reconciliation of the differences. The position in this regard as on 31 March 2019 is stated in **Table 1.4**:

Table 1.4: Equity, loans and guarantees outstanding as per Finance Accounts *vis-à-vis* records of State PSUs (Power Sector)

(₹ in crore)

Sl. No.	Outstanding in respect of	Amount as per Finance Accounts	Amount as per records of PSUs	Difference
1	Equity	40.39	3,514.88	3,474.49
2	Loans	2,714.92	0.00	2,714.92
3	Guarantees	0.00	0.00	0.00

(Source: Compiled based on information received from PSUs and Finance Accounts)

The differences between the figures are due to the difference in figures pertaining to KSEBL and persisting since many years. The issue of reconciliation of differences was also taken up with the PSUs/ Departments from time to time. **We, therefore, recommend that the State Government and the PSUs should reconcile the differences in a time-bound manner.**

Submission of accounts by Power Sector Undertakings

1.7 Timeliness in preparation of accounts by Power Sector Undertakings

There were three Power Sector Undertakings under the audit purview of CAG as on 31 March 2019. Accounts for the year 2018-19 were not submitted by any PSU by 30 September 2019 as per the statutory requirement. One PSU (KINESCO Power and Utilities Private Limited) submitted one accounts (2017-18) by 30 September 2019. Details of arrears in submission of accounts of Power Sector Undertakings as on 30 September of each financial year for the last five years ended 31 March 2019 are given in **Table 1.5**:

Table 1.5: Position relating to submission of accounts by the working State PSUs (Power Sector)

Sl. No.	Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
1	Number of working PSUs	3	3	3	3	3
2	Number of accounts finalised during the year	2	3	3	4	1
3	Number of accounts in arrears	2	2	2	1	3
4	Number of working PSUs with arrears in accounts	1	1	2	1	3
5	Extent of arrears (in years)	Up to 2	Up to 2	Up to 1	Up to 1	Up to 1

(Source: Compiled based on accounts of PSUs received during the period October 2018 to September 2019)

Delay in submission of accounts ranged from one to two years during the above period.

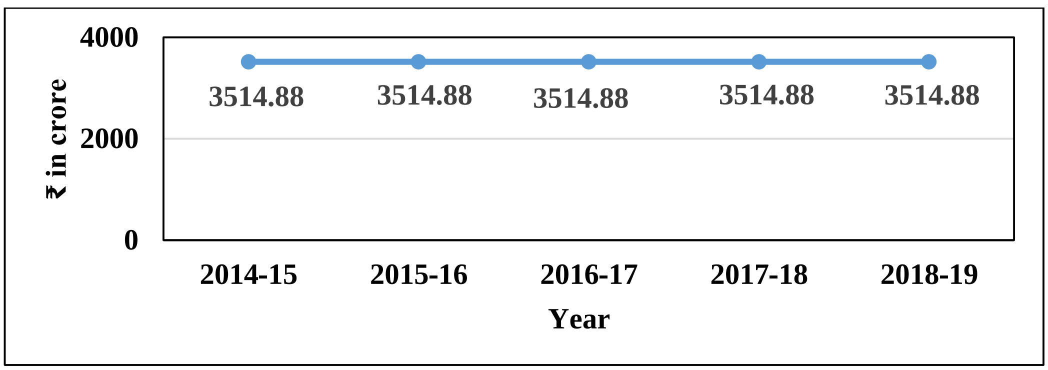
Performance of Power Sector Undertakings

1.8 The financial position and working results of Power Sector undertakings are detailed in ***Appendix 1*** as per their latest finalised accounts[6] as of 30 September 2019.

The PSUs are expected to yield reasonable return on investment made by the Government in such undertakings. The amount of investment in the Power Sector PSUs as on 31 March 2019 was ₹18,059.73 crore consisting of ₹3,526.02 crore as equity and ₹14,533.71 crore as long term loans. Out of this, the Government of Kerala has investment of ₹3,514.88 crore in the form of equity in two Power Sector undertakings *viz.*, Kerala State Electricity Board Limited and Kerala State Power and Infrastructure Finance Corporation Limited. GoK did not invest any amount in the Power Sector undertakings as long term loans during 2018-19.

The year-wise status of investment of GoK in respect of equity relating to the five-year period from 2014-15 to 2018-19 is shown in the **Chart 1.2** below:

Chart 1.2: Total investment of GoK in Power Sector undertakings



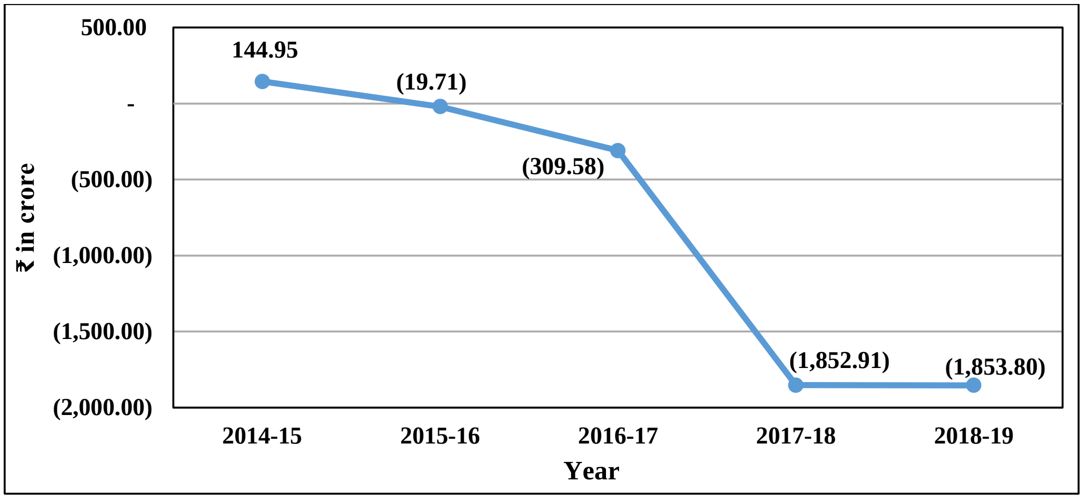
The profitability of a PSU is traditionally assessed through return on investment, return on equity and return on capital employed. Return on investment measures the profit or loss made in a fixed year relating to the amount of money invested in the form of equity and long term loans and is expressed as a percentage of profit to total investment. Return on capital employed is a financial ratio that measures the company's profitability and the efficiency with which its capital is used and is calculated by dividing company's earnings before interest and taxes by capital employed. Return on Equity is a measure of performance calculated by dividing net profit after tax by shareholders' fund.

[6] The figures from the last available accounts has been considered in this Report for the purpose of arriving at working results.

Return on investment

1.9 Return on investment is the percentage of profit or loss to the total investment. The overall position of profit earned /loss[7] incurred by the Power Sector Undertakings during 2014-15 to 2018-19 is depicted in the **Chart 1.3** below.

Chart 1.3: Profit earned /loss incurred by Power Sector Undertakings



The loss incurred by these PSUs was ₹1,853.80 crore in 2018-19 against profit of ₹144.95 crore earned in 2014-15. According to the latest finalised accounts of these three PSUs, Kerala State Power and Infrastructure Finance Corporation Limited (₹5.97 crore) and KINESCO Power and Utilities Private Limited (₹0.65 crore) earned profit while Kerala State Electricity Board Limited incurred substantial loss (₹1,860.42 crore) ***(Appendix 1)***.

Position of Power Sector Undertakings which earned profit/ incurred loss during 2014-15 to 2018-19 is given in **Table 1.6**:

Table 1.6: Power Sector Undertakings which earned profit/ incurred loss

Financial Year	Total PSUs in Power Sector	Number of PSUs which earned profit during the year	Number of PSUs which incurred loss during the year	Number of PSUs which had marginal profit/ loss during the year
2014-15	3	2	1	0
2015-16	3	2	1	0
2016-17	3	2	1	0
2017-18	3	2	1	0
2018-19	3	2	1	0

Return on the basis of historical cost of investment

1.10 Out of three Power Sector Undertakings of the State, the State Government infused funds in the form of equity, loans and grants/ subsidies

[7] Figures are as per the latest finalised accounts up to 30 September 2019.

amounting to ₹3,514.88 crore (as on 31 March 2019) in two Power Sector Undertakings only. The remaining equity of ₹11.14 crore was contributed by two PSUs[8].

The return on investment from the three PSUs has been calculated on the investment made by the Government of Kerala and others in the PSUs in the form of equity and loans. In the case of loans, only interest free loans are considered as investment since the government does not receive any interest on such loans and are therefore of the nature of equity investment by government except to the extent that the loans are liable to be repaid as per terms and conditions of repayment. Further, the funds made available in the form of the grants/ subsidy have not been reckoned as investment since they do not qualify to be considered as investment.

The investment in these three Power Sector Undertakings has been arrived at by considering the equity (initial equity plus the equity infused during the later years).

The investment as on 31 March 2019 in these three Power Sector PSUs was ₹3,526.02 crore consisting of equity. Thus, considering the equity of ₹3,526.02 crore as investment in these three Power Sector undertakings, the investment on the basis of historical cost at the end of 2018-19 stood at ₹3,526.02 crore.

The return on investment on historical cost basis for the period 2014-15 to 2018-19 is as given in **Table 1.7**:

Table 1.7: Return on Investment on historical cost basis

Financial year	**Funds infused in the form of equity and interest free loans on historic cost basis**			**Total profit/ loss[9] for the year**	**Return on investment (*per cent*)**
	GoK	**Others**	**Total**		
2014-15	3,514.88	11.18	3,526.06	144.95	4.11
2015-16	3,514.88	10.92	3,525.80	-19.71	-0.56
2016-17	3,514.88	10.92	3,525.80	-309.58	-8.78
2017-18	3,514.88	11.14	3,526.02	-1,852.91	-52.55
2018-19	3,514.88	11.14	3,526.02	-1,853.80	-52.57

The return on investment of the Power Sector PSUs ranged between (-)8.78 *per cent* and 4.11 *per cent* during 2014-15 to 2016-17. However, it reduced to (-)52.55 *per cent* in 2017-18 and to (-)52.57 *per cent* in 2018-19 mainly due to increases in finance cost and administrative expenses of KSEBL.

Erosion of Net worth

1.11 Net worth means the sum total of the paid-up capital and free reserves and surplus minus accumulated losses and deferred revenue expenditure. Essentially, it is a measure of what an entity is worth to the owners. A negative net worth indicates

[8] Kerala Industrial Infrastructure Development Corporation and Kerala State Electricity Board Limited.

[9] As per their latest finalised accounts of the respective years.

that the entire investment by the owners has been wiped out by accumulated losses and deferred revenue expenditure. The overall accumulated losses of two Power Sector Undertakings[10] were ₹4,933.31 crore as against the capital investment of ₹3,525.70 crore resulting in negative net worth of ₹1,407.61 crore. Of these two Power Sector Undertakings, the net worth was eroded in Kerala State Electricity Board Limited to (-)1,472.08 crore**.**

Table 1.8 indicates paid up capital, accumulated profit/loss and net worth of two Power Sector Undertakings, where the GoK had invested money, during the period 2014-15 to 2018-19:

Table 1.8: Net worth of two Power Sector Undertakings during 2014-15 to 2018-19

(₹ in crore)

Year	Paid up capital at end of the year	Accumulated profit/loss (-) at the end of year	Deferred revenue expenditure	Net worth
2014-15	1,579.70	2,371.02	0	3,950.72
2015-16	3,525.70	1.24	0	3,526.94
2016-17	3,525.70	-1,581.91	0	1,943.79
2017-18	3,525.70	-4,933.31	0	-1,407.61
2018-19	3,525.70	-4,933.31	0	-1,407.61

The State Government had not made any infusion of equity after 2014-15 in two Power Sector Undertakings. The accumulated profit of these Power Sector Undertakings decreased from ₹2,371.02 crore in 2014-15 to ₹(-)4,933.31 crore in 2018-19 which resulted in the erosion of the net worth from ₹3,950.72 crore in 2014-15 to ₹(-)1,407.61 crore in the year 2018-19.

During 2014-15, 2017-18 and 2018-19, net worth of one PSU[11] was negative and one PSU showed positive net worth. For the year 2015-16 and 2016-17, both the PSUs showed positive net worth.

Dividend Payout

1.12 The State Government had formulated (December 1998) a dividend policy under which all PSUs are required to pay a minimum return of 20 *per cent* on the paid up share capital or 30 *per cent* of the allocable surplus, whichever is lower. None of the Power Sector undertakings, which were liable to pay dividend, complied with the State Government policy on dividend payment. Details of dividend payout of Power Sector undertakings during 2014-15 to 2018-19 are given in **Table 1.9**:

[10] Kerala State Power and Infrastructure Finance Corporation Limited and Kerala State Electricity Board Limited.
[11] Kerala State Electricity Board Limited.

Table 1.9: Dividend payout of Power Sector Undertakings during 2014-15 to 2018-19

(₹ in crore)

Year	PSUs where equity was infused by GoK		PSUs which earned profit during the year		PSUs which declared/ paid dividend during the year		Dividend Payout Ratio (*per cent*)
	Number of PSUs	Equity infused by GoK	Number of PSUs	Equity infused by GoK	Number of PSUs	Dividend declared/paid by PSUs	
1	2	3	4	5	6	7	8=7/5*100
2014-15	2	3,514.88	1	15.83	0	0.00	0.00
2015-16	2	3,514.88	1	15.83	1	0.53	3.35
2016-17	2	3,514.88	1	15.83	0	0.00	0.00
2017-18	2	3,514.88	1	15.83	0	0.00	0.00
2018-19	2	3,514.88	1	15.83	0	0.00	0.00

There was short payment of dividend to the extent of ₹1.79 crore as one PSU[12] in which GoK infused equity and earned profit, did not declare/pay dividend to GoK.

Return on Equity

1.13 Return on Equity (ROE) is a measure of financial performance to assess how effectively management is using company's assets to create profits and is calculated by dividing net income (*i.e.*, net profit after taxes) by shareholders' fund. It is expressed as a percentage and can be calculated for any company if net income and shareholders' fund are both positive numbers.

Shareholders' fund of a company is calculated by adding paid up capital and free reserves net of accumulated losses and deferred revenue expenditure and reveals how much would be left for a company's stakeholders if all assets were sold and all debts paid. A positive shareholders' fund reveals that the company has enough assets to cover its liabilities while negative shareholders' fund means that liabilities exceed assets.

Return on Equity has been computed in respect of two Power Sector Undertakings where funds had been infused by the State Government. The details of shareholders' fund and ROE relating to these two Power Sector Undertakings during the period from 2014-15 to 2018-19 are given in **Table 1.10**:

[12] Kerala State Power and Infrastructure Finance Corporation Limited as per their latest finalised accounts 2017-18.

Table 1.10: Return on Equity relating to Power Sector Undertakings where funds were infused by the GoK

Year	Net income/ total earnings for the year[13] (₹ in crore)	Shareholders' fund (₹ in crore)	Return on equity (*per cent*)
2014-15	144.55	3,950.72	3.66
2015-16	-20.38	3,526.94	-
2016-17	-310.25	1,943.79	-
2017-18	-1,854.45	-1,407.61	-
2018-19	-1,854.45	-1,407.61	-

As can be seen from the above table, during the last five years ended March 2019, the net income was positive only during 2014-15 and the shareholders' fund turned negative from 2017-18. Since the net income of these PSUs during 2015-16 to 2018-19 and the shareholders' fund for 2017-18 and 2018-19 were negative, ROE in respect of these PSUs could not be worked out. However, negative shareholders' fund indicates that the liabilities of these PSUs have exceeded the assets.

Return on Capital Employed

1.14 Return on Capital Employed (ROCE) is a ratio that measures a company's profitability and the efficiency with which its capital is employed. ROCE is calculated by dividing a company's earnings before interest and taxes (EBIT) by the capital employed[14]. The details of ROCE of Power Sector Undertakings during the period from 2014-15 to 2018-19 are given in **Table 1.11**:

Table 1.11: Return on Capital Employed

Year	EBIT (₹ in crore)	Capital Employed (₹ in crore)	ROCE (*per cent*)
2014-15	595.77	12,529.09	4.76
2015-16	244.72	6,500.71	3.76
2016-17	545.63	5,713.58	9.55
2017-18	96.67	14,531.98	0.67
2018-19	95.01	14,539.71	0.65

The ROCE of the Power Sector Undertakings ranged between 0.65 *per cent* and 9.55 *per cent* during the period 2014-15 to 2018-19. The substantial decrease of ROCE in 2017-18 and 2018-19 compared to 2016-17 was due to increase in borrowing (₹11,667.98 crore) and loss (₹365.79 crore) of KSEBL.

Analysis of long term loans of the Companies

1.15 The analysis of the long term loans of the companies which had leverage during 2014-15 to 2018-19 was carried out to assess the ability of the companies to service the debt owed by the companies to Government, banks and other financial

[13] As per the latest finalised annual accounts during respective years.

[14] Capital employed = Paid up share capital+ free reserves and surplus+ long term loans - accumulated losses - deferred revenue expenditure.

institutions. This is assessed through the Interest Coverage Ratio and Debt Turnover Ratio.

Interest Coverage Ratio

1.16 Interest coverage ratio is used to determine the ability of a company to pay interest on outstanding debt and is calculated by dividing a company's earnings before interest and taxes (EBIT) by interest expenses of the same period. The lower the ratio, the lesser the ability of the company to pay interest on debt. An interest coverage ratio of below one indicates that the company was not generating sufficient revenues to meet its expenses on interest. The details of interest coverage ratio in those Power Sector companies which had interest burden during the period from 2014-15 to 2018-19 are given in **Table 1.12**:

Table 1.12: Interest coverage ratio

Year	Interest (₹ in crore)	Earnings before interest and tax (EBIT) (₹ in crore)	Number of companies having interest burden	Number of companies having interest coverage ratio more than 1	Number of companies having interest coverage ratio less than 1
2014-15	450.82	595.77	1	1	0
2015-16	264.43	244.72	2	1	1
2016-17	850.52	545.63	2	1	1
2017-18	1,945.97	96.67	3	2	1
2018-19	1,946.97	95.01	3	2	1

It is observed that the number of Power Sector companies with interest coverage ratio of more than one increased from one company in 2016-17 to two companies in 2017-18 and the same status continued in 2018-19 also.

Debt-Turnover Ratio

1.17 The Debt Turnover Ratio of the three Power Sector Undertakings are as given in **Table 1.13**:

Table 1.13: Debt Turnover ratio relating to the Power Sector undertakings

(₹ in crore)

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Debt from Government/ banks and financial institutions	3,699.35	1,855.85	6,426.77	15,943.82	14,533.71
Turnover	5,063.49	5,315.94	10,975.78	12,382.68	12,383.93
Debt-Turnover Ratio	0.73:1	0.35:1	0.59:1	1.29:1	1.17:1

(Source: Compiled based on information received from PSUs)

During the last five years, the turnover of the three Power Sector Undertakings recorded compounded annual growth of 25.05 *per cent* while the compounded annual growth of debt was 40.78 *per cent* due to which the Debt-Turnover ratio degraded from 0.73 in 2014-15 to 1.17 in 2018-19.

Assistance under Ujwal DISCOM Assurance Yojana (UDAY)

1.18 The Ministry of Power (MoP), Government of India launched (20 November 2015) Ujwal DISCOM Assurance Yojana (UDAY Scheme) for operational and financial turnaround of State owned Power Distribution Companies (DISCOMs). As per the provisions of UDAY Scheme, the participating States were required to undertake the following measures for operational and financial turnaround of DISCOMs.

Scheme for improving operational efficiency

1.18.1 The participating States were required to undertake various targeted activities such as compulsory feeder and distribution transformer (DT) metering, smart metering, Demand Side Management (DSM) which includes energy efficient LED bulbs, agricultural pumps, comprehensive Information, Education and Communication (IEC) campaign to check power theft, *etc*. The outcomes of the operational improvements would be measured through indicators *viz*., reduction of Aggregate Technical & Commercial (AT&C) loss to 15 *per cent* in 2018-19 as per loss reduction trajectory finalised by MoP and States, reduction in gap between average cost of supply (ACS) and average revenue realised (ARR) to zero by 2018-19.

Scheme for financial turnaround

1.18.2 The participating States were required to take over 75 *per cent* of DISCOMs debt over two years, *i.e.*, 50 *per cent* in 2015-16 and 25 *per cent* in 2016-17.

UDAY Scheme in Kerala

A tripartite Memorandum of Understanding (MoU) amongst Ministry of Power, Government of India, Government of Kerala (GoK) and Kerala State Electricity Board Limited (KSEBL) in order to achieve higher operational efficiency was entered into on 2 March 2017. The measures to be taken by KSEBL included activities for improving operational efficiency, undertaking tariff measures such as quarterly tariff revision, timely filing of tariff petition and timely preparation of annual accounts. The MoU envisaged reduction in AT&C losses of its electricity distribution business to 11 *per cent* by 2018-19. The MoU did not envisage takeover of any debt by GoK.

Implementation of the UDAY Scheme

1.18.3 The status of implementation of the UDAY Scheme is detailed below:

Achievement of operational parameters

The achievements *vis-à-vis* targets under UDAY Scheme regarding different operational parameters are given in **Table 1.14:**

Table 1.14: Parameter-wise achievements *vis-à-vis* targets of operational performance up to 30 September 2019

Parameter of UDAY Scheme	Target under UDAY Scheme	Progress under UDAY Scheme	Achievement (in *per cent*)
Feeder metering (in No.)			
Urban	268	271	100
Rural	358	439	100
Metering at Distribution Transformers (in No.)			
Urban	14,999	9,182	61.22
Rural	32,751	22,793	69.59
Rural Feeder Audit (in No.)	1,053	1,053	100
Electricity in unconnected households (in lakh No.)	2.4	6.59	100
Smart metering (in No.)			
Above 200 units/ month	7,45,000	0	0
Above 500 units/ month	1,36,000	0	0
Distribution of LED UJALA (in lakh Nos.)	135	108.50	80.37
AT&C losses (in *per cent*)	11	8.94	0
ACS-ARR Gap (₹ per unit)	0	0.11	0
Net income or profit/(loss) including subsidy (₹ in crore)	148.36	(290.01)	0

(Source: KSEBL progress reports/ State Health Card under UDAY Scheme)

Comments on Accounts of Power Sector Undertakings

1.19 Only one Power Sector Undertaking[15] forwarded its one audited accounts for the year 2017-18 to the Accountant General during the period from 1 October 2018 to 30 September 2019. This account was not selected for supplementary audit and the Statutory Auditor issued unqualified audit report. The details of aggregate money value of the comments of Statutory Auditors and the CAG for the accounts of 2016-17 to 2018-19 are given in **Table 1.15**:

[15] KINESCO Power and Utilities Private Limited.

Table 1.15: Impact of audit comments on Working Companies (Power Sector)

Sl. No.	Particulars	2016-17		2017-18		2018-19	
		Number of accounts	Amount (₹ in crore)	Number of accounts	Amount (₹ in crore)	Number of accounts	Amount (₹ in crore)
1	Decrease in profit	-	-	-	-	-	-
2	Increase in loss	2	453.44	2	194.43	-	-
3	Increase in profit	-	-	-	-	-	-
4	Decrease in loss	-	-	-	-	-	-
5	Non-disclosure of material facts	-	-	1	5,774.85	-	-
6	Errors of classification	2	639.00	2	285.75	-	-

Compliance to the Accounting Standards by the Power Sector Undertakings was poor as the Statutory Auditors and the CAG pointed out 21 and 19 instances of non-compliance to the Accounting Standards in 2016-17 and 2017-18 respectively. As the Power Sector Undertakings had not forwarded their accounts for the year 2018-19, the level of compliance to the Accounting Standards could not be commented upon.

Performance Audit Report and Compliance Audit Paragraphs

1.20 For Part-I of the Report of the Comptroller and Auditor General of India for the year ended 31 March 2019, one Performance Audit on Operational Performance of Major Hydro Electric Projects and two Compliance Audit Paragraphs relating to Kerala State Electricity Board Limited were issued to the Secretary, Department of Power, GoK with request to furnish replies within four weeks. Replies to the Performance Audit and one Compliance Audit Paragraph were yet to be received. An exit conference was held with the Department and Performance Audit Report and Compliance Audit Paragraphs were discussed. The total financial impact of the Performance Audit Report (₹423.19 crore) and of the Compliance Audit Paragraphs (₹2.08 crore) is ₹425.27 crore.

Follow up action on Audit Reports

Replies outstanding

1.21 The Reports of the CAG represent the culmination of the process of audit scrutiny. It is, therefore, necessary that they elicit appropriate and timely response from the executive. The Finance Department, Government of Kerala issued directions to all Administrative Departments in 2017 to furnish Explanatory Notes to Performance Audit/Compliance Audits/ Paragraphs included in the Audit Reports of the CAG within a period of two months of their presentation to the Legislature for speedy settlement of audit observations. The status of Explanatory Notes not received as of March 2020 is given in **Table 1.16:**

Table 1.16: Explanatory Notes not received (as of March 2020)

Year of the Audit Report (PSUs)	Date of placement of Audit Report in the State Legislature	Total Performance Audits (PAs) and Paragraphs in the Audit Report		Number of PAs/ Paragraphs for which explanatory notes were not received	
		PAs	Paragraphs	PAs	Paragraphs
2014-15	28/06/2016	2	3	0	0
2015-16	23/05/2017	1	1	0	1[16]
2016-17	19/06/2018	0	0	0	0
Total		**3**	**4**	**0**	**1**

From the above, it could be seen that out of three Performance Audits and four Paragraphs, Explanatory Notes to one Paragraph in respect of Power Department, which were commented upon, were awaited (March 2020).

Discussion of Audit Reports by Committee on Public Undertakings (CoPU)

1.22 The status of discussion of Performance Audits and Compliance Audits/ Paragraphs that appeared in Audit Report (PSUs) by CoPU as of March 2020 is shown in **Table 1.17:**

Table 1.17: Performance Audits/ Paragraphs appeared in Audit Reports *vis-à-vis* discussed as of March 2020

Period of Audit Report	Number of Performance Audits/ Paragraphs			
	Appeared in Audit Report		Discussed	
	PAs	Paragraphs	PAs	Paragraphs
2014-15	2	3	1	0
2015-16	1	1	0	0
2016-17	0	0	0	0
Total	**3**	**4**	**1**	**0**

Compliance to Reports of Committee on Public Undertakings

1.23 Action Taken Notes (ATNs) to 50 Paragraphs in eight Reports of the CoPU presented to the State Legislature between February 2011 and November 2019 have not been received (March 2020) as indicated in **Table 1.18**:

[16] Sub Para (2) and (3) of Para 3.3.

Table 1.18: Compliance to CoPU Report

Year of the CoPU Report	Total number of CoPU Reports	Total number of recommendations in the CoPU Reports	No. of recommendations where ATNs not received
2008-11	1	14	1
2016-19	3	23	6
2019-21	4	43	43
Total	**8**	**80**	**50**

These Reports of CoPU contained recommendations in respect of Paragraphs pertaining to Power Department, which appeared in the Report of CAG of India for the year 1998-99 to 2013-14. The pace of receipt of ATNs from GoK to CoPU was not encouraging.

It is recommended that the Government may ensure:

(a) sending of replies/ Explanatory Notes to Paragraphs/ Performance Audits and ATNs on the recommendations of CoPU as per the prescribed time schedule; and

(b) revamping of the system of response by GoK to audit observations.

Chapter II

Performance Audit relating to Power Sector Undertakings

Chapter II

Performance Audit relating to Power Sector Undertakings

Operational Performance of Major Hydro Electric Projects of Kerala State Electricity Board Limited

Executive Summary

Introduction

Kerala State Electricity Board Limited (KSEBL) was incorporated under the Companies Act, 1956 on 14 January 2011 and started operations as an independent company with effect from 1 November 2013. KSEBL manages the activities of transmission, generation and distribution of power in the State through three strategic business units (SBU), viz. SBU-Transmission, SBU-Generation and SBU-Distribution. The total installed capacity of KSEBL as on 31 March 2019 was 2,237.59 Megawatt (MW), of which 2,058.75 MW (92 per cent) was hydel. The total hydel power capacity was accounted for by 12 major Hydro Electric Projects (HEPs) (1,935 MW) and 23 small HEPs (123.75 MW). The Performance Audit covered the operational performance of three major HEPs of KSEBL, viz. Idukki, Sabarigiri and Kuttiyadi, for a period of five years from 2014-15 to 2018-19. The three major HEPs constituted 65 per cent of the total hydel generation capacity and 63.60 per cent of the total generation capacity of KSEBL.

Non–adherence to hydro generation policy

Failure of KSEBL to adhere to its hydro generation policy and step up the generation of power from the HEPs to meet the additional demand during the peak hours of summer months led to purchase of 86.40 MU of power incurring ₹25.31 crore.

Delay in rectifying defect due to bifurcation of penstock

Bifurcation of penstock of Kuttiyadi HEP for supplying water to the generating stations of Kuttiyadi Extension Scheme led to flow instabilities and consequent reduction of generation capacity by 10 MW. Though the problem was first noticed in 2003, delay in rectifying this led to generation loss of 178.70 MU of power and consequent purchase of power incurring ₹52.36 crore.

Runner erosion due to construction of weir across tail race

The construction of a weir across the tail race channel of Kuttiyadi Additional Extension Scheme led to lack of proper aeration in the runner housing of the generating unit. This forced KSEBL to reduce the generation capacity by 20 MW resulting in generation loss of 133.80 MU of power and consequent purchase of power incurring ₹39.20 crore.

Non-exploration of possibility of uprating

Failure to utilise the uprating potential of first stage units of Idukki HEP and of units 1, 2, 3 and 5 of Sabarigiri HEP resulted in loss of generation capability of 212.04 MU of power per annum, which could have reduced the power procurement by KSEBL to that extent.

Plant Availability Factor

The Plant Availability Factor of the HEPs was affected by considerable amount of forced outages due to improper execution of maintenance works. This resulted in generation loss of 920.71 MU of power and additional expenditure of ₹269.77 crore towards purchase of power.

Renovation, Modernisation and Uprating of Idukki HEP

Defective technical evaluation of the bids delayed the award of Renovation, Modernisation and Uprating (RMU) works of Idukki HEP by 21 months. The RMU works of three units of Idukki HEP was to be completed by July 2019. As of October 2019, the RMU works of only one unit was completed.

Renovation, Modernisation and Uprating of Sabarigiri HEP

Unit 4 of Sabarigiri HEP failed to perform in accordance with the parameters guaranteed by the contractor. The unit was under forced shut down due to technical problems for 1,366:49 hours during the defect liability period and for 5,221:18 hours after the defect liability period causing generation loss of 201.60 MU of power and additional expenditure of ₹59.07 crore towards purchase of power.

Introduction

2.1 Kerala State Electricity Board was a statutory body constituted on 1 April 1957 under Section 5 of the Electricity (Supply) Act, 1948 (Act) for the coordinated development of generation, transmission and distribution of electricity in the State of Kerala. As per the provisions of the Electricity Act 2003, KSEB continued as a State Transmission Utility and Distribution Licensee performing the same functions till 31 October 2013. Kerala State Electricity Board Limited (KSEBL) was incorporated under the Companies Act, 1956 on 14 January 2011 and started operations as an independent company with effect from 1 November 2013. KSEBL manages the activities of transmission, generation and distribution of power in the State through three strategic business units (SBU), *viz*. SBU-Transmission, SBU-Generation and SBU-Distribution.

The electricity demand of the State is met through generation from KSEBL and purchase from Central Generating Stations, Independent Power Producers, power exchange and traders. At present, the power generation of KSEBL comprises a mix of hydel, thermal, solar and wind power stations. The total installed capacity of

KSEBL as on 31 March 2019 was 2,237.59 Megawatt[17] (MW), of which 2,058.75 MW (92 *per cent*) was hydel, 159.96 MW (7.15 *per cent*) thermal, 16.85 MW (0.75 *per cent*) solar and 2.03 MW (0.09 *per cent*) wind. The total hydel power capacity of 2,058.75 MW was accounted for by 12[18] major Hydro Electric Projects (HEPs)[19] (1,935 MW) and 23 small HEPs[20] (123.75 MW). Out of 35 HEPs, Idukki HEP has the highest capacity (780 MW), followed by Sabarigiri HEP (340 MW) and Kuttiyadi HEP (225 MW).

Audit scope and sample

2.2 The Performance Audit covered the operational performance of three major HEPs of KSEBL, *viz*. Idukki, Sabarigiri and Kuttiyadi, for a period of five years from 2014-15 to 2018-19. The three major HEPs constituted 65 *per cent* of the total hydel generation capacity and 63.60 *per cent* of the total generation capacity of KSEBL.

Audit objectives

2.3 The objectives of the Performance Audit were to assess whether:

- the HEPs were operated and maintained in such a way as to generate power in the most optimal manner and minimise power purchase.
- the periodical maintenance of the HEPs was planned and carried out economically and effectively and renovation, modernisation and uprating programmes were carried out effectively.

Audit criteria

2.4 Audit criteria for the Performance Audit were derived from the following:

- Targets fixed by KSEBL for generation of power and approved by the Central Electricity Authority and the Kerala State Electricity Regulatory Commission (KSERC).
- Best Practices Guidelines for Renovation and Modernisation of Hydro Power Plants by Central Electricity Authority.
- Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electrical Lines) Regulation, 2010.
- Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations, 2011.
- Guidelines for Submission of Proposals for Revision of Design Energy of Hydro Electric Stations (2004) issued by the Central Electricity Authority.

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[17] One Megawatt is the equivalent of ten lakh (one million) watts.
[18] Extension schemes of Kuttiyadi and Neriamangalam HEPs were not considered as separate HEPs.
[19] HEPs with capacity above 25 MW.
[20] HEPs with capacity below 25 MW.

- Renovation, Modernisation and Uprating programs planned and scheduled by KSEBL and Regulations issued by KSERC in this regard.
- Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations.
- Manual on Renovation, Modernisation, Uprating and Life Extension of Hydropower Plants issued (February 2005) by Central Board of Irrigation and Power.
- Maintenance and Repair Schedules and Residual Life Assessment Study Reports.
- Board Orders, Directions/ Circulars *etc*. relevant to the topic.
- Agenda and Minutes of meetings of the Board of Directors and Core Committee.
- Investigation Reports/ Reports of Vigilance Wing of KSEBL.
- Stores Purchase Manual issued by Government of Kerala and General Conditions of Contract of KSEBL.
- Cost Audit Reports and Internal Audit Reports.

Audit methodology

2.5 The methodology adopted for attaining the audit objectives with reference to audit criteria consisted of explaining the audit objectives to top management of KSEBL/ Government of Kerala (GoK), scrutiny of records of KSEBL, analysis of data with reference to the criteria and issue of audit requisitions and queries. An Entry Conference was held in May 2019 with the KSEBL/ GoK wherein the scope and objectives were discussed. Field audit involving scrutiny of records was conducted during May to October 2019. The draft Performance Audit Report was issued to GoK/ KSEBL in May 2020 and an Exit Conference for discussing the Report with GoK/ KSEBL was held in September 2020. KSEBL furnished (August/ October 2020) its reply which was duly incorporated, while the replies from GoK were awaited (November 2020).

Acknowledgement

2.6 Audit acknowledges the cooperation and assistance extended by the Management and staff of KSEBL in the conduct of this Performance Audit.

Audit findings

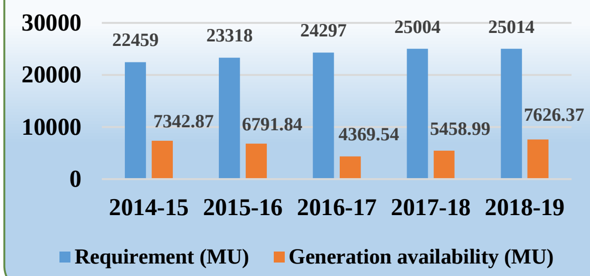
2.7 The findings of the Performance Audit are discussed in the succeeding paragraphs.

2.8 Performance of HEPs

Generation of power *vis-à-vis* requirement for power

2.8.1 The requirement for power *vs.* generation of power in the State (including generation of power by private generators) during 2014-15 to 2018-19 is shown in the **Figure 2.1**.

Figure-2.1: Requirement *vs.* Generation of power



The gap between the requirement for power and the generation of power in the State ranged between 67 to 82 *per cent*.

In order to bridge this gap, KSEBL purchased power from Central Generating Stations, Independent Power Producers, power exchange and traders. **Table 2.1** shows the details of generation of power by KSEBL, purchase from other sources along with average cost of purchase and generation of power.

Table 2.1: Details of generation and purchase of power

Particulars	Unit	2014-15	2015-16	2016-17	2017-18	2018-19
Generation by KSEBL[21]	Million Unit (MU)	7,301.00	6,753.38	4,339.93	5,474.47	7,577.02
Purchase of power		15,031.44	16,448.36	19,734.92	19,426.74	18,046.57
Total power supplied		22,332.45	23,201.75	24,074.85	24,901.21	25,623.59
Generation as a percentage of power supplied	*per cent*	32.69	29.11	18.03	21.98	29.57
Average cost of generation	(₹/kWh)	0.80	0.67	1.03	0.92	0.59
Average cost of purchase[22]	(₹/kWh)	3.61	3.25	3.75	3.87	4.19

(Source: Data furnished by KSEBL and Cost Audit Report of KSEBL)

From the table above, it can be seen that KSEBL was able to generate only 18.03 *per cent* to 32.69 *per cent* of its annual requirement from its own sources. The gap between generation and demand was made up by the purchase of power at an average annual cost ranging from ₹3.25 to ₹4.19 *per unit* during the period covered in audit while the average cost of generation ranged from ₹0.59 to ₹1.03 *per unit.*

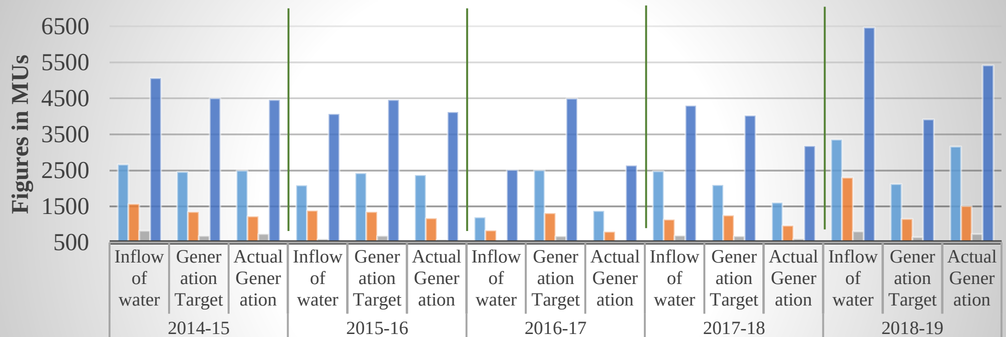
[21] Excluding Auxiliary Consumption, *i.e.*, the fraction of the power generated in a power house which is consumed by power generating equipment and their auxiliaries such as fans, motors *etc*.

[22] As per Cost Audit Report.

Generation targets and achievement

2.8.2 KSEBL fixed annual targets for generation of power and the same were approved by the Central Electricity Authority (CEA). The targets fixed and the actual generation there against in respect of Idukki, Sabarigiri and Kuttiyadi HEPs during 2014-15 to 2018-19 were as shown in **Figure 2.2**.

Figure-2.2: Generation Target vs. Actual



	2014-15 Inflow of water	2014-15 Generation Target	2014-15 Actual Generation	2015-16 Inflow of water	2015-16 Generation Target	2015-16 Actual Generation	2016-17 Inflow of water	2016-17 Generation Target	2016-17 Actual Generation	2017-18 Inflow of water	2017-18 Generation Target	2017-18 Actual Generation	2018-19 Inflow of water	2018-19 Generation Target	2018-19 Actual Generation
Idukki	2662	2465	2493	2086	2427	2373	1200	2505	1379	2475	2096	1611	3357	2119	3166
Sabarigiri	1575	1354	1225	1388	1354	1169	831	1312	798	1136	1250	969	2297	1159	1511
Kuttiyadi	830	682	738	593	682	576	480	676	465	690	676	601	812	644	740
Total	5066	4501	4456	4067	4463	4118	2511	4493	2642	4300	4022	3181	6467	3922	5417

(Source: Data furnished by KSEBL)

It can be seen that:

- Idukki HEP achieved the target only in 2014-15 and 2018-19. In 2015-16 and 2016-17, the HEP generated more power than the actual inflow of water during the year by utilising the water balance from the previous years. The power generation in 2017-18 was 1,611.10 MU only, despite the inflow of water for generation of 2,475 MU of power.
- Sabarigiri HEP could achieve the target only in 2018-19. The actual generation in 2014-15 and 2015-16 was less than the target, despite sufficient inflow of water. In 2016-17 and 2017-18, the HEP was not able to generate power even for the actual inflow of water.
- Kuttiyadi HEP achieved the annual target only in 2014-15 and 2018-19. In 2017-18, the generation was 601 MU of power only despite the water inflow for generation of 690 MU of power. But in 2015-16 and 2016-17 generation of power was lower than the actual inflow of water.
- The total generation of power by the three HEPs, however, indicated that these HEPs could not achieve the targets in four years. The shortfall was significantly higher in 2016-17 as the total generation was only 59 *per cent* due to deficit monsoon. On the other hand, the total generation exceeded the target by 38 *per cent* in 2018-19 due to heavy rainfall.

KSEBL replied (August 2020) that the achievement of HEPs against a fixed target changed due to various reasons such as inflow of water, availability of power from central stations and other States, demand, grid conditions, price of external power *etc*. Further, as the power purchase was based on Availability Based Tariff (ABT)[23], all the units were not utilised continuously even in peak hours and the units were often kept under cold reserve[24].

The reply was not tenable. As shown in **Figure 2.2**, HEPs could not achieve the targets despite availability of sufficient water. Further, the cost of generation from HEPs during 2014-15 to 2018-19 ranged between ₹0.67 to ₹1.03 *per unit* which in any case was lower than the cost of purchase from other sources.

Plant Load Factor

2.8.3 Plant Load Factor (PLF) in respect of a generating station refers to the ratio between actual generation and maximum possible generation at installed capacity. It indicates the output efficiency of a generating station. The actual PLF of the HEPs in comparison with their respective design PLF for the period 2014-15 to 2018-19 is given in **Table 2.2**.

Table 2.2: Details of design and actual plant load factor of HEPs

HEP	Design PLF	Actual PLF (*per cent*)					
		2014-15	2015-16	2016-17	2017-18	2018-19	Average
Idukki	35.92	36.50	34.62	20.68	23.58	46.35	32.35
Sabarigiri	51.00	17.44	16.65	20.18	13.80	21.51	17.92
Kuttiyadi	28.72@	37.46	29.22	11.36	30.47	37.53	29.21

(Source: Data furnished by KSEBL)

@ Weighted average design PLF of Kuttiyadi HEP, Kuttiyadi Extension Scheme and Kuttiyadi Additional Extension Scheme.

It can be seen from the above that while Idukki and Kuttiyadi HEPs could not achieve the design PLF in three out of five years and in one out of five years respectively, Sabarigiri HEP failed to achieve the design PLF in all the five years. The maximum PLF achieved by Sabarigiri HEP was 21.51 *per cent* only against the design PLF of 51.00 *per cent.*

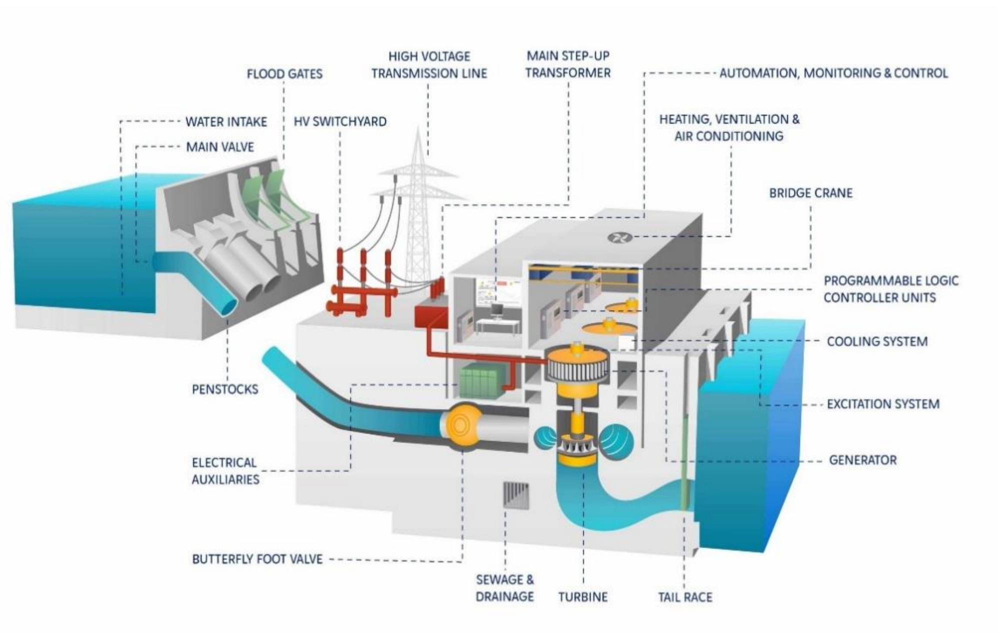
Audit observed that the generation capability of the HEPs and their PLF were affected due to the issues discussed in ***Paragraphs 2.8.4 to 2.8.9*** below. As a result, the HEPs suffered generation loss of 496.92 MU during the period from 2014-15 to 2018-19 and KSEBL incurred additional expenditure of ₹145.59 crore for purchase of power to make up the shortage in generation. The extra expenditure towards procurement of power was calculated at ₹2.93 per unit, being the average cost of power purchase per unit (₹3.73) during 2014-19, less the average cost of hydel generation (₹0.80) during the period. Since hydroelectric power is the cheapest and the most environmental friendly, it should be ensured that there is no shortfall in achievement of generation targets and PLF on account of controllable reasons.

[23] Availability Based Tariff (ABT) is a frequency based pricing scheme adopted in Indian power sector.

[24] Cold reserve in a power system is that reserve capacity which is available for service but normally not ready for immediate loading.

The important technical terms featured in this Report have been explained in the footnotes. A general presentation of a hydropower plant is given in the **Figure 2.3:**

Figure 2.3: General layout of a hydropower plant



Non-adherence to hydro generation policy

2.8.4 KSEBL follows a policy of conserving the water in reservoirs with large storage capacity such as Idukki, Pampa-Kakki, and Kakkayam during the monsoon months (June to November) in order to utilise the same to the maximum during the summer months (March, April and May) when the power purchase costs are high.

The power generation of Idukki, Sabarigiri and Kuttiyadi HEPs and power purchases in the summer months during 2016 to 2019[25] was analysed from the data provided by the State Load Dispatch Centre (SLDC) of KSEBL. Audit selected 22,080 blocks of 15 minutes' duration in the evening peak hours (18:00 to 23:00) of summer months and observed that in respect of 7,595 blocks (*i.e.* in 34.39 *per cent* blocks) power import exceeded the quantity scheduled for each block. It transpired that despite availability of adequate water in the reservoirs and availability of machines for meeting the additional requirement of power in the identified blocks, KSEBL did not step up the generation from these HEPs. Thus, though the water was conserved during monsoon, it was not used to the maximum during summer which was not in line with KSEBL's policy. Adherence to the generation policy would have reduced the import of power by 86.40 MU during the peak hours in the summer months of 2016 to 2019 for which KSEBL incurred an additional expenditure of ₹25.31 crore.

[25] SLDC provided data from 2016 only since the revamped Unified Load Despatch and Communication System was operationalised from January 2016.

KSEBL stated (August 2020) that the SLDC directs all the major generating stations to put the units in service based on various factors and all the units were not continuously used even in the peak hours during summer season as they were kept as cold reserve.

The reply was not tenable. SLDC is one of the operating units of KSEBL and expected to adhere to its policies while scheduling generation/ import with a view to minimise the cost of power purchase. Audit has considered those units which were in operation (excluding the units in cold reserve) during the peak hour blocks and observed that those were operated at less than the average generation.

Delay in replacement of pumps

2.8.5 Under the Sabarigiri Augmentation Scheme (1981), KSEBL set up a pump house at Kochu Pamba equipped with four turbine pumps of 235 kW capacity each. The pump house is to operate three pumps at a time to pump 14 MCM of water to generate 22.58 MU of power *per annum* from Sabarigiri HEP.

Due to long years of service coupled with obsolete switching arrangements and non-availability of transformer protection, only one pump could be operated at a time since December 2012. A temporary arrangement by providing one more pump was put in place. Since the remaining two pumps needed major repair, the Assistant Executive Engineer concerned proposed (December 2012) to replace the pumps in a phased manner. As per the estimate report (May 2015) for renovation of the pump house which included replacement of pumps, the new pumps would be operated for at least 7,000 hours during monsoon every year and would generate 12.20 MU of power. After deducting 1.40 MU towards power consumption by the pumps, there would be a net power generation of 10.80 MU per year.

Audit observed that though the pumps were experiencing problems since 2012 KSEBL invited tender for renovation of the pump house only in November 2016. The work order was finally placed in August 2019 only with the completion of works by April 2020. There was considerable delay in finalising the design of the pumps as the design was modified six times during January 2013 to August 2015. Though technical sanction for the works was accorded in October 2015, there was unexplained delay of 12 months for tendering the works. KSEBL took further 10 months for finalising the tender and to award the works.

Details of operations of the pump house from 2014-15 to 2018-19 indicated that two pumps were operated for eight months and one pump for 11 months in place of three pumps at a time. The quantity of water pumped during this period was 15.21 MCM which resulted in generation of 24.53 MU of power. However, renovation of pump house without any delay would have led to a total generation of 54 MU of power. Thus, there was a loss of generation of 29.47 MU of power during 2014-19 which also led to additional expenditure of ₹8.63 crore for procurement of alternate power.

KSEBL replied (August/ October 2020) that the pumps and panels were custom-made and the manufacturers could not supply such products to suit the requirements of KSEBL. Hence, there was delay in finalising the design of pumps. The tendering work was delayed as it was very difficult to get contractors for carrying out the work due to geographical terrain of the area. There was no spillage of water reported from

Kochu Pampa except in the heavy rain year of 2018-19 and it would have been a loss to KSEBL if water had been pumped into the dam. Hence, there was no energy loss due to non-installation of new pumps.

The reply was not acceptable. The proposal was for renovation of an existing pump house along with replacement of old pumps. Hence, the time taken (32 months) for finalising the design was not justified. Non-availability of contractor for undertaking the works was also not convincing as KSEBL completed the tendering process within three months when it retendered the works. Audit did not comment upon the spillage of water and associated generation loss, but highlighted the extra expenditure due to non-generation of electricity due to delay in replacing the old pumps.

Delay in rectifying defect due to bifurcation of penstock

2.8.6 Kuttiyadi HEP (3 units of 25 MW each) was commissioned in 1972. Kuttiyadi Extension Scheme (KES) with a capacity of 50 MW was commissioned in 2001 by bifurcating the existing penstock[26] into two penstocks, one supplying water to the three units of 25 MW each of Kuttiyadi HEP and the other supplying water to the 50 MW unit of KES. In this regard, Audit observed that:

- After the introduction of the penstock of KES, the runner buckets[27] in the Pelton turbine[28] of the old units started developing severe pitting[29] and frequent bucket cracking during the year 2003. This was attributed to the head loss[30] and turbulence in the water at the bifurcation point of the penstock. KSEBL subsequently found that when the three units of Kuttiyadi HEP were run at reduced maximum loads, the severity of pitting reduced. Therefore, KSEBL decided (August 2011) to operate the three units at a reduced combined load of 65 MW instead of 75 MW.

- The problem was first noticed in 2003. During 2003-04 to 2008-09, regular repair works were carried out to rectify the damage caused to the runner by pitting. To avoid further breakdowns and repair, the generation from Units 2 and 3 was reduced from August 2011 onwards. KSEBL engaged a consultant to conduct detailed study of the combined water conducting system only in March 2012. The consultant concluded (June 2014) that taking a branch penstock from the main penstock led to flow instabilities in the downstream from the bifurcation point of the penstock. Hence, the consultant

[26] A penstock is an enclosed pipe that delivers water to a hydro turbine from the reservoir.
[27] A Pelton turbine consists of a runner, which is a circular disc on the periphery of which a number of buckets are mounted with equal spacing between them.
[28] Pelton Turbine is a tangential flow impulse turbine in which the pressure energy of water is converted into kinetic energy to form high speed water jet and this jet strikes the wheel tangentially to make it rotate.
[29] Pitting is a form of extremely localised corrosion that leads to the creation of small holes in the metal.
[30] Head loss refers to the totality of energy losses due to the length of a pipe and those due to the function of fittings, valves and other system structures.

recommended an additional penstock from the dam to the bifurcation point so as to create an independent water conducting system for the new unit.

- KSEBL initiated corrective measures in June 2017 as suggested by the consultant, after a delay of three years. Though the consultant had recommended the corrective measures in 2014, the work for laying the penstock is still under tendering (October 2020). Rather than taking up this work separately, this was clubbed with RMU of Kuttiyadi HEP and delayed as detailed in ***Paragraph 2.10.4***.
- During the period from 2014-15 to 2018-19, KSEBL suffered generation loss of 178.70 MU due to the reduced utilisation of generating units at the Kuttiyadi HEP by 10 MW. This also led to avoidable expenditure of ₹52.36 crore towards procurement of power to make up the reduced generation during this period.

KSEBL stated (October 2020) that the existing penstock of water conducting system of Kuttiyadi HEP was bifurcated to complete the project within a short span of time and to avoid delays in obtaining environmental clearance. A proper solution could be evolved only through detailed analysis of the problems and evolving a pragmatic solution was time consuming. Since there was no spillage from reservoir reported except during 2018-19, the 10 MW reduction has reserved water for use in summer seasons.

The reply was not acceptable. Audit highlighted the avoidable delay in resolving the technical issue noticed in the penstock. While noting KSEBL's contention that detailed study was required for evolving a suitable solution, a period of 17 years for addressing the technical issue was detrimental to the financial interests of KSEBL and hence not justified. Audit did not comment upon the spillage of water and associated generation loss, but highlighted the reduction in generation capacity and consequent purchase of power from other sources incurring extra expenditure.

Runner erosion due to construction of weir across tail race

2.8.7 As per Regulation 33 (11) of the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010, Pelton turbine shall be installed with its centreline at a height of minimum three meters above the maximum tail water level or as per the recommendations of the manufacturer.

KSEBL commissioned Kuttiyadi Additional Extension Scheme (KAES) with a capacity of 100 MW (2 x 50 MW) in October 2010. To effectively utilise the tail race waters of KAES, KSEBL implemented Kakkayam Small Hydro Electric Project (Kakkayam SHEP) during December 2012 to February 2015. As part of Kakkayam SHEP, a weir[31] of 1.29 meter height was constructed across the tail race

[31] A weir or low head dam is a barrier across the width of a river that alters the flow characteristics of water and usually results in a change in the height of the river level.

channel[32] of KAES approximately 80 meters away from the runner housing[33]. In this regard, Audit noticed that:

- Severe runner erosion was noticed on the rear side of the buckets in the Pelton turbine of Unit 2 of KAES from April 2013. KSEBL found that the tail race water level below the runner pit in the Pelton turbines of Unit 1 and 2 of KAES increased beyond the maximum prescribed level due to the construction of the weir which led to lack of proper aeration in the runner housing. In order to protect the runner from further damage, KSEBL decided (March 2015) to restrict the generation capacity from 100 MW to 80 MW.
- KSEBL consulted Bharat Heavy Electricals Limited (BHEL), the Original Equipment Manufacturer (OEM), to rectify the defects in the runner housing. After inspecting the site, BHEL informed that the runner erosion was due to the sub-atmospheric condition inside the runner housing caused by the lack of proper aeration through the tail race after the construction of the weir. BHEL also informed that the weir was constructed without taking their consent and also without considering its consequences on the health of the generation units of KAES in violation of the contract.
- KSEBL took five years to finally resolve (March 2018) the issue by providing aeration pipes inside the runner pits while it suffered generation loss of 133.80 MU of power from April 2015 to March 2018. During this period, KSEBL incurred an extra expenditure of ₹39.20 crore towards procurement of power to compensate this generation loss.

KSEBL replied (August 2020) that there was no delay in attending the problem. Such problems could only be solved by some detailed analysis and step by step method. KSEBL contended that no loss was incurred as the unutilised portion of water could be used during peak summer period when the cost of power was high. There was no spillage in Kuttiyadi dam during the period 2015-2018.

The reply was not acceptable as KSEBL took five years to solve the aeration problem associated with runner housing of KAES. Also KSEBL constructed the weir across the tail race without consulting the OEM of KAES regarding tail race water level. Due to reduction in generation capacity, KSEBL resorted to purchase of power and incurred additional expenditure.

Delay in completing the work of power channel gates

2.8.8 Kuttiyadi Tail Race (KTR) power house (3.75 MW) under the Kuttiyadi HEP consisting of three units of 1.25 MW each was commissioned during June 2008 to October 2009. The project uses the water discharged from the Kuttiyadi HEP (Unit 1, 2 and 3) and KES (Unit 4). An open power channel of 600 meter length is connecting the common tail race of Kuttiyadi HEP and KES and the fore bay tank[34]

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[32] Tail race is an open channel made up of reinforced concrete or a pipeline to carry away the water discharged from the turbine of a generating station after power is produced from the water.

[33] Runner housing is the enclosure that surrounds the runner which is the rotating part of the turbine that converts the energy of falling water into mechanical energy.

[34] The forebay tank forms the connection between the channel and the penstock and also serves as reservoir at the head of the penstock that carries water to the turbine.

of KTR power house. The water flow through the channel is controlled by three vertical shutters situated near Kuttiyadi HEP while a surplus channel is used to divert excess water from the fore bay tank of KTR.

In July 2010, the generating units at the KTR tripped and the water level in the power channel rose due to insufficient surplus channel. The power channel walls also broke due to the excess water pressure and water spilled over to the nearby properties. This was due to practical difficulties in closing the third shutter in the power channel as a person was required to travel about a kilometre to close the same. Since then, one of the vertical shutters was fully inserted in the power channel to reduce the water flow, the second shutter was placed in hanging position to adjust the flow according to the load conditions and maximum generation from KTR units was limited (July 2010) to 2.5 MW. In order to solve the difficulty in closing the power channel shutters, KSEBL accorded (September 2015) sanction for combining the three pieces of power channel shutters into one single piece at an estimated cost of ₹0.15 crore.

Though an estimate was prepared and approved in September 2015, KSEBL was yet (March 2020) to finalise the rectification work. There was lack of coordination between the Civil Construction and Generation wings in KSEBL which resulted in non-finalisation of technical design for the rectification works. As per the estimate for this work, completion of the rectification work would result in a minimum load increase of 0.5 MW. The non-execution of the rectification works, therefore, resulted in generation loss of 10.95 MU during 2014-15 to 2018-19 due to reduced utilisation of capacity at the KTR. This also led to extra expenditure of ₹3.21 crore for procurement of power during this period.

KSEBL replied (August 2020) that the maximum generation of KTR was limited to 2.5 MW due to problems associated with the power channel gates. The proposal for solving these problems by joining the two gates was being examined. A trial run was conducted in February 2020 for analysing the level of the channel and water surge, after which, Chief Engineer, (Civil Construction, North) has formulated a proposal for strengthening the channel and the report was yet to be finalised.

The reply was not acceptable as the difficulty in closing the power channel gates was persisting since July 2010 and no tangible measures were taken for its rectification. This also reduced the generation of power by 0.5 MW. Audit noticed that the Deputy Chief Engineer (Generation) had submitted a detailed proposal for strengthening the power channel in July 2010 to the Chief Engineer (Civil Construction). Hence, the fact that the power channel required strengthening was known to KSEBL even before the trial run in February 2020.

Insufficient power evacuation lines

2.8.9 The total installed capacity of Kuttiyadi HEP was enhanced to 225 MW with the commissioning of KAES (100 MW) in 2010. Power evacuation from Kuttiyadi HEP is carried out through four 110 kV feeders, *viz*., two feeders cater to Kozhikode side and other two towards Kannur side. The conductor current carrying capacity of each feeder was 343-Ampere. But, in view of the weak jumper[35] connection and other weak points in the feeders, the feeders were loaded only up to 330-Ampere. In order to evacuate the power generated from KAES and to improve the current carrying capacity of the feeders, KSEBL approved (March 2007) works for construction of transmission facilities[36] at a cost ₹17.22 crore.

Though the construction of transmission facilities were awarded during October 2008 to May 2009, the works were stopped due to litigation from the public against the drawal of line through the proposed route. The disputes were settled and the routes were cleared by the end of 2011. The contractor did not resume the work demanding rate escalation which KSEBL rejected and short-closed (July 2012) the contract. The work, though retendered in February 2014, was not awarded as the contractor quoted 143.38 *per cent* above the estimate. The execution of the works remained at standstill thereafter.

Despite KSEBL considering various options such as combining the construction of transmission facilities in one package, assigning the works to other separate field offices and constructing new transmission facilities *etc.,* the works did not progress further. This indicated that KSEBL could not firm up a technically feasible proposal for construction of the lines and other facilities even though it was incurring considerable loss by way of reduced generation from the Kuttiyadi HEP.

As a result, the peak load generation at Kuttiyadi HEP was reduced by 50 MW during off-monsoon period and by 10 MW during monsoon period which necessitated procurement of power from other sources as under:

- *During off-monsoon period (October to May)* – underutilisation of capacity of 50 MW for three hours per day led to generation loss of 10.47 MU of power *per annum* (based on combined PLF of Kuttiyadi HEP). This resulted in extra expenditure of ₹15.34 crore for procurement of power during the period covered in audit (2014-19).

- *During monsoon period (June to September)* – underutilisation of capacity of 10 MW for three hours per day led to generation loss of 1.05 MU of power *per annum* (based on combined PLF of Kuttiyadi HEP). This resulted in extra expenditure of ₹1.54 crore for procurement of power during the period covered in audit (2014-19).

KSEBL replied (August 2020) that the conductor of two feeders towards Kozhikode side were replaced with high capacity conductors in May 2019 and no transmission line constraint was experienced at present. The re-conductoring of the two feeders towards Kannur side was in progress. KSEBL added (October 2020) that the delay occurred mainly due to the litigations and time taken for repeated tendering due to escalation in rates. Though there were line constraints, Kuttiyadi HEP was able to load up to 210 MW by splitting the buses and putting the lines in radial mode while

[35] A jumper is a tiny metal connector that is used to close or open part of an electrical circuit.
[36] Construction of 110 kV Multi-Circuit line from Kakkayam to Pattanippara and 100 kV Double-Circuit line from Pattanippara to 220 kV Substation Vadakara, including construction of two 100 kV feeder bays at 220 kV Substation Vadakara.

the maximum capacity could be obtained by putting all machines into operation was roughly 215 MW. Hence, the loss calculated by Audit was exorbitant.

The reply was to be viewed against the fact that KSEBL could not fully solve the power evacuation issues even after 12 years despite incurring additional expenditure of ₹16.88 crore during 2014-19 for procurement of power. For assessing the impact of non-availability of evacuation lines, Audit adopted the reduction in generation capacity as assessed by KSEBL and hence, there was no basis for stating that the extra expenditure stated by Audit was exorbitant.

Control and monitoring of power stations

2.8.10 The State Load Dispatch Centre (SLDC) is the apex body to ensure integrated operation of the power systems in the State by monitoring grid operations through optimum scheduling and despatch of electricity. The SLDC controls the output from the various generating stations of KSEBL as per the approved annual generation plan and taking into account the water availability in HEPs on a daily basis. The SLDC also schedules and executes the import/ export of power and interaction with the Regional/ National Power Grid. The operations at the individual power stations are controlled by the respective operators under the supervision of superior officers and the SLDC. Control over the generators/ turbines is exercised through the Supervisory Control and Data Acquisition (SCADA) software which is interfaced with the embedded software in the generating units.

Deficiencies in SCADA upgradation

2.8.10.1 KSEBL awarded (January 2017) a work for upgrading the SCADA software used in the Sabarigiri HEP to Andritz Hydro Private Limited at ₹5.25 crore stipulating completion of the work by December 2017. The contractor completed all works except installation of optical fibre communication ring with various SCADA equipment (October 2019).

KSEBL decided to upgrade the existing SCADA software as it was outdated. Audit observed that the SCADA software upgraded by the contractor is compatible with Windows 7 platform only, though the latest version of Microsoft Windows 10 platform was available since July 2015. Thus, KSEBL did not ensure that the software upgradation was compatible with the latest Microsoft Windows platform. It was also noticed that the product support for Windows 7 ended in January 2020 whereas the product support for Windows 10 would be available up to 2025. Hence, KSEBL might have to opt for another upgradation in the near future.

KSEBL replied (August 2020) that it opted for Windows 7 as it was bug-free and stable compared to the new versions.

The reply was not acceptable as the Guidelines for Protection of Critical Information Infrastructure issued (January 2015) by National Critical Information Infrastructure Protection Centre[37] stipulated that outdated or obsolete technology should be avoided as far as possible and facility of updation and patching should be ensured.

[37] National Critical Information Infrastructure Protection Centre is the nodal agency notified (January 2014) by Government of India for protection of Critical Information Infrastructure.

Recommendation 2.1: Early action may be taken to rectify design defects and problems affecting generating capabilities of HEPs to prevent recurring generation losses.

Recommendation 2.2: Hydel resources may be utilised to the maximum possible extent to meet unforeseen surges in demand in line with the policy of KSEBL.

Recommendation 2.3: Lack of coordination among functional wings within KSEBL which led to delays in addressing critical operational issues needs to be addressed on priority.

Maintenance of HEPs

2.9 As per the Best Practices in Operation and Maintenance of Hydro Power Stations of the CEA, the downtime of individual generating unit/ plant should be minimum and the operational reliability of the generating units shall be such that, whenever the grid demands, it should be available for generation.

Plant Availability Factor

2.9.1 The Plant Availability Factor (PAF), a ratio of actual hours operated to maximum possible hours available during a period, is an indication of the efficiency at which the maintenance and upkeep of the equipment of the HEP is carried out. As per GoI notification (30 March 1992), the norm for PAF of HEP is fixed as 90.00 *per cent*.

The PAF of Idukki, Sabarigiri and Kuttiyadi HEPs for the period 2014-19 is given in **Table 2.3**.

Table 2.3: Details of Plant Availability *vs.* norm in three HEPs

HEP	Norm (*per cent*)	Actual PAF (in *per cent*) as furnished by KSEBL					
		2014-15	2015-16	2016-17	2017-18	2018-19	Average
Idukki	90.00	87.49	89.64	89.53	76.89	76.66	84.04
Sabarigiri		80.10	79.81	85.67	84.19	78.71	81.70
Kuttiyadi		87.12	87.12	87.51	84.96	79.21	85.18

(Source: Data furnished by KSEBL)

It is observed that none of the three HEPs were able to achieve the norm of 90 *per cent* PAF during the period under review.

Detailed review of operation of the HEPs revealed that the PAF was affected by considerable amount of forced outages, improper and inefficient execution of maintenance of equipment, repeated accidents in the Idukki HEP *etc*. as discussed in the succeeding paragraphs.

Plant outages

2.9.2 Outage refers to the period when a power generating unit is not in operation. Outage can be either planned outage or forced outage. Planned outage is the scheduled removal of generating unit from service for inspection, maintenance or repair whereas forced outage is an immediate reduction in output or capacity of a generating unit by reason of an emergency or other causes beyond the control of the HEP. The quantum of forced outages, however, is directly related to the timeliness and quality of the maintenance activities. The status of outages in Idukki, Sabarigiri and Kuttiyadi HEPs is given in **Table 2.4**.

Table 2.4: Details of total and forced outages of HEPs during 2014-19

(*in hours*)

Name of HEP	2014-15		2015-16		2016-17		2017-18		2018-19	
	Outages		Outages		Outages		Outages		Outages	
	Total	Forced	Total	Forced	Total	Forced	Total	Forced	Total	Forced
Idukki	6,094	451	5,434	455	6,302	459	5,599	42	11,721	167
Sabarigiri	10,008	1,274	7,952	279	7,571	91	8,521	482	11,922	403
Kuttiyadi	6,672	270	6,676	128	7,020	74	7,910	67	NA	119

(Source: Data furnished by KSEBL)

While the percentage of forced outage in Idukki HEP ranged between 0.75 *per cent* and 8.37 *per cent* during the period covered in audit (2014-15 to 2018-19), the same in respect of Sabarigiri HEP ranged between 1.20 *per cent* and 12.73 *per cent.* In the case of Kuttiyadi HEP, the forced outage to total outages ranged between 0.85 *per cent* and 4.05 *per cent* during this period. During the period of forced outages, KSEBL could not generate 920.71 MU of power from the three HEPs and had to procure electricity from other sources for ₹269.77 crore during 2014-15 to 2018-19. Specific instances of long duration of forced outages are discussed in ***Paragraphs 2.9.5, 2.9.7.2 and 2.10.3.1***.

KSEBL replied (August 2020) that the assumption that during the period of forced outage KSEBL could not generate power need not be true always as the hydro generators have the inherent limitation of total generation limited to the inflow and effective storage.

The reply was not acceptable. Forced outage caused loss of generation to KSEBL as the units were taken out of the grid. Further, KSEBL did not provide any details related to forced outages which occurred when the units could not be operated due to limited inflow/ storage of water.

Annual Maintenance of HEPs

2.9.3 KSEBL follows the practice of undertaking annual maintenance of HEPs[38] during monsoon months (June to November) in order to ensure the plant availability during summer months (March to May). The Idukki, Sabarigiri and Kuttiyadi HEPs have six generating units each. One generating unit requires annual maintenance for 30 days. Hence, each HEP has to undertake six annual maintenances every year and

[38] In the case of Kuttiyadi HEP, the annual maintenance was undertaken during off-monsoon period so as to reduce the water spillage in the dam.

30 annual maintenances in the five-year period. Scrutiny of records related to annual maintenance of three HEPs during 2014-19 revealed the following:

- Five cases of annual maintenance in Kuttiyadi were not carried out.
- KSEBL did not comply with the policy of undertaking maintenance of the HEPs in the monsoon months. Out of 30 cases of annual maintenances of each HEP, nine cases in Idukki HEP and 13 cases in Sabarigiri HEP were carried out in off monsoon months.
- KSEBL carried out annual maintenance works in excess of the prescribed period of 30 days. The excess days ranged up to 12 days in the case of Idukki HEP, 183 days in the case of Sabarigiri HEP and 27 days in the case of Kuttiyadi HEP.

Undertaking maintenance works in off monsoon periods and also taking more days beyond the prescribed quantum of 30 days were due to undertaking other repair works, which ought to have come under forced outages, along with the annual maintenance. Further, non-availability of the spares also resulted in the excess days of annual maintenance.

KSEBL replied (August 2020) that annual periodic maintenance works were carried out as per the concurrence and strict monitoring of SLDC, necessitating shifting of maintenance schedules. Further, the annual maintenance works were extended to accommodate some special works and in some specific cases clubbed with forced shutdown maintenance works/ other essential maintenance works in consultation with SLDC.

The reply was not acceptable. The reply was silent on the reasons for non-conduct of annual maintenances in the case of Kuttiyadi HEP. An Expert Committee of KSEBL which investigated two recent accidents that occurred in Idukki HEP in January/ February 2020 recommended (March 2020) that the scheduled maintenances should never be compromised under any circumstances or altered at any cost. Clubbing of the annual periodic maintenance works of HEPs with forced shutdown maintenance works or other required essential maintenance works was not acceptable, as these should invariably be shown under forced outages.

Excess auxiliary consumption

2.9.4 Regulation 46 (2) (a) of the KSERC (Terms and Conditions for Determination of Tariff) Regulations, 2014 provides for the auxiliary consumption[39] for the major generating stations of KSEBL. The normative auxiliary consumption of the three HEPs as a percentage of gross generation and the actual auxiliary consumption during the period 2014-15 to 2018-19 were as given in the **Table 2.5** below.

[39] Auxiliary consumption is the fraction of the power generated in a power house which is consumed by power generating equipment and their auxiliaries such as fans, motors *etc*.

Table 2.5: Details showing auxiliary consumption of the HEPs

HEP	Norm (*per cent*)	Actual auxiliary consumption (in *per cent*)					
		2014-15	2015-16	2016-17	2017-18	2018-19	Average
Idukki	0.53	0.45	0.41	0.55	0.35	0.35	**0.42**
Kuttiyadi	0.22	0.35	0.38	0.43	0.35	0.25	**0.35**
Sabarigiri	0.24	0.32	0.33	0.39	0.35	0.25	**0.33**

(Source: Data furnished by KSEBL)

During the period 2014-15 to 2018-19, the auxiliary consumption in the case of Idukki HEP was within the norms except during 2016-17, while the auxiliary consumption recorded at Sabarigiri and Kuttiyadi HEPs exceeded the norms throughout the period. Consequently, the HEPs consumed 36.47 MU of power towards auxiliary consumption during this period as against 26.81 MU of power as per the norm. The excess auxiliary consumption during the period, thus, worked out to 9.66 MU of power which led to purchase of power amounting to ₹2.83 crore.

Audit also observed that KSERC, while approving the truing up petition of KSEBL for the year 2015-16, disallowed 7.44 MU of power from the auxiliary consumption claimed by KSEBL as it was in excess of the norms. In the case of truing up petition for the year 2016-17, even though the auxiliary consumption by the generating stations of KSEBL was in excess of the norm, KSERC allowed the actual consumption due to the monsoon shortfall during the year. The truing up petitions for the year 2014-15 was pending approval of KSERC while KSEBL filed the truing up petitions for the years 2017-18 and 2018-19 in December 2019 and March 2020 respectively as there was delay in finalisation of financial statements for these years. In the truing up orders, KSERC also observed that KSEBL did not furnish any clarification sought by it regarding the excess auxiliary consumption.

KSEBL replied (August 2020) that auxiliary consumption not only depended on annual generation but also on the total running hours of the generators irrespective of its load and also the power consumed by the equipment which were used, while the machines were in annual maintenance. Hence, the auxiliary consumption exceeded the normative value.

The reply was not tenable. KSERC fixed separate norms for each HEP which itself indicated that the specific working requirements and conditions of each HEP were taken into account while fixing the norm. The practical difficulties, if any, in achieving the norm should have been taken up with KSERC.

Accidents in Idukki HEP

2.9.5 Idukki HEP is an underground power station and constitutes 37.88 *per cent* of the total hydel capacity of KSEBL. Therefore, timely and efficient upkeep of systems and equipment of the generating units to avoid accidents is of utmost importance. Audit, however, noticed that a series of accidents occurred in Idukki HEP which led to long duration of outages and consequent non-generation of electricity. Audit examined the accidents that occurred in Idukki HEP between 2011 and 2020 for assessing the reasons and remedial actions taken by KSEBL to avoid further occurrence. **Table 2.6** shows the details of accidents in Idukki HEP:

Table 2.6: Details of accidents in Idukki HEP

Date	Unit	Particulars	Main reason for accident	Other common reasons
20/06/2011	5	Flash over of 11 kV Potential Transformer and Lightning Arrester.	Failure of surge capacitors (surge capacitors failure)	1. Ageing of the equipment 2. Lack of proper maintenance 3. Lightning issues
03/11/2013	5	SF6 circuit breaker exploded	Faulty circuit breaker. (circuit breaker failure)	
28/04/2015	3	Explosion of 220 kV circuit breaker 3 and tripping of all six generators.	Inadequate making of breaker main contacts inside the interrupting chamber assembly (circuit breaker failure)	
20/01/2020	2	Explosion in 11 kV bus duct near exciter transformer	Loose connection in R phase bushing of excitation transformer to 11 kV tap bus	1. Ageing of the equipment 2. Lack of proper maintenance
01/02/2020	6	Explosion of surge arrester	Rapid degradation in the insulation of 11 kV Y phase surge capacitor and dislocation of the Y phase of the exciter transformer. (surge capacitors failure)	1. Ageing of equipment 2. Lack of proper maintenance

(Source: Accident investigation reports provided by KSEBL)

Audit noticed that after every accident, KSEBL appointed committees to investigate the reasons of the accidents and to suggest remedial measures. KSEBL, however, did not implement the recommendations of these committees as discussed below.

- The Committee that investigated the fatal accident of 2011 recommended (15 July 2011) implementation of condition monitoring diagnostic techniques[40] and periodical review/ modification of other station related maintenance practices. The Committee also recommended to form a Power Equipment Testing (PET) subdivision in all the Generation Circles to conduct half-yearly Tan delta[41] and insulation leakage (AC) current measurements of Lightning Arrester, Voltage Transformer, Surge Capacitor

[40] On-line diagnostic equipment shall be dedicated type for that critical equipment, the health of which is to be monitored continuously and includes dissolved gas analyser, winding resistance meter and frequency response analyser for transformers and reactors, capacitance and tan-delta measuring units for transformers, reactors and instrument transformers, circuit breaker analyser including dynamic contact resistance meter and leakage current monitor for surge arrester and relay testing kit.

[41] Tan δ or Tan Delta, also called Loss Angle or Dissipation Factor testing, is a diagnostic method of testing cables to determine the quality of the cable insulation.

and Bus Duct Insulators and to implement a disaster management scheme. The recommendations of the Committee, however, were not implemented (August 2019) by KSEBL. It was noticed that the subsequent accidents that occurred in January 2020 and February 2020 were due to the failure of equipment such as surge arresters/ capacitor and problems in the bus duct. The non-implementation of the recommendation regarding diagnostic techniques was to be viewed against the fact that the CEA regulations[42] required that diagnostic methods should be preferred over traditional time-based maintenance and diagnostic equipment should be provided to assess the health of various equipment.

- In the wake of fault of circuit breaker of Unit 6 in 2010, it was proposed to install new circuit breakers for Units 4 and 5 also. The circuit breakers were, however, replaced only after the explosion of the circuit breakers of Unit 5 in November 2013.

- The Vigilance Wing of KSEBL, after the accident in November 2013, recommended to increase the frequency of PETs from annual to quarterly basis. This was, however, not complied with. Though one PET was conducted in August 2014, it was incomplete as the closing time of the circuit breaker was not recorded. It is pertinent to mention that the accident which occurred on 28 April 2015 was due to failure of the circuit breaker.

- The repeated accidents due to failure of similar equipment also indicated that the committees which investigated accidents did not examine whether the recommendations given by the previous committees were complied with or not.

The above accidents led to prolonged outages and non-generation of power from Idukki HEP. During the period covered in audit, there were outages of 362.97 hours which led to non-generation of power and procurement of 16.95 MU of power from other sources incurring extra expenditure of ₹4.97 crore.

KSEBL replied (August 2020) that providing of diagnostic equipment could not have prevented the accidents. The recommendation of the committee regarding providing diagnostic testing could not be carried out in view of the age of the equipment. Formation of separate PET sub-divisions for each generation circle was being done. It was also added that other recommendations of the committees were being carried out.

The reply was not acceptable as the condition monitoring of equipment in the generating units was necessary to assess the health of the equipment. Inability to conduct diagnostic testing due to age of the equipment warrants immediate

[42] The Central Electricity Authority (Grid Standards) Regulations, 2010 and The Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electrical Lines) Regulations, 2010.

replacement of such equipment. Non-implementation of recommendations given by the committees in 2011 and 2013 was not justified.

Poor performance of circuit breakers

2.9.6 KSEBL replaced three numbers of 220 kV circuit breakers costing ₹0.39 crore, one circuit breaker each at Unit 2 and Unit 3 of Idukki HEP and the third one at Idukki-Udumalpet inter-State feeder, during August 2015 to October 2016. As per the purchase order, the materials were guaranteed for satisfactory performance for a period of 24 months from the date of receipt and defects, if any, noticed during this period were to be rectified/ replaced free of cost. Guarantee period of these circuit breakers expired in February 2017, May 2017 and April 2018 respectively.

Audit observed that all the three circuit breakers showed deviations of similar nature in the routine tests/ re-tests conducted (July 2016 to January 2019). These incidents occurred within four years of commissioning of the circuit breakers and also during the performance guarantee period though the supplier claimed trouble free operation for 10 years. KSEBL, however, did not take any steps to replace the defective equipment despite enabling provision in the purchase order. This carried the risk of further failures, apart from posing threat to the security and safety.

KSEBL replied (August 2020) that the matter was reported to the Chief Engineer concerned who was the agreement authority for taking up the matter with the firm.

The reply was not acceptable as KSEBL did not replace the defective equipment though deviations in performance of the circuit breakers were noticed since July 2016.

Health and safety

2.9.7 CEA issued (January 2010) the Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations, 2011 under Section 177 read with section 73(c) of the Electricity Act 2003.

Compliance to IS-18001 Certification

2.9.7.1 As per Regulation 4, a company which owns or operates or maintains electrical plants or electrical lines shall make safety an integral part of work processes to ensure safety for employees as well as visitors and shall obtain accreditation of electric plants and electric lines with IS-18001 certification[43] within two years from the date (January 2010) of coming into force of the Regulation. It was, however, observed that the three HEPs covered in audit were operated without obtaining IS-18001 certification for the last eight years.

KSEBL stated (August 2020) that IS-18001 certification as directed by CEA would be obtained.

[43] IS-18001, brought out by Bureau of Indian Standards, intends to assist the organisations to develop a systematic approach to management of Occupational Health and Safety (OH&S) in such a way as to protect their employees and others whose health and safety may be affected by the organisations' activities.

Landslide at HEPs

2.9.7.2 Regulation 9 provided for formulation of an on-site Emergency Management Plan within 90 days of the Regulation coming into force for dealing with probable emergencies[44] including landslide. As per Regulation 5 read with 4 (c), a site-specific Safety Manual shall be prepared in accordance with Schedule I(A), I(B) and II of the Regulation. Audit observed that:

- KSEBL prepared a Safety Manual as per Schedule I (A) which dealt with common issues for all types of power plants and Schedule II which prescribed safety features to be additionally covered in Safety Manual for Operation and Maintenance for the Idukki and Kuttiyadi HEPs. But KSEBL did not prepare on-site Emergency Management Plan and Safety Manual as per Schedule I (B) which was specifically meant for HEPs wherein preventive measures against landslides were also to be included.

- The Kerala State Disaster Management Authority (KSDMA) under Section 14 of the Disaster Management Act, 2005 published maps[45] (2010) indicating landslide susceptible zones in Kerala. As per these maps, Kakkayam dam, Kakki dam and power houses of Sabarigiri and Kuttiyadi HEPs are situated in proximity on either sides of high and medium hazard landslide susceptible zones. The penstock of Kuttiyadi HEP and the penstock from Kakki dam to the power house of Sabarigiri HEP also passes through the landslide susceptible zones.

- In August 2019, a landslide occurred in Kuttiyadi HEP site completely disabling Unit 4, 5 and 6 which could only be put back into operation between September and November 2019. KSEBL's failure to undertake landslide mitigation measures, despite repeated instances of landslides in nearby areas, led to forced shut down of these units for 3,704:22 hours and generation loss of 26.45 MU of power. This also led to extra expenditure of ₹7.75 crore for procuring power, apart from incurring ₹ five crore for restoration of these units.

KSEBL stated (August 2020) that a plant level disaster management group was formed in September 2019. KSEBL added (October 2020) that measures were being taken for constructing retaining walls which could mitigate the impact of landslides to some extent.

Non-reporting of outages to CEA

2.9.7.3 As per Regulation 8, HEPs are required to report accident cases of outages to CEA within 24 hours, whether or not any death or disablement is caused to any person.

Audit observed that HEPs, however, did not report the accident cases of outages to the CEA. Timely reporting of cases of accidents would have enabled CEA to decide

[44] Like fire, explosion, gas leakages, landslides, floods, earthquakes, storms, cyclones, hurricanes, and crisis situations arising in the event of strikes, terrorist threats, attacks and sabotages, bomb threats and explosions.

[45] https://sdma.kerala.gov.in/maps/

if investigation at the accident site was required and also to recommend remedial measures to prevent recurrences.

KSEBL accepted (August 2020) the audit observation and assured that future accidents would be reported to CEA within the prescribed time frame.

Replacement of Clophen-filled transformers

2.9.7.4 HEP utilises a portion of power generated by it for running other plant and systems used by it. The auxiliary transformers ensure correct voltage for all such equipment. The old auxiliary transformers installed in HEPs were filled with Clophen, a Poly Chlorinated Biphenyl (PCB)[46]. **Table 2.7** indicates status of Clophen filled auxiliary transformers in the HEPs.

Table 2.7: Status of Clophen-filled auxiliary transformers

HEP	Remarks
Idukki	There were ten Clophen-filled transformers, of which seven transformers were still continuing in service. The remaining three were taken out from service in 2000, tagged, labelled and kept in store, but yet to be disposed.
Sabarigiri	There were seven Clophen-filled transformers, of which four were replaced in 2016 and another two were removed from service in 2017. The remaining one transformer was still in service. Further, 2,000 litres of Clophen taken out from the dismantled transformers was filled in barrels and stacked separately.
Kuttiyadi	There were two Clophen-filled transformers. While one transformer was taken out from service in December 2017 and moved to a safe location after labelling, the other transformer was still in service, but labelled and kept for replacement.

(Source: Details furnished by KSEBL)

Audit observed that:

- Though directions were received under Section 5 of the Environment Act, 1986 to dispose all the PCB based materials from the power utilities, KSEBL did not take any concrete action. The replacement of Clophen-filled transformers in the Idukki HEP proposed (2013) under the RMU was not carried out. Subsequently, replacement of the transformers was included (15 November 2017) under Power System Development Fund scheme and the same was pending (October 2019).
- Transformers filled with Clophen were hazardous to human beings and dangerous to handle in case of leakage. Further, no agency was available to attend to the rectification works of these transformers due to the hazardous nature.

[46] As per question answered (20 September 2007) in the European Parliament, since the end of 1977, Community legislation has banned the use of PCB, except for some closed systems such as electrical equipment transformers, for which PCBs were still allowed until 30 June 1986.

- In the aftermath of accidents in 2011 and 2013 in Idukki HEP, the Investigating Committee/ Vigilance Wing of KSEBL recommended replacement of all equipment which completed their life span. Five transformers commissioned in 1974-75 which exhausted their life span of 25 years were still in use, even after 43 years.
- The Sabarigiri HEP was having 14 transformers apart from the Clophen-filled transformers. The oil samples of two transformers randomly selected from these were sent to Central Power Research Institute (CPRI) for identifying the presence of PCB. Tests confirmed (November 2016) the presence of PCB in these two transformers also.

KSEBL replied (August 2020) that in Idukki HEP, the most critical factor for replacement of the Clophen filled auxiliary transformers was to keep the overall dimensions of new transformers within the dimensions of the existing transformers. However, budgetary quotation was being collected from reputed vendors in this regard. In respect of Sabarigiri HEP, the transformers were being replaced in a phased manner and in the case of Kuttiyadi HEP, both the transformers were decommissioned and were in the process of scrap disposal.

The reply was not acceptable. Though the replacement of Clophen-filled transformers was mandated by the Environment Act, 1986, KSEBL did not comply with this even after 33 years which was not justified.

Lack of insurance coverage

2.9.7.5 Business prudence requires that every business entity protects its critical assets and facilities from any damage or losses by insuring its assets. KSEBL, engaged in generation, transmission and distribution of power, owns and operates a number of electrical installations and facilities such as dams, power houses, penstocks, transmission and distribution lines *etc*. As on 31 March 2018, the book value of assets of the HEPs covered in audit worked out to ₹9.16 crore. Audit observed that:

- KSEBL mortgaged its assets, including the three HEPs examined in audit to the Life Insurance Corporation of India, as security for the loan availed in 1990. The assets, thus mortgaged, were insured with Kerala State Insurance Department against loss due to fire, flood, earthquake, typhoon, lightning, explosion, terrorism and other natural calamities. Since the loan was fully repaid (July 2018), KSEBL did not renew the insurance coverage thereafter. As such, the insurance coverage for the Idukki, Kuttiyadi and Sabarigiri HEPs expired in April 2018, October 2018 and November 2018 respectively.
- Due to the floods which occurred in 2019, generation from three (Units 4, 5 and 6) out of six units of Kuttiyadi HEP was suspended from 9 August 2019. The generation from Units 6, 5 and 4 was restored on 4 September 2019, 22 September 2019 and 1 November 2019 respectively. KSEBL incurred ₹5.00 crore for restoration of these units, but it could not recover the damage due to absence of any insurance cover for the Kuttiyadi HEP.

KSEBL replied (October 2020) that it would initiate steps to procure insurance coverage in consultation with KSERC.

Renovation, Modernisation and Uprating

2.10 Renovation, Modernisation and Uprating (RMU) of old HEPs is considered to be the best option to bridge the gap between demand and supply of power as RMU programmes are cost effective having much lower gestation period compared to setting up of new plants. RMU programmes are expected to be completed in about three to four years as against the installation period for new HEPs of six to seven years. Also, taking up RMU programmes timely prevents deterioration in the operation of HEPs. The Best Practices Guidelines issued by Central Electricity Authority (CEA) states that timely[47] RMU programme extends the operating life of HEP for another extended period of 20 to 25 years with improved reliability and availability. **Table 2.8** indicates the due date of RMU of HEPs covered in audit and the present status.

Table 2.8: Details of status of RMU programmes in HEPs

HEP and (Reservoir)	Installed capacity (MW)	No. of units and capacity (MW)	Year of commission	Due date of RMU	Present status
Idukki (Idukki)	Before RMU-390	I Stage-3x130	1976	2011	In progress
	After RMU-390				
	390	II Stage-3x130	1986	2021	-
Kuttiyadi (Kakkayam and Thariode)	225	KHEP-3x25	1972	2007	In progress
		KES-1x50	2001	2036	-
		KAES-2x50	2010	2046	-
Sabarigiri (Pampa and Kakki)	Before RMU-300	6x50	1966-67	2001-02	Completed in 2009
	After RMU-335	1 x 60 + 5 x 55			

[Source: Data from 'System Operations' prepared by Chief Engineer (System Operations), KSEBL]

Non-exploration of possibility of uprating

2.10.1 As per the Best Practices Guidelines of CEA, uprating of existing machines shall be taken up along with life extension programs, if feasible, by conducting prior uprating studies and it is possible to uprate the generating capacity of existing units by 10 to 30 *per cent* by undertaking uprating programmes[48].

[47] As per the Best Practices Guidelines for Renovation and Modernisation of Hydro Power Plants issued by Central Electricity Authority, the normative operative life of a hydroelectric plant is 30 to 35 years after which it requires life extension through RMU.

[48] This involve rewinding of stator from Class B to Class F, restoring stator core, improving air gap and replacing turbine runner with advanced blade profile and material.

As per para 2.5 of the Manual on Renovation, Modernisation, Uprating and Life Extension of Hydro Power Plants issued (February 2005) by Central Board of Irrigation and Power (CBIP), machines designed before and during the early eighties, were provided with Class 'B' insulation for stator and rotor windings[49]. With the development of Class 'F' insulation, the copper area of conductor in the existing slots can be increased by about 30 *per cent.* This would increase the capacity of the stator and rotor and with the existing margins in turbine, shaft and water conducting systems, the units can be uprated by 20 to 30 *per cent*. Audit observed that:

- KSEBL did not envisage to uprate the capacity of the three units of Idukki HEP for which RMU works were in progress though the uprating of capacity ranging from 6 to 20 *per cent* was part of all the recent RMU works carried out in HEPs such as Sabarigiri, Neriamangalam, Poringalkuthu, Pallivasal, Sengulam and Panniar. The non-exploration of uprating possibilities was not in line with the policy of KSEBL which aimed at optimal utilisation of hydro power resources to maximise the generation and to reduce power purchase. A 10 *per cent* increase in generation capacity of Idukki HEP Stage-I would have augmented its capacity by 39 MW.
- KSEBL replaced (2005-09) the stator winding and cooling system of Unit 6 of Sabarigiri HEP which resulted in the capacity enhancement of this unit by 10 MW. On the other hand, the stator winding in Units 1, 2, 3 and 5 were not replaced[50] instead the cooling system alone was replaced. As a result, the capacity enhancement of these units were limited to 5 MW. If the stator windings of Units 1, 2, 3 and 5 were also replaced, KSEBL could have further enhanced the generation capacity by 20 MW.

Failure to utilise the uprating potential of three units of Idukki HEP and of Units 1, 2, 3 and 5 of Sabarigiri HEP resulted in loss of generation capability of 212.04 MU *per annum*, which could have reduced the power procurement by KSEBL to that extent.

KSEBL replied (August 2020) that uprating of Idukki HEP units was not attempted as it required modification of water conducting and mechanical systems. There was also limitation for modifying the civil structures as the HEP was an underground power station. In the case of Sabarigiri HEP, for uprating the systems to get 30 *per cent* increase, the capacity of penstock and tunnel were to be increased. This would require long shutdown and to avoid it, the units were uprated to 10 *per cent* of its capacity.

The reply was not acceptable. KSEBL did not assess the feasibility of uprating the capacity of three units of Idukki HEP through Residual Life Assessment (RLA) studies. Hence, the limitation, if any, of the water conducting and other systems in

[49] The generator is connected to the turbine drive shaft. It has a moving part–the rotor–and a fixed part–the stator. The rotor's outer surface is covered with electromagnets. The stator's inner surface, or cylinder wall, is made up of copper windings.

[50] In the case of Unit 4, the cooling system alone was replaced and the capacity was uprated from 50 to 55 MW. However, due to an accident in May 2008, Unit 4 was completely damaged and subsequently reconstructed with 60 MW in May 2014.

this regard was not established. In the case of Sabarigiri HEP, capacity of Unit 6 was uprated by 20 *per cent* without any modification in the water conducting system and as such capacity of other four units could have also been uprated by 20 *per cent* (instead of 10 *per cent*) if the windings were provided with Class F insulation. Further, as per CBIP, uprating of generating units by 20 to 30 *per cent* was possible using the new class of insulation for windings with the existing margins in turbine, shaft and water conducting systems.

RMU of Idukki HEP

2.10.2 Three units of Idukki HEP completed 35 years in 2011 and RMU was proposed (October 2012) under 12th Plan (2012-17). As a first step, a RLA study was conducted (August 2011) through CPRI. As per the Detailed Project Report (DPR) finalised in November 2013, the RMU was to be completed by July 2017 at a cost of ₹70 crore.

Residual Life Assessment study

2.10.2.1 As per para 7.6 of Best Practices Guidelines for Renovation and Modernisation of Hydro Power Plants of CEA, scope of RMU works and life extension programme in respect of generating units which have completed more than 30 years of service life should be firmed up based on RLA studies and the DPR prepared accordingly.

Audit observed that the RLA study recommended to maintain variation between maximum and minimum velocities of water flow within 10 *per cent* by improving the effectiveness of the ventilation system by providing new air guides, use of air baffles to direct the air flow and replacing the blades/ baffles[51] with improved design. But no specific proposal was included in the DPR to maintain the maximum and minimum water flow velocities within 10 *per cent* though the actual difference at the time of RLA study was 30 *per cent*. The non-adherence to the recommendations of RLA study was not in line with the Best Practices Guidelines issued by CEA.

KSEBL did not furnish any specific reply on the audit observation.

Tendering of RMU works

2.10.2.2 The RMU works was tendered (May 2014) with a probable amount of contract (PAC) of ₹42 crore. Two firms, Alstom India Private Limited (Alstom) and Andritz Hydro Private Limited (Andritz) participated and were prequalified (January 2015) and price bids were opened (March 2015). Though Andritz offered the lowest price (₹51.08 crore), the tender was subsequently cancelled (October 2015) as the Governor System[52] offered by the firm was not acceptable to KSEBL. The works were re-tendered (January 2016) and only Alstom submitted the bid.

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[51] Baffles are air flow ventilation channels used to direct the flow of air as part of cooling system of the generators.

[52] Governor System is the main controller of the hydraulic turbine. The governor varies the water flow through the turbine to control its speed or power output. Generating units' speed and system frequency are adjusted by the governor.

KSEBL accepted the bid (₹46.14 crore) and awarded (September 2016) the work with the time of completion of RMU works of all the three units by March 2020.

Audit observed that:

- The DPR provided five months for completing the tendering and awarding the work. KSEBL, however, took 26 months from issue of tender to final award of work. One of the reasons for the delay was defective technical evaluation of the bids as KSEBL failed to assess the suitability of the Governor System proposed by the bidders before prequalifying them. The unsuitability of the Governor System proposed by Andritz (lowest bidder) was noticed only after opening the price bid which led to cancellation of the tender.

- The DPR envisaged a period of 36 months from the date of award of work for completing the RMU works of all the three units. KSEBL provided a period of 42 months in the tender document and work order, which would have the impact of delaying the completion by another six months, in addition to the delay of 21 months occurred in the tendering stage.

The above deficiencies eventually postponed the benefit of RMU for a total period of 27 months compared to the period of completion envisaged in the DPR.

KSEBL replied (August 2020) that during prequalification, both the bidders offered Governor System as per tender specification. Andritz, however, changed their technical specification after opening of the financial bid. Hence, their offer was rejected and the work was retendered. As per the DPR, the time of completion of the RMU work was from July 2014 to December 2017 (43 months) and no additional time was given.

The reply was not acceptable. The Director (Supply Chain Management and Generation) instructed (November 2014) to assess the suitability of the Governor System proposed by Andritz for Idukki HEP even before the prequalification. The assessment was, however, carried out after opening the financial bid. The reply regarding time of completion of the work was factually incorrect as the DPR provided 36 months from July 2014 to July 2017 for completion of the work.

Execution of works

2.10.2.3 As per the DPR, RMU works of Unit 1 was to be completed first followed by Unit 2 and Unit 3, taking eight months each for completion. Similarly, as per the work schedule furnished by the contractor, RMU works of Unit 1 was to be completed by March 2018, Unit 2 by January 2019 and Unit 3 by July 2019. Audit observed that KSEBL handed over (June 2017) Unit 3 first to the contractor who took 18 months instead of 8 months and completed the RMU works only in December 2018. KSEBL handed over the second unit (Unit 2) in July 2019 and the RMU works were in progress (October 2020).

KSEBL stated (August 2020) that considering the maintenance history of generator shaft vibration, Unit 3 was handed over first. During execution of work, unforeseen events and extra works popped up which consumed time. Further, shut down of common systems were necessitated which could not be taken at the desired time as it was the major station in Kerala.

The reply was not tenable as the requirement of shut down of common systems was known to KSEBL and should have been considered in the planning stage itself. Further, non-availability of Unit 3 for an extended period of 10 months resulted in potential generation loss of 336.21 MU.

RMU of Sabarigiri HEP

2.10.3 Sabarigiri HEP was commissioned in 1966 with an installed capacity of 300 MW (50MW x 6 units). RMU works of the HEP were undertaken from 2005 to 2009 which enhanced the total installed capacity of the HEP to 335 MW (Units 1, 2, 3, 4 and 5 were uprated from 50 to 55 MW and Unit 6 from 50 to 60 MW).

Poor performance of Unit 4 after rebuilding

2.10.3.1 Unit 4 (55 MW) of Sabarigiri HEP was severely damaged in an explosion (16 May 2008), 15 months after completion (11 February 2007) of RMU works. KSEBL awarded (16 October 2009) the work of rebuilding Unit 4 (60 MW) to Puissance De L'eau Power Systems Pvt. Ltd. (PDL) for ₹52.20 crore. As against the scheduled completion of works by 15 November 2011, the Unit was completed and commissioned on 6 May 2014. As per the agreement, the contractor was liable to rectify all the defects noticed during the defect liability period of two years from the date of commissioning. Audit noticed that:

- The total generation from Unit 4 after rebuilding as compared to Unit 6 having similar installed capacity (60 MW) revealed that Unit 4 could not perform at the desired level as a result of repeated forced outages and technical problems. While Unit 6 generated a total of 1,257.61 MU of power during 2014-19, generation from Unit 4 was 609.40 MU of power (*i.e.* less than 50 *per cent* of Unit 6) during the same period.
- During the defect liability period (May 2014 to April 2016), several technical problems[53] were noticed which led to 49 instances of forced outage of the Unit for 1,366:49 hours. Out of the above, ten instances were for a duration exceeding 24 hours and the maximum duration of outage was up to 312 hours. The Unit experienced forced outages on a regular basis after the defect liability period also due to governor failures (366:56 hours), stator earth fault protection (4,795:35 hours) and vibration problems with continuous oil leak in turbine guide bearing (58:47 hours). As a result, KSEBL suffered generation loss of 201.60 MU of power and incurred additional expenditure of ₹59.07 crore towards purchase of power for supplementing this generation loss.
- In a meeting (November 2019) between KSEBL and the contractor, KSEBL stated that Unit 4 could not be loaded beyond 45 MW due to increase in vibrations and bearing temperature. Similarly, the windings which were

[53] Rotor earth fault, governor problems, oil leakage from nozzle, vibration in turbine guide bearing, SCADA rectification works *etc*.

expected to withstand 28 kV could not withstand even 12 kV. This indicated that the stator windings were vulnerable to failures.

- As per clause 19 of the terms and conditions of the purchase order, the weighted average efficiency of the turbines shall not be less than 90.82 *per cent*. If the shortfall is 2.00 *per cent* or more, the turbine will be rejected. As per CEA Regulations 2010-Technical Standards for Construction of Hydro-Electric Generating Stations, the weighted average efficiency of the turbine should be determined after the installation and commissioning of the generating units on the basis of field acceptance test. KSEBL did not, however, specify any timeframe for conducting the field efficiency test at least before the expiry of defect liability period (by April 2016). The field efficiency test of the turbines conducted by CPRI in July 2018 revealed that the turbine efficiency ranged between 83.74 *per cent* and 84.85 *per cent*. As the field efficiency test of the turbines was conducted after a lapse of two years from the expiry of defect liability period, it proved a futile exercise. Meanwhile, KSEBL issued (August 2020) a notice to the contractor seeking explanation as to why the turbine should not be rejected on account of the shortfall in turbine efficiency.

From the above, it is evident that Unit 4 failed to perform in accordance with the parameters guaranteed by the contractor. But, KSEBL did not enforce the applicable contract conditions for making good the loss suffered by it in terms of generation loss.

KSEBL replied (August 2020) that the breakdowns in the generating unit could be explained based on the life cycle curve called the bath tub curve[54] which has three phases, *viz*., break-in-phase/ infant mortality phase, second phase/ optimum level and the last/ final phase. An amount of ₹2.58 crore was available with KSEBL towards security deposit and any recoveries, if needed, could be made from this.

The reply was not acceptable. As per the bath tub curve, while a generating unit in the infant mortality phase was expected to show a declining trend of failures, Unit 4 showed an increasing or persisting trend of failures since its commissioning, rendering ₹52.20 crore spent for reconstruction of Unit 4 infructuous in addition to the extra expenditure of ₹59.07 crore for procuring power during 2014-19. In view of continuous vibration problems, KSEBL decided (July 2020) to shut down the operation of the unit for ensuring safety. Specific reasons as to why the problems and the associated forced outages occurred from the defect liability period till date were not stated in the reply. The reply was also silent regarding the vulnerability of the stator windings and the non-compliance of CEA Regulations on the conduct of timely field efficiency test.

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[54] The bathtub curve is widely used in reliability engineering. It describes a particular form of the hazard function which comprises three parts: the first part is a decreasing failure rate, known as early failures, the second part is a constant failure rate, known as random failures, the third part is an increasing failure rate, known as wear-out failures.

RMU of Kuttiyadi HEP

2.10.4 Kuttiyadi HEP having a capacity of 3x25 MW was commissioned in 1972 and has completed 47 years of service. KSEBL entrusted (March 2012) Alternate Hydro Energy Centre (AHEC) of IIT Roorkee to conduct the Residual Life Assessment (RLA) study of the HEP and the RLA study report was submitted in June 2014. KSEBL accorded (June 2017) administrative sanction for ₹327.20 crore for the RMU work based on a DPR (May 2017) envisaging 38 months for its completion. KSEBL tendered (December 2017) the electro-mechanical works, but the tender was cancelled (July 2018) due to lack of competition. The works were re-tendered in November 2018 and awarded in September 2019 to BHEL at ₹89.82 crore.

Audit observed that:

- As per the Best Practices Guidelines on Renovation and Modernisation of Hydro Power Plants by CEA, the normative operative life of HEP was 30 to 35 years after which it required life extension through renovation. Though the RMU of Kuttiyadi HEP was due in 2007, implementation of RMU works commenced with the award of electro-mechanical works in September 2019 only, after a delay of 12 years.
- When the HEP was about to complete 30 years of operative life, a feasibility study on RMU was conducted by the Japan Bank for International Cooperation through Electric Power Development Company Ltd. (Japan) during 2001-02. Even though the feasibility study recommended replacement of major equipment, KSEBL did not initiate any action for the next 10 years.
- As per the Best Practices Guidelines on Renovation and Modernisation of Hydro Power Plants by CEA, RLA studies are conducted to get a realistic picture regarding the residual life/ condition of the entire equipment, systems and sub systems[55] in the HEP. KSEBL did not include the equipment proposed for replacement/ renovation in the RMU feasibility study conducted during 2001-02 in the scope of RLA study through AHEC and confined the study to the combined water conducting system of the HEP, the existing penstock and turbine header.
- KSEBL appointed (August 2014) a technical sub-committee for preparation of the DPR directing it to submit the DPR by first week of September 2014. The DPR was, however, finalised only in May 2017. KSEBL took 35 months to finalise the DPR due to lack of coordination between various functional wings involved in its preparation.

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[55] Category I: Hydro turbines, generators, valves, governors, excitation, system equipment and station auxiliaries.
Category II: Main power transformers and switchyard equipment.
Category III: Hydro mechanical equipment like gates, trash rack, stop logs and gate operating mechanisms.
Category IV: Civil engineering elements/ components namely dams, intake, water conductor system, power house building, foundations *etc*.

As the RLA study recommended (June 2014) uprating of the capacity of generating units by 10 *per cent*, the benefits from the additional generating capacity of 7.5 MW (*i.e.*, 2.68 MU of power *per annum*) could not be realised. Thus, the possibility of improved machine availability and optimum use of water by undertaking RMU work did not materialise.

KSEBL replied (August 2020) that though the machines were old and needed replacement, there was no threat to the availability of the machines.

The reply was not tenable as it was silent on why KSEBL took 12 years to initiate the RMU works.

Recommendation 2.4*: *Priority may be accorded for developing and implementing a detailed system and procedures for periodical maintenance and upkeep of equipment at HEPs. The implementation of the system may also be monitored at senior management level.

Recommendation 2.5: Clear and rational policy and procedures may be evolved in accordance with the guidelines issued by Government/ Central Electricity Authority for timely renovation, modernisation and uprating of HEPs so that the benefits from RMU are maximised.

Conclusion

The generation capability of the HEPs was not optimally utilised leading to generation loss of 496.92 MU of power and additional expenditure of ₹145.59 crore. There were deficiencies in planning and execution of renovation, modernisation and uprating of HEPs. Failure to utilise the uprating potential resulted in loss of generation capability of 201.60 MU of power *per annum*. There was avoidable delay in finalising and implementing RMU of Idukki and Kuttiyadi HEPs. A rebuilt generating unit of Sabarigiri HEP failed to perform at expected levels due to technical issues resulting in generation loss of ₹59.07 crore. The HEPs did not achieve the norm of 90 *per cent* Plant Availability Factor due to forced outages as a result of inefficient maintenance. As a result, KSEBL could not generate 920.71 MU of power causing extra expenditure of ₹269.77 crore.

Chapter III

Compliance Audit Observations relating to Power Sector Undertakings

Chapter III

Compliance Audit Observations relating to Power Sector Undertakings

Kerala State Electricity Board Limited

Non-adherence to Model Standard Bidding Documents

Purchase of power from other than lowest bidder disregarding the Model Standard Bidding Documents and guidelines issued by Ministry of Power led to non-accordance of final approval for the power supply agreements by the Regulator.

3.1 Ministry of Power (MoP), Government of India (GoI) issued (November 2013) new guidelines for procurement of electricity from thermal power stations set up on Design, Build, Finance, Own and Operate (DBFOO) basis. MoP also issued Model Standard Bidding Documents[56] (MSBD) to be adopted by distribution licensees for procurement of electricity from power producers through a process of open and transparent competitive bidding based on the offer of the lowest tariff. As per the guidelines, any deviation from the standard bidding documents was to be done with the prior approval of GoI.

Kerala State Electricity Board Limited (KSEBL) floated (March/ April 2014) two[57] tenders for procurement of 450 MW (Bid-1) and 400 MW (Bid-2) for a period of 25 years on DBFOO basis. The power to be procured under Bid-1 and Bid-2 was to be drawn from 1 December 2016 and 1 October 2017 respectively.

- In response to Bid-1, 10 bids were received (opened on 31 October 2014) with tariff ranging between ₹3.60 per kWh and ₹7.29 per kWh in which Jindal Power Limited offered the lowest rate for 200 MW. Though KSEBL requested bidders L2 to L4 to match with the L1 offer for the remaining quantity (250 MW), the bidders refused to match with the L1 rate. KSEBL issued Letter of Acceptance (LoA) to Jindal Power Limited for 200 MW of power offered by them at the lowest rate of ₹3.60 per kWh and to Jhabua Power Limited for 115 MW of power offered by them at L2 rate of ₹4.15 per kWh.
- In response to Bid-2, 11 bids were received (opened on 14 November 2014) with tariff ranging between ₹4.29 per kWh and ₹5.95 per kWh in which Bharat Aluminium Company Limited offered the lowest rate for 100 MW.

[56] Model documents comprising of the Model Request for Qualification, the Model Request for Proposal and the Model Power Supply Agreement.

[57] KSEBL had, considering the energy shortage anticipated from the year 2016-17 and the risk of bearing the 50 *per cent* of fixed charges in the event of non-availability of transmission system, decided to invite two separate bids.

In order to tie-up for the remaining quantity (300 MW), KSEBL requested bidders L2 to L6 to match with the L1 rate and four bidders (L2 to L5) concurred to match with the L1 rate. KSEBL placed LoA on L1 to L5 bidders for the quantity of power offered by them (aggregating to 550 MW) at the lowest rate of ₹4.29 per kWh.

Accordingly, power supply agreements were entered into[58] for supply of 865 MW of power (315 MW under Bid-1 and 550 MW under Bid-2) for 25 years. In this regard, Audit noticed the following:

3.1.1 As per Para 3.3.1 of the Request for Proposal (RFP) issued by KSEBL in line with the Model Standard Bidding Documents and guidelines of MoP, the bidder who quoted the lowest tariff should be declared as the successful bidder. Para 3.3.3 provided that in the event that the lowest bidder withdrew or was not selected for any reason in the first instance (first round), the utility was to invite all the remaining bidders to match the lowest bidder (second round). Para 3.3.4 provided that in the event of no bidder offering to match the lowest bidder in the second round, utility was to invite fresh bids (third round) from all bidders except the lowest bidder of the first round or annul the bidding process as the case might be.

Audit observed that KSEBL did not comply with the RFP regarding acceptance of the lowest bid.

- In the case of Bid-1, since KSEBL accepted the offer from the lowest bidder, Jindal Power Limited ought to have been declared as successful bidder for the offered quantity of 200 MW and the bidding process closed. As the RFP did not permit KSEBL to undertake the second round of bidding process, it should have resorted to retendering for procuring the untied quantity (250 MW). Thus, inviting bidders L2 to L4 to match with the L1 rate (₹3.60 per kWh) was irregular.

  Further, KSEBL placed LoA on Jhabua Power Limited (L2) at their quoted rate (₹4.15 per kWh) on the plea that their rate was lower than the lowest rate (₹4.29 per kWh) of Bid-2. Placement of LoA on L2 bidder (Jhabua Power Limited) at their offered rate (₹4.15 per kWh) by comparing the rate obtained in another tender was irregular.

- In the case of Bid-2, KSEBL accepted the lowest offer received from Bharat Aluminium Company Limited for 100 MW. Hence, instead of inviting fresh tenders for procuring 300 MW, KSEBL's decision to invite bidders L2 to L6 to match with the L1 rate (₹4.29 per kWh) and subsequent placement of LoA on bidders L2 to L5 was not in order.

[58] Bid-1: Jindal Power Limited on 29/12/2014 for 200 MW and Jhabua Power Limited on 31/12/2014 for 115 MW. Bid-2: Bharat Aluminium Company Limited on 26/12/2014 for100 MW, Jindal India Thermal Power Limited on 29/12/2014 for 100 MW, Jhabua Power Limited 26/12/2014 for 100 MW, Jindal Power Limited on 29/12/2014 for 150 MW and East Coast Energy Private Limited on 02/02/2015 for 100 MW.

3.1.2 KSEBL floated (March/ April 2014) two tenders for procurement of 850 MW, *i.e*., 450 MW under Bid-1 and 400 MW under Bid-2, for a period of 25 years. Audit observed that KSEBL placed LoA for procurement of 865 MW as against the tendered quantity of 850 MW as under.

- Though KSEBL tendered for 450 MW under Bid-1, it could procure only 315 MW leaving a shortfall of 135 MW of power from this bid.
- In the case of Bid-2, as against the tendered quantity of 400 MW, KSEBL procured 550 MW resulting in excess procurement of 150 MW at ₹4.29 per kWh to offset the shortfall of 135 MW under Bid-1. As the bid was invited for procurement of 400 MW only and the RFP did not envisage procurement of any additional quantity, the procurement of 150 MW was irregular.

3.1.3 According to Section 63 of the Electricity Act, 2003, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the MoP. KSEBL executed (December 2014) power supply agreements with the two lowest bidders for 300 MW and four other than lowest bidders for 465 MW. The agreement entered into (February 2015) with one other than lowest bidder[59] (100 MW) was cancelled as the party failed to supply the power as agreed.

Audit noticed that Kerala State Electricity Regulatory Commission (KSERC) did not agree with the process of bidding by KSEBL and ordered (August 2016) that the approval of purchase of power from bidders other than lowest bidders would be considered on getting approval from GoI on the deviations from the guidelines. Although GoK and KSEBL approached (September 2016/ July 2019) MoP for approval/ advice, the MoP intimated (November 2016/ December 2019) that the deviations as pointed out by KSERC should have been got vetted and approved by GoI before issuance of bidding documents. MoP also stated that as per the guidelines, deviations on the provisions of bidding documents were approved, if necessary, and not the actions taken by the utility as per practice or precedence. Hence, MoP suggested GoK/ KSEBL to take appropriate action in consultation with KSERC**.** Due to deviations from the RFP and the guidelines issued by MoP, KSERC was yet to accord final approval for the power supply agreements with other than lowest bidders for 465 MW of power though these were provisionally approved[60]. Non-approval of the power supply agreements by KSERC would result in non-consideration of the expenditure amounting to ₹1,482.04 crore *per annum*[61] for Aggregate Revenue Requirement and recovery through tariff. KSERC allowed

[59] East Coast Energy Private Limited.

[60] In the case of Bid-1, KSERC provisionally approved (December 2016) the purchase of power from L2 bidder based on an order of GoK dated November 2016. In the case of Bid-2, KSERC provisionally allowed (December 2017) KSEBL to draw the contracted power in view of an order of GoK dated October 2017.

[61] ₹1,482.04 crore *per annum*, *i.e.*, 350 MW x 1,000 x 0.90 *per cent* availability x 24 hours x 365 days x 0.95 *per cent* injunction x ₹4.29 per kWh = ₹1,124.59 crore and 115 MW x 1,000 x 0.90 *per cent* availability x 24 hours x 365 days x 0.95 *per cent* injunction x ₹4.15 per kWh = ₹357.45 crore.

recovery of cost incurred for purchase of power against these power supply agreements through tariff till March 2022.

The GoK stated (November 2020) that the deviation was due to a glaring gap in the MSBD on the procedure to be followed when lowest bidder did not offer required quantity of power. Had KSEBL not procured 115 MW at L2 rate (₹4.15 per unit) under Bid-1, it would have contracted this quantity from Bid-2 at L1 rate (₹4.29 per unit) as the entire requirement of 850 MW was to be contracted before December 2014. In order to ensure transmission facility from October 2017, applications for the same were to be filed before December 2014. Hence, the additional quantum was contracted from Bid-2. Further, KSEBL does not find any reason for KSERC in not continuing to allow the recovery of cost beyond 2022.

The reply was not acceptable. The gap pointed out in the reply arose as KSEBL prescribed minimum quantity (25 *per cent* of the quantity tendered) to be offered by a bidder in RFP (clause 1.1.4) while the MSBD did not make it mandatory to prescribe such minimum quantity. This led to a situation where the lowest bidder did not offer required quantity of power. Since KSEBL prescribed minimum quantity, it would have been prudent on its part to approach MoP for revising the procedure for selection of bidders (clause 3 of RFP) before inviting the bids. Purchase of power at L2 rate was irregular as the RFP provided for purchase of power only at the lowest rate offered. The procurement of additional 150 MW under Bid-2 was not in order as the RFP did not provide for the same. KSERC stated (December 2017) that the approval to the power supply agreements would be accorded only after the GoK accorded final approval to the entire procurement of power under DBFOO which was under consideration of the GoK since October 2017.

Recommendation 3.1: Power procurement may be carried out complying with all the applicable guidelines/ procedures. Any modifications required in the applicable guidelines/ procedures may be taken up with the appropriate authority for its approval before initiating the tendering process.

Loss of revenue

Non-adherence to the provisions of an agreement with Carborundum Universal Limited resulted in loss of revenue of ₹2.08 crore

3.2 Kerala State Electricity Board Limited (KSEBL) entered into agreements with Carborundum Universal Limited (May 1991/ September 1995) and Indsil Electrosmelts Limited (December 1994) for wheeling[62] and banking[63] of electricity

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[62] The operation whereby the distribution system and associated facilities of a transmission licensee or distribution licensee are used by another person for the conveyance of electricity on payment of charges.

[63] Banking of power is the process under which the generating plant supplies power to the grid not with the intention of selling it to a third party, but with the intention of exercising its eligibility to draw back its power from the grid in future.

generated from their captive generating plants[64] for their industrial use. As per the agreements, if the energy so banked is not utilised during an accounting year, it shall not be carried over to the next accounting year and shall be treated as lapsed. The agreements also provided an option to sell the unused banked energy during an accounting year, if any, to KSEBL. KSEBL was to collect commission at the rate of one *per cent per annum* of the banked energy in addition to Transmission and Distribution loss and wheeling charges. The year of accounting for this purpose is reckoned from first day of July to thirtieth day of June.

Audit observed that KSEBL, based on a request (September 1996) from Carborundum Universal Limited[65] (CUL), amended the agreement and permitted (December 1996) banking of energy for a period of two years instead of one year as per the original agreement (September 1995). This allowed CUL to carry forward the balance of banked energy at the end of an accounting year to the next accounting year. Since the carried forward energy was available for use by CUL during the next accounting year, commission at the rate of one *per cent* was to be collected against the energy thus carried forward in addition to commission for the fresh banking of energy.

Scrutiny of the banking statement for the accounting years July 2012 to June 2019 revealed that CUL could not use the banked energy completely within the stipulated period of two accounting years during July 2014 to June 2017. Further, CUL did not exercise the option to sell the banked energy which was not used during the stipulated period of two accounting years to KSEBL. Though the agreement provided that unused banked energy at the end of two years should be treated as lapsed, KSEBL carried forward the unused energy of 14.48 lakh units from 2014-15 and 26.28 lakh units from 2015-16 to the third accounting year as given in Table (a) of ***Appendix 2.*** Thus, CUL used 40.76 lakh units beyond the stipulated two years banking period resulting in loss of revenue of ₹2.08 crore[66] to KSEBL.

Audit also conducted a test check of banking commission collected from CUL for the accounting years July 2012 to June 2019. It revealed that though KSEBL collected banking commission for the fresh banking during this period, commission on the quantity of energy that was carried forward from one accounting year to the next accounting year was not collected. This was not in line with the agreement which provided for collection of commission for the entire energy banked in each accounting year. The non-collection of commission in accordance with the agreement with CUL, thus, resulted in loss of revenue of ₹0.24 crore as shown in Table (b) of ***Appendix 2.***

The GoK stated (February 2019) that as per the banking statement during 2015-16 to 2017-18, previous year's banked energy was adjusted against consumption in the next year itself and the banked energy was zero in 2017-18. Thus, KSEBL has not

[64] Power plant setup by any person to generate electricity primarily for his own use.

[65] Government of Kerala allotted the Maniyar Hydroelectric Project to CUL for 30 years from the date of commissioning (June 1995).

[66] Carried forward energy: 40.78 lakh units x ₹5.10 being the tariff applicable for sale of power to extra high tension consumers.

carried forward unbanked energy from one banking period of two years to the next banking period.

KSEBL replied (July 2020) that as per the agreement with CUL and the Board Orders, the balance of banked energy outstanding at the end of the two-year period did not lapse, but was to be purchased by KSEBL[67]. The balance energy that remained at the credit of CUL at the end of two years was adjusted by KSEBL against the energy consumed by CUL in the following year. Such adjustment was equivalent to purchase of the balance of banked energy by KSEBL as provided in the agreement and hence, there was no financial loss to KSEBL. Regarding the short charging of banking commission, it was replied that the units corresponding to the alleged short charging was realised from the consumer by deducting the corresponding units from the existing banked units.

The reply was not acceptable. As per the agreement, if the energy banked was not utilised by CUL within the stipulated period of two years, it should not be carried over to the next accounting year and should be treated as lapsed. KSEBL's reply that it adjusted the unused banked energy at the end of banking period in the subsequent year indicated that CUL did not offer to sell any unused banked energy to KSEBL. Thus, it was evident that the unused banked energy was carried forward by KSEBL beyond the stipulated banking period which allowed CUL to use the same in the subsequent year. This assumed significance, particularly in the context that the agreement would be in force till 2025. Audit also noticed that Indsil Electrosmelts Limited, which also had similar arrangement with KSEBL, exercised (July 2015) the option to sell unused banked energy to KSEBL. Regarding the short charging of banking commission, though KSEBL adjusted the banking commission as pointed out by Audit, it did not rework and recover the banking commission for the period prior to July 2012.

Recommendation 3.2: Provisions in the agreement may be strictly followed and a mechanism may be put in place to ensure correct accounting of banked energy so as to avoid any loss of revenue. The accounting of banked energy for the period prior to July 2012 may also be reviewed and short recovery of banking commission, if any, recovered.

[67] At the rate at which it sells energy to Extra High Tension consumers in the same voltage class and also receives the energy from CUL.

Part II

Other than Power Sector

Chapter IV

Functioning of State Public Sector Undertakings (other than Power Sector)

Part II

Chapter IV

Functioning of State Public Sector Undertakings (other than Power Sector)

Introduction

4.1 There were 137 State Public Sector Undertakings (PSUs) as on 31 March 2019 which were related to sectors other than Power Sector. These State PSUs were incorporated during the period 1927-28 to 2018-19 and included 133 Government Companies and four Statutory Corporations, *i.e.*, Kerala State Road Transport Corporation, Kerala State Warehousing Corporation, Kerala Financial Corporation and Kerala Industrial Infrastructure Development Corporation. The Government Companies further included 16 non-working companies and 15 subsidiary companies (five[68] working and ten[69] non-working) owned by other Government Companies.

The State Government provides financial support to the State PSUs in the form of equity, loans and grants/subsidy from time to time. Of the 137 State PSUs (other than Power Sector), the State Government invested funds in 122 State PSUs including three[70] subsidiaries of Government Companies. The State Government did not infuse any funds in three PSUs[71] and in those 12 Government Companies which were incorporated as subsidiary of other Government Companies. Equity of these 12 subsidiary companies was contributed by the respective Holding Companies.

Contribution to Economy of the State

4.2 A ratio of turnover of the PSUs to the Gross State Domestic Product (GSDP) shows the extent of activities of the PSUs in the State economy. **Table 4.1** below provides the details of turnover of working State PSUs (other than Power Sector) and GSDP for a period of five years ended March 2019:

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[68] Kinfra Export Promotion Industrial Parks Limited, Kinfra Film and Video Park Limited, Kinfra International Apparel Parks Limited, Keltron Component Complex Limited and Keltron Electro Ceramics Limited.

[69] Kerala Garments Limited, SIDECO Mohan Kerala Limited, Keltron Counters Limited, Keltron Power Devices Limited, SIDKEL Televisions Limited, Astral Watches Limited, Keltron Rectifiers Limited, Kerala State Wood Industries Limited, Kunnathara Textiles Limited and Vanjinad Leathers Limited.

[70] Keltron Component Complex Limited, Kerala State Wood Industries Limited and Kunnathara Textiles Limited.

[71] As per information furnished by PSUs, GoK did not invest any funds in KINFRA, Kerala Infrastructure Fund Management Limited and Kerala Social Security Pension Limited (data not furnished).

Table 4.1: Details of turnover of working State PSUs (other than Power Sector) *vis-à-vis* GSDP of Kerala

(₹ in crore)

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Turnover	14,131	14,562	15,488	16,535	19,123
GSDP	5,12,564	5,61,994	6,16,357	6,86,764	7,74,995
Percentage of turnover of State PSUs (other than Power Sector) to GSDP	2.76	2.59	2.51	2.41	2.47

(Source: Compiled based on turnover figures of working PSUs and GSDP figures as per State Finance Report of GoK)

The turnover of these PSUs has recorded continuous increase over previous years. The increase in turnover ranged between 3.05 *per cent* and 15.65 *per cent* during the period 2014-15 to 2018-19, whereas increase in GSDP of the State ranged between 9.64 *per cent* and 12.85 *per cent* during the same period. The turnover of these PSUs recorded compounded annual growth of 7.85 *per cent* during the last five years which was lower than the compounded annual growth of 10.88 *per cent* of the GSDP of the State. This resulted in marginal decrease in share of turnover of these PSUs to the GSDP from 2.76 *per cent* in 2014-15 to 2.47 *per cent* in 2018-19.

Investment in State PSUs (other than Power Sector)

4.3 There are some PSUs which function as instruments of the State Government to provide certain services which the private sector may not be willing to extend due to various reasons. Besides, the Government has also invested in certain business segments through PSUs which function in a competitive environment along with private sector undertakings. The position of these State PSUs has, therefore, been analysed under two major classifications *viz.* those in the social sector and those functioning in the competitive environment sector. Details of investment made in these 137 State PSUs in the form of equity and long term loans up to 31 March 2019 are detailed in ***Appendix 3.***

4.4 The sector-wise summary of investment in these State PSUs as on 31 March 2019 is given below in **Table 4.2**:

Table 4.2: Sector-wise investment in State PSUs (other than Power Sector)

Sector	Number of PSUs	Investment (₹ in crore)		
		Equity	Long term loans	Total
Social Sector	35	1,060.92	2,498.91	3,559.83
Competitive Environment Sector	102	5,730.13	11,078.40	16,808.53
Total	**137**	**6,791.05**	**13,577.31**	**20,368.36**

(Source: Compiled based on information received from PSUs)

As on 31 March 2019, the total investment (equity and long term loans) in these 137 PSUs was ₹20,368.36 crore. The investment consisted of 33.34 *per cent* towards equity and 66.66 *per cent* in long term loans. The long term loans consisted of 48.83 *per cent* (₹6,629.35 crore) from the State Government, 0.31 *per cent* (₹42.49 crore) from the Central Government and 50.86 *per cent* (₹6,905.47 crore) from financial institutions.

The investment has grown by 60.28 *per cent* from ₹12,707.79 crore in 2014-15 to ₹20,368.36 crore in 2018-19. The investment increased due to addition of ₹2,436.15 crore and ₹5,224.42 crore towards equity and long term loans respectively during 2014-15 to 2018-19.

Disinvestment, restructuring and privatisation of State PSUs (other than Power Sector)

4.5 During the year 2018-19, no disinvestment, restructuring or privatisation was done by the State Government in State PSUs (other than Power Sector).

Budgetary Support to State PSUs (other than Power Sector)

4.6 The Government of Kerala (GoK) provides financial support to State PSUs in various forms through annual budget. The summarised details of budgetary outgo towards equity, loans, grants/ subsidies, loans written off and loans converted into equity during the year in respect of State PSUs (other than Power Sector) for the last three years ended March 2019 are given in **Table 4.3**:

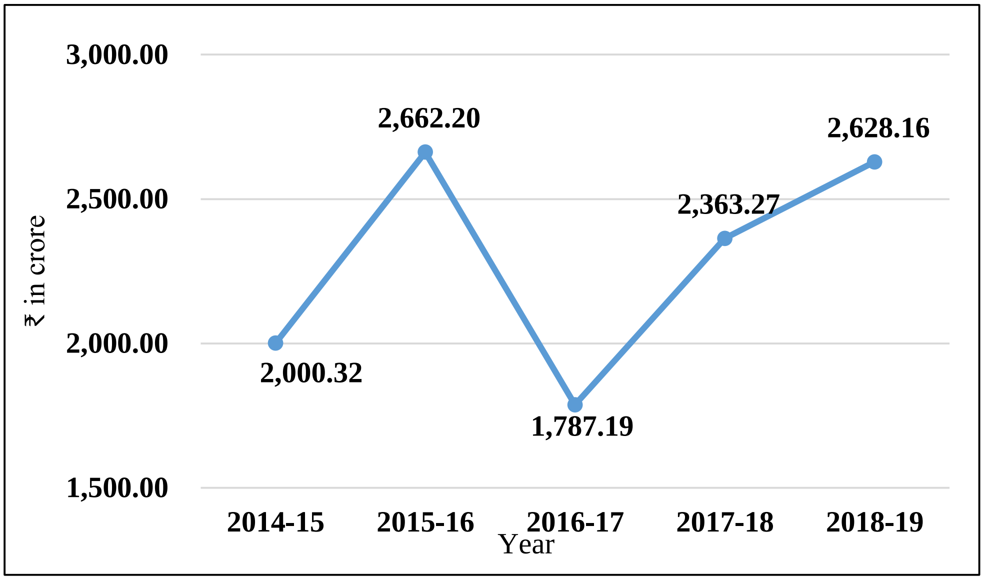
Table 4.3: Details regarding budgetary support to State PSUs (other than Power Sector)

Sl. No.	Particulars	2016-17		2017-18		2018-19	
		No. of PSUs	Amount (₹ in crore)	No. of PSUs	Amount (₹ in crore)	No. of PSUs	Amount (₹ in crore)
1	Equity capital outgo from budget	19	301.05	29	238.68	18	866.71
2	Loans given from budget	17	136.94	24	244.25	19	610.61
3	Grants/Subsidy given	27	1,349.20	28	1,880.34	31	1,150.84
4	**Total outgo (1+2+3)**		**1,787.19**		**2,363.27**		**2,628.16**
5	Loans written off and interest waived	3	6.20	2	4.34	2	2.52
6	Guarantees issued	8	6,150.72	11	7,341.17	15	17,415.39
7	Guarantee commitment	11	7,549.92	11	9,513.05	16	11,779.28

(Source: Compiled based on information received from PSUs)

The details regarding budgetary outgo towards equity, loans and grants/subsidies for the last five years ending March 2019 are given in **Chart 4.1**:

Chart 4.1: Budgetary outgo towards Equity, Loans and Grants/Subsidies (other than Power sector)



The budgetary assistance given to these PSUs ranged between ₹1,787.19 crore and ₹2,662.20 crore during the period 2014-15 to 2018-19. The budgetary assistance of ₹2,628.16 crore received during the year 2018-19 included ₹866.71 crore, ₹610.61 crore and ₹1,150.84 crore in the form of equity capital, loans and grants/subsidy respectively. The subsidy/grants given by the State Government was mainly to Kerala Medical Services Corporation Limited (₹410 crore), The Kerala State Civil Supplies Corporation Limited (₹383.30 crore), Vizhinjam International Seaport Limited (₹100.69 crore) and Kerala State Industrial Development Corporation Limited (₹43.55 crore).

In order to enable the PSUs to obtain financial assistance from banks and financial institutions, State Government gives guarantees under the Kerala Ceiling on Government Guarantee Act, 2003, subject to the limits prescribed by the Constitution of India, for which guarantee commission is being charged. The Government would charge a minimum of 0.75 *per cent* as guarantee commission, which shall not be waived under any circumstance. The guarantee commitment of PSUs increased from ₹7,549.92 crore in 2016-17 to ₹11,779.28 crore during 2018-19 whereas the guarantee issued by GoK to PSUs increased from ₹7,341.17 crore in 2017-18 to ₹17,415.39 crore during 2018-19.

Further, out of ₹168.69 crore guarantee commission payable by 25 PSUs, 14 PSUs[72] paid ₹84.41 crore[73] during 2018-19. The accumulated/outstanding guarantee commission payable by 13 PSUs was ₹86.12 crore as on 31 March 2019. The PSUs, which had major arrears were Kerala State Road Transport Corporation (₹25.20 crore), The Kerala Ceramics Limited (₹24.48 crore), Kerala State Development Corporation for Scheduled Castes and Scheduled Tribes Limited (₹14.30 crore) and Kerala Urban and Rural Development Finance Corporation Limited (₹10.31 crore).

Reconciliation with Finance Accounts of Government of Kerala

4.7 The figures in respect of equity, loans and guarantees outstanding as per records of State PSUs (other than Power Sector) should agree with that of the figures appearing in the Finance Accounts of the Government of Kerala. In case the figures do not agree, the PSUs concerned and the Finance Department should carry out reconciliation of the differences. The position in this regard as on 31 March 2019 is stated in **Table 4.4**:

Table 4.4: Equity, loans and guarantees outstanding as per Finance Accounts of GoK *vis-à-vis* records of State PSUs (other than Power Sector)

(₹ in crore)

Sl. No.	Outstanding in respect of	Amount as per Finance Accounts	Amount as per records of PSUs	Difference
1	Equity	5,662.25	5,734.05	71.80
2	Loans	6,390.61	6,629.35	238.74
3	Guarantees	17,451.90	17,415.39	36.51

(Source: Compiled based on information received from PSUs and Finance Accounts)

Audit observed that out of 137 State PSUs, such differences occurred in respect of 117 PSUs as shown in ***Appendix 4.*** The differences between the figures are persisting since last many years. The issue of reconciliation of differences was also taken up with the PSUs and the Departments from time to time. We, therefore, recommend that the State Government and the respective PSUs should reconcile the differences in a time-bound manner.

Submission of accounts by State PSUs (other than Power Sector)

4.8 Of the total 137 State PSUs (other than Power Sector), there were 121 working PSUs, *i.e.*, 117 Government Companies and four Statutory Corporations and

[72] Kerala Electrical and Allied Engineering Company Limited and Traco Cable Company Limited made payments partially during the year 2018-19.

[73] Kerala State Women's Development Corporation Limited paid ₹1.84 crore excess guarantee commission.

16 non-working PSUs under the purview of CAG as on 31 March 2019. The status of timelines followed by the State PSUs in preparation of accounts is as detailed under:

Timeliness in preparation of accounts by the working State PSUs

4.8.1 Accounts for the year 2018-19 were required to be submitted by all the working PSUs by 30 September 2019. However, out of 117 working Government Companies, 14 Government Companies submitted their accounts for the year 2018-19 for audit by CAG on or before 30 September 2019 whereas the accounts of 103 Government Companies were in arrears. Out of four Statutory Corporations, the CAG is the sole auditor in two Statutory Corporations (Kerala State Road Transport Corporation and Kerala Industrial Infrastructure Development Corporation) and CAG is doing supplementary audit in two Statutory Corporations (Kerala Financial Corporation and Kerala State Warehousing Corporation). Of these four Statutory Corporations, Kerala Financial Corporation presented the accounts for the year 2018-19 for audit in time. The accounts of Kerala State Road Transport Corporation (KSRTC) for the years 2015-16 to 2018-19 (four accounts), Kerala Industrial Infrastructure Development Corporation for the year 2018-19 (one accounts) and Kerala State Warehousing Corporation for the year 2018-19 (one accounts) were awaited as on 30 September 2019.

Details of arrears in submission of accounts of working PSUs (other than Power Sector) as on 30 September 2019 are given in **Table 4.5**:

Table 4.5: Position relating to submission of accounts by the working State PSUs (other than Power Sector)

Sl. No.	Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
1	Number of working PSUs	108	110	112	118	121
2	Number of accounts finalised during the year	93	96	98	100	131
3	Number of accounts in arrears	237	250	263	281	271
4	Number of working PSUs with arrears in accounts	93	95	99	107	106
5	Extent of arrears (in years)	1 to 19	1 to 20	1 to 14	1 to 11	1 to 12

(Source: Data collected from PSUs)

Of these 121 working State PSUs, 97 PSUs finalised 131 annual accounts during the period 1 October 2018 to 30 September 2019 which included 15 annual accounts for the year 2018-19 and 116 annual accounts for previous years. Further, 271 annual accounts were in arrears which pertain to 106 PSUs (265 accounts of 103 Government Companies and six accounts of three Statutory Corporations). The Administrative Departments have the responsibility to oversee the activities of these entities and to ensure that the accounts are finalised and adopted by these PSUs within the stipulated period. Though the Administrative Departments concerned were informed regularly (twice a year) by the Accountant General (Economic & Revenue Sector Audit), Kerala, the number of accounts in arrears was still on the higher side. In addition, this issue was also discussed in the Apex Committee meetings convened (February 2018 and June 2018) by the Chief Secretary. Further, Finance Department, GoK issued a circular (December 2018) that Government would be forced to stop further release of funds and pay revision of employees of PSUs which fail to finalise the accounts up to the previous year and also on maintenance of up-to-date accounts. However, no improvement was noticed. It was further observed that though many PSUs had not finalised their accounts for long, the Registrar of Companies did not take any penal action under Section 129 (7) of the Companies Act, 2013.

The GoK had invested ₹7,300.83 crore {Equity: ₹1,223.83 crore (25 PSUs), Loan: ₹1,884.24 crore (24 PSUs), Subsidy: ₹4,192.76 crore (35 PSUs)} during the years in respect of which accounts were not finalised as detailed in ***Appendix 5***. In the absence of finalisation of accounts and their subsequent audit, it could not be ensured whether the investment and expenditure incurred were properly accounted for and the purpose for which the amount was invested was achieved or not and thus, Government's investment in such PSUs remained outside the control of State Legislature.

Timeliness in preparation of accounts by non-working State PSUs

4.8.2 There were arrears in finalisation of accounts by 16 non-working PSUs, details of which are as given below in **Table 4.6**:

Table 4.6: Position relating to arrears of accounts in respect of non-working PSUs

Number of non-working companies	Period for which accounts were in arrears	Number of accounts in arrears
16	1986-87 to 2018-19	183

(Source: Data collected from PSUs)

In respect of non-working companies where accounts were in arrears starting from 1986-87 onwards, the progress in finalisation of the accounts was poor. For example, only two[74] out of 16 non-working PSUs finalised its four accounts during 2018-19.

Placement of Separate Audit Reports of Statutory Corporations

4.9 Out of four Statutory Corporations, only Kerala Financial Corporation forwarded its accounts of 2018-19 by 30 September 2019.

Separate Audit Reports (SARs) are audit reports of the CAG on the accounts of

[74] Kerala State Wood Industries Limited (2017-18), Kerala Special Refractories Limited (2015-18).

Statutory Corporations. These SARs are to be laid before the Legislature as per provisions of the respective Acts. The position depicted in **Table 4.7** shows the status of placement of SARs issued by CAG (up to 30 September 2019) on the accounts of Statutory Corporations in the Legislature.

Table 4.7: Status of placement of SARs in State Legislature

Sl. No.	Name of Statutory Corporation	Year up to which SARs are placed in the Legislature	Year in which SARs are placed in the Legislature
1	Kerala State Road Transport Corporation	2014-15	2018-19
2	Kerala Financial Corporation	2018-19	2019-20
3	Kerala State Warehousing Corporation	2017-18	2019-20
4	Kerala Industrial Infrastructure Development Corporation	2017-18	2019-20

(Source: Data furnished by PSUs/GoK)

Delay in placement of SARs weakens the legislative control over the Statutory Corporations and dilutes the latter's financial accountability. The Government should ensure prompt placement of SARs in the Legislature.

Impact of non-finalisation of accounts of State PSUs (other than Power Sector)

4.10 As pointed in ***Paragraph 4.8***, the delay in finalisation of accounts may also result in risk of fraud and leakage of public money apart from violation of the provisions of the relevant statutes. In view of the above state of arrears of accounts, the actual contribution of the State PSUs (other than Power Sector) to State GDP for the year 2018-19 could not be ascertained and their contribution to State exchequer was also not reported to the State Legislature.

It is, therefore, recommended that the Administrative Departments concerned should strictly monitor and issue necessary directions to clear up the arrears in accounts. The Government may also look into the constraints in preparing the accounts of the PSUs and take necessary steps to clear up the arrears in accounts.

Performance of State PSUs (other than Power Sector)

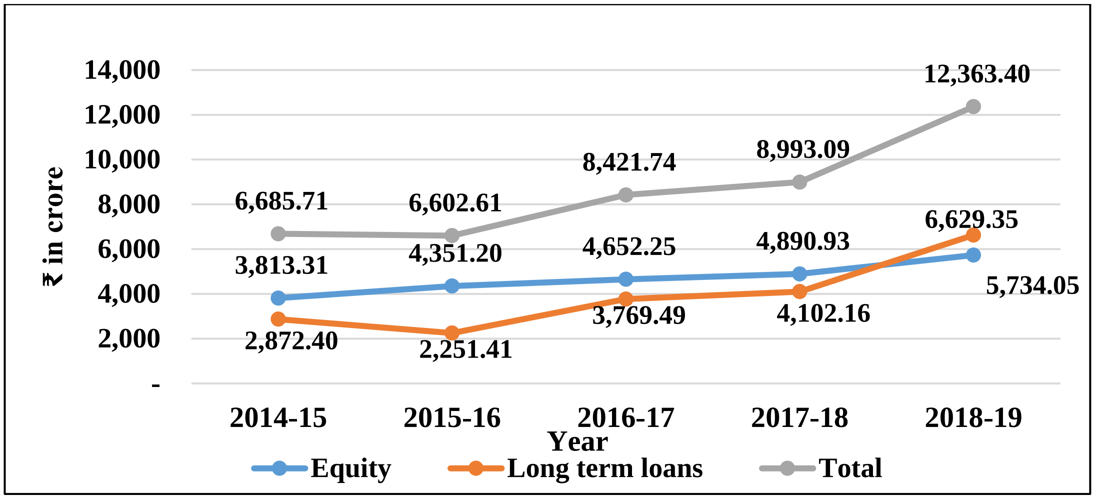
4.11 The financial position and working results of State PSUs (other than Power Sector) are detailed in ***Appendix 6*** as per their latest finalised accounts[75] as on 30 September 2019.

[75] The figures from the last available accounts have been considered in this Report for the purpose of arriving at working results.

The Public Sector Undertakings are expected to yield reasonable return on investment made by the Government. The amount of investment as on 31 March 2019 in the PSUs (other than Power Sector) was ₹20,368.36 crore consisting of ₹6,791.05 crore as equity and ₹13,577.31 crore as long term loans. Out of this, Government of Kerala has investment of ₹12,363.40 crore consisting of equity of ₹5,734.05 crore (122 PSUs) and long term loans of ₹6,629.35 crore (61 PSUs).

The year-wise investment of GoK in the PSUs (other than Power Sector) during the period 2014-15 to 2018-19 is shown in **Chart 4.2**:

Chart 4.2: Total investment of GoK in PSUs (other than Power Sector)



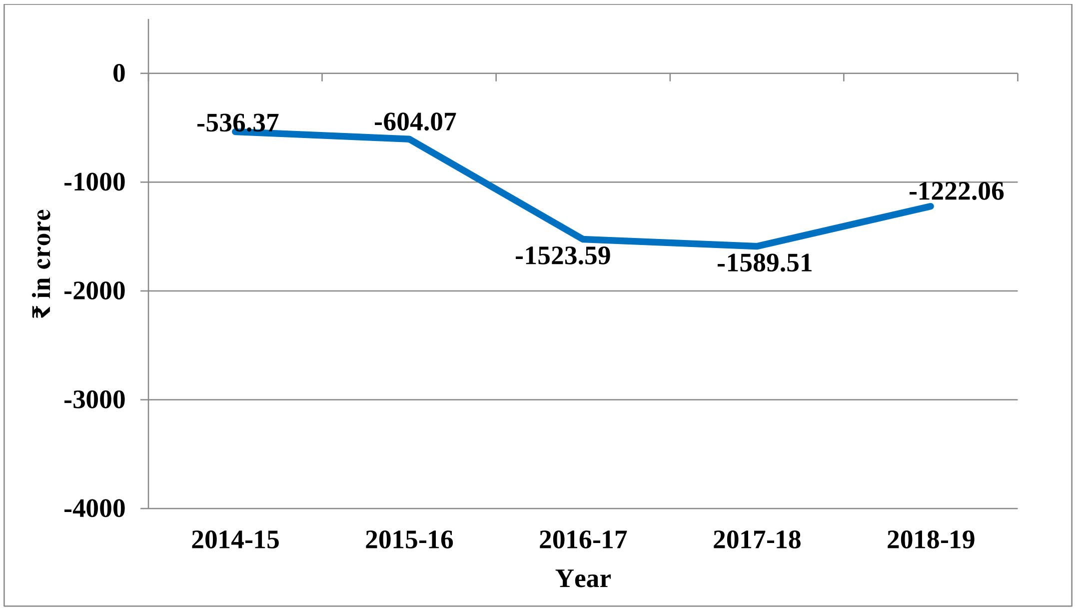
The profitability of a company is traditionally assessed through return on investment, return on equity and return on capital employed. Return on investment measures the profit or loss made in a fixed year relating to the amount of money invested in the form of equity and long term loans and is expressed as a percentage of profit to total investment. Return on capital employed is a financial ratio that measures the company's profitability and the efficiency with which its capital is used and is calculated by dividing company's earnings before interest and taxes by capital employed. Return on equity is a measure of performance calculated by dividing net profit after tax by shareholders' fund.

Return on Investment

4.12 The Return on Investment is the percentage of profit or loss to the total investment. The overall position of profit earned or loss incurred by the working State PSUs (other than Power Sector) as per the latest finalised accounts[76] during the period 2014-15 to 2018-19 is given in **Chart 4.3**:

[76] For instance, latest accounts finalised between October 2018 to September 2019 were considered for the period 2018-19.

Chart 4.3: Profit earned /Loss incurred by working PSUs (other than Power Sector)



An analysis of the latest finalised accounts of all working PSUs (other than Power Sector) in the State revealed that 53 PSUs earned profit of ₹574.49 crore, 58 PSUs incurred loss of ₹1,796.55 crore and two PSUs[77] had no profit or loss. Eight working PSUs did not finalise (September 2019) their first accounts.

The major contributors to profit were The Kerala State Financial Enterprises Limited (₹144.41 crore in 2017-18), The Kerala Minerals and Metals Limited (₹104.46 crore in 2018-19), Kerala State Beverages (Manufacturing and Marketing) Corporation Limited (₹85.93 crore in 2016-17) and The Kerala State Cashew Development Corporation Limited (₹61.59 crore in 2013-14). The major PSUs which incurred loss were Kerala State Road Transport Corporation (₹1,431.29 crore in 2014-15), Kerala State Textiles Corporation Limited (₹53.17 crore in 2014-15), The Kerala State Civil Supplies Corporation Limited (₹25.91 crore in 2015-16) and Travancore Titanium Products Limited (₹23.63 crore in 2014-15).

Of the 121 working PSUs (other than Power Sector) as on 31 March 2019, position of working PSUs (other than Power Sector) which earned profit/ incurred loss during 2014-15 to 2018-19 is given in **Table 4.8:**

[77] Road Infrastructure Company Kerala Limited and Vizhinjam International Seaport Limited.

Table 4.8: Details of working Public Sector Undertakings (other than Power Sector) which earned profit / incurred loss during 2014-15 to 2018-19

Financial year	Total number of PSUs	Number of PSUs which earned profit	Number of PSUs which incurred loss	Number of PSUs which had no profit/ loss	Number of PSUs which had not finalised their first accounts
2014-15	108	47	52	4	5
2015-16	110	48	55	3	4
2016-17	112	43	63	2	4
2017-18	118	45	64	1	8
2018-19	121	53	58	2	8

(Source: Data furnished by PSUs)

As on 31 March 2019, there were 83 working PSUs (other than Power Sector) in competitive environment sector which were expected to operate with the objective of earning profit. During 2018-19, 34 of these PSUs earned profit, 44 incurred loss, two had no profit or loss and three did not finalise their first accounts during 2018-19. Further analysis revealed that 49 PSUs in the competitive environment sector reported accumulated loss at the end of 2018-19, of which 22 PSUs continuously incurred loss for the last five years (based on the latest finalised accounts) and the accumulated loss of these PSUs increased from ₹304.62 crore to ₹864.14 crore. Hence, GoK may put in place a mechanism for monitoring the operation of these PSUs in order to ensure their profitable operation.

Return on Investment on the basis of historical cost of investment

4.13 Out of 137 Public Sector Undertakings (other than Power Sector) of the State, the State Government infused funds in the form of equity, long term loans and grants/ subsidies in 122 PSUs only. The Government has investment of ₹12,363.40 crore in these PSUs including equity of ₹5,734.05 crore and long term loans of ₹6,629.35 crore. As on 31 March 2019, the total investments in the form of equity and interest free loans made by GoK and others in the 137 State PSUs (other than Power Sector) was ₹7,017.83 crore.

The Return on Investment from the PSUs has been calculated on the investment made by the GoK and others in the PSUs in the form of equity and loans. In the case of loans, only interest free loans are considered as investment since the Government does not receive any interest on such loans and are, therefore, of the nature of equity investment by Government except to the extent that the loans are liable to be repaid as per terms and conditions of repayment. Thus, investment in these 137 PSUs (other than Power Sector) has been arrived at by considering the equity and the interest free loans as detailed in **Table 4.9**. The funds made available in the forms of the grants/subsidy have not been reckoned as investment since they do not qualify to be considered as investment.

The sector-wise return on investment on the basis of historical cost of investment for the period 2014-15 to 2018-19 is as given in **Table 4.9**:

Table 4.9: Return on Investment on the basis of historical cost of investment

(₹ in crore)

Year-wise, Sector-wise break-up	Total earnings for the year	Funds invested in the form of equity and interest free loans on historical cost			Return on investment on historical cost basis (*per cent*)
		GoK	Others	Total	
2014-15					
Social Sector	9.36	509.25	67.84	577.09	1.62
Competitive Environment Sector	-555.08	3,531.05	473.75	4,004.80	-13.86
Total	**-545.72**	**4,040.30**	**541.59**	**4,581.89**	**-11.91**
2015-16					
Social Sector	13.70	565.52	76.41	641.93	2.13
Competitive Environment Sector	-625.90	4,059.78	725.96	4,785.74	-13.08
Total	**-612.20**	**4,625.30**	**802.37**	**5,427.67**	**-11.28**
2016-17					
Social Sector	29.14	743.69	179.97	923.66	3.15
Competitive Environment Sector	-1,556.35	4,247.34	840.78	5,088.12	-30.59
Total	**-1,527.21**	**4,991.03**	**1,020.75**	**6,011.78**	**-25.40**
2017-18					
Social Sector	40.50	835.72	194.64	1,030.36	3.93
Competitive Environment Sector	-1,634.60	4,316.31	875.18	5,191.49	-31.49
Total	**-1,594.10**	**5,152.03**	**1,069.82**	**6,221.85**	**-25.62**
2018-19					
Social Sector	-4.09	883.81	181.55	1,065.36	-0.38
Competitive Environment Sector	-1,222.32	5,077.02	875.45	5,952.47	-20.53
Total	**-1,226.41**	**5,960.83**	**1,057.00**	**7,017.83**	**-17.48**

(Source: Data furnished by PSUs)

The return on investment is worked out by dividing the total earnings[78] of these PSUs by the cost of the investments. The return earned on investment ranged between -25.62 *per cent* and -11.28 *per cent* during the period 2014-15 to 2018-19. The overall return on investment was negative during the period which was mainly due to heavy losses incurred by Kerala State Road Transport Corporation (₹1,431.29

[78] This includes net profit/loss for the concerned year relating to those State PSUs where the investments have been made by the State Government.

crore in 2014-15), Kerala State Textiles Corporation Limited (₹53.17 crore in 2014-15), The Kerala State Civil Supplies Corporation Limited (₹25.91 crore in 2015-16) and Travancore Titanium Products Limited (₹23.63 crore in 2014-15) in competitive environment sector. Further analysis revealed that the return on investment from competitive environment sector has shown a fluctuating trend. The returns from competitive environment sector reduced from (-)13.86 *per cent* in 2014-15 to (-)20.53 *per cent* in 2018-19.

Erosion of Net worth

4.14 Net worth means the sum total of the paid-up capital and free reserves and surplus minus accumulated losses and deferred revenue expenditure. Essentially, it is a measure of what an entity is worth to the owners. A negative net worth indicates that the entire investment by the owners has been wiped out by accumulated losses and deferred revenue expenditure. The capital investment and accumulated losses and free reserves and surplus of these 137 State PSUs (other than Power Sector) as per their latest finalised accounts were ₹5,655.57 crore, ₹4,944.00 crore and ₹89.37 crore respectively resulting in net worth of ₹800.94 crore. Analysis of investment and accumulated losses disclosed that net worth was eroded fully in 54 out of these 137 PSUs as the capital investment and accumulated losses of these 54 PSUs were ₹2,081.07 crore and ₹8,642.19 crore respectively. Of these 54 PSUs, the maximum net worth erosion was in Kerala State Road Transport Corporation (₹4,290.63 crore), The Kerala State Cashew Development Corporation Limited (₹798.94 crore), The Kerala State Civil Supplies Corporation Limited (₹214.23 crore) and Autokast Limited (₹159.79 crore). Of these 54 PSUs where net worth had been fully eroded, eight PSUs[79] earned profit as per their latest accounts finalised during the year 2018-19 although there were substantial accumulated losses.

Table 4.10 indicates total paid up capital, total accumulated profit/ loss, and total net worth of the 122 PSUs (other than Power Sector) where the State Government has made direct investment:

Table 4.10: Net worth of PSUs (other than Power Sector) during 2014-15 to 2018-19

(₹ in crore)

Year	Paid up capital at end of the year	Accumulated profit (+) loss (-) at end of the year	Deferred revenue expenditure	Net worth
2014-15	3,714.54	-2,818.46	0.00	896.08
2015-16	4,207.21	-3,387.52	0.00	819.69
2016-17	4,747.27	-5,028.98	0.00	-281.71
2017-18	5,121.33	-4,949.67	0.00	171.66
2018-19	5,619.51	-4,982.37	0.00	637.14

[79] The Kerala State Cashew Development Corporation Limited, Keltron Counters Limited, Kerala State Coconut Development Corporation Limited, Keltron Component Complex Limited, Kerala Police Housing and Construction Corporation Limited, Kerala State Mineral Development Corporation Limited and Kerala School Teachers, Non-teaching Staff Welfare Corporation Limited and Kerala State Warehousing Corporation.

As can be seen, the net worth of these companies fluctuated during the period. It decreased from ₹896.08 crore in 2014-15 to ₹(-)281.71 crore in 2016-17, but increased to ₹171.66 crore in 2017-18 and to ₹637.14 crore in 2018-19. Out of 122 PSUs, 68 PSUs showed positive net worth and net worth of 46 PSUs was in negative during 2018-19. One PSU had zero net worth and for the remaining seven PSUs, there was no data available for calculation of net worth.

Dividend Payout

4.15 The State Government had formulated (December 1998) a dividend policy under which all PSUs are required to pay a minimum return of 20 *per cent* on the paid up capital or 30 *per cent* of the allocable surplus, whichever is lower.

Dividend payout relating to 122 PSUs (other than Power Sector) where equity was infused by GoK during the period 2014-15 to 2018-19 is shown in **Table 4.11:**

Table 4.11: Dividend payout of PSUs (other than Power Sector) during 2014-15 to 2018-19

(₹ in crore)

Year	PSUs where equity was infused by GoK		PSUs which earned profit during the year		PSUs which declared/ paid dividend during the year		Dividend Payout Ratio *(per cent)*
	Number of PSUs	Equity infused	Number of PSUs	Equity infused	Number of PSUs	Dividend declared/ paid	
1	2	3	4	5	6	7	8=7/5*100
2014-15	109	3,813.31	47	1,341.95	20	28.57	2.13
2015-16	113	4,351.20	48	1,841.64	16	23.36	1.27
2016-17	115	4,652.25	43	1,265.38	9	32.04	2.53
2017-18	120	4,890.93	45	1,607.54	7	10.59	0.66
2018-19	122	5,734.05	49	2,126.52	7	12.11	0.57

During the period 2014-15 to 2018-19, the number of PSUs which earned profit ranged between 43 and 49. During this period, number of PSUs which declared/paid dividend to GoK ranged between 7 and 20. The Dividend Payout Ratio during 2014-15 to 2018-19 ranged between 0.57 *per cent* and 2.53 *per cent* only.

As per their latest finalised accounts, seven working PSUs declared dividend of ₹12.11 crore which worked out to 0.21 *per cent* of equity capital of all the PSUs. Only one PSU[80] complied with the State Government policy on dividend payment. As a result, there was short payment of dividend to the extent of ₹110.12 crore by 48 PSUs.

[80] Kerala State Beverages (Manufacturing and Marketing) Corporation Limited.

Return on Equity

4.16 Return on Equity (ROE) is a measure of financial performance to assess how effectively management is using shareholders' fund to create profits and is calculated by dividing net income (*i.e*., net profit after taxes) by shareholders' fund. It is expressed as a percentage and can be calculated for any company if net income and shareholders' fund are both positive numbers.

Shareholders' fund of a company is calculated by adding paid up capital and free reserves, net of accumulated losses and deferred revenue expenditure and reveals how much would be left for a company's stakeholders if all assets were sold and all debts paid. A positive shareholders fund reveals that the company has enough assets to cover its liabilities while negative shareholders' fund means that liabilities exceed assets.

Return on Equity has been computed in respect of 122 other than Power Sector undertakings where funds had been infused by the State Government. The details of shareholders' fund and ROE relating to 122 PSUs (other than Power Sector) during the period from 2014-15 to 2018-19 are given in **Table 4.12**:

Table 4.12: Return on Equity relating to PSUs (other than Power Sector)

Year	Net income (₹ in crore)	Shareholders' fund (₹ in crore)	Return on equity (*per cent*)
2014-15	-551.66	896.08	-
2015-16	-616.89	819.69	-
2016-17	-1,528.30	-281.71	-
2017-18	-1,593.44	171.66	-
2018-19	-1,228.38	637.14	-

During the last five years ended March 2019, the net income of these PSUs were negative. Hence, ROE in respect of these PSUs could not be worked out for this period.

Return on Capital Employed

4.17 Return on Capital Employed (ROCE) is a ratio that measures a company's profitability and the efficiency with which its capital is employed. ROCE is calculated by dividing a company's earnings before interest and taxes (EBIT) by the capital employed[81]. The details of ROCE of the State PSUs (other than Power Sector) during the period from 2014-15 to 2018-19 are given in **Table 4.13**:

[81] Capital employed = Paid up capital + free reserves and surplus + long term loans - accumulated losses - deferred revenue expenditure.

Table 4.13: Return on Capital Employed

Year	EBIT (₹ in crore)	Capital employed (₹ in crore)	ROCE (*per cent*)
2014-15	515.24	8,603.90	5.99
2015-16	684.11	10,019.53	6.83
2016-17	413.08	10,124.91	4.08
2017-18	526.99	10,235.65	5.15
2018-19	697.50	9,225.19	7.56

The ROCE of these State PSUs ranged between 4.08 *per cent* and 7.56 *per cent* during the period 2014-15 to 2018-19. The ROCE increased over two *per cent* in 2018-19 mainly due to increase in EBIT (₹399.63 crore) of the four PSUs.[82]

Analysis of long term loans of the PSUs (other than Power Sector)

4.18 Analysis of the long term loans of the PSUs which had leverage during 2014-15 to 2018-19 was carried out to assess the ability of the companies to serve the debt owed by the companies to the Government, banks and other financial institutions. This is assessed through the interest coverage ratio and debt turnover ratio.

Interest Coverage Ratio

4.19 Interest coverage ratio is used to determine the ability of a PSU to pay interest on outstanding debt and is calculated by dividing the earnings before interest and taxes (EBIT) of a PSU by interest expenses of the same period. The lower the ratio, the lesser the ability of the PSU to pay interest on debt. An interest coverage ratio below one indicated that the PSU is not generating sufficient revenues to meet its expenses on interest. The details of interest coverage ratio during the period from 2014-15 to 2018-19 are given in **Table 4.14**:

[82] The Kerala Minerals and Metals Limited (₹134.40 crore), The Kerala State Cashew Development Corporation Limited (₹120.21 crore), The Kerala State Civil Supplies Corporation Limited (₹73.44 crore) and Kerala State Beverages (Manufacturing and Marketing) Corporation Limited (₹71.58 crore).

Table 4.14: Interest coverage ratio of working State PSUs (other than Power Sector) having liability of loans

Year	Interest (₹ in crore)	Earnings before interest and tax (₹ in crore)	Number of PSUs having liability of loans	Number of PSUs having interest coverage ratio more than or equal to 1	Number of PSUs having interest coverage ratio less than 1
2014-15	1,057.29	330.84	58	25	33
2015-16	1,293.73	677.20	63	28	35
2016-17	1,694.93	190.25	62	27	35
2017-18	1,890.85	486.96	60	23	37
2018-19	1,666.10	486.48	62	22	40

Of the 62 State working PSUs (other than Power Sector) having liability of loans during 2018-19, 22 PSUs had interest coverage ratio of more than or equal to one whereas remaining 40 PSUs had interest coverage ratio below one which indicates that these 40 PSUs could not generate sufficient revenues to meet their expenses on interest.

Debt Turnover Ratio

4.20 During the last five years, the turnover of these State PSUs recorded compounded annual growth of 7.85 *per cent* while the compounded annual growth of debt was 12.91 *per cent* due to which the debt turnover ratio degraded from 0.59 in 2014-15 to 0.71 in 2018-19 as given in the **Table 4.15** below:

Table 4.15: Debt Turnover Ratio relating to the State PSUs (other than Power Sector)

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Debt (₹ in crore)	8,352.89	9,251.67	11,481.32	14,064.25	13,577.31
Turnover (₹ in crore)	14,130.57	14,562.41	15,487.50	16,535.00	19,122.57
Debt-Turnover Ratio	0.59:1	0.51:1	0.74:1	0.85:1	0.71:1

(Source: Data furnished by PSUs)

The debt-turnover ratio ranged between 0.51 and 0.85 during this period.

Winding up of non-working State PSUs

4.21 Of the 137 State PSUs (other than Power Sector), 16 were non-working companies having a total investment of ₹91.89 crore towards equity (₹25.30 crore) and long term loans (₹66.59 crore) as on 31 March 2019. The number of non-working PSUs at the end of each year during last five years ended 31 March 2019 are given in **Table 4.16**:

Table 4.16: Non-working PSUs

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Number of non-working PSUs	15	15	15	15	16

(Source: Data furnished by PSUs)

Out of the above sixteen non-working PSUs, liquidation process was initiated in respect of four PSUs[83]. Since the non-working PSUs are not contributing to the State economy and not meeting the intended objectives, these PSUs may be considered for their closure or revival.

Comments on Accounts of State PSUs (other than Power Sector)

4.22 Out of 117 working PSUs, 94 PSUs forwarded their 127 audited accounts to the Accountant General during the period from 1 October 2018 to 30 September 2019. Of these, 62 accounts of 53 companies were selected for supplementary audit while non-review certificates were issued in respect of 65 accounts of 50 companies. The Audit Reports of Statutory Auditors and supplementary audit conducted by the CAG indicated that the quality of accounts needs to be improved substantially. The details of aggregate money value of the comments of Statutory Auditors and the CAG are as given in **Table 4.17**:

Table 4.17: Impact of audit comments on Working Companies (other than Power Sector)

(₹ in crore)

Sl. No.	Particulars	2016-17		2017-18		2018-19	
		Number of accounts	Amount	Number of accounts	Amount	Number of accounts	Amount
1	Decrease in profit	10	19.90	20	59.08	13	53.10
2	Increase in loss	17	26.43	19	76.61	33	244.36
3	Increase in profit	5	1.34	5	6.72	7	15.50
4	Decrease in loss	5	3.29	6	6.65	8	5.04
5	Non-disclosure of material facts	27	378.11	6	37.63	7	41.07
6	Errors of classification	35	285.76	17	262.37	11	212.80

(Source: Compiled from the annual accounts of Government Companies)

During the year 2018-19, the Statutory Auditors issued qualified audit reports on 83 accounts, unqualified audit reports on 36 accounts, disclaimer on two accounts and adverse opinion on six accounts. Compliance to the Accounting Standards by the PSUs remained poor as the Statutory Auditors and the CAG pointed out 141 instances of non-compliance to the Accounting Standards in 61 accounts.

[83] Keltron Power Devices Limited, Keltron Rectifiers Limited, Kunnathara Textiles Limited and Vanjinad Leathers Limited.

4.23 The State has four Statutory Corporations, *i.e.*, (i) Kerala State Road Transport Corporation (KSRTC), (ii) Kerala Financial Corporation (KFC), (iii) Kerala State Warehousing Corporation (KSWC) and (iv) Kerala Industrial Infrastructure Development Corporation (KINFRA). The CAG is sole auditor in respect of KSRTC and KINFRA.

Out of four working Statutory Corporations, KSWC forwarded two accounts for the years 2016-17 and 2017-18 during 1 October 2018 to 30 September 2019. The Statutory Auditors gave qualified certificates on both the accounts and were selected for supplementary audit. The KFC forwarded accounts for the year 2018-19 for which the Statutory Auditor gave unqualified certificates and the same was selected for supplementary audit. KSRTC did not forward any accounts during the above period. KINFRA forwarded annual accounts for the year 2017-18 and the accounts of KINFRA was audited and SAR was issued.

The details of aggregate money value of the comments of Statutory Auditors and supplementary audit by the CAG in respect of Statutory Corporations are given in **Table 4.18**:

Table 4.18: Impact of audit comments on Statutory Corporations

(₹ in crore)

Sl. No.	Particulars	2016-17		2017-18		2018-19	
		Number of accounts	Amount	Number of accounts	Amount	Number of accounts	Amount
1	Decrease in profit	1	0.03	1	0.71	1	9.79
2	Increase in loss	1	0.06	2	0.36	2	0.36
3	Increase in profit	…	…	…	…	1	0.11
4	Decrease in loss	…	…	1	0.03	…	…
5	Non-disclosure of material facts	…	…	2	63.89	…	…
6	Errors of classification	1	4.64	1	39.24	…	…

(Source: Compiled from the annual accounts of Statutory Corporations)

Compliance Audit Paragraphs

4.24 For the Report of the Comptroller and Auditor General of India (Public Sector Undertakings) for the year ended 31 March 2019, eight Compliance Audit Paragraphs related to 23 PSUs were issued to the Principal Secretaries/ Secretaries of the respective Administrative Departments with a request to furnish replies within four weeks. Replies were received for five Compliance Audit Paragraphs and replies were partially received for two Compliance Audit Paragraphs from Department of Industries and Commerce. The Department of Transport was yet to furnish the reply for one Compliance Audit Paragraph. Exit conferences were held with the Departments concerned and the Compliance Audit Paragraphs were discussed. The total financial impact of the Compliance Audit Paragraphs was ₹48.16 crore.

Follow up action on Audit Reports (other than Power Sector)

Replies outstanding

4.25 The Report of CAG represents the culmination of the process of audit scrutiny. It is, therefore, necessary that they elicit appropriate and timely response from the executive. The Finance Department, Government of Kerala issued directions to all Administrative Departments in 2017 to furnish Explanatory Notes to Performance Audits/ Compliance Audits/ Paragraphs included in the Audit Reports of the CAG within a period of two months of their presentation to the Legislature for speedy settlement of audit observations. The status of Explanatory Notes not received as of March 2020 is given in **Table 4.19:**

Table 4.19: Explanatory Notes not received (as of March 2020)

Year of the Audit Report (PSUs)	Date of placement of Audit Report in the State Legislature	Total Performance Audits (PAs) and Paragraphs in the Audit Report		Number of PAs/ Paragraphs for which explanatory notes were not received	
		PAs	Paragraphs	PAs	Paragraphs
2014-15	28/06/2016	1	9	0	0
2015-16	23/05/2017	2	11	2	6
2016-17	19/06/2018	2	10	2	7
Total		**5**	**30**	**4**	**13**

From the above, it could be seen that out of five Performance Audits and 30 Paragraphs, Explanatory Notes to four Performance Audits and 13 Paragraphs in respect of 12 Departments, which were commented upon, were awaited (March 2020).

Discussion of Audit Reports by Committee on Public Undertakings

4.26 The status of discussion of Performance Audits and Compliance Audits/ Paragraphs that appeared in Audit Report (PSUs) by Committee on Public Undertakings (CoPU) as of March 2020 is shown in **Table 4.20:**

Table 4.20: Performance Audits/ Paragraphs that appeared in Audit Reports *vis-à-vis* discussed as of March 2020

Period of Audit Report	Number of Performance Audits/ Paragraphs			
	Appeared in Audit Report		Discussed	
	PAs	Paragraphs	PAs	Paragraphs
2014-15	1	9	1	9
2015-16	2	11	0	2
2016-17	2	10	0	1
Total	**5**	**30**	**1**	**12**

Compliance to Reports of Committee on Public Undertakings

4.27 Action Taken Notes (ATNs) to 138 recommendations in 25 Reports of the CoPU presented to the State Legislature between December 2014 and November 2019 have not been received (March 2020) as indicated in **Table 4.21:**

Table 4.21: Compliance to CoPU Reports

Year of the CoPU Report	Total number of CoPU Reports	Total number of recommendations in the CoPU Reports	No. of recommendations where ATNs not received
2014-16	1	3	3
2016-19	12	61	53
2019-21	12	82	82
Total	**25**	**146**	**138**

These Reports of CoPU contained recommendations in respect of Paragraphs pertaining to nine Departments, which appeared in the Reports of CAG of India for the years 2002-03 to 2014-15. The pace of receipt of ATNs from GoK to CoPU was not encouraging.

It is recommended that the Government may ensure:

(a) sending of replies/ Explanatory Notes to Paragraphs/ Performance Audits and ATNs on the recommendations of CoPU as per the prescribed time schedule; and

(b) revamping of the system of response by GoK to audit observations.

Chapter V

Compliance Audit Observations relating to Public Sector Undertakings (other than Power Sector)

Chapter V

Compliance Audit Observations relating to Public Sector Undertakings (other than Power Sector)

5.1 Compliance to the Government of Kerala guidelines for implementation of Enterprise Resource Planning initiatives by Public Sector Undertakings

Non-adherence to GoK guidelines for implementing e-governance initiatives affected timely implementation of ERP systems in seven PSUs. Five PSUs could not derive any benefit even after incurring ₹1.15 crore due to non-completion of their ERP systems.

The Government of Kerala (GoK) issued (September 2009) guidelines for implementation of e-governance initiatives in the State, detailing therein the procedures to be followed in the development of software systems. In this backdrop, Enterprise Resource Planning (ERP) systems[84] implemented after September 2009 by 8 randomly selected Public Sector Undertakings (PSUs) out of 17 were examined in order to assess the level of compliance to the guidelines by these PSUs. Of the selected PSUs, ERP systems were commissioned in Kerala State Coir Corporation Limited (COIR CORP), Travancore Titanium Products Limited (TTPL) and Travancore Cochin Chemicals Limited (TCCL) with varying degrees of success. Implementation was in different stages of completion in Kerala State Horticultural Products Development Corporation Limited (HORTICORP), The Kerala State Cashew Development Corporation Limited (CASHEW CORP), Kerala State Warehousing Corporation (WAREHOUSING CORP) and Kerala Electrical and Allied Engineering Limited (KEL). The implementation of ERP system was a failure in Foam Mattings (India) Limited (FOMIL). The status of ERP implementation in the selected PSUs is given in the ***Appendix 7***. The Audit findings in this regard are discussed below:

5.1.1 Leadership and Coordination of the implementation process

The e-governance guidelines (the Guidelines) stipulated that organisations implementing e-governance projects shall appoint a nodal officer who, even if not from the IT wing, should at least be not more than one level below the Head of the Organisation. As per the guidelines, the Nodal Officer plays a pro-active role in implementation of ERP systems and is responsible for change management in the event of any adverse situation.

TCCL constituted a committee comprising of head of individual departments in which Nodal Officer and implementing agency (IA) were also members. Power users were identified from each department and the Nodal Officer acted as the coordinator between them and the IA throughout the implementation process.

[84] A packaged business software system that allows an enterprise to automate and integrate the majority of its business processes, share common data and practices across the entire enterprise and produce and access information in a real time environment.

Audit, however, observed that except TCCL, none of the PSUs instituted a formal mechanism for ensuring involvement of top management in the implementation of ERP. Three PSUs (CASHEW CORP, WAREHOUSING CORP and KEL) appointed nodal officers from the lower managerial level as coordinators and the ERP projects in these PSUs were yet to be completed long after their projected target dates due to absence of active role of the top management. For instance, in two PSUs, development process was stalled for long periods of time[85] merely due to failure of the PSUs to test the beta versions[86] of software modules. In the case of TTPL and COIR CORP, the role of Nodal Officer was entrusted to Manager (IT) and System Analyst respectively. Such an arrangement was, however, absent in FOMIL and HORTICORP and the ERP systems in these PSUs were not yet completed (November 2019).

The GoK replied (September/ October 2020) that WAREHOUSING CORP appointed a nodal officer from the lower level due to lack of technically qualified personnel. HORTICORP appointed an Accounts Officer as nodal officer, and KEL and TTPL appointed Senior Managers.

FOMIL replied (June 2020) that a nodal officer was not appointed due to lack of any competent IT personnel. CASHEW CORP replied (June 2020) that based on the audit observation the head of IT from the top management team was appointed for supervision of ERP implementation.

The reply only validates the audit observation that non-appointment of properly qualified and suitably senior nodal officers as required in the Guidelines affected the timely implementation of ERP systems in the PSUs.

5.1.2 Development of Detailed Project Proposal

The Guidelines stipulated that all IT enabled projects should invariably have a detailed project proposal (DPP) prepared either in-house or by taking external help from a Total Solution Provider[87] (TSP)/ professional consultancy agency. The proposal shall consist of User Requirements Specification (URS), Functional Requirements Specification (FRS[88]), Technical Analysis and an Implementation Plan. None of the PSUs, however, prepared DPPs/ its components resulting in the following issues:

5.1.2.1 Non-preparation of URS and FRS

As per the Guidelines, URS and FRS should be prepared by functional experts within the organisation by defining the user requirements exhaustively, and practically feasible process reforms should be included in the FRS. Tenders for software development should be invited based on FRS which, in turn, shall form the basis for development of System Requirements Specification (SRS) to be delivered by the Implementing Agency **(**IA).

[85] WAREHOUSING CORP-January 2014 to March 2017; CASHEW CORP-December 2011 to October 2016.

[86] An early version of software made available for testing and feedback.

[87] So approved by GoK.

[88] Defines how URS is to be achieved.

Audit observed that since the user requirements were not exhaustively identified through URS by the PSUs themselves, no process reforms could be identified and brought out through FRS. The PSUs assigned the work of developing SRS to the IAs without identifying the user requirements and FRS. The SRS developed by the IAs, hence, suffered from the following shortcomings which affected the development process:

- In CASHEW CORP, the URS study was conducted by Kerala State Electronics Development Corporation (KELTRON), the IA. This, however, did not meet the actual user requirements[89] and the 'beta version' of the software was modified several times. Even after the lapse of eight years since releasing the beta version, none of the 12 modules could be put to use (December 2019).

  CASHEW CORP replied (June 2020) that the beta version did not meet the requirements though KELTRON prepared the URS.

  The reply substantiates the audit observation that the PSU did not ensure the adequacy of URS prepared by KELTRON before development of the software.

- WAREHOUSING CORP did not conduct URS study before inviting tender. It was observed that the Payroll and Warehouses modules developed by the IA (CDAC) at a cost of ₹ six lakh had unresolved issues such as integration of Leave Management System and Income Tax modules with Payroll module, incorporation of payment mode of electronic transfer, verification of balance sheet and linking user management with Payroll *etc*. for which the PSU paid an additional amount of ₹2.23 lakh to the IA. Also, the requirement of 'ability to make back dated accounting entries' in Accounts module was not included in the original requirements. Inclusion of this at a later stage caused delay in implementation. Audit also noticed that the requirement for various kinds of MIS reports at Head Office, Regional Offices and Zonal Offices was not finalised even though the project was nearing completion.

  The GoK replied (September 2020) that the computerisation project was completed in March 2020.

  The fact remains that the shortcomings in the development process due to non-adherence to the Guidelines delayed the completion of the project by eight years.

- In HORTICORP, the URS was not prepared either by the PSU or by the IA. As a result, the system implemented did not meet the requirements like entry of physical damage of stock in the software, entering physical stock manually and inclusion of many standard reports called for by the Head Office even after four years of implementation of the pilot phase. This is despite the fact that 88 *per cent* (₹66.91 lakh) of the contract amount has been incurred (October 2019) though as per the agreement, the IA was eligible for 50 *per cent*.

[89] Some of the additional requirements were lot mixing report, lot transfer (inter-factory transfer) reports, lot receipt reports, daily status report of filling, production expenses report *etc.* for Production Department. Sales report, Origin-wise, Grade-wise, Tin-wise reports, Comparison (origin and rate-wise) and payment status report *etc*. for Commerce Department.

The GoK replied (September 2020) that URS and FRS were prepared by IA under the guidance of KELTRON officials due to absence of technical person in HORTICORP.

The reply was not acceptable as the PSU did not furnish the URS and FRS during the course of audit. Further, the additional documents furnished[90] by the PSU in support of the GoK reply did not substantiate the claim regarding preparation of URS or FRS.

- As no URS was prepared in FOMIL, demands for changes cropped up immediately after the installation of the software. Reports and invoices generated through the system did not meet the statutory and business requirements and the software remained non-functional despite incurring ₹8.19 lakh (80 *per cent* of the contract amount).

  FOMIL replied (June 2020) that due to lack of competent officials it was not aware of the procedures to be followed.

- Due to absence of exhaustive user requirement study in the beginning, COIR CORP had to bring in a number of additional features during the course of development for which an extra amount of ₹2.30 lakh was paid. Conversely, though the PSU did not require a Training module, the ERP system included it as it was not backed by a user requirement study. Thus, the module could not be utilised despite spending ₹0.50 lakh for it.

  COIR CORP replied (June 2020) that FRS was prepared before publishing the tender and the same was included in the tender document. Also, the additional requirements were for meeting regulatory requirements like Goods and Services Tax (GST) which were not applicable when tenders were invited.

  Audit, however, observed that COIR CORP provided an outline of functional requirements in the tender document which was not comprehensive due to absence of detailed user requirement study. Hence, additional features, which were functional in nature[91], had to be included later.

5.1.2.2 Absence of Technical Analysis

As per the Guidelines, technical analysis shall be carried out based on the URS and different alternatives for connectivity, operational platform (Operating System, RDBMS[92] *etc*.) and risks associated therewith. Audit, however, observed that none of the PSUs carried out any detailed technical analysis of the proposed ERP systems which led to the following issues:

- HORTICORP, during the implementation of ERP proposed to link weighing machines located in outlets with the ERP system so as to facilitate real time data

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[90] The PSU furnished copy of three documents, *viz.*, User Manual (553 pages), project summary (15 pages) and transaction flow chart of District Procurement Centre, Thiruvananthapuram (two pages).

[91] The additional features included were GST features, creation of credit and debit notes, changes in leave and loan management, salary based on punching system, inclusion of three new reports, training personnel dashboard and despatch document/ workflow management.

[92] Relational Database Management System.

on stock position of vegetables and fruits. An amount of ₹5.20 lakh was expended for upgrading existing weighing balances at outlets with GPRS modem to make them compatible with the ERP system. However, the power backup capability of the weighing machines was not assessed. As a result, the ERP system could not be implemented in retail/ mobile outlets as the upgraded machines could be used only for two to three hours continuously. Though the manufacturer of the weighing machine suggested additional battery backup to solve this, HORTICORP did not entertain the same as it needed additional investment.

The GoK replied (September 2020) that initially the entire system worked efficiently, but the efficiency of the system dropped due to power back up issues which could not be addressed due to huge investments.

The reply confirmed that there was absence of technical analysis which hindered online monitoring of sales in retail outlets.

- WAREHOUSING CORP decided (July 2017) to use the existing Tally financial accounting package even after implementation of the ERP system. Hence, generation and export of XML[93] files from the Accounts Module of ERP system to the Tally package was attempted while developing the ERP system. It was, however, not found feasible and the Accounts Module had to be modified accordingly. The time and effort expended on integration of Tally with the ERP did not have the backing of any technical analysis. Further, the proposal for using Tally financial accounting package along with ERP system lacked justification as ERP system was implemented as an integrated software solution for materials, marketing and finance functions.

  The GoK replied (September 2020) that the computerisation project was completed in March 2020.

  The fact remains that the shortcomings in development process due to non-adherence to the Guidelines delayed the completion of the project by eight years.

- As per the Guidelines, free and open source based software[94] should be used, wherever possible. Audit, however, observed that only CASHEW CORP used open source platform[95] in its ERP system while other PSUs used proprietary[96] platforms[97]. Three PSUs (KEL, HORTICORP and WAREHOUSING CORP) spent ₹2.95 lakh towards license fee for proprietary software.

  COIR CORP stated (June 2020) that MS SQL was selected due to its better data management and security features. FOMIL stated (June 2020) that technical

[93] eXtensible Markup Language (XML) is a markup language that is designed to transport and store data in a specific format.
[94] It is a type of computer software in which source code is released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose.
[95] PGSQL/Apache/Linux.
[96] It is a closed-source, non-free computer software for which the software's publisher or another person retains intellectual property rights, usually copyright of the source code and patent rights.
[97] RDBMS like MS SQL and Oracle.

analysis was not done due to non-awareness of procedure and absence of competent IT personnel.

The fact remained that the selection of proprietary software was not followed by any technical analysis.

- TTPL invited tenders and awarded the work order to the IA for developing the ERP systems on 'web based platform'. The system was, however, developed on 'client-server' model at the time of implementation. This was due to the fact that the PSU did not conduct an analysis regarding the feasibility of having a suitable platform of the system to be developed before inviting the tender.

  The GoK replied (October 2020) that TTPL proceeded for developing client-server model software, as there was not enough internet facility to support functioning of the ERP software on a web based platform.

  The reply confirmed that the technical analysis did not consider all aspects that had a bearing on the selection of type of software platform.

5.1.2.3 Absence of Implementation Plan

As per the Guidelines, an implementation plan containing an estimate prepared on the basis of 'total cost of ownership', the expected benefits quantified based on higher revenue generation or cost reduction and the time schedule for the pilot phase and final rollout for the project shall be prepared.

Audit, however, observed that the PSUs did not envisage any definite objective for implementation of ERP systems. In the absence of the implementation plan, Audit could not assess the outcome or impact of ERP projects that were completed and the opportunity cost of those that were delayed beyond the target date.

Regarding phase-wise rollout, Audit noticed that CASHEW CORP's decision to roll out the software in all factories and Head Office in one go faced hurdles like non-completion of data entry in all factories, difficulties in inter-factory transactions, non-availability of adequate number of trained personnel *etc*.

CASHEW CORP replied (September 2020) that it was now fully equipped to implement the project. The other PSUs did not offer any specific reply in this regard.

5.1.3 Application Development and Project Rollout

5.1.3.1 Invitation of tender

As per the Guidelines, application development involving a third party agency shall be through a transparent tendering process based on FRS, detailed technical architecture, implementation plan and information security policy of Kerala State IT Mission (KSITM)/ Computer Emergency Response Team-IN (CERT-IN). The PSUs, however, did not comply with this stipulation and entered into tendering with bare minimum specifications of the functional processes to be covered by the software.

5.1.3.2 Prequalification criteria

> TCCL prequalified bidders based on essential characteristics like Modularity, Flexibility, Open Architecture, Transaction Audit Trails, Integrated Workflow, Simplicity, Manageability and Scalability. Points were allotted for experience, solution status, functionality compliance, readiness to handover source code and detailed project implementation plan.

The Guidelines stipulated that there shall be a prequalification process to shortlist the bidders. As per the Central Vigilance Commission (CVC) guidelines, the average annual financial turnover of the bidders is to be included as one of the prequalification criteria in the tender document to ensure the financial soundness of the firm. CVC guidelines also stipulated that all important tender evaluation criteria need to be specified in unambiguous terms in the bid documents so that the evaluation of bids can be made without any subjectivity.

Audit, however, observed that two PSUs (CASHEW CORP and WAREHOUSING CORP) did not include any prequalification criteria in the tender. Of the five[98] PSUs which included prequalification criteria in the tender, the criteria stipulated by FOMIL, TCCL and COIR CORP did not include parameters for ensuring financial soundness of the bidders while that of FOMIL were too vague to ensure participation of only ERP vendors. Similarly, WAREHOUSING CORP, COIR CORP and TTPL did not include the evaluation criteria, subsequently used for prequalifying the bids, in their tender documents.

> Both COIR CORP and TCCL stipulated successful implementation of the software in their respective sectors as a prequalification criterion which led to selection of experienced IAs and successful implementation of the ERP.

The absence of or ambiguous prequalification criteria led to selection of inexperienced Implementation Agencies resulting in non-implementation/ delayed implementation of the ERP systems by the Implementing Agencies.

The GoK replied (September/ October 2020) that WAREHOUSING CORP and TTPL carried out technical evaluation of the bids received and selected the lowest firm from the technically qualified bidders. The main focus of TCCL was on robustness of software, proximity of its transaction flows to the business practices and technical expertise of the bidder.

CASHEW CORP replied (June 2020) that the tendering was carried out before the Guidelines came into force and the work was awarded to KELTRON. COIR CORP replied (June 2020) that the experience of the firm was stipulated as criteria instead of fixing turnover. Also, the financial statements of the last five years were scrutinised.

The fact, however, remains that the CVC guidelines were not complied with by the PSUs, with adverse impact on implementation of the ERP systems.

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[98] HORTICORP awarded the work on nomination basis.

5.1.3.3 Evaluation of bids and award of work

The following deficiencies were noticed in bid evaluation and award of work in the case of six out of eight PSUs:

- FOMIL selected the IA though the firm did not meet the criteria of having 'supported ERP systems of at least two PSUs in Kerala' and 'twenty-five-year experience in IT sector' prescribed for the technical qualification of the bidders. As per the Stores Purchase Manual[99] (SPM), price bids of technically qualified bidders alone shall be opened. FOMIL, however, opened the price bids of all the four bidders including that of two technically disqualified bidders and evaluated them.

  FOMIL replied (June 2020) that 25 years' experience criterion was overlooked. The bid of the firms that had implemented ERP projects in government aided agencies were considered as equivalent to PSUs.

  The reply was not tenable as the evaluation was not in line with the criteria stipulated in the tender document.

- As per CVC guidelines (July 2007), tendering process is a basic requirement for the award of contract as any other method, especially award of contract on nomination basis, would amount to a breach of Article 14 of the Constitution guaranteeing right to equality. It was noticed that HORTICORP selected the IA in an arbitrary manner in a meeting (July 2015) in which the representative of the IA also participated. HORTICORP justified the selection of IA stating that the manufacturer of the weighing machines used by it advised to award the work to the IA for best results. It is pertinent to note that the project was currently dormant due to software and technical issues (November 2019).

  The GoK did not offer any reply in this regard.

- The Guidelines stipulated that the estimated cost of an IT project should be assessed based on 'total cost of ownership' and that cost comparison among various software should include cost of all necessary licenses and recurring expenses for first three years. Costs related to licensing and annual maintenance (varying from 10 to 12 *per cent*) were, however, considered by TCCL, TTPL and KEL only.

  FOMIL replied (June 2020) that the failure to incorporate maintenance cost in the tender was due to lack of expertise/ absence of an IT official.

5.1.3.4 Service Level Agreements

As per the Guidelines, System Requirements Specification (SRS), detailed acceptance test plan based on the SRS, application software with fully documented source code and all necessary licenses are the deliverables expected from the IA. Accordingly, a detailed Service Level Agreement[100] (SLA) needs to be entered into

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[99] Read with Office order No.72/12/04 dated 10 December 2004 issued by CVC.

[100] A Service Level Agreement is a contract between a service provider and its customers that documents what services the provider will furnish and defines the service standards the provider is obligated to meet.

with the IA covering all the aspects of development, implementation and maintenance of the software.

Audit observed that four PSUs (FOMIL, COIR CORP, KEL and HORTICORP) did not enter into any SLA with the respective IAs and therefore these PSUs did not have clear-cut guidelines regarding the service obligations of the IAs and the associated service deliverables during the implementation process. The remaining four PSUs (CASHEW CORP, WAREHOUSING CORP, TTPL and TCCL), through the SLAs, ensured that the SRS was prepared and source code of the developed system was handed over to it by the IA. Further, none of these SLAs provided for comprehensive acceptance testing including the final acceptance testing by an independent third party as stipulated by the Guidelines.

COIR CORP accepted (June 2020) that they did not enter into SLA with the IA, while FOMIL replied (June 2020) that they were unaware of the guidelines regarding SLA.

The fact remained that the PSUs did not comply with the Guidelines. The replies of the PSUs were also silent on the absence of provision for comprehensive acceptance testing. Absence of or incomplete SLA would result in inadequate mapping of deliverables expected from the implementation of ERP systems.

5.1.3.5 Acceptance Testing

The Guidelines stipulated that Acceptance Test Plan (ATP) along with sample data should be ready by the time the application software is developed and that testing is conducted by functional experts within the organisation. The Final Acceptance Testing (FAT) should be conducted by a professional agency appointed through a transparent process.

Audit observed that documentation regarding in-house acceptance testing was not available in any of the PSUs nor did the PSUs involve any external agency for FAT since there were no agreement clauses regarding the same. Absence of ATP or FAT led to the following issues in four out of eight PSUs:

- Disagreement between CASHEW CORP and the IA on the completion/ commissioning status of various modules of the ERP led to suspension of development work for over two years.

- FOMIL released about 80 *per cent* of the contract price without conducting any testing. Even though the IA claimed successful completion of ERP, various departments in FOMIL raised complaints/ demanded changes in the software which the IA did not carry out. As a result, FOMIL went for litigation.

- WAREHOUSING CORP did not conduct acceptance testing of the modules completed by the IA in October 2012. In the absence of any testing reports, the IA could not further proceed with the development work for over four years (up to July 2017).

- HORTICORP released about 88 *per cent* of the contract price without any testing and acceptance procedure though the IA was eligible for only 50 *per cent* as per the work order[101]. HORTICORP, thus, paid an excess amount of ₹28.73 lakh without considering the stages of implementation. Further, the software was presently utilised only for generating invoices. The other functionalities such as real time monitoring of outlets, procurement, storage, accounting *etc*. envisaged in the project have not been achieved to date (January 2020).

The GoK replied (September/ October 2020) that WAREHOUSING CORP conducted the testing after revamping the project and all the modules were running. HORTICORP released 88 *per cent* of the contract price based on technical committee evaluation that ERP implementation attained 80 *per cent* progress. Further, acceptance testing in TCCL was conducted by functional experts within the company which helped in timely completion of the project. In the case of TTPL, the software was accepted with the help of technical experts from The Kerala Minerals and Metals Limited, a State PSU.

CASHEW CORP replied (June 2020) that all the issues with IA were over and the project was revived. Though SLA did not provide for acceptance test by a third party, the process of independent audit and testing by a government approved external agency was initiated. FOMIL replied (June 2020) that the requirement of testing by a third party agency was not known to the management.

The replies of GoK and FOMIL were not acceptable as the Guidelines mandated final acceptance test by an external agency selected through a transparent process. The reply regarding HORTICORP was not acceptable as the payment made was not in line with the conditions specified in the work order. The failure to conduct ATP or FAT resulted in the delayed development and fine-tuning of the ERP software based on actual requirements.

5.1.3.6 Other Contract Management Issues

Audit also noticed contract management issues in various PSUs as stated below:

COIR CORP

- As per Rule 7.33 of the SPM, a minimum of 15 days should be given to submit the tenders. However, the PSU allowed only six days (30 April 2013 to 6 May 2013) which was not justified as there was no urgency.
- As per the tender conditions, the successful bidder was to furnish a performance bank guarantee for an amount equivalent to 10 *per cent* of the quoted value. The PSU, however, did not insist for its compliance by the IA.
- Even though the Annual Maintenance Contract (AMC) for the ERP commenced three years ago, the PSU did not sign any agreement with the IA detailing the terms and conditions thereof.

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[101] Fifty *per cent* payment as advance along with work order, another 30 *per cent* after successful installation of hardware and software and acceptance of HORTICORP based on the recommendation of technical committee and balance 20 *per cent* after successful trial run.

COIR CORP replied (June 2020) that as it wanted to implement the project in the shortest possible time, the bid submission date was fixed short. Since the IA was not able to furnish bank guarantee, a deduction of 10 to 25 *per cent* from bill amount was made which was released after six months of successful implementation of the project. Further, the software was under the warranty period of three years and an agreement was being entered into with the IA for future AMC.

However, COIR CORP did not comply with the provisions of the SPM and the tender conditions. By shortening the bid submission date, the PSU did not provide equal chance to all the prospective bidders to participate in the tender. The delay in entering into an agreement for the AMC would entail the risk of non/poor performance from the IA.

WAREHOUSING CORP

- As per the agreement with the IA (CDAC) in June 2019, the entire payment was to be released after the acceptance of individual modules. The agreement, however, did not provide for integration of individual modules, which was an essential characteristic of the ERP system.

  The GoK replied (September 2020) that payment was released after acceptance of each module and final payment was made only after completion (March 2020) of the project.

  The fact, however, remains that the integration of all individual modules was not specified as a payment milestone.

FOMIL

- As per the tender conditions, no advance payment could be made to any suppliers. The PSU, however, agreed to pay 50 *per cent* advance along with work order while issuing work order to the IA. The conditions under which the PSU agreed to pay the advance, were not forthcoming from the records made available in audit.

  FOMIL replied (June 2020) that in the absence of subject expert with the company, management believed the IA and released the payment.

5.1.4 Procurement of Hardware

The Guidelines also stipulated that no e-governance initiative should plan for common IT infrastructure like server since the facility in the State Data Centre could be made use of and duplicate expenditure avoided.

Audit, however, observed that out of eight PSUs covered in audit, only CASHEW CORP explored the possibility of using State Data Centre (who offered free hosting) for their data storage needs. While TCCL used the existing server, COIR CORP was hosting database through Amazon Web Services and incurred ₹2.68 lakh (from March 2017 onwards) as

> CASHEW CORP has entered into an agreement with KELTRON for hosting its database in the Cloud VMs of State Data Centre, thus avoiding extra expenditure for own server.

hosting charges. In the case of remaining five PSUs, four PSUs (TTPL, FOMIL, WAREHOUSING CORP and HORTICORP) spent ₹9.49 lakh for procuring the server machines. The amount spent by KEL for procuring the server, however, could not be ascertained from the documents produced in audit.

The GoK replied (September 2020) that WAREHOUSING CORP procured the server machine as per the advice of IA and the server was running without any issues. The services provided by State Data Centre were not available when TTPL procured their server. HORTICORP procured the hardware through KELTRON as there were no technical experts in the PSU.

FOMIL replied (June 2020) that the procurement of server was made without the knowledge that common state level facilities existed. COIR CORP replied (June 2020) that server space was not available in IT Mission when it approached them in 2013-14. In-house server was used for two to three years until it became non-functional. Amazon Web Services were availed by the company as their cost was cheaper compared to new server machine.

The replies were not acceptable as the procurement of hardware by PSUs was not in line with the Guidelines issued by GoK. Further, COIR CORP did not ascertain the availability of server space with the State Data Centre/ IT Mission before it opted for Amazon Web Services in 2017 or thereafter. The reply regarding TTPL was to be seen against the fact that the Guidelines issued by GoK in September 2009 provided for use of common facilities like servers. Hence, procurement of server by TTPL in April 2011, *i.e.*, after 18 months of issue of the Guidelines was not justified.

5.1.5 Security of Hardware and Data

Of the eight PSUs, ERP systems of six PSUs (TCCL, TTPL, WAREHOUSING CORP, COIR CORP, HORTICORP and KEL) were either fully or partially operationalised (*i.e.*, some of the modules) and the PSUs used live production servers to host their data. The security of hardware and data assumed importance as any loss of data could cripple their operations from short to medium duration.

5.1.5.1 Information security policy

As per the Guidelines, an organisation should either use Information Security Policy published by KSITM (based on CERT-IN) or use a modified version to suit their requirement. Audit, however, noticed that none of the six PSUs adopted Information Security Policy of KSITM or prepared a modified version.

The GoK replied (October 2020) that TTPL now formulated documented information security policy and necessary steps were being initiated by TCCL and WAREHOUSING CORP for the same.

5.1.5.2 Server security

As per the System Security Guidelines issued by CERT-IN, physical access to a server should be limited to only the administrator and other server operators. Audit, however, noticed that this was not ensured in five PSUs and only HORTICORP complied with this requirement. In fact, in TCCL and TTPL, main server and hot back-up server machines were kept in a room which was accessible to other staff for use of common printer kept therein. In WAREHOUSING CORP, the server machine was kept in a photocopy room adjacent to the visitor's room.

The GoK replied (October 2020) that TTPL and WAREHOUSING CORP have now ensured sever room security and entry was restricted to authorised persons only.

5.1.5.3 Database security

As per the Database Server Security Guidelines issued by CERT-IN, database server supplying information to a website should never be on the same machine as the web server. In the case of WAREHOUSING CORP and KEL, Audit, however, observed that the web server and database server were located in the same server machine. In WAREHOUSING CORP and HORTICORP, though the server was connected to the internet, the database was not protected by any firewall.

Audit also noticed that the ERP system of HORTICORP faced a ransomware[102] attack in August 2016. Though all the files were decoded by the malware, they were restored from the backup server in KELTRON and an antivirus software was installed in the server in December 2016. The validity of the software, however, expired in December 2017 and the server remained without the protection of an antivirus software or a firewall since then.

The GoK replied (September/ October 2020) that implementation of firewall and related security systems which were part of the computerisation plan of WAREHOUSING CORP was progressing. KEL has installed an end point security business software for data security. In the case of HORTICORP, an antivirus software was installed for database security.

However, the ERP system implemented by WAREHOSUING CORP was functioning without any firewall protection. The other PSUs initiated action after the same were pointed out by Audit.

5.1.5.4 Data backup policy

It was observed that all the PSUs had either manual or automatic back-up systems. In the case of COIR CORP and CASHEW CORP, the responsibility for data backup was entrusted to their respective data storage service providers. The other PSUs, however, did not have a documented data backup policy as stipulated by the System Security Guidelines.

The GoK replied (September/ October 2020) that TTPL formulated new IT policy which includes data backup policy and data of HORTICORP was backed up in backup server in KELTRON. The data of WAREHOUSING CORP would be backed up in the State Data Centre.

COIR CORP replied (June 2020) that data backup was done by the IA on weekly basis.

[102] Ransomware is a type of malicious software that threatens to publish the victim's data or block access to it.

However, the PSUs except TTPL were yet to formulate a documented data backup policy as required under the Guidelines which may weaken the regular data backup procedures and audit trail.

5.1.6 Other Related Issues

5.1.6.1 Training, documentation and change management

The Guidelines stipulated that all users and stakeholders of the new system shall be imparted knowledge about the new systems to ensure proper use and operation of applications and infrastructure. The Guidelines read with Regulation No. 161 of Regulation on Audit and Accounts issued by the CAG of India also required that all documentations such as the URS, FRS, SRS, design documents, change control documents, training materials, source code *etc*. shall be kept under safe custody of the IT Division so that maintenance and change management are carried out smoothly.

It was observed that COIR CORP did not maintain change control documents, source code *etc*. while none of the prescribed documents were available in KEL. Though all the PSUs entered into agreements/ issued work orders with specific clauses for imparting training in the new software, computer illiteracy was a major impediment in ERP implementation in the case of WAREHOUSING CORP and KEL.

The GoK replied (September/ October 2020) that the IA of KEL imparted training, but there was high reluctance from employees due to poor computer literacy which delayed the implementation. WAREHOUSING CORP was providing training to their employees.

COIR CORP replied (June 2020) that they have demanded the IA to provide change control and source code.

However, COIR CORP completed the project in February 2014, but the request was made to the IA only after it was pointed out by Audit.

5.1.6.2 Role of KELTRON as a Total Solution Provider in HORTICORP

As per Government Order (February 2000), role of TSPs in IT project implementation was limited to aid the clients in preparation of feasibility studies, technical evaluation of bids, preparation of SRS, assisting in tendering process, onsite support after implementation *etc*. The TSPs were also required to follow all the instructions in the Guidelines scrupulously, lest it would result in revocation of their TSP status. KELTRON was the TSP in the case of HORTICORP. Audit, however, observed that:

- HORTICORP decided to appoint its IA on nomination basis without following transparent tendering process in a meeting (July 2015) where representatives of both IA and KELTRON were present. Though it was the duty of KELTRON as TSP to point out the non-compliance to the Guidelines regarding selection of IA, KELTRON did not object to the non-compliance.

The GoK replied (October 2020) that tendering process was not followed as the supplier of weighing machine suggested the IA as they had integrated ERP software of the IA.

The reply was not acceptable as the Guidelines stipulated that application development involving a third party agency shall be through a transparent tendering process.

- KELTRON also failed to advise HORTICORP regarding the use of common IT infrastructure, usage of free and open source software and to ensure that proper system study and technical analysis were carried out prior to project rollout.

  The GoK replied (October 2020) that upgradation/procurement of the weighing machine and its installation was only the scope of work. KELTRON proceeded with the procurement of these facilities only after the receipt of completion certificate of the pilot phase of project from HORTICORP.

  The reply was not tenable as the scope of work of KELTRON as TSP included turn-key implementation of ERP initiative in HORTICORP.

Recommendation 5.1: The GoK/PSUs may ensure that the Guidelines for implementation of e-governance initiatives are complied with while implementing ERP systems so that such projects are completed in a time bound manner and intended benefits achieved.

5.2 Electrical energy management by Public Sector Undertakings in the manufacturing sector

Delay in conducting energy audit, failure to achieve specific energy consumption norms, non-availing of open access facility *etc*. led to extra expenditure and non-achievement of energy savings.

Energy[103] management activities in India are governed by the Energy Conservation Act, 2001 (Act). Government of Kerala (GoK) accords high priority to energy conservation and energy efficiency and issued guidelines (May/ November 1992) for conducting energy audit and directions (June 2015) to regulate energy consumption standards for equipment and appliances. Bureau of Energy Efficiency (BEE) is established under the Act to coordinate with designated consumers, designated agencies and others. Energy Management Centre (EMC) is the State Designated Agency to coordinate, regulate and enforce the provisions of the Act/ guidelines/ directions.

[103] As per Section 2(h) of Energy Conservation Act, 2001, energy means any form of energy derived from fossil fuels, nuclear substances or materials, hydro-electricity and includes electrical energy or electricity generated from renewable sources of energy or bio-mass connected to the grid.

A sample of nine[104] out of thirty Public Sector Undertakings (PSUs) functioning in the manufacturing sector was selected as per Stratified Random Sampling Method[105] for assessing the level of compliance to the Act/ guidelines/ directions and evaluating the implementation of energy conservation measures during the period 2016-17 to 2018-19. Audit findings in this regard are discussed below:

5.2.1 Delay in conducting energy audit

As per the GoK directions (1992/2015) read with Government Order (January 2011), all HT/EHT installations should conduct energy audit once in three years.

Audit observed that out of nine PSUs selected for audit, energy audit was not conducted in STL so far (October 2019). Though SILK conducted first energy audit in 2008, subsequent energy audits were not conducted till October 2019. In the case of remaining six[106] PSUs, delay ranging from 7 to 59 months was noticed in conducting the latest energy audit which was due between May 2012 and March 2019. The energy audit conducted by MCL, KMML and KSCMMCL did not include all their HT/EHT connections[107].

Regarding delay in conducting energy audit, the GoK replied (October/ November/ December 2020) that SILK planned to conduct energy audit during July 2020, which did not materialise due to Covid-Pandemic situation. TCCL conducted the energy audit only in February 2019 due to selecting energy auditor from the BEE's empanelled list. Further, KMML and TTPL had initiated steps for conducting the energy audit for its units. KCCL missed one energy audit due to retirement of key personnel and STL would take immediate steps to conduct energy audit.

TELK replied (September 2020) that the energy audit was conducted and report submitted to EMC in September 2020. Regarding not conducting energy audit of all the units, the PSUs replied that steps were initiated to conduct the energy audit of these units.

The fact, however, remains that non-conducting of energy audit or delay in conducting it would lead to delayed identification of areas for energy efficiency and conservation with probable energy savings. The reply of GoK regarding TCCL was not correct as the delay was due to failure of the PSU to ensure technical qualification of the L1 firm before opening the price bid which led to cancellation of the tender. Further**,** as STL and SILK did not conduct any energy audit and

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[104] Travancore Cochin Chemicals Limited (TCCL), Malabar Cements Limited (MCL), The Kerala Minerals and Metals Limited (KMML), Kerala State Coir Machinery Manufacturing Company Limited (KSCMMCL), Travancore Titanium Products Limited (TTPL), Keltron Component Complex Limited (KCCL), Steel Industrials Kerala Limited (SILK), Sitaram Textiles Limited (STL) and Transformers and Electricals Kerala Limited (TELK).

[105] Based on energy consumption bill data.

[106] TCCL, KMML, KSCMMCL, TTPL, KCCL and TELK. Since the last energy audit of MCL was conducted in April 2016, next audit was due in April 2019.

[107] Mines at Walayar of MCL, Mineral Separation Unit and Titanium Sponge Plant of KMML and the administrative building of KSCMMCL.

KMML did not claim the subsidy though it conducted energy audits, these PSUs did not receive the subsidy[108] from EMC.

Audit also noticed that EMC was appointed (January 2011) as the State Designated Agency to coordinate, regulate and enforce the provisions of the rules[109] in force. EMC, however, did not regularly monitor the conduct of energy audit and follow-up measures implemented by the PSUs.

EMC stated (July 2020) that empanelled energy auditors would be directed to incorporate details including status of implementation of previous energy audit and recommendations in energy audit report.

5.2.2 Non-achievement of specific energy consumption targets

As per Perform Achieve and Trade (PAT) Rules 2012[110], the designated consumers[111] are required to achieve specific energy consumption[112] target over a cycle of three years. Any shortfall in achieving the target is compensated by purchasing required number of Energy Savings Certificates (ESCerts). As per Section 26 of the Energy Conservation Act, 2001, non-compliance of the above would attract a penalty of ₹10 lakh in addition to ₹10,000 per day for continued failures. The performance of the designated consumers, MCL and TCCL, under PAT cycle-I (1 April 2012 to 31 March 2015) and PAT cycle-II (1 April 2016 to 31 March 2019) was examined in audit.

Audit noticed that MCL failed to achieve the specific energy consumption target of 0.1050 and 0.1011 Ton of Oil Equivalent (TOE) per ton of finished product in PAT cycle-I and PAT cycle-II respectively. As a result, MCL has a liability to purchase 16,522 nos. (3,958 nos. for PAT cycle-I and 12,564 nos. for PAT cycle-II) of ESCerts costing ₹74.35 lakh[113]. Since MCL did not purchase any ESCerts so far (December 2019), it was also liable to pay penalty of ₹60.80 lakh[114] as per Section 26 of the Energy Conservation Act, 2001. Further, the non-achievement of specific

[108] EMC provides subsidy of ₹50,000 or 50 *per cent* of the cost incurred, whichever is less, to PSUs for conducting energy audit.

[109] The Energy Conservation Act 2001, Guidelines issued by the GoK in May 1992 and November 1992 and the Directions issued by GoK in June 2015.

[110] Energy Conservation (Energy Consumption Norms and Standards for Designated Consumers, Form, Time within which, and Manner of Preparation and Implementation of Scheme, Procedure for Issue of Energy Savings Certificate and Value of Per Metric Tonne of Oil Equivalent of Energy Consumed) Rules, 2012, which is known as PAT Rules, 2012.

[111] Government of India notified consumers from 11 energy intensive sectors (*i.e.*, Thermal power stations, Fertilisers, Cement, Iron and Steel, Chlor-Alkali, Aluminium, Railways, Textile, Pulp and Paper, Petroleum Refinery and Electricity Distribution Company) as designated consumers. Out of nine PSUs selected for audit, TCCL (Chlor-Alkali) and MCL (Cement) are designated consumers.

[112] Specific energy consumption refers to all the energy used to perform an action or manufacture something. In a factory, total energy consumption can be measured by looking at how much energy a production process consumes.

[113] As per the last traded rate of ₹450 per ESCerts at Indian Energy Exchange, the liability amounts to ₹17.81 lakh in PAT cycle-I and ₹56.54 lakh for PAT cycle-II.

[114] ₹60.80 lakh = ₹10 lakh + ₹10,000 x 508 days.

energy consumption norms resulted in excess consumption of fuel amounting to ₹80.05 crore[115] for the PAT cycle-II (1 April 2016 to 31 March 2019).

The GoK replied (November 2020) that MCL could not achieve capacity utilisation due to interruptions in continuous running of plant caused by external factors like sluggish market demand which affected the energy efficiency of the entire plant.

The reply was, however, silent as to why MCL did not approach BEE for revising the target, citing unfavourable market conditions. Further, MCL did not purchase ESCerts even after receiving directions (November 2017) from EMC in this regard.

5.2.3 Excess power consumption by non-designated PSUs

In the case of non-designated PSUs, Audit reviewed the existence of power consumption norms and power consumption pattern against such norms, if any.

Audit observed that four[116] out of seven PSUs did not fix any norms for power consumption. In the case of remaining three[117] PSUs, the consumption of power was higher than the norm fixed by them. The excess power consumption over the norms ranged between 0.47 *per cent* (TTPL) and 13.90 *per cent* (KMML) during 2016-17 to 2018-19. This resulted in extra expenditure of ₹11.36 [118] crore.

The GoK replied (November/ December 2020) that the specific energy consumption of TTPL was fixed for a daily production of 45 tons and the excess compared to the norm was due to non-achievement of this production level. Further, steps were being taken to fix the range of specific energy consumption under different production levels. The GoK replied that STL achieved the norms in 2016-18, but the power consumption increased in 2018-19 due to the increase in capacity utilisation.

TELK/KSCMMCL replied (September/December 2020) that steps were being taken for fixing norms for consumption of energy for different productions levels, production mix *etc*.

The GoK reply was silent on the reasons for the excess consumption of power in KMML. The reply regarding TTPL was also not acceptable as no production level was stipulated for achieving the specific energy consumption at the time of fixing the norm. Further, the norm was revised from 1,200 kWh to 1,150 kWh in May 2016 based on the performance in 2015-16 and no revision was made thereafter which indicated that the norm was achievable. The reply regarding STL was not tenable as increase in capacity utilisation would ideally help to achieve the norm.

5.2.4 Non-utilisation of open access facility for purchase of power

As per Section 42 of the Electricity Act 2003, Kerala State Electricity Regulatory Commission introduced (2013) open access scheme enabling the electricity users

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[115] Calculated based on the average cost of High Speed Diesel in 2017-18.
[116] KSCMMCL, TELK, SILK and KCCL.
[117] KMML, TTPL and STL.
[118] KMML (₹10.87 crore), TTPL (₹33.96 lakh) and STL (₹14.55 lakh).

having more than 1 MW connected load to avail the benefits of cheap power by purchasing it from the open market.

Audit noticed that out of seven PSUs[119] which were eligible to avail the open access facility, only two PSUs, KMML and TCCL, utilised the facility from 2015-16 and 2017-18 onwards respectively. There were savings of ₹13.37 crore to KMML and ₹8.72 crore to TCCL on account of purchasing power using the open access facility up to 2018-19.

The GoK confirmed (December 2020) that STL did not initiate steps for availing open access facility for purchase of power. KCCL would explore the possibilities of utilisation of open access facility.

Out of the remaining five PSUs, three PSUs, MCL, TTPL and TELK, had EHT connections and there was scope for availing power through open access facility to minimise the cost of power.

5.2.4.1 Audit noticed that MCL applied for no objection certificate from Kerala State Electricity Board Limited (KSEBL) in April 2013. But, instead of pursuing the application pending with KSEBL, MCL initiated (August 2013) steps for obtaining legal opinion on an agreement proposed to be entered into with Power Trading Corporation of India for purchasing power through open access. The legal opinion was received only in April 2017. MCL lost four years in obtaining the legal opinion and took another two years for obtaining no objection certificate from KSEBL, which was received only in July 2019. Power purchase through open access could be commenced only from November 2019 onwards. As per information furnished by MCL, though the plant was not running full-fledged, it could achieve savings of ₹2.75 lakh for the month of November 2019 by using the open access facility.

The GoK replied (November 2020) that MCL applied for NOC and waited for the NOC in good faith. But, there was delay from KSEBL in giving the NOC which could be realised in later years. The legal opinion was obtained only to ensure correctness of the proposed agreement.

The reply was not tenable as it was silent on why MCL waited for four years (April 2013 to April 2017) for obtaining the legal opinion instead of pursuing the application pending with KSEBL for the NOC. During this period, MCL did not take any steps to comply with the directions (April 2013) of KSEBL for installation of required meters and other facilities. This was also confirmed by the Managing Director in an exit meeting with the audit team. Considering the benefit of ₹2.75 lakh achieved in November 2019 when the plant was not running full-fledged, MCL lost an opportunity to save ₹1.32 crore for these four years.

5.2.4.2 Despite initiating steps (March 2017) for availing open access, TTPL could not avail open access facility due to revision of specifications and non-supply of Availability Based Tariff (ABT) meter by KSEBL.

[119] MCL, TCCL, KMML, TELK, TTPL, KCCL and STL.

The GoK replied (November 2020) that steps were initiated by TTPL for installation of ABT meter and to avail power from open access.

5.2.4.3 TELK, however, did not take any action for purchasing power through open access till date (December 2019).

TELK stated (September 2020) that steps were taken to explore the possibilities of open access facility.

5.2.5 Non-implementation of solar power projects

The Budget Speech 2013-14 of the GoK encouraged the PSUs to set up solar energy units. GoK also issued directions (July/December 2013) to six[120] out of nine PSUs selected for audit to implement solar energy units.

Audit observed that four[121] out of the six PSUs set up solar energy units as directed by GoK. In the case of the remaining two PSUs, TELK did not take any steps to comply with the directions of the GoK. KMML did not implement the solar energy unit as it was not financially viable (2014) and due to closure (2018) of a scheme for roof top solar project under Renewable Energy Service Company (RESCO) model[122] implemented by Solar Energy Corporation of India Limited. Audit noticed that implementation of solar energy project would have reduced the liability of KMML towards purchase of Renewable Energy Certificates for fulfilling Renewable Purchase Obligation[123].

It was further noticed that MCL failed to claim subsidy of ₹ six lakh[124] from Ministry of New and Renewable Energy (MNRE) for implementing the solar energy project. After it was pointed out by Audit, MCL claimed (October 2019) the same, which was yet to be received.

The GoK replied (November 2020) that there was no intentional delay on KMML's part in implementing the solar project. Further, MCL was not eligible for MNRE subsidy as it comes under industrial building under State PSU.

TELK replied (September 2020) that the possibilities of implementing roof top solar project were being explored.

However, as per the notification (November 2015) of MNRE, subsidy was not available to commercial and industrial buildings of the private sector but was

[120] KMML, MCL, TELK, TTPL, TCCL and STL.
[121] MCL, TTPL, STL and TCCL.
[122] Under this model, there is no capital investment by KMML and regular upkeep of the facility will be done by the supplier for 25 years.
[123] As per Kerala State Electricity Regulatory Commission (Renewable Energy) Regulations, 2015, 2017 and 2019, KMML was liable to purchase Renewable Energy Certificates for a certain percentage (ranged from 4.50 *per cent* to 12 *per cent*) of the total energy availed through open access from renewable sources.
[124] Cost capital subsidy of 30 *per cent* of the project cost limited to ₹30 per Watt peak for Photovoltaic Systems without battery backup.

available for an industrial building under a State PSU. In the case of other PSUs, they were yet to comply with the direction (2013) of the GoK.

5.2.6 Lapses in energy requirement planning and efficiency improvement measures

As per the tariff orders of KSEBL approved by the Kerala State Electricity Regulatory Commission, 75 *per cent* of the Contract Demand (CD) or the actual Recorded Maximum Demand (RMD) whichever is higher is considered as the billing maximum demand. If the RMD exceeds the CD, RMD is billed at 1.5 times. The tariff orders from time to time also provide for incentives[125] to HT and EHT consumers for power factor[126] (PF) improvement. An increase in PF above 0.90 would thus reduce energy charges. If the PF falls below 0.90, one *per cent* of energy charges for reduction of every 0.01 unit is charged in addition to the applicable charges.

5.2.6.1 Analysis of the contract demand and the actual consumption pattern from the monthly electricity bills of nine PSUs (total 13 connections) from April 2016 to March 2019 was made in audit. In four connections of three PSUs[127], the actual RMD was in the range of 15.25 *per cent* to 67.83 *per cent* of the CD. The PSUs did not analyse the need for reducing the CD and act accordingly which resulted in avoidable expenditure of ₹54.14 lakh[128].

TTPL replied (January 2020) that on implementation of the ongoing projects, the total power requirement would be 3,850 KVA. TELK replied (September 2020) that KSEBL insisted (2016) for upgradation of equipment in the TELK substation for reduction of CD. TELK added that as the planned upgradation of the equipment would take time, it would again request KSEBL to reduce the CD. KSCMMCL replied (December 2020) that full level of production was not yet started and more machinery were being installed and assured that steps would be taken to reduce the CD to a safer level.

Audit, however, noticed that the energy audit reports of these PSUs also recommended for reduction in contract demand which was not yet complied with.

5.2.6.2 Analysis also revealed that seven PSUs[129] achieved PF above 0.90 in all the three years (total eight connections). Out of this, TCCL obtained PF incentive of 10 points for 34 months and nine points for two months. In the remaining five connections, three PSUs (KMML-2, KSCMMCL-2 and SILK-1) paid penalty of ₹7.21 lakh during this period for reduction in PF below 0.90. Continued reduction

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[125] 0.50 *per cent* vide Kerala Gazette Order No. 782 dated 21/04/2017, 0.25 *per cent* vide Kerala Gazette Order No. 1305 dated 28/11/2012, No. 2652 dated 9/9/2013 and No. 2379 dated 27/09/2014.

[126] Power Factor (PF) expresses the ratio of true power used in a circuit to the apparent power delivered to the circuit.

[127] Two connections in KSCMMCL, one connection each in TTPL and TELK.

[128] Excess contract demand is worked out by taking difference between the actual connected load and the connected load recommended in energy audit reports. This excess contract demand is multiplied with applicable fixed charges.

[129] TCCL, MCL, TTPL, TELK, KCCL, SILK (one connection) and STL.

in the PF and payment of penalty indicated that the PSUs failed to investigate the reasons for poor PF and take remedial action. Though the energy audit report recommended (April 2018) replacement of capacitor in one of the HT connections, KMML replaced the capacitor only in June 2019 despite paying penalty for PF reduction on a regular basis.

The GoK and PSUs (January/ October 2020) replied that steps were being taken to improve the power factor.

Recommendation 5.2: The GoK/PSUs may accord priority for undertaking timely energy audit, to identify energy efficiency and conservation areas including availing open access facility in order to achieve efficient use of energy. A senior management level oversight mechanism may be contemplated to monitor the achievement in this regard.

5.3 Operation of Modern Rice Mills by Public Sector Undertakings

Non-procurement of adequate quantity of paddy by the PSUs led to underutilisation/ idling of paddy processing capacity established by incurring ₹21.85 crore. Further, only a meagre quantity of the total rice produced was channelled through Public Distribution System, leading to non-achievement of the objectives of providing fair price for paddy to the farmers and rice at reasonable rates to the consumers.

The Government of Kerala (GoK) accorded (between January 2000 and January 2017) approval for establishing five Modern Rice Mills (MRMs) with the objective of ensuring fair price for paddy to the farmers and providing rice at reasonable rate to the consumers. Establishment and operation of the MRMs were entrusted to four Public Sector Undertakings (PSUs), *viz*., Kerala State Warehousing Corporation (KSWC), Oil Palm India Limited (OPIL), Kerala Agro Industries Corporation Limited (KAICO) and Kerala State Palmyrah Products Development and Workers' Welfare Corporation Limited (KELPALM). None of these PSUs had any previous experience in operating MRMs. The details of MRMs are indicated in **Table 5.1**

Table 5.1: Details of MRMs planned/established by GoK up to 2018-19

Sl. No.	Location of MRM (District in brackets)	Project cost	Actual cost incurred	Installed capacity	Time of completion	PSUs to which operation was entrusted
		(₹ in crore)		MT/year		
1	Thakazhi (Alappuzha)	1.70	0.54	12,000	Abandoned	KSWC
2	Vaikom (Kottayam)	8.00	9.91	12,000	May 2012	OPIL
3	Alathur (Palakkad)	1.26	2.40	6,000	November 2008	KSWC and OPIL
4	Sulthan Bathery (Wayanad)	0.25	0.46	300	January 2019	KAICO
5	Kallepully (Palakkad)	9.61	1.61	14,400	Under construction	KELPALM
Total		**20.82**	**14.92**	**44,700**		

As of March 2019, only the MRM at Vaikom was in operation. The MRM at Thakazhi was abandoned (March 2005) after completion of the civil works[130] due to labour dispute. The MRM at Alathur commenced operation under KSWC in November 2008 but was closed down in June 2010 due to paucity of working capital and lack of qualified technical staff. The MRM was again operated, this time by OPIL from September 2018 to December 2018 and thereafter remained inoperative. The MRM at Sulthan Bathery, though completed in January 2019, is yet to commence operations as rectification works for defects noticed during trial run (March 2019) were continuing as of December 2019. The MRM at Kallepully is under construction as of March 2019.

Audit analysed the working of the MRMs at Vaikom and Alathur which were in operation during the period 2014-15 to 2018-19 and noticed the following:

5.3.1 Underutilisation of production and storage capacity

The Detailed Project Report (DPR) of MRM at Vaikom stated that paddy was readily available in the surrounding area of the MRM and was to be procured directly from these farmers. Further, GoK authorised (February 2011) OPIL to procure paddy in the same manner as it was being done by The Kerala State Civil Supplies Corporation Limited[131] (Supplyco). The DPR envisaged 90 *per cent* capacity utilisation to be achieved by the third year of operation.

OPIL, however, could not procure the required quantity of paddy for operating the MRM at 90 *per cent* capacity even after seven years of operation. During the period 2014-15 to 2016-17, the capacity utilisation of Vaikom MRM ranged between 40.11 *per cent* (2015-16) and 59.20 *per cent* (2016-17). The low capacity utilisation was attributed to the inadequate storage facility. Accordingly, as approved (August 2013) by GoK, OPIL constructed (February 2016) a silo[132] storage facility having capacity

[130] The building was being used as a godown by KSWC.
[131] A State Public Sector Undertaking acting as an agency for procurement of paddy from the farmers and distribution of rice through the Public Distribution System (PDS) in Kerala.
[132] A silo is a tall tower used for storing grain, cement *etc.*

to store 5,000 MT in one paddy season[133] at a total cost of ₹9.37 crore. The silo was put to use from 30 September 2016 to 23 December 2017 and was idling thereafter. Audit observed that even after commissioning of the silo, procurement of paddy did not improve and the capacity utilisation reduced to 42.72 *per cent* in 2017-18 and to 34.55 *per cent* in 2018-19. The investment made in the construction of silo, therefore, proved unfruitful despite OPIL's claim (September 2016) that 100 *per cent* capacity utilisation was attainable with the commissioning of the silo.

OPIL attributed shortfall in procurement of paddy from 2017-18 onwards to shortage of working capital due to non-receipt of State Incentive Bonus (SIB)[134] from GoK. Audit observed that though OPIL claimed the SIB from time to time, GoK released only ₹0.43 crore in 2014-15 and ₹2.17 crore in 2018-19. As of March 2019, an amount of ₹18.72 crore was yet to be received from GoK on account of SIB. The delay in releasing SIB, thus, affected the working capital position of OPIL and led to low procurement of paddy leaving the capacity of the MRM and the silo underutilised.

The GoK confirmed (September 2020) that the underutilisation of production capacity was due to absence of storage facility up to 2016-17 and thereafter due to lack of working capital and stated that GoK decided (August 2020) to release ₹8.63 crore to OPIL as part of SIB. GoK also stated that as envisaged in the DPR, OPIL was ready to procure paddy from the local farmers. But the variety of paddy available in the Kuttanad (Alappuzha) region was mainly 'Unda' and it was not economically viable for OPIL to procure this variety alone.

The reply was not acceptable as the MRM was established to support the local farmers by providing a ready market for their paddy. Also, the primary objective of MRM was to make use of the paddy available in the surrounding area as envisaged in the DPR.

5.3.2 Sale of rice

Ensuring availability of rice at reasonable rates to the consumers was one of the objectives of establishing the MRMs. As per the DPR of MRM at Vaikom, rice was to be distributed in the open market as well as through the Public Distribution System (PDS).

OPIL sold rice in the open market at the price fixed by it from time to time based on market conditions, including the price of its competitors. Up to 2016-17, OPIL sold the entire quantity of rice (14,811.28 MT) in the open market without resorting to sales through PDS. GoK also did not ensure that the MRM effected sales through PDS until October 2017 when a meeting was convened between the Minister for Agriculture and the Minister for Food and Civil Supplies wherein it was decided to sell the entire quantity of rice produced at the MRM through Supplyco. The MRM, however, sold only 3,839 MT of rice to Supplyco during 2017-19 while 5,741.18

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[133] Paddy harvesting seasons are October to December and February to April every year.

[134] SIB is the difference between the Minimum Support Price for paddy fixed by Government of India and the price at which GoK authorised OPIL to procure paddy from the farmers.

MT was sold in the open market. Thus up to 2018-19, out of the total sales of 24,391.46 MT, 84.26 *per cent* was sold in the open market against the objective envisaged in the DPR. As the price of rice sold in open market was fixed based on market conditions, the objective of ensuring availability of rice at reasonable rates to the consumers could not be achieved.

The GoK replied (September 2020) that the processing charges (₹2.14 per kg) paid by Supplyco for rice sold under PDS was meagre considering the overall cost of production. At certain stages, deviating from the DPR, the Company was constrained to resort to open market sale so as to run the company in a profitable manner.

The reply was not acceptable as since inception, all the rice produced by the MRM was sold in the open market. The direction (October 2017) of the GoK to sell all the rice produced by the MRM through PDS was also not complied with as it sold 60 *per cent* of rice produced during 2017-19 in the open market.

5.3.3 High level of immature paddy

As per the norms[135] fixed by Food Corporation of India (FCI), immature, shrunken and shrivelled grains in the paddy should not exceed three *per cent* of the total quantity of the paddy procured from farmers.

In the case of paddy procured by the MRM at Vaikom during 2014-19, the percentage of immature paddy, however, ranged between 5.83 *per cent* (2015-16) and 9.86 *per cent* (2017-18) with an average of 8.01 *per cent.* Considering the average cost of paddy procured during this period, the excess immature paddy over the norm resulted in extra expenditure of ₹3.18 crore. It was further noticed that OPIL did not reduce the procurement price of paddy in proportion to the excess immature paddy, though it did so in the case of excess moisture content of the paddy.

The GoK replied (September 2020) that OPIL categorised all the impurities in the paddy as immature paddy and its total percentage was within the norm of 13 *per cent* fixed by FCI. Though the impurities in the paddy available in Alappuzha and Kottayam districts were comparatively high, OPIL procured paddy in order to protect the interests of farmers.

The reply was not acceptable. Since FCI prescribed separate norms for each category of impurity, OPIL should have categorised the impurities in line with the FCI norms. Even while accepting paddy with high impurities from farmers, OPIL should have reduced the procurement price of such paddy in proportion to the excess immature paddy as it did in the case of excess moisture content.

[135] Foreign matter - two *per cent*, Damaged, discoloured, sprouted and weevilled grains – five *per cent*, Immature, shrunken and shrivelled grains - three *per cent*, Admixture of lower class – six *per cent* and Moisture content - 17 *per cent*.

5.3.4 Loss due to reduced yield

As per the DPR of MRM at Vaikom, 68 *per cent* yield was to be achieved from the paddy processed by it.

The actual yield achieved by the MRM during the period 2014-15 to 2018-19, however, ranged between 56.11 *per cent* and 61.48 *per cent* only. Considering the yield as per the DPR, there was shortage in yield to the tune of 2,394.14 MT of rice valuing ₹7.35 crore[136]. OPIL, however, did not analyse the reasons for low yield and take corrective action to achieve the yield envisaged in the DPR.

The GoK replied (September 2020) that the target depicted in DPR would vary based on the actual situation of each project. The actual yield ranged between 56.11 *per cent* and 61.48 *per cent* was quite near to the target of 68.00 *per cent* in DPR.

The reply was not acceptable as operation of the MRM would not be economically viable without ensuring the yield envisaged in DPR. Further, the yield showed a declining trend warranting action from OPIL to analyse the reasons for such decline.

5.3.5 Operational performance

The operational performance of MRM at Vaikom during 2014-15 to 2018-19 was as indicated in **Table 5.2**:

Table 5.2: Operational performance of MRM at Vaikom

(₹ in crore)

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
Total revenue	12.47	12.21	18.07	15.19	11.98
Total expenses	13.13	13.09	18.89	15.79	15.16
Loss	0.66	0.88	0.82	0.60	3.18
Loss as a percentage of total revenue	5.29	7.21	4.54	3.95	26.54

Audit observed that the MRM incurred loss in all the years since 2014-15 and the same increased every year resulting in an accumulated loss of ₹6.14 crore as of March 2019. The MRM incurred loss even after selling 84.26 *per cent* of the rice through open market at competitive rates. The major reasons that contributed to this loss was shortage in the yield of rice (average yield of 58.93 *per cent* during 2014-15 to 2018-19) and underutilisation of production capacity.

The GoK replied (September 2020) that except during 2018-19, the loss incurred was not extensive. From 2013-14 to 2018-19, OPIL could fully recover the depreciation during three years and the operational result before providing for depreciation was nominal in two years. The loss during 2018-19 was attributed to the non-release of SIB. In the Exit Conference, OPIL stated (September 2020) that it had to match the price of rice according to the market which led to the loss. OPIL accepted that low capacity utilisation was one of the major reasons for the loss.

[136] Based on the average sales realisation during 2014-15 to 2018-19.

The reply was not acceptable. The MRM incurred loss on account of underutilisation of capacity and low yield while OPIL did not take measures to improve the utilisation of production capacity of the MRM and investigate the reasons for low yield.

5.3.6 Lack of continuity in revival activities

The MRM at Alathur was implemented at a total cost of ₹2.40 crore with an installed capacity of 6,000 MT *per annum*. Since commissioning in November 2008, the MRM was operated for a period of 19 months till June 2010 and processed 738 MT of paddy. The effective utilisation, thus, worked out to 7.77 *per cent* of installed capacity. Audit observed that neither GoK nor KSWC took the initiative to revive the MRM until June 2018, when GoK decided to entrust the operation of the MRM to OPIL for a period of one year. Regarding the future operation of the MRM, KSWC decided (October 2018) to conduct a technical evaluation using an external agency and assess the present value of the mill based on the direction of GoK. Though KSWC overhauled the MRM incurring ₹17 lakh before handing it over, OPIL operated the MRM only for a period of 81 days[137] and processed 294.44 MT of paddy. As the revival activities were not followed up by technical evaluation and arrangements for continuing the operations, the MRM remained idle thereafter leaving the investment of ₹2.57 crore unfruitful.

Though the MRM at Alathur was not in operation since June 2010, KSWC did not temporarily disconnect the high tension electrical service connection of the MRM until a firm decision on the continued operation was taken. As a result, KSWC incurred electricity charges of ₹33 lakh for the service connection from October 2010 to September 2018.

The GoK replied (September 2020) that OPIL could operate the MRM only for a short period due to lack of sortex machine, weigh bridge, storage facility *etc*. The MRM needed complete overhauling and KSWC entrusted an expert from Kerala Agriculture University to conduct a technical evaluation and further action would be taken based on the evaluation report. It was also replied that steps have been taken to minimise the electricity charges of the MRM in view of its non-functioning. If the service connection was disconnected, restoration of the same would take time and cost.

The reply was not acceptable as no initiative was taken by KSWC or GoK to revive the MRM until June 2018. Though KSWC decided (October 2018) to conduct a technical evaluation, the report was not yet received (September 2020). Further, for a period of eight years, electricity charges were paid though the MRM remained unused.

Thus, non-procurement of adequate quantity of paddy by the PSUs led to underutilisation and/ or idling of paddy processing capacity established by incurring

[137] 24 September 2018 to 13 December 2018.

₹21.85 crore[138]. Further, only a meagre quantity of the total rice produced was channelled through the Public Distribution System. These led to non-achievement of the objectives of providing fair price for paddy to the farmers and rice at reasonable rates to the consumers.

Recommendation 5.3: GoK may ensure a support ecosystem to the PSUs selected for operating the MRMs to tackle the problems associated with the new line of business. For instance, a back-to-back arrangement with the Supplyco could have provided operational synergy to achieve the intended objectives of the MRMs.

Kerala State Road Transport Corporation

5.4 Construction and utilisation of Bus Terminals-cum-Shopping Complexes

Failure of the Corporation in augmenting non-operating income through shopping complexes due to inefficiencies in planning and implementation of projects, non-development of envisaged projects and underutilisation of completed projects.

Kerala State Road Transport Corporation (Corporation) decided (January 2005) to construct 19 bus terminals-cum-shopping complexes (BTSCs) for augmenting non-operating revenue. As of November 2019, the construction of six[139] BTSCs was completed and six[140] BTSCs were under construction, while seven[141] BTSCs were not developed. As of November 2019, the Corporation incurred ₹51 crore for 12 BTSCs (six completed and six under construction). Audit examined the level of compliance to relevant rules and procedures in the construction of six BTSCs (three[142] completed and three under construction[143]). The utilisation of commercial built-up area was examined in all the six completed BTSCs while two[144] non-developed BTSCs were randomly selected to examine the reasons for non-development. Thus, out of 19 BTSCs, 11 were covered in the audit, details of which are given in ***Appendix 8***. The audit findings in this regard are discussed below:

5.4.1 Planning and implementation of BTSCs

5.4.1.1 As per Section 1601.1.6 of the Kerala Public Works Department (PWD) Manual, a revised estimate shall be prepared and got sanctioned when there are deletions, additions or alterations to the scope of the work as originally sanctioned, when there are major structural alterations from the originally sanctioned design, when the cost of a work is likely to exceed by more than five *per cent* of technically sanctioned amount. This shall be done as soon as any two of the above conditions

[138] Cost incurred for establishing MRMs at Alathur (₹2.40 crore) and Vaikom (₹9.91 crore), construction of silo in the MRM at Vaikom (₹9.37 crore) and overhauling of MRM at Alathur (₹0.17 crore).

[139] BTSCs at Kottarakkara, Kasargod, Kattakkada, Nedumangad, Neyyattinkara and Payyannur.

[140] BTSCs at Thodupuzha, Malappuram, Haripad, Nilambur, Muvattupuzha and Pathanamthitta.

[141] BTSCs at Palakkad, Kottayam, Eenchakkal, Pala, Munnar, Fort (Thiruvananthapuram) and Karunagappally.

[142] BTSCs at Nedumangad, Neyyattinkara and Payyannur which were completed after 2014.

[143] BTSCs at Thodupuzha, Malappuram and Haripad selected based on their cost of construction.

[144] BTSCs at Kottayam and Palakkad.

are anticipated during the course of execution of the work. As per the Delegation of Powers of the Corporation, approval for the revised estimate is to be obtained from the Board of Directors (BoD).

Audit observed that there were changes to the scope of work in five[145] out of six BTSCs[146] requiring approval of revised estimate. The Corporation, however, did not obtain approval of the BoD for the revised estimates of three[147] BTSCs while in the case of Thodupuzha and Nedumangad BTSCs, the approval was obtained after a delay of 11 to 16 months. In the case of Nedumangad BTSC, the unjustified delay in approving the revised estimate delayed the payment to the contractor and therefore delayed the completion of the BTSC by a year resulting in loss of license fee amounting to ₹10.46 lakh[148].

The Corporation replied (September 2020) that as per the practice followed till 2017, bills were settled after approval of revised estimate by the Chairman and Managing Director for projects which were completed within the sanctioned amount. Since the Payyannur and Neyyattinkara BTSCs were completed before 2017 and within the sanctioned amount, approval of the BoD was not obtained. In the case of Thodupuzha and Nedumangad BTSCs, approval of the BoD was obtained and the revised estimate of Haripad BTSC was prepared for submission to the BoD.

The reply was not acceptable as the practice followed by the Corporation till 2017 was not in line with the PWD Manual. The reply was silent on the delay in obtaining approval for the revised estimate from the BoD.

5.4.1.2 As per Clauses 1.03 to 1.10 of the agreement with the architect, a preliminary design shall be submitted to the Corporation for approval which shall be revised as directed by the Corporation. The architect, thereafter, shall submit complete working drawings to commence the work. Thus, the civil works were to be commenced after the Corporation approved the design submitted by the architect. As per Clause 1.13 of the agreement with the architect, the Corporation was entitled to claim damages or recover the fee payable to the architect if they failed to do the work in a satisfactory manner.

Audit observed that the Corporation noticed (September/ October 2013) significant defects in structural designs of BTSCs at Nedumangad and Thodupuzha when the civil works were in progress. So, the structural designs and estimated costs were revised later (October 2014/ February 2015). This indicated that the Corporation failed to detect the defects in the structural designs before its approval. The Corporation blacklisted (October 2014) the architect of Nedumangad BTSC only and did not assess and recover the cost of damages suffered due to the defects in design and released (October 2015) the full payment (₹9.50 lakh) to the architect of

[145] BTSCs at Payyannur, Neyyattinkara, Nedumangad, Thodupuzha and Haripad.
[146] Selected by Audit for examining the level of compliance to relevant rules and procedures in the construction.
[147] BTSCs at Payyannur, Neyyattinkara and Haripad.
[148] Basement 12 shops (1,135 sq. ft.x ₹35 x 12 months) = ₹4,76,700 and Ground floor 9 shops (1,898 sq. ft.x ₹25 x 12 months) = ₹5,69,400.

Nedumangad BTSC.

The Corporation replied (September 2020) that the architect of Thodupuzha BTSC was given only part payment and no further payments would be released. The Corporation did not engage him for any further projects. Action against the architect of Nedumangad BTSC was initiated when the project was nearing completion. Engaging another architect at that stage would have caused delay. As the work was completed, full payment was released to the architect.

The reply was not acceptable as the Corporation did not assess and recover the cost of damages from the architect despite enabling provisions in the agreements with them.

5.4.1.3 As per the Government Order (March 2013) approving the construction of BTSCs, the cost of construction was to be financed by the Corporation through Interest Free Security Deposits (IFSD) mobilised from prospective tenants. Hence, the Corporation was to ensure that the BTSCs had adequate commercial built up area and that the minimum IFSD fixed for each shop was sufficient to cover the cost of construction. Further, the Corporation issued guidelines to the architect stating that the commercial space in the building as per the design submitted by them should be prime and sufficient to justify the viability of the BTSCs.

Audit observed that the Corporation did not ensure adequacy of the commercial built up area earmarked in each BTSC so as to mobilise the required IFSD as detailed below:

Out of the three completed BTSCs examined, the Corporation could not mobilise IFSD equivalent to the cost of construction in Payyannur and Nedumangad BTSCs. The construction of Payyannur and Nedumangad BTSCs was completed in 2015 incurring ₹5.14 crore and ₹9.66 crore respectively. However, as of September 2019, the IFSD collected was only ₹3.30 crore in Payyanur BTSC and ₹6.61 crore in Nedumangad BTSC.

In respect of Payyannur BTSC, the inflow of passengers to the BTSC was low as it was located away from the main town and a considerable number of buses proceed to their destination without entering the BTSC. As of October 2019, 15 out of 40 shops in the BTSC remained vacant. The wrong selection of site for the BTSC, therefore, adversely affected the realisation of IFSD.

In the case of Nedumangad BTSC, the Corporation did not complete the construction of a standalone building with commercial built-up area of 4,390 sq. ft. as planned. The Corporation did not give any reason for not completing the construction which led to foregoing the opportunity to mobilise the IFSD for 4,390 sq. ft.

The expected IFSD[149] based on the available commercial built up area in the ongoing BTSCs at Haripad, Thodupuzha and Malappuram was ₹4.01 crore, ₹8.00 crore and ₹2.26 crore as against their estimated construction cost of ₹6.45 crore, ₹14.98 crore

[149] Expected IFSD for all the three BTSCs was calculated @ ₹6,000 per sq. ft. approved by the BoD for Haripad BTSC as no specific rate was approved for other BTSCs.

and ₹7.90 crore respectively. Up to September 2019, the Corporation mobilised[150] ₹1.39 crore as IFSD from Thodupuzha BTSC while no IFSD could be mobilised from Malappuram[151] and Haripad BTSCs. The Corporation stopped (March 2019) the construction of these BTSCs due to shortage of funds.

In the case of Thodupuzha BTSC, bids received in respect of 10 shops in the tender-cum-auction conducted in May 2017 were not accepted as the minimum IFSD fixed for these shops was not offered. Next tender-cum-auction was conducted in August 2018 and the Corporation allotted six shops. It was noticed that in the case of four of these shops, the minimum IFSD fixed by the Corporation was lower than the IFSD offered in the previous tender-cum-auction. Hence, the allotment of four shops in August 2018 led to reduced collection of IFSD amounting to ₹19.56 lakh

The Corporation replied (September 2020) that the expected IFSD could not be fetched due to unpredicted variations in the economic situation of the country. The plan for operating all the buses from Payyannur BTSC could not be implemented due to local and political reasons. New ways for subletting/ leasing the commercial space in Payyannur BTSC were being explored. The construction of standalone building at Nedumangad BTSC was postponed due to poor response to the tender-cum-auctions. It was now envisaged to lease out the standalone building as a whole to interested parties. In the case of Haripad, Thodupuzha and Malappuram BTSCs, the Corporation was planning to lease the entire commercial area and pre-bid meeting for the same was conducted for Haripad BTSC**.**

The reply was not acceptable. The Corporation could not mobilise the required IFSD in completed projects even after five years of their completion. The reply was silent on the efforts taken by the Corporation to operate all buses from the Payyannur BTSC. In the case of Nedumangad BTSC, commercial built-up area was only 16.10 *per cent* of the total built-up area. Considering the average IFSD actually realised for the shops already rented out, this was not sufficient to recover the cost of construction. The reply was not specific to the audit comment regarding the possibility of not recovering the cost of construction in the BTSCs under construction due to inadequate commercial built-up area.

5.4.1.4 As per Rules 4 and 17 of the Kerala Municipality Building Rules, 1999 (KMBR), permission for construction of a building shall be obtained from the Municipality concerned and deviation from the approved plan shall not be made unless a revised permit is obtained. Further, as per Section 235AA of the Kerala Panchayat Raj Act 1994, an unauthorised construction would be liable to property tax at twice the normal rate.

Audit observed that in Neyyattinkara BTSC, the Corporation did not provide 10-meter splay at both sides of the exit point as per the approved plan. The Municipality refused (January 2016) to issue the building completion certificate for Neyyattinkara BTSC due to non-adherence to the approved plan and imposed property tax at twice the normal rate for 18 months from October 2015. This led to payment of additional

[150] Including amount receivable (₹0.47crore) from the tenants towards subsequent instalments.
[151] Though the Corporation allotted one shop and collected IFSD of ₹0.08 crore, the tenant requested for refund of IFSD subsequently.

property tax amounting to ₹4.57 lakh. Further, as the Municipality refused to grant license for commencing business in the BTSC stating that the construction was unauthorised, four bidders withdrew from the allotment made to them and the Corporation had to refund IFSD of ₹50.95 lakh. As agreements were executed with these four bidders to rent out the shops for two years, the withdrawal also resulted in loss of license fee for two years amounting to ₹3.44 lakh[152].

The Corporation replied (September 2020) that there was no violation of KMBR in the construction of the BTSC. It did not widen the exit of the BTSC as per the design because it would be conducive for unauthorised parallel transport services that operated in the area.

The reply was not acceptable as the non-widening of exit points in line with the design approved by the Municipality was not in compliance with the KMBR. The reply also indicated that the unauthorised parallel service was a known issue which was not considered while designing the BTSC.

5.4.1.5 As per Rule 4 of KMBR, a building permit issued by the Municipality is valid for three years from the date of issue and can be extended up to nine years provided that it is extended before expiry of the original validity. As per Rule 54 (4a) of KMBR, a certificate of approval from the Director of Fire Force and a No Objection Certificate (NOC) from Kerala State Pollution Control Board (PCB) were also required for issuing building permits. The Corporation had entrusted the architect with the responsibility of obtaining necessary statutory permissions.

Audit observed that the Corporation did not renew the building permits of Thodupuzha and Haripad BTSCs though their validity expired in December 2016 and August 2018 respectively. As the building permits were not renewed before their expiry, the Corporation faced the risk of non-receipt of further extensions. Similarly, NOC from the PCB was not obtained for Haripad and Malappuram BTSCs. For Thodupuzha BTSC, the NOC from PCB which expired in September 2019 was not renewed.

Audit also noticed that though the construction of Payyannur BTSC was completed in October 2015, the Municipality granted building numbers only in June 2016 due to non-completion of fire and safety measures. This led to delay in entering into tenancy agreements and resulted in loss of license fee amounting to ₹11.69 lakh.

The Corporation replied (September 2020) that it applied (August 2015) for renewal of the building permit of Haripad BTSC, but the same was pending. Further directions from the Municipality in this regard were being awaited. Necessary steps would be initiated to renew the permit of Thodupuzha BTSC at the earliest. NOC from PCB was obtained after completion of the Sewage Treatment Plant (STP) works. The STP works of Thodupuzha BTSC have commenced while that of Haripad and Malappuram BTSCs were yet to commence. The firefighting works at Payyannur BTSC could not be carried out due to financial constraints.

[152] Three shops - ₹2,85,600 (*i.e.* ₹25 x 476 sq. ft. x 24 months) and one shop - ₹57,960 (*i.e.,* ₹35 x 69 sq. ft. x 24 months).

5.4.1.6 The GoK sanctioned (December 2012/ March 2013) a special loan of ₹30 crore for meeting initial expenses related to the construction of 14 BTSCs[153]. The loan carried interest of 13.50 *per cent* and penal interest of 2.50 *per cent* in case of default. The loan was to be repaid in three years commencing from one year from the date of drawal of the loan. The Corporation was to furnish detailed statement of expenditure incurred out of the loan and utilisation certificate to the GoK. A monitoring committee was also to be constituted to ensure the completion of the BTSCs by January 2015.

Audit observed that the Corporation availed the loan during January to March 2013, but has not repaid the loan yet (October 2019). Out of the 14 BTSCs, the Corporation could complete (October 2015) only one BTSC (Payyannur) while the works of six BTSCs were stopped due to shortage of funds. The Corporation could not commence construction of seven BTSCs till October 2019 despite GoK earmarking ₹18 crore[154] out of ₹30 crore for these BTSCs. Further, the Corporation did not adhere to the directions of GoK regarding constitution of monitoring committee, furnishing of utilisation certificate and statement of expenditure incurred.

The Corporation replied (September 2020) that directions have been issued to properly record the utilisation of all funds received from GoK and to maintain individual project-wise accounts in future.

5.4.2 Utilisation of completed BTSCs

5.4.2.1 As of November 2019, 54.39 *per cent* of the total commercial built-up area (88,483 sq. ft.) in the six completed[155] BTSCs remained vacant. Audit observed that the Corporation did not issue any guidelines regarding the frequency of tendering or constitute a centralised monitoring mechanism to oversee the vacancy position of commercial built-up area in the BTSCs. This lead to unjustified delay in conducting tender-cum-auction in three BTSCs as detailed below:

Though tenders were invited at regular intervals in the case of Kottarakkara and Kattakada BTSCs, commercial area of 5,357 sq. ft. (32.78 *per cent*) and 4,176 sq. ft. (26.40 *per cent*) respectively remained vacant owing to the high vacancy position in second floor in these BTSCs (Kottarakkara-3,932 sq. ft. and Kattakada-4,176 sq. ft.). Further, unlike the other BTSCs, Kottarakkara BTSC was located separately from the already existing bus terminal. In the case of Kasargod BTSC, though tenders were invited regularly, 25,405 sq. ft. (65.59 *per cent*) of commercial built-up area including 6,745 sq. ft. in the second floor remained vacant due to poor demand.

In Payyannur BTSC, the Corporation did not conduct tender-cum-auction since October 2017. As of November 2019, 38.02 *per cent* of the total commercial built-

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[153] BTSCs at Payyanur, Thodupuzha, Haripad, Malappuram, Karunagappally, Munnar, Muvattupuzha, Pathanamthitta, Thiruvananthapuram, Palakkad, Pala, Kottayam, Eenchakkal and Nilambur.

[154] Munnar- ₹1 crore, Fort-Thiruvananthapuram- ₹1 crore, Palakkad- ₹2 crore, Karunagappally- ₹2 crore, Kottayam- ₹3 crore, Eenchakkal- ₹4 crore and Pala- ₹5 crore.

[155] Kottarakkara, Kasargod, Kattakkada, Nedumangad, Neyyattinkara and Payyannur.

up area of 11,632 sq. ft. remained vacant. In Neyyattinkara BTSC, 40.42 *per cent* of the total commercial area of 6,551 sq. ft. remained vacant since the latest tender-cum-auction conducted in June 2018. In Nedumangad BTSC, 6,934 sq. ft. out of the total commercial area of 10,038 sq. ft. remained vacant since the tender-cum-auction in December 2017. The next tender-cum-auction was conducted (March 2019) after 15 months, in which four shops (1,399 sq. ft.) were rented out.

The Corporation replied (September 2020) that it invited tenders for all the vacant shops in Payyannur BTSC in January 2020 and March 2020, but the response was poor. Though tenders were invited for 18 shops of Neyyattinkara BTSC in February 2020, only three shops could be rented out. In the case of Nedumangad BTSC, there were no responses for the latest tender invited in January 2020.

However, the fact remains that there was considerable gap in conducting regular tenders for renting out vacant shops in the BTSCs. The reply was also silent on the efforts taken to rent out vacant shops in Kasargod, Kottarakkara and Kattakkada BTSCs.

5.4.2.2 As per the terms and conditions of tender-cum-auction, IFSD received from the licensee shall be refunded within three months after the contract period.

Audit observed that as of November 2019, the Corporation did not refund IFSD of ₹1.58 crore payable to 21 tenants in Payyannur, Kasargod and Malappuram BTSCs[156]. The delay in refund of IFSD ranged from 4 to 14 months.

5.4.3 Non-developed BTSCs

As per Section 2003 of the PWD Manual, 100 *per cent* hindrance free possession of the land should be ensured before bids are invited for a work.

Out of the ₹30 crore special loan sanctioned by GoK, ₹3 crore and ₹2 crore were earmarked for the BTSCs at Kottayam and Palakkad respectively. Audit observed that the works for construction of Kottayam and Palakkad BTSCs were awarded in March 2015 and March 2016 respectively. But the Corporation did not hand over the site to the contractors even after a lapse of 10 to 19 months as there was protest (April 2015) against re-location of employees in Kottayam BTSC. In the case of Palakkad BTSC, the Corporation could not evict the office of the Employees Co-operative Society from the site. The Corporation did not proceed with the construction of the BTSCs due to shortage of fund despite incurring ₹52.04 lakh towards consultancy and other charges.

The Corporation, meanwhile, requested (May/ July 2018) the GoK to include Kottayam BTSC under KIIFB[157] project. The Corporation obtained (July 2019) administrative sanction from the GoK for construction of Palakkad BTSC using the Legislative Assembly Constituency Asset Development Fund of ₹7.10 crore. Details

[156] Payyanur BTSC-10 cases – ₹87.00 lakh; Kasargod BTSC -11 cases- ₹63.39 lakh and Malappuram BTSC - one case- ₹8.00 lakh.

[157] Kerala Infrastructure Investment Fund Board (KIIFB) was established by the GoK with the main objective of providing investment for projects in the State of Kerala in sectors like Transport, Water Sanitation, Energy, Social and Commercial Infrastructure, IT and Telecommunication *etc*.

of further progress in this regard were awaited (October 2019).

The Corporation replied (September 2020) that it could not make available the free possession of the land due to various political issues/ other reasons. At present, the work of Palakkad BTSC was under progress using MLA-LAC-ADS[158] fund.

Thus, the Corporation completed only six out of 19 BTSCs even after 15 years. The deficiencies in planning and implementation of the BTSCs led to delay in completion. This also resulted in loss of license fee, payment of additional property tax and refund/ inadequate collection of IFSD to the tune of ₹1.01 crore. Further, the delay in conducting tender-cum-auction to rent out the vacant spaces in the completed BTSCs resulted in underutilisation of commercial area.

Recommendation 5.4: Construction activities may be carried out complying with all the relevant rules and regulations and avoiding procedural delays in case of revision in plans. Efforts may be made to utilise the vacant spaces in completed BTSCs so that the objective of construction of BTSCs is achieved.

Kerala State Poultry Development Corporation Limited and Kerala Agro Industries Corporation Limited

5.5 Idling of investment

Delay in completing civil works, deficiency in tendering and unjustified denial of consultancy fee resulted in avoidable delay in completing the project and idling of investment amounting to ₹7.31 crore.

The Government of Kerala (GoK) approved (May 2011) a proposal by Kerala State Poultry Development Corporation Limited (Company) for setting up an Environmentally Controlled Hi-Tech Commercial Layer Farm (ECHCL farm) at a cost of ₹10.00 crore at Kudappanakunnu in Thiruvananthapuram. The Company later decided (January 2014) to change the type of farm from ECHCL to High-Tech Commercial Layer Farm of 'Open Type Housing with Collapsible Walls with Battery Cages having Automatic Feeding System, Egg Collection and Manure Removal System' (Open Type farm) on the ground that the protocol for operation of ECHCL farms in India was not standardised. Rooh Global Traders (Consultant) was appointed (June 2014) as the consultant for the project at a fee of 4.70 *per cent* of the project cost. The GoK released (July 2011 to July 2014) ₹9.80 crore to the Company for implementing the project. As of May 2020, the project was yet to be commissioned though the Company incurred ₹7.31 crore.

Audit examined the implementation of the project by the Company and observed the following:

- The project included three major areas of works *viz*., civil works, procurement and installation of machinery and super-structural works. The civil works were

[158] Legislative Assembly Constituency-Asset Development Scheme (LAC-ADS) was constituted (June 2012) by GoK for creating durable capital assets under the ownership of Government for which ₹ five crore is earmarked annually to each Member of Legislative Assembly for their respective constituencies.

to be completed first. The Company awarded (January 2015) the supply and installation of machinery for ₹4.62 crore to Big Dutchman Agriculture (India) Private Limited with a scheduled delivery in April 2015. The Company awarded the civil works to Kerala Agro Industries Corporation Limited (KAICO), a Public Sector Undertaking in March 2015 and stipulated three months for the completion of works. Subsequently, the Company entrusted (June 2015) additional works such as cutting of trees and blasting of rocks in the work site to KAICO without defining any specific timeframe for completion. The civil works were not completed before the delivery of the machinery which was delivered in June/ July 2015 and had to be stored in a temporary shed constructed at Kudappanakunnu incurring ₹13.27 lakh. KAICO completed the civil works only in March 2016.

- The Central Vigilance Commission (CVC) had stated[159] (December 2002) that the prequalification criteria for a tender needs to be fixed in advance specifying the minimum qualification, experience and number of similar works executed. Further, the term 'similar works' is to be clearly defined. Rule 9.1 of the Stores Purchase Manual (SPM) states that all the aspects to be accounted for evaluating the tenders are to be incorporated in the tender enquiry document without any ambiguity. No new condition should be brought in while evaluating the tenders. As per Rule 7.50 of the SPM, while inviting tenders in two-bid system, the technical bids are to be opened in the first instance and evaluated with reference to the parameters prescribed in the tender documents. In the second stage, the financial bids of only the technically acceptable offers are to be opened for further scrutiny, evaluation, ranking and placement of contract.

  The Company awarded (December 2015) the super-structural works to KAICO to be completed in June 2016. KAICO, in turn, re-tendered (December 2016) the works as only two bids were received in response to the first tender (February 2016). Though the criteria for qualifying in the technical evaluation in the re-tender stated that the contractor should be capable of supplying and erecting similar type of material including pre-fabricated structures, it did not define the term 'similar type of material'. A Technical Committee, including representatives of the Company, the Consultant and KAICO, prequalified (January 2017) only one out of the four bids received on the ground that the remaining three bidders lacked experience in sandwich panel work. For getting more competitive bids, KAICO opened (February 2017) the financial bids of two out of the three bidders who were not prequalified. After evaluation, KAICO recommended to select the lowest bidder who happened to be one of the bidders who failed in the technical evaluation. As the Consultant objected to this, the Company referred (June 2017) the matter to the Chief Technical Examiner, Department of Finance, GoK through the Department of Agriculture.

  The Chief Technical Examiner stated that the action of the Technical Committee to reject the bids citing lack of previous experience in sandwich panel construction without specifying the same in the notice inviting tenders was not in order. Based on this, the Agriculture Department directed (March 2018) the

[159] Vide Office Memorandum No. 12-02-1-CTE-6.

Company to re-tender the works. Thus, ambiguous eligibility criteria in the tender document led to defective evaluation of tenders and delay in implementation of the project from March 2017 to March 2018.

Further, as per directions issued (May 2015) by GoK, Public Sector Undertakings shall follow e-Government[160] procurement for all tenders above ₹5 lakh. The estimated cost of super structural works awarded to KAICO was ₹2.46 crore. While inviting tenders for executing the work, KAICO, however, did not follow e-Government procurement.

- The Company floated (July 2014) tender for the supply of machinery based on the specifications furnished by the Consultant. Though the Consultant was eligible to receive fee at 4.70 *per cent* of the value of machinery, the Company decided (April 2016) not to pay the consultancy fee amounting to ₹17.61 lakh on the ground that it directly procured the machinery. Since the Company did not pay the fee as agreed, the Consultant refused to provide revised estimate for floating fresh tender for the super-structural works. The Company referred the matter to Law Department, GoK as directed (October 2019) by the Minister for Agriculture, GoK. The Law Department advised (January 2020) to pay the consultancy fee after ascertaining whether there was any breach of agreement conditions on the part of the Consultant. The unjustified denial of consultancy fee, thus, stalled the project from March 2018 onwards.

- As per the agreement with Big Dutchman Agriculture (India) Private Limited for supply and installation of machinery, the warranty of the machinery would be up to 18 months from the date of delivery. As the machinery was delivered in June/July 2015, the warranty of the machinery expired in January 2017 and the machinery has been idling for 60 months up to May 2020. The Company might have to incur additional expenditure if any repairs were necessitated due to prolonged storage of the machinery.

The GoK replied (November 2020) that the Company has admitted to lapses in project management which was caused by absence of qualified technical manpower, dependence on accredited agencies, differing interpretations of agreement conditions and the absence of a proper technical advisory/ oversight mechanism within the Company. It was assured that GoK shall ensure that adequate mechanisms were in place to avoid such lapses in future. The project was estimated to be completed within six months.

The GoK reply was to be seen against the fact that the project sanctioned by GoK in 2011 was yet to be completed despite incurring ₹7.31 crore and ₹2.49 crore out of the ₹9.80 crore released by GoK remained unutilised since March 2017.

Thus, the delay in completion of civil works, deficiency in tendering and unjustified denial of consultancy fee resulted in avoidable delay in completing the project and

[160] It is the e-Submission Tender System of GoK that enables the tenderers to download the Tender Schedule free of cost and then submit the bids online through the portal 'www.etenders.kerala.gov.in'.

idling of investment amounting to ₹7.31 crore[161].

***Recommendation 5.5: Necessary steps may be taken to avoid such lapses in future so as to complete the projects in a time bound manner*.**

The Plantation Corporation of Kerala Limited

5.6 Non-achievement of intended benefits

Stoppage of construction works due to non-obtaining of Government approval for revised estimate leading to non-achievement of intended benefits even after 12 years from the initial sanction of the project, despite incurring an expenditure of ₹5.62 crore.

As per Section 1601.1.6 of the Kerala Public Works Department Manual, a revised estimate must be prepared and got sanctioned: (a) when there are deletions, additions or alterations to the scope of the work as originally sanctioned, (b) when there are major structural alterations from the design as originally sanctioned, (c) when the cost of a work is likely to exceed by more than five *per cent* of technically sanctioned amount. The revised estimate should be prepared and approval obtained when any two of the above conditions are anticipated and the same should not be held back for approval till the work is completed or reaches an advanced stage of completion.

The Plantation Corporation of Kerala Limited (the Company) decided (December 2007) to construct an office-cum-shopping complex in order to utilise the commercial potential of the land situated along the National Highway at Kozhikode and to earn rental income. The projected profit and loss statement of the project envisaged a profit after tax of ₹7.02 crore by 10th year. Based on a proposal forwarded (January 2008) by the Company, the Government of Kerala (GoK) accorded (August 2008) administrative sanction to the Company for the construction of an office-cum-shopping complex having nine floors at a total cost of ₹5.80 crore. The Company modified (November 2010) the design of the office-cum-shopping complex to comply with the requirements of town planning authorities and to ensure maximum use of available land. Due to this revision, the number of floors increased from nine to eleven and the project cost increased to ₹8.10 crore. The Board of Directors (BoD) approved (November 2010) the tendering of the works, limiting the expenditure within the amount sanctioned (₹5.80 crore) by GoK and directed the Company to obtain revised administrative sanction for ₹8.10 crore. Accordingly, the work was tendered (March 2013) reducing the scope of work to seven floors so as to limit the expenditure within the amount sanctioned by GoK. The construction work was awarded in September 2013 and was to be completed by June 2015[162]. Out of the total area of 31,696 sq. ft. tendered for construction, only 11,706.17 sq. ft. (36.93 *per cent*) could be completed till June 2016 and the works were stopped

[161] Purchase of machinery ₹4.62 crore, civil works ₹1.62 crore and ₹1.07 crore towards consultancy fee, customs duty, bank charges *etc*.

[162] Later extended up to May 2016.

thereafter. As of March 2017, the Company incurred ₹5.62 crore[163] for the project. Audit observed that:

- The Company did not obtain administrative sanction from the GoK for the revised estimates though the conditions stipulated in the Kerala Public Works Department Manual necessitated obtaining sanction for the revised estimate. The direction (November 2010) of BoD and the recommendation (March 2016) of the consultant to obtain revised administrative sanction for the work were also not complied with by the Company as of November 2020. Hence, the Company could not continue the construction works as it did not possess administrative sanction to incur expenditure beyond ₹5.80 crore though sufficient funds were available[164].

- The GoK, while approving the project, had directed (August 2008) the Company to avoid time and cost escalations. But the Company tendered the works only in March 2013 despite obtaining the building permit in September 2011. Due to delay in implementation of the project, the estimated cost (₹5.85 crore) of the works awarded (March 2013) to the contractor increased by ₹2.37 crore when it was revised in March 2016. The reasons for delay in tendering were not forthcoming from the files made available to Audit.

- While requesting (January 2008) the Government for administrative sanction for the project, the Company had prepared a financial viability report according to which the project ensured an Internal Rate of Return of 10.50 *per cent.* Audit, however, noticed that the Company did not review the viability of the project whenever the project cost was revised.

The GoK replied (November 2020) that it had accorded administrative sanction to the Company for construction of an office-cum-shopping complex having nine floors. The Company, however, did not seek sanction from the Government when the number of floors was increased to eleven by the consultant of the project.

Thus, stoppage of construction works due to non-obtaining of Government approval for revised estimate led to non-achievement of the intended benefit of earning rental income even after 12 years from the initial sanction of the project, despite incurring an expenditure of ₹5.62 crore.

Recommendation 5.6: Appropriate action may be taken to avoid recurrence of similar lapses while executing projects so as to achieve the intended benefits of the project. Further, the financial viability of the project may be reviewed in view of the time lapse and cost escalation and steps may be taken to complete the construction in a time bound manner to achieve the benefits of investment made without further delay.

[163] Civil works - ₹5.31 crore and Consultancy and other fees - ₹0.31 crore.

[164] Fixed deposits available at the end of 2014-15: ₹111.69 crore, 2015-16: ₹67.85 crore, 2016-17: ₹50.04 crore and 2017-18: ₹48.04 crore.

Kerala State Electronics Development Corporation Limited

5.7 Avoidable loss

Purchase of Tablet PCs for sale through single tender system without analysing the demand, compounded by complete lack of efforts to market the same resulted in liquidation of stock at reduced price resulting in loss of ₹39.72 lakh

As per Stores Purchase Manual (SPM) (Rule 7.11) whenever the estimated value of the contract is ₹10 lakh or more, procurement should be carried out through open tender system. SPM allows (Rule 7.20) single tender system for procurement when the articles required are of a proprietary character and competition is not expected to be advantageous. As per Central Vigilance Commission (CVC) guidelines (July 2007), open tendering is the most preferred mode of tendering, but procurement can also be done through private negotiation where the supplier or contractor has exclusive rights in respect of the goods or services and no reasonable alternative or substitute exists.

Kerala State Electronics Development Corporation Limited (Company) decided (January 2014) to enter into the business of Tablet PCs through one of its units, Keltron Communication Complex (KCC). The Company anticipated demand for the Tablet PCs from Government Departments, educational institutions and business organisations across the country. The Company proposed (January 2014) to enter into an agreement with Intel Technologies India (Intel) for manufacturing the Tablet PCs under ‘Keltron Intel’ brand. The Company also proposed to market the Tablet PCs in the consumer market and Government Departments across the country through Info Gnet Solution India. Accordingly, as advised by Intel (January 2014), the Company placed (January 2014) purchase order with Intel’s Original Device Manufacturer of Tablet PCs, Elite Group Computers System Co. Ltd., Taiwan for supply of 500 Tablet PCs at the rate of ₹9,011.26 *per unit*. The Company received the Tablet PCs in July 2014, incurring a total cost of ₹55.75 lakh[165] (*i.e.* ₹11,150 *per unit*) and fixed the selling price at ₹17,000 *per unit.* As of December 2019, the Company was, however, able to sell only 333 units while 39 units were issued for internal use and 33 units were kept for replacement under warranty/testing leaving 95 units in closing stock.

In this regard, Audit observed that:

- The Company selected Intel as the manufacturer of Tablet PCs to be marketed by it without adopting a transparent procedure. The procurement was made through single tender system though the conditions stipulated by SPM/CVC guidelines for resorting to it were not fulfilled.
- The Company decided to purchase the Tablet PCs without any market study, but based on the interest expressed by some Government Departments. However, no records were available to indicate that these Government Departments were

[165] Cost price ₹45.06 lakh, warranty charges ₹1.38 lakh, customs duty ₹7.99 lakh and freight insurance and other charges ₹1.32 lakh.

actually interested in buying the Tablet PCs. The placement of initial order for purchase of 500 units of Tablet PCs, therefore, lacked justification.

- The Company neither initiated any steps to launch the Tablet PCs in the target markets nor engaged Info Gnet Solution India to market the Tablet PCs. Instead, within one month of receiving the Tablet PCs, the Company offered (August 2014) to sell them to its employees at a reduced price of ₹14,700 per unit. The Managing Director also had confirmed that no effort was made by the officials concerned for marketing the Tablet PCs.

- During July to October 2014, the KCC unit of the Company could sell only 18 units at an average price of ₹14,117 *per unit*. After retaining eight units, the KCC unit transferred (January 2015) 474 units to Information Technology Business Group[166] (ITBG) unit of the Company to sell the Tablet PCs. Since the ITBG unit also could not improve the sales (only 13 units were sold up to August 2016), a Committee was constituted (December 2017) for liquidating the Tablet PCs. The Committee recommended (January 2018) sale of the Tablet PCs at ₹4,750 *per unit* among the employees of the Company. Since the demand was low even at this price, the Company was forced to further reduce (June 2018) the price to ₹2,000 *per unit*. As of March 2019, the Company, thus, sold a total of 333 units of which 275 units were sold to the employees of the Company at ₹2,000 *per unit*.

- The Company did not enter into an agreement with Intel as envisaged after the procurement of Tablet PCs in July 2014. The 95 units in stock and 33 units retained by Company for providing as replacement for damaged units under warranty were more than five years old and hence have become technologically outdated. In the absence of an agreement with Intel for technology up-gradation, which was a continuous process, these Tablet PCs cannot be updated either.

Thus, purchase of Tablet PCs for sale without analysing the demand and efforts to market the same resulted in liquidation of stock at reduced price resulting in loss of ₹39.72 lakh[167]. Further, the procurement of Tablet PCs did not comply with the requirements of SPM and CVC guidelines and thus lacked transparency.

The GoK replied (October 2020) that the Company entered into Tablet PC market considering the market trend in 2013. The Company held discussions with Intel, AMD *etc*. and Intel came forward to associate with the Company. Education sector was identified to establish the market and around 4.5 lakh Table PCs were required for E-learning project of GoK. The Company finalised the specifications in consultation with Education Department. The Company procured 500 Tablet PCs and proposed to give it to schools. As GoK could not proceed with the project, the Tablet PCs could not be sold. Being a customised product, it could not be marketed in other sectors. Further, the Company invited Expression of Interest for selection

[166] Engaged in the execution and after sales support of projects which include hardware and software products related to information technology.

[167] Loss on the sale of 333 units- ₹25.45 lakh and loss on account of obsolete stock of 128 units- ₹14.27 lakh.

of channel partners for marketing and participated (August 2014) in Intel Channel meet and in various exhibitions to market the Tablet PCs.

The reply was not acceptable as the Company should have called for expression of interest for selecting the manufacturer of Tablet PCs instead of informal/ undocumented communications. The reply regarding market identified by the Company was not convincing as the proposal seeking approval for entering into the Tablet PC market and purchasing 500 units did not mention that the Tablet PCs would be suitable only for education sector. Rather, the proposal was to cater to the consumer market as well as various government departments. The reply regarding marketing efforts was also not supported by any documentary evidence. The reply was also silent on the reasons for offering the Tablet PCs to employees of the Company immediately after the Tablet PCs were received.

Recommendation 5.7*: *New business activities may be undertaken after analysing demand for the proposed product and with an effective marketing mechanism to ensure its success.

Kerala Shipping and Inland Navigation Corporation Limited

5.8 Avoidable loss

Venturing into water sports project without assessing the environmental impact and obtaining prior approval from the Government resulted in loss of ₹28.81 lakh.

Kerala Shipping and Inland Navigation Corporation Limited (Company) was established (July 1989) with the main objective of establishing, maintaining and operating transportation services for the transport of goods and passengers in inland water in the State of Kerala or elsewhere. The Company initiated (October 2013) a proposal to enter into the business of water sports activities in four locations (*i.e.*, Kovalam, Varkala, Thanneermukkom and Bekal) in the State with a total expenditure of ₹62.10 lakh. This included capital expenditure of ₹57.10 lakh and a startup cost of ₹5 lakh. The Company projected an annual income of ₹2.26 crore against a projected annual expenditure of ₹2.06 crore, thus leaving a profit of ₹20 lakh from the project. The Managing Director invited (October 2013) a tender for purchase of equipment for operation at all the four locations. For implementing the project at Thanneermukkom, the Company procured (March 2014) water sports equipment incurring ₹20.37 lakh. Due to opposition from local population, the project could not be implemented. The water sports equipment were given out on hire for five months before being disposed of (March 2017) for ₹6.45 lakh. The Company did not implement the project at the other three identified locations also on the ground that it would entail additional cost for operation.

In this connection, Audit observed the following:

- The water sports activities at Thanneermukkom were proposed to be conducted in the Vembanad Lake. As per Section 4 (2) of Wetlands (Conservation and

Management) Rules, 2010[168] plying of motorised boat within the Vembanad-Kol wetland could be undertaken only if it was not detrimental to the nature and character of the biotic community and with the prior approval of the State Government.

The Company, however, neither undertook any study to assess whether the proposed water sports activities were detrimental to the nature and character of the biotic community nor did it obtain approval from the Government of Kerala (GoK). In the absence of such studies, the Company could not address the concerns of the fisher folk that the project would affect their livelihood. The Company also did not comply with the direction (September 2014) of the District Collector to conduct an environmental impact study to address the concerns of the fisher folk.

- The Articles of Association required the Company to obtain prior approval of the GoK for any programme or capital expenditure for an amount which exceeds ₹50 lakh[169]. Further, as decided (September 2007) by the Board of Directors (BoD), the Managing Director was authorised to sanction capital expenditure up to ₹10 lakh only.

  The total capital cost of the project as well as the estimated cost of equipment required for implementing the project exceeded ₹50 lakh. The Managing Director, however, approved the project and invited tenders for purchasing water sports equipment without taking prior approval of either the GoK or the BoD. The Company placed (March 2014) purchase orders for procurement of water sports equipment valuing ₹20.37 lakh for operation at Thanneermukkom only. The BoD was, however, informed of the Company's decision to venture into the water sports activities only in December 2014, when the implementation of the project was hindered due to opposition from the local fisher folk. The BoD did not take any action against the Managing Director despite non-compliance to the provisions of Articles of Association.

Thus, the Company incurred a total expenditure of ₹37.38 lakh[170] including operational expense of ₹17.20 lakh for the project without proper authority. The decision of the Company to venture into a new area of business without conducting an environmental impact study and obtaining approval from the Government also resulted in loss ₹28.81 lakh after adjusting ₹2.12 lakh earned as hire charges for the water sports equipment.

The GoK stated (November 2020) that it was of the Company's view that the operation of a speed boat *etc.* was not detrimental to the nature of a vast lake like Vembanad. The Company dropped the proposal when the environmental impact study was insisted upon as the cost of conducting the study was not economical. The GoK accepted that approval of the BoD was not obtained as required. The BoD was fully aware of the venture and the same person was the Chairman of the BoD and

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[168] Issued by the Ministry of Environment and Forests vide notification dated 24 March 2011.

[169] Amount revised (January 2016) to ₹1.00 crore.

[170] Including ₹20.18 lakh for procurement of water sports equipment (after deducting ₹0.19 lakh received as compensation against loss/ damage of equipment) and ₹17.20 lakh for wages, training cost, lease rent for use of IWAI terminal, operating charges, electricity *etc*.

the Managing Director at that time. Further, the expense incurred for Inland Waterways Authority of India (IWAI) terminals was a committed expenditure as it was taken on lease to explore the potential of cargo movement.

The reply was not acceptable as obtaining approval from the Government after ensuring that the project was not detrimental to the nature and character of the biotic community was a mandatory requirement. The Chairman of the BoD and Managing Director being one person does not relieve the Managing Director from obtaining prior approval from the BoD as required by the Articles of Association. The expense related to IWAI terminals was included in the expense incurred for water sports project as the Company had apprised (December 2014 and March 2015) the BoD that IWAI terminals were taken on lease solely for water sports activities.

Recommendation 5.8: Adherence to administrative and regulatory requirements may be ensured while taking up new projects for its successful implementation and to avoid bottlenecks that may lead to abandoning at a later stage.

Thiruvananthapuram,
The 23 March 2021

(K. P. ANAND)
Principal Accountant General
(Audit II), Kerala

Countersigned

New Delhi,
The 05 April 2021

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India

Appendices

Appendix 1
Summarised Financial Results of Power Sector Undertakings for the latest year for which accounts were finalised
(Referred to in Paragraph 1.9)

(₹ in crore)

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
1	Kerala State Power and Infrastructure Finance Corporation Limited	2017-18	2018-19	8.25	5.97	9.03	26.65	64.47	64.47	37.82
2	KINESCO Power and Utilities Private Limited	2017-18	2018-19	1.49	0.65	56.73	0.32	12.78	4.01	3.69
3	Kerala State Electricity Board Limited	2017-18	2018-19	85.27	-1,860.42	12,318.17	3,499.05	14,462.46	-1,472.08	-4,971.13
	Total			**95.01**	**-1,853.80**	**12,383.93**	**3,526.02**	**14,539.71**	**-1,403.60**	**-4,929.62**

Appendix 2

(Referred to in Paragraph 3.2)

Table (a): Statement showing carry forward of unused banked energy beyond the stipulated period of two accounting years

(Units in lakh)

Particulars	Accounting year (July to June)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Opening balance of banked energy	131.76	44.10	52.14	41.26	126.14	70.24
Commission on OB of banked energy	1.32	0.44	0.52	0.41	1.26	0.70
Banked energy used	168.74	91.03	161.53	26.37	98.6	74.02
Carry forward of banked energy	-38.30	-47.37	-109.91	14.48	26.28	-4.48
Fresh banking during the year	83.23	100.52	152.7	112.79	44.40	45.79
Balance of banked energy	44.93	53.15	42.79	127.27	70.68	41.31
Commission on fresh banking	0.83	1.01	1.53	1.13	0.44	0.46
Closing balance of banked energy	44.10	52.14	41.26	126.14	70.24	40.85

Table (b): Statement showing loss of revenue due to non-charging of commission for banked energy carried over to the next year

Accounting year of banked energy	Accounting year to which energy was carry forwarded	Quantity of energy carry forwarded	Banking commission@ one *per cent*	Per unit cost	Loss of revenue
		(Energy in lakh Kwh)		(₹)	(₹ in lakh)
2011-12	2012-13	131.76	1.32	4.00	5.28
2012-13	2013-14	44.10	0.44	4.30	1.89
2013-14	2014-15	52.14	0.52	4.80	2.50
2014-15	2015-16	41.26	0.41	4.80	1.97
2015-16	2016-17	126.14	1.26	5.10	6.43
2016-17	2017-18	70.24	0.70	5.10	3.57
2017-18	2018-19	40.85	0.41	5.10	2.09
Total		**506.49**	**5.06**		**23.73**

Appendix 3

Statement showing position of equity and outstanding loans relating to State PSUs (other than Power Sector) as on 31 March 2019

(Referred to in Paragraph 4.3)

(₹ in crore)

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
A. GOVERNMENT WORKING COMPANIES											
COMPETITIVE ENVIRONMENT SECTOR											
1	Kerala Agro Machinery Corporation Limited	Agriculture[171]	March-1973	1.61	…	…	1.61	…	…	…	…
2	Kerala Forest Development Corporation Limited	Forest and Wildlife	January-1975	8.27	0.93	…	9.20	1.25	…	…	1.25
3	Kerala Livestock Development Board Limited	Animal Husbandry	November-1975	7.33	…	…	7.33	…	…	…	…
4	Kerala State Horticultural Products Development Corporation Limited	Agriculture	March-1989	7.23	…	…	7.23	1.10	…	1.58	2.68
5	Kerala State Poultry Development Corporation Limited	Animal Husbandry	December-1989	1.97	…	…	1.97	…	0.49	…	0.49
6	Meat Products of India Limited	Animal Husbandry	March-1973	2.31	…	…	2.31	2.63	0.20	11.14	13.97

[171] Agriculture Development and Farmers' Welfare

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
7	Oil Palm India Limited	Agriculture	November-1977	6.80	4.99	…	11.79	…	…	…	…
8	The Kerala Agro Industries Corporation Limited	Agriculture	March-1968	3.05	1.69	…	4.74	9.18	…	…	9.18
9	The Kerala State Cashew Development Corporation Limited	Industries[172]	July-1969	487.34	…	…	487.34	326.62	…	…	326.62
10	The Kerala State Coir Corporation Limited	Industries	July-1969	8.05	…	…	8.05	1.43	…	0.13	1.56
11	The Plantation Corporation of Kerala Limited	Agriculture	November-1962	5.57	…	…	5.57	…	…	…	…
12	The Rehabilitation Plantations Limited	Labour and Skills	May-1976	2.06	1.33	…	3.39	…	…	…	…
13	The State Farming Corporation of Kerala Limited	Agriculture	April-1972	8.43	…	0.61	9.04	0.22	…	…	0.22
14	Aralam Farming Corporation (Kerala) Limited	SC and ST Development	June-2010	0.01	…	…	0.01	…	…	…	…
15	Vazhakulam Agro and Fruit Processing Company Limited	Agriculture	October-2013	0.03	…	0.02	0.05	0.50	…	5.94	6.44
16	Kerala Aqua Ventures	Fisheries	December-2007	2.04	…	1.89	3.93	…	…	1.00	1.00

[172] Industries and Commerce

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
	International Limited										
17	Kerala State Coconut Development Corporation Limited	Agriculture	October-1975	2.85	...	...	2.85	15.06	...	0.65	15.71
18	Kerala Cashew Board Limited	Industries	October-2017	24.50	...	23.10	47.60	...	...	...	...
19	The Kerala State Financial Enterprises Limited	Taxes	November-1969	100.00	...	...	100.00	...	...	...	...
20	Kerala Transport Development Finance Corporation Limited	Transport	February-1991	43.83	...	...	43.83	...	...	1,326.00	1,326.00
21	Kerala Police Housing and Construction Corporation Limited	Home	July-1990	0.27	...	...	0.27	8.65	...	...	8.65
22	Kerala State Construction Corporation Limited	Public Works	March-1975	0.88	...	...	0.88	2.05	...	...	2.05
23	Kerala State Industrial Development Corporation Limited	Industries	July-1961	301.24	...	...	301.24	...	...	...	...
24	Roads and Bridges Development Corporation of Kerala Limited	Public Works	September-1999	62.42	...	...	62.42	56.00	...	53.69	109.69

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
25	The Kerala Land Development Corporation Limited	Agriculture	December-1972	6.79	0.34	...	7.13	1.85	...	...	1.85
26	Kerala State Information Technology Infrastructure Limited	Electronics and Information Technology	January-2008	204.96	...	...	204.96	…	...	...	…
27	Kinfra Export Promotion Industrial Parks Limited	Industries	October-1994	…	...	0.25	0.25	…	...	…	…
28	Kinfra Film and Video Park Limited	Industries	June-2000	…	…	1.50	1.50	…	...	30.97	30.97
29	Kinfra International Apparel Parks Limited	Industries	August-1995	…	...	0.25	0.25	...	...	24.25	24.25
30	Marine Products Infrastructure Development Corporation Limited	MPEDA, MOC&I	March-1999	2.50	2.50	…	5.00	...	...	...	…
31	Kannur International Airport Limited	Transport	December-2009	350.00	...	637.00	987.00	...		557.79	557.79
32	Road Infrastructure Company Kerala Limited	Public Works	March-2012	0.03	...	0.24	0.27	…	...	...	…
33	Autokast Limited	Industries	May-1984	19.97	...	...	19.97	113.29		0.15	113.44
34	Foam Mattings (India) Limited	Industries	December-1978	6.67	...	...	6.67	…	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
35	Forest Industries (Travancore) Limited	Industries	August-1946	0.29	...	0.09	0.38	6.74	...	…	6.74
36	Kanjikode Electronics and Electricals Limited	Industries	March-1996	0.39	...	…	0.39	…	…	…	…
37	Keltron Component Complex Limited	Industries	October-1974	7.30	...	26.92	34.22	17.42	...	…	17.42
38	Keltron Electro Ceramics Limited	Industries	April-1974	…	...	3.18	3.18	1.92	...	1.35	3.27
39	Kerala Automobiles Limited	Industries	March-1978	10.98	...	...	10.98	47.43	...	…	47.43
40	Kerala Clays and Ceramic Products Limited	Industries	June-1984	1.32	...	...	1.32	8.88	...	...	8.88
41	Kerala Electrical and Allied Engineering Company Limited	Industries	June-1964	145.64	...	...	145.64	23.45	...	48.83	72.28
42	Kerala Feeds Limited	Animal Husbandry	October-1995	32.34	...	6.32	38.66	28.24	...	...	28.24
43	Kerala State Bamboo Corporation Limited	Industries	March-1971	10.31	...	...	10.31	48.48	1.11	…	49.59
44	Kerala State Beverages (Manufacturing and Marketing) Corporation Limited	Taxes	February-1984	5.00	...	...	5.00	1,500.00	...	…	1,500.00

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
45	Kerala State Drugs and Pharmaceuticals Limited	Industries	December-1971	130.73	...	...	130.73	39.38	...	1.50	40.88
46	Kerala State Electronics Development Corporation Limited	Industries	September-1972	199.55	...	4.00	203.55	93.74	...	8.62	102.36
47	Kerala State Mineral Development Corporation Limited	Industries	June-1992	1.76	...	...	1.76	11.00	...	...	11.00
48	Kerala State Textile Corporation Limited	Industries	March-1972	64.27	...	30.25	94.52	182.04	...	42.25	224.29
49	Malabar Cements Limited	Industries	April-1978	26.00	...	...	26.00	...	...	48.67	48.67
50	Sitaram Textiles Limited	Industries	February-1975	42.46	...	...	42.46	22.88	...	2.62	25.50
51	Steel and Industrial Forgings Limited	Industries	June-1983	30.07	...	...	30.07	1.95	...	0.74	2.69
52	SAIL- SCL Kerala Limited	Industries	December-1969	13.02	13.02	0.39	26.43	14.62	…	59.52	74.14
53	Steel Industrials Kerala Limited	Industries	January-1975	36.55	...	...	36.55	9.19	...	0.95	10.14
54	The Kerala Ceramics Limited	Industries	November-1963	11.20	...	...	11.20	45.71	...	1.32	47.03
55	The Kerala Minerals and Metals Limited	Industries	February-1972	30.93	...	...	30.93	…	...	...	...
56	The Metal Industries Limited	Industries	March-1928	1.91	…	0.07	1.98	10.40	...	…	10.40
57	The Pharmaceutical Corporation (Indian	Ayush	September-1975	41.68	...	...	41.68	…	...	...	...

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
	Medicines) Kerala Limited										
58	The Travancore Cements Limited	Industries	October-1946	2.46	...	0.24	2.7	20.07	...	...	20.07
59	The Travancore Sugars and Chemicals Limited	Taxes	June-1937	1.02	...	0.30	1.32	0.10	...	...	0.10
60	The Travancore-Cochin Chemicals Limited	Industries	November-1951	40.33	...	4.40	44.73	…	...	…	…
61	Traco Cable Company Limited	Industries	February-1960	53.02	...	4.20	57.22	44.77	...	4.00	48.77
62	Transformers and Electricals Kerala Limited	Industries	December-1963	23.44	…	19.53	42.97	…	...	...	…
63	Travancore Titanium Products Limited	Industries	December-1946	13.43	...	0.34	13.77	28.90	....	8.00	36.90
64	United Electrical Industries Limited	Industries	October-1950	3.88	...	1.11	4.99	48.01	...	...	48.01
65	Malabar Distilleries Limited	Taxes	June-2009	3.51	...	…	3.51	…	...	…	…
66	Kerala State Coir Machinery Manufacturing Company Limited	Industries	January-2014	23.23	…	…	23.23	…	…	…	…
67	Trivandrum Spinning Mills Limited	Industries	November-1963	9.84	...	2.00	11.84	10.93	...	4.89	15.82

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
68	Bekal Resorts Development Corporation Limited	Tourism	July-1995	54.98	…	…	54.98	…	…	…	…
69	Kerala Medical Services Corporation Limited	Health and Family Welfare	December-2007	5.00	…	…	5.00	…	…	…	…
70	Kerala Shipping and Inland Navigation Corporation Limited	Coastal Shipping and Inland Navigation	December-1975	65.29	…	0.02	65.31	…	…	…	…
71	Kerala State Industrial Enterprises Limited	Industries	January-1973	1.20	…	…	1.20	1.10	…	1.90	3.00
72	Kerala State Maritime Development Corporation Limited	Ports	December-1994	10.00	…	…	10.00	…	…	…	…
73	Kerala Tourism Development Corporation Limited	Tourism	December-1965	108.90		…	108.90	1.92	…	….	1.92
74	The Kerala State Civil Supplies Corporation Limited	Food and Civil Supplies	June-1974	141.56	…	…	141.56	…	…	…	…
75	Kerala Tourism Infrastructure Limited	Tourism	August-1989	37.86	…	4.02	41.88	…	…	…	…
76	Vizhinjam International Seaport Limited	Ports	December-2004	12.00	…	…	12.00	…	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	**(2)**	**(3)**	**(4)**	**5(a)**	**5(b)**	**5(c)**	**5(d)**	**6(a)**	**6(b)**	**6(c)**	**6(d)**
77	Kerala State Coastal Area Development Corporation Limited	Fisheries	December-2008	5.81	…	…	5.81	…	…	…	…
78	Kerala High Speed Rail Corporation Limited	Industries	September-2011	59.00	…	…	59.00	…	…	…	…
79	Kerala Rapid Transit Corporation Ltd (Erstwhile Kerala Monorail Corporation Ltd.)	Public Works	December-2012	23.65	…	…	23.65	…	…	…	…
80	Kerala Rail Development Corporation Limited	Transport	January-2017	51.00	25.98	…	76.98	…	…	…	…
81	Muziris Projects Limited	Tourism	March-2014	0.05	…	…	0.05	…	…	…	…
82	Azhikkal Port Limited	Ports	March-2018	1.27	…	…	1.27	…	…	…	…
83	Kerala Infrastructure Fund Management Limited	Finance	November-2018	…	…	1.00	1.00	…	…	…	…
	Sector Wise Total			**3,274.44**	**50.78**	**773.24**	**4,098.46**	**2,809.10**	**1.80**	**2,248.45**	**5,059.35**
SOCIAL SECTOR											
84	Handicrafts Development Corporation of Kerala Limited	Industries	November-1968	2.16	0.61	...	2.77	15.31	...	...	15.31

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
85	Kerala Artisans' Development Corporation Limited	Industries	October-1981	4.60	...	...	4.60	0.99	...	....	0.99
86	Kerala Fibre Optic Network Limited	Electronics and Information Technology	September-2018	0.02	...	0.98	1.00	…	…	…	…
87	Kerala Small Industries Development Corporation Limited	Industries	November-1975	23.94	...	4.15	28.09	4.06	...	4.31	8.37
88	Kerala State Development Corporation for Christian Converts from Scheduled Castes and the Recommended Communities Limited	Backward Communities Development	June-1980	37.19	...	...	37.19	...	...	...	...
89	Kerala State Development Corporation for Scheduled Castes and Scheduled Tribes Limited	SC and ST Development	December-1972	168.21	59.95	...	228.16	...	...	...	...
90	Kerala State Film Development Corporation Limited	Cultural Affairs	July-1975	51.83	...	...	51.83	7.79	...	…	7.79
91	Kerala State Handicapped	Social Justice	July-1979	3.60	...	...	3.60	2.63	...	...	2.63

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
	Persons' Welfare Corporation Limited										
92	Kerala State Handloom Development Corporation Limited	Industries	June-1968	58.04	...	0.05	58.09	17.23	...	...	17.23
93	Kerala State Palmyrah Products Development and Workers' Welfare Corporation Limited	Industries	November-1985	0.87	...	...	0.87	1.10	...	...	1.10
94	Kerala State Women's Development Corporation Limited	Social Justice	February-1988	5.52	0.49	...	6.01	...	...	283.32	283.32
95	Kerala Urban and Rural Development Finance Corporation Limited	Local Self Government	January-1970	5.59	...	0.61	6.20	...	...	1,375.00	1,375.00
96	The Kerala State Backward Classes Development Corporation Limited	Backward Communities Development	February-1995	135.35	...	...	135.35	...	...	746.04	746.04
97	Kerala State Minorities Development Finance Corporation	Minority Welfare	March-2013	56.93	…	…	56.93	...	40.69	…	40.69
98	Kerala State Housing Development	Housing	July-2013	0.82	…	…	0.82	...	…	…	...

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
	Finance Corporation Limited										
99	Kerala State Welfare Corporation for Forward Communities	General Adminis-tration	November-2012	20.30	…	…	20.30	...	…	…	...
100	Vision Varkala Infrastructure Development Corporation Limited	Planning and Economic Affairs	February-2013	6.75	...	...	6.75	...	...	...	...
101	Kerala Irrigation Infrastructure Development Corporation Limited	Water Resources	August-2000	10.00	...	...	10.00	...	...	...	...
102	Pratheeksha Bus Shelters Kerala Limited	Public Works	June-2013	0.05	…	…	0.05	...	…	…	...
103	Ashwas Public Amenities Kerala Limited	Public Works	June-2013	0.05			0.05			...	...
104	Kerala State Ex-Servicemen Development and Rehabilitation Corporation Limited	General Adminis-tration	December-2001	0.50	…	…	0.50	...	…	…	...
105	Overseas Development and Employment Promotion Consultants Limited	Labour and Skills	October-1977	0.85	…	…	0.85	...	…	…	...

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
106	Norka Roots	NORKA	December-2002	0.78	…	0.74	1.52	...	…	…	...
107	Kerala Infrastructure and Technology for Education	General Education	July-2017	5.00	…	…	5.00	0.13	…	…	0.13
108	Indian Institute of Information Technology and Management - Kerala	Electronics and Information Technology	September-2000	111.78	…	…	111.78	…	…	…	…
109	Clean Kerala Company Limited	Local Self Government	December-2013	0.05	…	13.92	13.97	…	…	…	...
110	Kerala Academy for Skills Excellence	Labour and Skills	March-2012	26.94	…	…	26.94	…	…	…	...
111	Bhavanam Foundation Kerala	Labour and Skills	January-2014	40.00	…	…	40.00	…	…	…	...
112	Trivandrum Engineering Science and Technology Research Park	Higher Education Department	March-2015	0.01	…	…	0.01	…	…	…	...
113	Cochin Smart Mission Limited	Local Self Government	March-2016	100.00	99.95	0.05	200.00	…	…	…	...
114	Impact Kerala Limited	Local Self Government	December-2017	0.10	…	…	0.10	…	…	…	...
115	Smart City Thiruvananthapuram Limited	Local Self Government	August-2017	0.05	…	0.05	0.10	…	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	**(2)**	**(3)**	**(4)**	**5(a)**	**5(b)**	**5(c)**	**5(d)**	**6(a)**	**6(b)**	**6(c)**	**6(d)**
116	Kerala State Pottery Manufacturing, Marketing Welfare Development Corporation Limited	Backward Communities Development	February-2016	0.99	…	…	0.99	…	…	…	…
117	Kerala Social Security Pension Limited	Finance	Data not furnished								
	Sector Wise Total			**878.87**	**161.00**	**20.55**	**1,060.42**	**49.24**	**40.69**	**2,408.67**	**2,498.60**
	Total A (All Working Government Companies)			**4,153.31**	**211.78**	**793.79**	**5,158.88**	**2,858.34**	**42.49**	**4,657.12**	**7,557.95**
B. WORKING STATUTORY CORPORATIONS											
COMPETITIVE ENVIRONMENT SECTOR											
1	Kerala State Warehousing Corporation	Agriculture	February-1959	7.25	5.75	…	13.00	5.50	…	32.44	37.94
2	Kerala Financial Corporation	Finance	November-1953	220.27	...	6.23	226.50	…	...	2,163.99	2,163.99
3	Kerala Industrial Infrastructure Development Corporation	Industries	February-1993	…	...	...	…	531.04	...	22.67	553.71
4	Kerala State Road Transport Corporation	Transport	April-1965	1,344.16	23.21	...	1,367.37	3,197.13	…	…	3,197.13
	Sector Wise Total			**1,571.68**	**28.96**	**6.23**	**1,606.87**	**3,733.67**	**…**	**2,219.10**	**5,952.77**

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
	Total B (All Working Statutory Corporations)			**1,571.68**	**28.96**	**6.23**	**1,606.87**	**3,733.67**	**…**	**2,219.1**	**5,952.77**
	Grand Total (A+B)			**5,724.99**	**240.74**	**800.02**	**6,765.75**	**6,592.01**	**42.49**	**6,876.22**	**13,510.72**
C. NON-WORKING GOVERNMENT COMPANIES											
COMPETITIVE ENVIRONMENT SECTOR											
1	The Kerala Premo Pipe Factory Limited	Water Resources	September-1961	1.31	...	...	1.31	…	...	0.25	0.25
2	Kerala Garments Limited	Industries	July-1974	…	...	0.48	0.48	3.96	...	0.15	4.11
3	Kerala Special Refractories Limited	Industries	November-1985	2.91	...	...	2.91	1.07	...	...	1.07
4	The Kerala Asbestos Cement Pipe Factory Limited	Local Admn.	March-1984	0.06	...	...	0.06	…	...	...	…
5	SIDECO Mohan Kerala Limited	Industries	August-1980	…	0.08	0.09	0.17	0.12	...	0.19	0.31
6	Keltron Counters Limited	Industries	July-1964	…	...	4.97	4.97	5.05	...	...	5.05
7	Keltron Power Devices Limited	Industries	January-1976	…	...	4.10	4.10	…	...	6.38	6.38
8	SIDKEL Televisions Limited	Industries	March-1984	…	...	0.44	0.44	…	...	…	…
9	Astral Watches Limited	Industries	February-1978	…	...	0.95	0.95	1.08	...	1.81	2.89

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	Month and Year of incorporation	Paid-up capital				Loans outstanding at the close of 2018-19			
				State Govern-ment	Central Govern-ment	Others	Total	State Govern-ment	Central Govern-ment	Others	Total
(1)	(2)	(3)	(4)	5(a)	5(b)	5(c)	5(d)	6(a)	6(b)	6(c)	6(d)
10	Keltron Rectifiers Limited	Industries	March-1976	…	...	2.74	2.74	1.65	...	7.02	8.67
11	Trivandrum Rubber Works Limited	Agriculture	November-1963	1.76	...	0.59	2.35	7.22	...	2.42	9.64
12	Kerala State Wood Industries Limited	Forest and Wildlife	September 1981	0.75	...	0.95	1.70	8.23	...	...	8.23
13	Kerala State Detergents and Chemicals Limited	Industries	June-1976	1.55	...	...	1.55	8.96	...	10.72	19.68
14	Kunnathara Textiles Limited	Industries	September-1975	0.22	...	0.48	0.70	…	...	...	…
15	Vanjinad Leathers Limited	Industries	April-1974	…	0.19	0.18	0.37	…	...	...	…
	Sector Wise Total			**8.56**	**0.27**	**15.97**	**24.8**	**37.34**	**…**	**28.94**	**66.28**
SOCIAL SECTOR											
16	Kerala School Teachers and Non-teaching Staff Welfare Corporation Limited	General Education	August-1984	0.50	…	…	0.50	…	…	0.31	0.31
	Sector Wise Total			**0.50**	**…**	**…**	**0.50**	**…**	**…**	**0.31**	**0.31**
	Total C (All Non-Working Government Companies)			**9.06**	**0.27**	**15.97**	**25.30**	**37.34**	**…**	**29.25**	**66.59**
	Grand Total (A+B+C)			**5,734.05**	**241.01**	**815.99**	**6,791.05**	**6,629.35**	**42.49**	**6,905.47**	**13,577.31**

Appendix 4

Statement showing differences between Finance Accounts of Government of Kerala and Accounts of State PSUs (other than Power Sector) in respect of balances of Equity, Loans and Guarantee as on 31 March 2019

(Referred to in Paragraph 4.7)

(₹ in crore)

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
1	Kerala Agro Machinery Corporation Limited	Agriculture	1.61	…	0.44	…	1.17	…	…	…
2	Kerala Forest Development Corporation Limited	Forest and Wild life	8.27	1.25	8.27	1.75	…	-0.50	…	…
3	Kerala Livestock Development Board Limited	Animal Husbandry	7.33	…	7.33	1.27	…	-1.27	…	…
4	Kerala State Horticultural Products Development Corporation Limited	Agriculture	7.23	1.10	7.73	…	-0.50	1.10	…	…
5	Kerala State Poultry Development Corporation Limited	Animal Husbandry	1.97	…	1.00	…	0.97	…	…	…
6	Meat Products of India Limited	Animal Husbandry	2.31	2.63	0.98	15.33	1.33	-12.70	…	…
7	Oil Palm India Limited	Agriculture	6.80	…	6.20	…	0.60	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
8	The Kerala Agro Industries Corporation Limited	Agriculture	3.05	9.18	3.05	9.09	…	0.09	…	…
9	The Kerala State Cashew Development Corporation Limited	Industries	487.34	326.62	491.34	316.61	-4.00	10.01	…	…
10	The Kerala State Coir Corporation Limited	Industries	8.05	1.43	8.05	0.26	…	1.17	…	…
11	The Plantation Corporation of Kerala Limited	Agriculture	5.57	…	5.57	0.72	…	-0.72	…	…
12	The State Farming Corporation of Kerala Limited	Agriculture	8.43	0.22	8.43	…	…	0.22	…	…
13	Aralam Farming Corporation (Kerala) Limited	SC and ST Development	0.01	…	…	…	0.01	…	…	…
14	Vazhakulam Agro and Fruit Processing Company Limited	Agriculture	0.03	0.50	0.03	2.53	…	-2.03	…	…
15	Kerala Aqua Ventures International Limited	Fisheries	2.04	…	…	…	2.04	…	…	…
16	Kerala State Coconut Development Corporation Limited	Agriculture	2.85	15.06	2.85	10.94	…	4.12	…	…
17	Kerala Cashew Board Limited	Industries	24.50	…	24.50	…	…	…	100.00	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
18	The Kerala State Financial Enterprises Limited	Taxes	100.00	…	50.00	…	50.00	…	8,719.82	…
19	Kerala Transport Development Finance Corporation Limited	Transport	43.83	…	43.83	…	…	…	1,364.83	…
20	Kerala Police Housing and Construction Corporation Limited	Home	0.27	8.65	1.27	121.00	-1.00	-112.35	…	…
21	Kerala State Construction Corporation Limited	Public Works	0.88	2.05	0.88	1.08	…	0.97	…	…
22	Kerala State Industrial Development Corporation Limited	Industries	301.24	…	340.24	18.21	-39.00	-18.21	…	…
23	Roads and Bridges Development Corporation of Kerala Limited	Public Works	62.42	56.00	62.43	156.00	-0.01	-100.00	…	…
24	The Kerala Land Development Corporation Limited	Agriculture	6.79	1.85	6.79	2.19	…	-0.34	…	…
25	Kerala State Information Technology Infrastructure Limited	Information Technology	204.96	…	155.40	…	49.56	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
26	Marine Products Infrastructure Development Corporation Limited	Industries	2.50	…	…	…	2.50	…	…	…
27	Kannur International Airport Limited	Transport	350.00	…	1,239.00	…	-889.00	…	…	…
28	Road Infrastructure Company Kerala Limited	Public Works	0.03	…	…	…	0.03	…	…	…
29	Autokast Limited	Industries	19.97	113.29	1.63	109.23	18.34	4.06	…	…
30	Foam Mattings (India) Limited	Industries	6.67	…	5.15	…	1.52	…	…	…
31	Forest Industries (Travancore) Limited	Industries	0.29	6.74	0.29	7.55	…	-0.81	…	…
32	Kanjikode Electronics and Electricals Limited	Industries	0.39	…	…	…	0.39	…	…	…
33	Keltron Component Complex Limited	Industries	7.30	17.42	…	20.21	7.30	-2.79	…	…
34	Kerala Automobiles Limited	Industries	10.98	47.43	10.98	42.99	…	4.44	…	…
35	Kerala Clays and Ceramic Products Limited	Industries	1.32	8.88	1.32	7.89	…	0.99	…	…
36	Kerala Electrical and Allied Engineering Company Limited	Industries	145.64	23.45	77.48	78.14	68.16	-54.69	26.00	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
37	Kerala Feeds Limited	Animal Husbandry	32.34	28.24	21.65	…	10.69	28.24	…	…
38	Kerala State Bamboo Corporation Limited	Industries	10.31	48.48	6.59	48.40	3.72	0.08	…	…
39	Kerala State Beverages (Manufacturing and Marketing) Corporation Limited	Taxes	5.00	1,500.00	1.03	…	3.97	1,500.00	…	…
40	Kerala State Drugs and Pharmaceuticals Limited	Industries	130.73	39.38	8.98	…	121.75	39.38	…	…
41	Kerala State Electronics Development Corporation Limited	Industries	199.55	93.74	199.55	105.23	…	-11.49	…	…
42	Kerala State Textile Corporation Limited	Industries	64.27	182.04	57.78	168.96	6.49	13.08	1.66	…
43	Malabar Cements Limited	Industries	26.00	…	26.01	48.67	-0.01	-48.67	…	…
44	Sitaram Textiles Limited	Industries	42.46	22.88	36.70	…	5.76	22.88	…	…
45	Steel and Industrial Forgings Limited	Industries	30.07	1.95	19.67	6.16	10.40	-4.21	…	…
46	SAIL- SCL Kerala Limited	Industries	13.02	14.62	16.67	45.12	-3.65	-30.50	…	…
47	Steel Industrials Kerala Limited	Industries	36.55	9.19	36.31	43.21	0.24	-34.02	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
48	The Kerala Ceramics Limited	Industries	11.20	45.71	6.38	48.98	4.82	-3.27	…	…
49	The Kerala Minerals and Metals Limited	Industries	30.93	…	30.93	0.85	…	-0.85	…	…
50	The Metal Industries Limited	Industries	1.91	10.40	1.41	9.53	0.50	0.87	…	…
51	The Travancore Cements Limited	Industries	2.46	20.07	0.27	36.89	2.19	-16.82	…	…
52	The Travancore Sugars and Chemicals Limited	Taxes	1.02	0.10	1.00	0.10	0.02	…	…	…
53	The Travancore-Cochin Chemicals Limited	Industries	40.33	…	16.91	…	23.42	…	…	…
54	Traco Cable Company Limited	Industries	53.02	44.77	50.10	50.88	2.92	-6.11	8.00	…
55	Transformers and Electricals Kerala Limited	Industries	23.44	…	19.43	16.09	4.01	-16.09	…	…
56	Travancore Titanium Products Limited	Industries	13.43	28.90	13.43	34.32	…	-5.42	…	…
57	United Electrical Industries Limited	Industries	3.88	48.01	3.88	42.13	…	5.88	…	…
58	Malabar Distilleries Limited	Taxes	3.51	…	…	…	3.51	…	…	…
59	Kerala State Coir Machinery Manufacturing Company Limited	Industries	23.23	…	…	…	23.23	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
60	Trivandrum Spinning Mills Limited	Industries	9.84	10.93	7.73	15.50	2.11	-4.57	…	…
61	Bekal Resorts Development Corporation Limited	Tourism	54.98	…	57.43	…	-2.45	…	…	…
62	Kerala Shipping and Inland Navigation Corporation Limited	Coastal Shipping and Inland Navigation	65.29	…	51.67	…	13.62	…	…	…
63	Kerala State Industrial Enterprises Limited	Industries	1.20	1.10	31.28	27.50	-30.08	-26.40	…	…
64	Kerala State Maritime Development Corporation Limited	Ports	10.00	…	9.75	…	0.25	…	…	…
65	Kerala Tourism Development Corporation Limited	Tourism	108.90	1.92	113.01	1.78	-4.11	0.14	…	…
66	The Kerala State Civil Supplies Corporation Limited	Food and Civil Supplies	141.56	…	141.56	45.93	…	-45.93	…	…
67	Vizhinjam International Seaport Limited	Ports	12.00	…	…	…	12.00	…	…	…
68	Kerala State Coastal Area Development Corporation Limited	Fisheries	5.81	…	5.09	…	0.72	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
69	Kerala High Speed Rail Corporation Limited	Industries	59.00	…	…	…	59.00	…	…	…
70	Kerala Rapid Transit Corporation Ltd (Erstwhile Kerala Monorail Corporation Ltd.)	Public Works	23.65	…	25.92	…	-2.27	…	…	…
71	Muziris Projects Limited	Tourism	0.05	…	…	…	0.05	…	…	…
72	Azhikkal Port Limited	Ports	1.27	…	18.85	…	-17.58	…	…	…
73	Handicrafts Development Corporation of Kerala Limited	Industries	2.16	15.31	2.16	16.94	…	-1.63	4.16	…
74	Kerala Artisans' Development Corporation Limited	Industries	4.60	0.99	2.20	0.93	2.40	0.06	1.00	…
75	Kerala Fibre Optice Network Limited	Electronics and IT	0.02	…	…	…	0.02	…	…	…
76	Kerala Small Industries Development Corporation Limited	Industries	23.94	4.06	21.86	4.12	2.08	-0.06	2.00	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
77	Kerala State Development Corporation for Christian Converts from Scheduled Castes and the Recommended Communities Limited	Backward Communities Development	37.19	…	60.05	1.55	-22.86	-1.55	…	…
78	Kerala State Development Corporation for Scheduled Castes and Scheduled Tribes Limited	SC and ST Development	168.21	…	171.18	0.40	-2.97	-0.40	21.22	…
79	Kerala State Film Development Corporation Limited	Cultural Affairs	51.83	7.79	53.38	7.24	-1.55	0.55	…	…
80	Kerala State Handicapped Persons' Welfare Corporation Limited	Social Justice	3.60	2.63	5.60	2.57	-2.00	0.06	…	…
81	Kerala State Handloom Development Corporation Limited	Industries	58.04	17.23	54.04	13.80	4.00	3.43	…	…
82	Kerala State Palmyrah Products Development and	Industries	0.87	1.10	0.87	1.43	…	-0.33	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
	Workers' Welfare Corporation Limited									
83	Kerala State Women's Development Corporation Limited	Social Justice	5.52	…	9.99	…	-4.47	…	283.34	…
84	Kerala Urban and Rural Development Finance Corporation Limited	Local Self Government	5.59	…	6.12	165.95	-0.53	-165.95	10.31	…
85	The Kerala State Backward Classes Development Corporation Limited	Backward Communities Development	135.35	…	139.42	…	-4.07	…	823.00	…
86	Kerala State Minorities Development Finance Corporation	Minority Welfare	56.93	…	68.65	…	-11.72	…	40.69	…
87	Kerala State Housing Development Finance Corporation Limited	Housing	0.82	…	10.27	…	-9.45	…	…	…
88	Kerala State Welfare Corporation for Forward Communities	General Admn	20.30	…	20.29	…	0.01	…	…	…
89	Vision Varkala Infrastructure	Planning and Economic Affairs	6.75	…	10.73	…	-3.98	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
	Development Corporation Limited									
90	Kerala Irrigation Infrastructure Development Corporation Limited	Irrigation	10.00	…	9.79	…	0.21	…	…	…
91	Pratheeksha Bus Shelters Kerala Limited	Public Works	0.05	…	0.10	…	-0.05	…	…	…
92	Ashwas Public Amenities Kerala Limited	Public Works	0.05	…	0.20	…	-0.15	…	…	…
93	Overseas Development and Employment Promotion Consultants Limited	Labour and Skills	0.85	…	0.86	…	-0.01	…	…	…
94	Kerala Infrastructure and Technology for Education	General Education	5.00	0.13	…	…	5.00	0.13	…	…
95	Indian Institute of Information Technology and Management - Kerala	Electronics and IT	111.78	…	115.26	…	-3.48	…	…	…
96	Clean Kerala Company Limited	Local Self Government	0.05	…	…	…	0.05	…	…	…
97	Kerala Academy for Skills Excellence	Labour and Skills	26.94	…	64.94	…	-38.00	…	…	…

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
98	Bhavanam Foundation Kerala	Labour and Skills	40.00	…	…	…	40.00	…	…	…
99	Trivandrum Engineering Science and Technology Research Park	Higher Education Department	0.01	…	…	…	0.01	…	…	…
100	Cochin Smart Mission Limited	Local Self Government	100.00	…	…	…	100.00	…	…	…
101	Kerala State Pottery Marketing ,Manufacturing and welfare Development Corporation Limited	Backward Communities Development	0.99	…	…	…	0.99	…	…	…
102	Kerala Social Security Pension Limited	Finance	…	…	100.00	…	-100.00	…	…	…
103	Kerala State Warehousing Corporation	Agriculture	7.25	5.50	7.50	42.10	-0.25	-36.60	…	…
104	Kerala Financial Corporation	Finance	220.27	…	316.43	…	-96.16	…	350.00	381.17
105	Kerala Industrial Infrastructure Development Corporation	Industries	…	531.04	…	595.01	…	-63.97	…	…
106	Kerala State Road Transport Corporation	Transport	1,344.16	3,197.13	749.61	3,767.93	594.55	-570.80	23.25	3,068.07

Sl. No.	Sector and Name of the Company/ Corporation	Name of the Department	As per PSUs' Accounts		As per Finance Accounts		Equity Difference	Loan Difference	Guarantee Commit-ment as per PSUs' Accounts	Guarantees (given by Government) outstanding as per finance accounts
			State Govern-ment Paid up capital	State Govern-ment Loan	Paid-up capital	Loans outstanding at the close of 2018-19				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)	(12)
107	The Kerala Premo Pipe Factory Limited	Water Resources	1.31	…	1.31	8.35	…	-8.35	…	…
108	Kerala Garments Limited	Industries	…	3.96	…	4.02	…	-0.06	…	…
109	The Kerala Asbestos Cement Pipe Factory Limited	Local Admn.	0.06	…	…	…	0.06	…	…	…
110	SIDECO Mohan Kerala Limited	Industries	…	0.12	…	…	…	0.12	…	…
111	Keltron Counters Limited	Industries	…	5.05	…	0.84	…	4.21	…	…
112	Astral Watches Limited	Industries	…	1.08	…	…	…	1.08	…	…
113	Keltron Rectifiers Limited	Industries	…	1.65	…	0.10	…	1.55	…	…
114	Trivandrum Rubber Works Limited	Agriculture	1.76	7.22	2.75	5.24	-0.99	1.98	…	…
115	Kerala State Wood Industries Limited	Forest and Wildlife	0.75	8.23	1.35	7.13	-0.60	1.10	…	…
116	Kerala State Detergents and Chemicals Limited	Industries	1.55	8.96	…	9.03	1.55	-0.07	…	…
117	Kunnathara Textiles Limited	Industries	0.22	…	1.71	2.72	-1.49	-2.72	…	…

Appendix 5

Statement showing position of State Government investment in working State PSUs (other than Power Sector), accounts of which are in arrears, during the period of arrears

(Referred to in Paragraph 4.8.1)

(₹ in crore)

Sl. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Working Government Companies							
1	Kerala State Horticultural Products Development Corporation Limited	2013-14	6.48	2014-15	0.25	…	5.44
				2015-16	0.25	…	12.00
				2016-17	…	…	5.00
				2017-18	0.25	…	…
				2018-19	…	…	14.80
2	Kerala State Poultry Development Corporation Limited	2014-15	1.97	2015-16	…	…	7.00
				2016-17	…	…	6.00
				2017-18	…	…	7.57
				2018-19	…	…	3.00
3	Meat Products of India Limited	2016-17	2.31	2017-18	…	…	1.17
				2018-19	…	…	0.50
4	The Kerala Agro Industries Corporation Limited	2013-14	4.74	2014-15	…	…	0.82
				2015-16	…	…	2.55
				2016-17	…	…	1.93
				2017-18	…	…	0.75
5	The Kerala State Cashew Development Corporation Limited	2013-14	321.34	2014-15	15.00	30.00	…
				2015-16	41.00	…	…
				2016-17	110.00	…	…

Sl. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				2017-18	50.00	65.00	…
				2018-19	34.00	…	…
6	The Kerala State Coir Corporation Limited	2015-16	8.05	2016-17	…	…	7.09
				2018-19	…	…	39.66
7	Aralam Farming Corporation (Kerala) Limited	2014-15	0.01	2017-18	…	…	5.19
8	Kerala Aqua Ventures International Limited	2014-15	3.99	2015-16	…	…	2.57
9	Kerala Police Housing and Construction Corporation Limited	2013-14	0.27	2014-15	...	9.50	…
				2015-16	…	9.50	…
				2016-17	…	9.50	…
10	Kerala State Industrial Development Corporation Limited	2017-18	301.24	2018-19	78.77	…	…
11	Kerala State Information Technology Infrastructure Limited	2017-18	204.96	2018-19	25.00	…	…
12	Forest Industries (Travancore) Limited	2014-15	0.38	2018-19	…	0.80	…
13	Kanjikode Electronics and Electricals Limited	2009-10	0.10	2010-11	0.15	…	…
				2011-12	0.14	…	…
				2014-15	…	0.07	…
14	Kerala Electrical and Allied Engineering Company Limited	2017-18	111.13	2018-19	34.50	9.00	…
15	Kerala Feeds Limited	2014-15	38.66	2015-16	5.00	12.00	3.00
				2016-17	9.49	…	7.00
				2017-18	5.01	2.40	…
				2018-19	…	2.27	4.84
16	Kerala State Bamboo Corporation Limited	2013-14	9.36	2014-15	0.50	…	0.20

SI. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				2015-16	…	7.30	…
				2016-17	…	3.26	1.45
				2017-18	…	3.00	…
				2018-19	…	5.50	…
17	Kerala State Drugs and Pharmaceuticals Limited	2017-18	130.74	2018-19	…	5.50	1.00
18	Kerala State Electronics Development Corporation Limited	2016-17	203.55	2017-18	…	0.50	…
				2018-19	…	4.58	…
19	Kerala State Mineral Development Corporation Limited	2017-18	1.76	2018-19	…	1.00	…
20	Kerala State Textiles Corporation Limited	2014-15	94.52	2015-16	…	17.46	…
				2016-17	…	16.56	…
				2017-18	…	25.89	…
				2018-19	…	21.80	…
21	Sitaram Textiles Limited	2017-18	42.46	2018-19	…	0.90	…
22	SAIL -SCL Kerala Limited	2017-18	26.43	2018-19	…	1.50	…
23	The Metal Industries Limited	2016-17	1.98	2018-19	…	1.00	…
24	The Pharmaceutical Corporation (Indian Medicines) Kerala Limited	2017-18	40.00	2018-19	0.01	…	…
25	The Travancore Cements Limited	2016-17	2.71	2017-18	…	5.00	…
				2018-19	…	6.00	…
26	Traco Cable Company Limited	2017-18	57.22	2018-19	…	15.60	…
27	Travancore Titanium Products Limited	2014-15	13.77	2015-16	…	3.00	…
				2016-17	…	9.99	…
				2017-18	…	3.44	…

Sl. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				2018-19	…	2.07	…
28	United Electrical Industries Limited	2017-18	4.99	2018-19	…	8.44	…
29	Kerala State Coir Machinary Manufacturing Company Limited	2016-17	23.23	2017-18	…	…	6.22
				2018-19	…	…	21.19
30	Trivandrum Spinning Mills Limited	2006-07	7.73	2009-10	2.11	…	…
				2013-14	…	1.00	…
				2014-15	…	1.50	…
				2016-17	…	1.90	…
				2017-18	…	1.90	…
				2018-19	…	0.79	…
31	Bekal Resorts Development Corporation Limited	2016-17	51.98	2017-18	3.00	…	…
				2018-19	1.48	…	…
32	Kerala Medical Services Corporation Limited	2012-13	0.01	2013-14	…	…	220.00
				2014-15	…	…	165.00
				2015-16	…	…	225.00
				2016-17	…	…	339.87
				2017-18			455.90
				2018-19	…	…	410.00
33	Kerala Shipping and Inland Navigation Corporation Limited	2017-18	58.81	2018-19	6.52	…	…
34	Kerala Tourism Development Corporation Limited	2014-15	85.00	2015-16	5.00	…	…
				2016-17	6.50	…	…
				2017-18	7.20	…	…
35	The Kerala State Civil Supplies Corporation Limited	2015-16	142.02	2016-17	…	…	686.49
				2017-18	…	…	525.14

Sl. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				2018-19	…	…	383.30
36	Vizhinjam International Seaport Limited	2016-17	12.00	2017-18	…		141.11
				2018-19	…	…	100.69
37	Kerala State Coastal Area Development Corporation Limited	2013-14	5.81	2014-15	…	…	0.59
				2015-16	…	…	34.13
38	Kerala Rapid Transit Corporation Ltd (Erstwhile Kerala Monorail Corporation Ltd.)	2015-16	28.05	2018-19	1.33	…	…
39	Muziris Projects Limited	First Accounts not finalised		2017-18	…	…	4.03
				2018-19	…	…	4.03
40	Azhikkal Port Limited	First Accounts not finalised		2017-18	1.27	…	…
				2018-19	18.27	…	0.50
41	Handicrafts Development Corporation of Kerala Limited	2017-18	3.06	2018-19	…	1.00	0.75
42	Kerala Artisans' Development Corporation Limited	2015-16	4.60	2016-17	…	…	0.50
				2018-19	…	…	25.00
43	Kerala State Development Corporation for Christian Converts from Scheduled Castes & the Recommended Communities Limited	2012-13	41.70	2013-14	…	4.90	0.10
				2014-15	…	…	2.00
				2015-16	6.00	…	…
				2016-17	…	…	6.00
				2017-18	…	…	5.25
				2018-19	…	…	5.60
44	Kerala State Development Corporation for Scheduled Castes and Scheduled Tribes Limited	2017-18	149.97	2018-19	30.00	…	1.00

Sl. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
45	Kerala State Film Development Corporation Limited	2015-16	41.22	2016-17	4.00	…	1.41
				2017-18	1.67	…	1.41
				2018-19	4.95	…	1.41
46	Kerala State Handicapped Persons' Welfare Corporation Limited	2012-13	3.60	2013-14	…	…	5.85
				2014-15	…	…	2.25
				2015-16	…	…	7.45
				2016-17	…	…	2.25
				2017-18	…	…	4.26
				2018-19	…	…	5.44
47	Kerala State Handloom Development Corporation Limited	2017-18	57.29	2018-19	0.80	…	0.62
48	Kerala State Palmyrah Products Development and Workers' Welfare Corporation Limited	2013-14	0.87	2017-18	…	0.10	…
49	Kerala State Women's Development Corporation Limited	2015-16	7.07	2016-17	…	…	8.50
				2017-18	…	…	5.45
				2018-19	…	…	0.25
50	Kerala State Minorities Development Finance Corporation	2015-16	29.20	2016-17	20.00	…	…
				2017-18	11.25	…	…
				2018-19	7.73	…	…
51	Kerala State Housing Development Finance Corporation Limited	2013-14	1.27	2014-15	9.00	…	…
52	Kerala State Welfare Corporation for Forward Communities Limited	2014-15	9.51	2015-16	10.00	…	17.01
				2016-17	…	…	28.59
				2017-18	…	…	27.61

Sl. No.	Name of the Company/ Corporation	Year up to which Accounts finalised	Paid up capital as per latest finalised accounts	Period of Accounts pending finalisation	Investment made by State Government during the years for which accounts are in arrears		
					Equity	Loans	Grants
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				2018-19	…	…	13.50
53	Vision Varkala Infrastructure Development Corporation Limited	2017-18	3.50	2018-19	…	…	5.16
54	Ashwas Public Amenities Kerala Limited	2017-18	0.05	2018-19	…	…	0.10
55	Kerala Infrastructure and Technology for Education	2017-18	5.00	2018-19	…	…	19.67
56	Overseas Development and Employment Promotion Consultants Limited	2017-18	0.86	2018-19	…	…	0.50
57	Kerala Academy for Skills Excellence	2017-18	26.94	2018-19	…	…	38.00
58	Bhavanam Foundation Kerala	2017-18	40.00	2018-19	…	…	9.00
59	Impact Kerala Limited	First Accounts not finalised		2018-19	0.10	…	0.15
60	Smart City Thiruvananthapuram Limited	First Accounts not finalised		2017-18	0.05	…	38.00
				2018-19	…	…	38.00
Total A (Working Government Companies)					**567.55**	**332.42**	**4,191.76**
B. Working Statutory Corporations							
1	Kerala Industrial Infrastructure Development Corporation	2017-18	…	2018-19	…	17.00	1.00
2	Kerala State Road Transport Corporation	2014-15	711.09	2015-16	39.55	214.00	…
				2016-17	40.61	…	…
				2017-18	5.60	835.00	…
				2018-19	570.52	485.82	…
Total B (Statutory corporations)					**656.28**	**1,551.82**	**1.00**
Grand Total (A)+(B)					**1,223.83**	**1,884.24**	**4,192.76**
Aggregate of Equity, Loans and Grants							**7,300.83**

Appendix 6
Statement showing summarised financial results of State PSUs (other than Power Sector) as per their latest finalised financial accounts

(Referred to in Paragraph 4.11)

(₹ in crore)

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A. WORKING GOVERNMENT COMPANIES										
COMPETITIVE ENVIRONMENT SECTOR										
1	Kerala Agro Machinery Corporation Limited	2017-18	2018-19	3.80	2.40	156.13	1.61	115.35	115.35	113.74
2	Kerala Forest Development Corporation Limited	2017-18	2018-19	0.53	0.39	18.32	9.20	25.16	24.16	14.96
3	Kerala Livestock Development Board Limited	2014-15	2017-18	0.48	0.33	11.49	7.33	18.72	18.72	11.39
4	Kerala State Horticultural Products Development Corporation Limited	2013-14	2019-20	0.01	0.01	70.59	6.48	5.12	1.57	-4.91
5	Kerala State Poultry Development Corporation Limited	2014-15	2019-20	-2.89	-2.91	19.94	1.97	-3.10	-3.53	-5.50
6	Meat Products of India Limited	2016-17	2018-19	-3.59	-3.75	15.96	2.31	-13.24	-21.83	-24.14
7	Oil Palm India Limited	2018-19	2019-20	-3.20	-3.74	47.04	11.79	55.25	55.25	23.70
8	The Kerala Agro Industries Corporation Limited	2013-14	2019-20	0.62	-1.08	64.43	4.74	12.69	-9.94	-14.68
9	The Kerala State Cashew Development Corporation Limited	2013-14	2018-19	99.27	61.59	124.78	321.34	-557.54	-798.94	-1120.28

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
10	The Kerala State Coir Corporation Limited	2015-16	2019-20	1.68	0.67	111.06	8.05	4.44	3.01	-5.04
11	The Plantation Corporation of Kerala Limited	2017-18	2018-19	-1.46	-1.49	94.87	5.57	137.68	137.20	131.63
12	The Rehabilitation Plantations Limited	2018-19	2019-20	-13.26	-13.26	25.99	3.39	141.52	141.52	138.13
13	The State Farming Corporation of Kerala Limited	2017-18	2018-19	0.18	-3.45	17.01	9.04	64.97	64.75	55.71
14	Aralam Farming Corporation (Kerala) Limited	2014-15	2016-17	-0.02	-0.02	…	0.01	-0.30	-0.30	-0.31
15	Vazhakulam Agro and Fruit Processing Company Limited	2017-18	2018-19	-2.59	-2.68	4.06	0.05	-1.00	-7.67	-7.72
16	Kerala Aqua Ventures International Limited	2014-15	2019-20	-0.92	-1.06	0.15	3.99	1.50	-1.80	-5.79
17	Kerala State Coconut Development Corporation Limited	2013-14	2017-18	0.25	0.25	…	2.85	-1.86	-17.57	-20.68
18	Kerala Cashew Board Limited	2018-19	2019-20	2.52	1.82	78.87	47.60	48.62	48.62	1.02
19	Kerala Transport Development Finance Corporation Limited	2017-18	2018-19	132.35	2.41	157.86	43.83	653.08	73.98	30.15
20	The Kerala State Financial Enterprises Limited	2017-18	2018-19	1,158.80	144.41	1,923.64	100.00	664.12	664.12	564.12
21	Kerala Police Housing and Construction Corporation Limited	2013-14	2018-19	1.94	0.51	49.31	0.27	30.65	-2.31	-2.58
22	Kerala State Construction Corporation Limited	2016-17	2018-19	5.07	15.04	515.07	0.88	48.69	48.69	47.81

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
23	Kerala State Industrial Development Corporation Limited	2017-18	2018-19	33.61	25.20	39.50	301.24	537.98	537.98	236.74
24	Roads and Bridges Development Corporation of Kerala Limited	2017-18	2018-19	-5.46	-10.16	7.86	62.43	43.05	-12.95	-75.38
25	The Kerala Land Development Corporation Limited	2014-15	2019-20	-1.49	-1.49	3.67	7.13	-20.56	-22.44	-29.57
26	Kerala State Information Technology Infrastructure Limited	2017-18	2019-20	-1.11	-1.11	1.06	204.96	199.34	199.34	-5.62
27	Kinfra Export Promotion Industrial Parks Limited	2017-18	2018-19	2.05	1.27	1.57	0.25	23.49	23.49	23.24
28	Kinfra Film and Video Park Limited	2017-18	2018-19	4.92	3.59	7.78	1.50	33.25	8.28	6.78
29	Kinfra International Apparel Parks Limited	2017-18	2018-19	-1.85	-1.15	2.23	0.25	19.20	-7.05	-7.30
30	Marine Products Infrastructure Development Corporation Limited	2017-18	2018-19	0.54	0.40	0.24	5.00	10.30	10.30	5.30
31	Kannur International Airport Limited	2015-16	2016-17	-0.52	-0.52	….	869.77	1,183.97	881.15	11.38
32	Road Infrastructure Company Kerala Limited	2013-14	2017-18	….	….	4.15	0.05	0.05	0.05	….
33	Autokast Limited	2018-19	2019-20	-11.74	-15.93	18.23	18.97	-138.21	-159.79	-178.76
34	Foam Mattings (India) Limited	2016-17	2018-19	-1.86	-1.86	5.44	6.67	3.61	-0.38	-7.05
35	Forest Industries (Travancore) Limited	2014-15	2018-19	-2.80	-3.60	32.56	0.38	-2.64	-8.58	-8.96
36	Kanjikode Electronics and Electricals Limited	2009-10	2010-11	-0.04	-0.04	0.31	0.10	0.57	0.57	0.03
37	Keltron Component Complex Limited	2017-18	2018-19	4.26	0.52	63.48	34.23	-12.70	-15.86	-50.09

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
38	Keltron Electro Ceramics Limited	2017-18	2019-20	0.55	0.08	14.49	3.18	3.09	0.47	-2.71
39	Kerala Automobiles Limited	2017-18	2019-20	-5.50	-5.52	1.76	10.98	-19.06	-58.69	-69.67
40	Kerala Clays and Ceramic Products Limited	2017-18	2018-19	-3.89	-4.88	0.96	1.32	1.26	-2.11	-3.43
41	Kerala Electrical and Allied Engineering Company Limited	2017-18	2018-19	-15.11	-21.44	95.93	111.13	-53.30	-74.76	-185.89
42	Kerala Feeds Limited	2014-15	2018-19	-3.27	-0.86	403.89	38.66	48.81	27.73	-10.93
43	Kerala State Bamboo Corporation Limited	2013-14	2017-18	-5.24	-7.15	11.25	9.36	8.18	-29.69	-39.53
44	Kerala State Beverages (Manufacturing and Marketing) Corporation Limited	2016-17	2018-19	127.37	85.93	5,089.97	1.03	945.18	945.18	944.23
45	Kerala State Drugs and Pharmaceuticals Limited	2017-18	2018-19	5.50	4.86	29.78	130.74	44.84	29.74	-101.00
46	Kerala State Electronics Development Corporation Limited	2016-17	2018-19	-8.35	-11.18	378.03	203.55	74.31	-8.35	-211.90
47	Kerala State Mineral Development Corporation Limited	2017-18	2018-19	0.04	0.03	0.74	1.76	9.71	-0.29	-2.05
48	Kerala State Textile Corporation Limited	2014-15	2018-19	-39.61	-53.17	49.27	94.52	-8.21	-67.27	-161.79
49	Malabar Cements Limited	2017-18	2019-20	-5.02	-4.78	225.97	26.00	288.10	252.36	224.95
50	Sitaram Textiles Limited	2017-18	2019-20	-3.92	-7.04	7.96	42.46	-23.71	-30.93	-73.39
51	Steel and Industrial Forgings Limited	2018-19	2019-20	-10.78	-10.24	40.82	30.07	44.76	41.75	11.68
52	SAIL- SCL Kerala Limited	2017-18	2018-19	-11.58	-20.31	0.06	26.43	-20.72	-56.35	-82.89
53	Steel Industrials Kerala Limited	2017-18	2018-19	1.08	0.15	56.67	36.56	15.42	8.71	-27.85

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
54	The Kerala Ceramics Limited	2018-19	2019-20	-0.23	-4.08	6.05	11.21	0.22	-83.15	-94.36
55	The Kerala Minerals and Metals Limited	2018-19	2019-20	163.95	104.46	829.71	30.93	779.00	779.00	748.07
56	The Metal Industries Limited	2016-17	2018-19	-1.12	-2.59	2.72	1.98	-5.10	-12.54	-14.52
57	The Pharmaceutical Corporation (Indian Medicines) Kerala Limited	2017-18	2018-19	27.01	17.85	141.59	40.00	125.67	125.67	85.67
58	The Travancore Cements Limited	2016-17	2019-20	-10.48	-13.59	18.87	2.71	-34.97	-60.86	-63.57
59	The Travancore Sugars and Chemicals Limited	2017-18	2018-19	4.77	2.87	65.52	1.32	15.36	15.26	13.94
60	The Travancore-Cochin Chemicals Limited	2018-19	2019-20	41.18	25.83	257.83	44.73	104.37	104.37	59.64
61	Traco Cable Company Limited	2017-18	2018-19	1.01	-8.78	111.23	57.22	-7.33	-16.69	-73.91
62	Transformers and Electricals Kerala Limited	2017-18	2019-20	12.16	2.93	156.16	42.97	66.26	66.26	23.75
63	Travancore Titanium Products Limited	2014-15	2019-20	-17.39	-23.63	118.69	13.77	-19.38	-40.72	-54.49
64	United Electrical Industries Limited	2017-18	2018-19	-5.94	-11.39	3.74	4.99	-46.73	-59.92	-64.91
65	Malabar Distilleries Limited	2017-18	2018-19	0.04	0.04	….	2.46	1.12	1.12	-1.34
66	Kerala State Coir Machinery Manufacturing Company Limited	2016-17	2018-19	-1.32	-1.32	3.40	23.23	19.73	19.73	-3.50
67	Trivandrum Spinning Mills Limited	2006-07	2017-18	-0.06	-0.09	….	7.73	-0.35	-11.80	-19.53
68	Bekal Resorts Development Corporation Limited	2016-17	2018-19	2.82	1.74	4.19	51.98	57.06	57.06	5.08
69	Kerala Medical Services Corporation Limited	2012-13	2019-20	1.26	1.00	341.86	0.01	9.00	8.94	8.93

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
70	Kerala Shipping and Inland Navigation Corporation Limited	2017-18	2018-19	-1.08	-1.15	10.48	58.81	41.03	41.03	-17.78
71	Kerala State Industrial Enterprises Limited	2014-15	2017-18	-3.28	-5.03	36.31	1.20	33.09	29.29	….
72	Kerala State Maritime Development Corporation Limited	2016-17	2018-19	-1.18	-0.83	0.24	10.00	0.66	0.66	-9.34
73	Kerala Tourism Development Corporation Limited	2014-15	2019-20	-6.30	-7.35	134.38	85.00	33.36	33.36	-51.64
74	The Kerala State Civil Supplies Corporation Limited	2015-16	2018-19	16.54	-25.91	4,024.97	142.02	-214.23	-214.23	-356.25
75	Kerala Tourism Infrastructure Limited	2018-19	2019-20	2.31	1.64	1.21	41.88	48.63	48.63	6.75
76	Vizhinjam International Seaport Limited	2016-17	2018-19	0.24	0.00	…	12.00	-48.11	-48.11	-60.11
77	Kerala State Coastal Area Development Corporation Limited	2013-14	2019-20	0.59	0.33	1.05	5.81	7.79	7.79	1.98
78	Kerala High Speed Rail Corporation Limited	2018-19	2019-20	-1.06	-1.06	….	59.00	42.17	42.17	-16.83
79	Kerala Rapid Transit Corporation Ltd (Erstwhile Kerala Monorail Corporation Ltd.)	2015-16	2018-19	0.01	0.02	….	28.05	27.96	27.96	-0.09
80	Kerala Rail Development Corporation Limited	2018-19	2019-20	0.26	0.31	….	76.98	76.03	76.03	-0.95
81	Muziris Projects Limited	First Accounts not finalised								
82	Azhikkal Port Limited	First Accounts not finalised								
83	Kerala Infrastructure Fund Management Limited	First Accounts not finalised								

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Sector Wise Total			**1,645.06**	**188.20**	**16,372.40**	**3,730.97**	**5,802.19**	**3,880.97**	**99.99**
SOCIAL SECTOR										
84	Handicrafts Development Corporation of Kerala Limited	2017-18	2019-20	-2.84	-4.90	10.65	3.06	-27.04	-35.86	-38.92
85	Kerala Artisans' Development Corporation Limited	2015-16	2018-19	0.34	0.08	19.70	4.60	3.98	1.77	-2.83
86	Kerala Fibre Optic Network Limited	First Accounts not finalised								
87	Kerala Small Industries Development Corporation Limited	2012-13	2018-19	-9.50	-11.56	192.83	28.09	18.79	-22.45	-50.54
88	Kerala State Development Corporation for Christian Converts from Scheduled Castes & the Recommended Communities Limited	2012-13	2019-20	-0.33	-0.35	…	41.70	33.77	31.93	-9.77
89	Kerala State Development Corporation for Scheduled Castes and Scheduled Tribes Limited	2017-18	2019-20	-5.74	-6.21	10.53	149.97	111.67	99.32	-50.65
90	Kerala State Film Development Corporation Limited	2015-16	2019-20	-0.25	-0.63	15.05	41.22	10.62	6.35	-34.87
91	Kerala State Handicapped Persons' Welfare Corporation Limited	2012-13	2019-20	0.22	0.04	5.73	3.60	13.56	1.24	-2.36
92	Kerala State Handloom Development Corporation Limited	2017-18	2018-19	-8.05	-9.90	21.12	57.29	-19.86	-37.15	-94.44
93	Kerala State Palmyrah Products Development and Workers' Welfare Corporation Limited	2013-14	2016-17	-0.31	-0.96	0.19	0.87	1.70	-0.66	-1.53

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
94	Kerala State Women's Development Corporation Limited	2015-16	2019-20	0.47	0.11	8.43	7.07	136.02	25.26	18.19
95	Kerala Urban & Rural Development Finance Corporation Limited	2016-17	2019-20	6.96	3.54	9.16	6.73	59.19	23.50	16.77
96	Kerala State Backward Classes Development Corporation Limited	2017-18	2018-19	41.06	27.29	67.49	135.35	858.28	352.04	216.69
97	Kerala State Minorities Development Finance Corporation Limited	2015-16	2018-19	0.43	0.43	2.34	29.20	48.23	29.07	-0.13
98	Kerala State Housing Development Finance Corporation Limited	2013-14	2018-19	-0.09	-0.09	...	1.27	1.18	1.18	-0.09
99	Kerala State Welfare Corporation for Forward Communities Limited	2014-15	2019-20	-0.03	-0.02	...	9.51	9.35	9.35	-0.16
100	Vision Varkala Infrastructure Development Corporation Limited	2017-18	2019-20	-0.35	-0.35	...	3.50	0.18	0.18	-3.32
101	Kerala Irrigation Infrastructure Development Corporation Limited	2013-14	2015-16	0.14	0.14	0.29	10.00	9.91	9.91	-0.09
102	Pratheeksha Bus Shelters Kerala Limited	2017-18	2018-19	0.16	0.11	0.32	0.05	0.33	0.33	0.28
103	Ashwas Public Amenities Kerala Limited	2017-18	2018-19	-0.10	-0.10	0.02	0.05	-0.17	-0.17	-0.22
104	Kerala Infrastructure and Technology for Education	2017-18	2019-20	-5.18	-5.18	24.18	5.00	13.23	-0.18	-5.18
105	Kerala State Ex-Servicemen Development and Rehabilitation Corporation Limited	2018-19	2019-20	3.05	3.05	73.21	0.50	16.80	16.80	16.30

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
106	Overseas Development and Employment Promotion Consultants Limited	2017-18	2018-19	0.30	0.25	0.70	0.86	3.62	3.62	2.76
107	Norka Roots	2018-19	2019-20	0.34	0.34	4.90	1.52	4.02	4.02	2.50
108	Indian Institute of Information Technology and Management - Kerala	2018-19	2019-20	0.25	0.25	3.75	111.78	102.83	102.83	-8.95
109	Clean Kerala Company Limited	2016-17	2018-19	0.38	0.38	1.00	13.97	13.77	13.77	-0.20
110	Kerala Academy for Skills Excellence	2017-18	2018-19	2.40	2.40	3.22	26.94	29.05	29.05	2.11
111	Bhavanam Foundation Kerala	2017-18	2019-20	0.01	0.01	...	40.00	40.11	40.11	0.11
112	Trivandrum Engineering Science & Technology Research Park	2016-17	2019-20	0.02	0.02	...	0.01	...	...	-0.01
113	Cochin Smart Mission Limited	2017-18	2018-19	-2.34	-2.34	...	200.00	195.93	195.93	-4.07
114	Impact Kerala Limited	First Accounts not finalised								
115	Smart City Thiruvananthapuram Limited	First Accounts not finalised								
116	Kerala State Pottery Marketing, Manufacturing and Welfare Development Corporation Limited	First Accounts not finalised								
117	Kerala Social Security Pension Limited	First Accounts not finalised								
	Sector Wise Total			**21.42**	**-4.15**	**474.81**	**933.71**	**1,689.05**	**901.09**	**-32.62**
	Total A (All Working Government Companies)			**1,666.48**	**184.05**	**16,847.21**	**4,664.68**	**7,491.24**	**4,782.06**	**67.37**

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
B. WORKING STATUTORY CORPORATION										
COMPETITIVE ENVIRONMENT SECTOR										
1	Kerala State Warehousing Corporation	2017-18	2019-20	9.17	6.57	30.02	13.00	24.38	-13.70	-26.70
2	Kerala Financial Corporation	2018-19	2019-20	26.65	17.70	411.67	226.50	2,102.76	338.77	112.27
3	Kerala Industrial Infrastructure Development Corporation	2017-18	2018-19	13.47	0.91	15.81	...	820.77	136.93	136.93
4	Kerala State Road Transport Corporation	2014-15	2017-18	-1,016.51	-1,431.29	1,817.86	711.09	-1,192.68	-4,290.63	-5,041.08
	Sector Wise Total			**-967.22**	**-1,406.11**	**2,275.36**	**950.59**	**1,755.23**	**-3,828.63**	**-4,818.58**
	Total B (All Working Statutory Corporations)			**-967.22**	**-1,406.11**	**2,275.36**	**950.59**	**1,755.23**	**-3,828.63**	**-4,818.58**
	Grand Total (A+B)			**699.26**	**-1,222.06**	**19,122.57**	**5,615.27**	**9,246.47**	**953.43**	**-4,751.21**
C. NON-WORKING GOVERNMENT COMPANIES										
COMPETITIVE ENVIRONMENT SECTOR										
1	The Kerala Premo Pipe Factory Limited	1985-86	1999-2000	-0.35	-0.35	…	0.35	1.00	0.16	-0.19
2	Kerala Garments Limited	2008-09	2009-10	0.35	-0.25	0.03	0.48	-7.87	-9.75	-10.23
3	Kerala Special Refractories Limited	2017-18	2019-20	-0.15	-0.15	…	2.91	-0.39	-0.39	-3.30
4	The Kerala Asbestos Cement Pipe Factory Limited	1984-85	1986-87	…	…	…	0.06	…	0.06	…

Sl. No.	Sector/ Name of the Company/ Corporation	Period of accounts	Year in which accounts finalised	Net Profit / Loss (-) before Interest and Tax	Net profit / Loss(-) after tax and interest	Turnover	Paid-up capital (including advance to Share Capital)	Capital employed	Net worth	Accumulated profit (+) / loss(-)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
5	SIDCO Mohan Kerala Limited	2007-08	2012-13	0.00	-1.16	…	0.17	-5.52	-5.96	-6.13
6	Keltron Counters Limited	2012-13	2016-17	0.08	0.08	…	4.97	-3.41	-33.96	-38.93
7	Keltron Power Devices Limited	2005-06	2014-15	…	-0.53	…	15.37	-6.42	-14.28	-29.65
8	SIDKEL Televisions Limited	1999-2000	2004-05	-0.48	-0.48	…	0.44	-2.03	-3.70	-4.14
9	Astral Watches Limited	2010-11	2011-12	-0.03	-0.32	…	0.95	-0.62	-4.97	-5.92
10	Keltron Rectifiers Limited	2005-06	2014-15	-0.07	-0.07	….	8.50	-4.86	-15.07	-23.57
11	Trivandrum Rubber Works Limited	2001-02	2010-11	-1.01	-1.02	1.52	2.35	14.00	-23.64	-25.99
12	Kerala State Wood Industries Limited	2017-18	2018-19	-0.07	-0.07	…	1.70	-1.03	-9.55	-11.25
13	Kerala State Detergents and Chemicals Limited	2014-15	2015-16	-0.09	-0.09	…	1.55	-4.02	-31.33	-32.88
14	Kunnathara Textiles Limited	Data not available								
15	Vanjinad Leathers Limited	Data not available								
	Sector Wise Total			**-1.82**	**-4.41**	**1.55**	**39.80**	**-21.17**	**-152.38**	**-192.18**
SOCIAL SECTOR										
1	Kerala School Teachers and Non-teaching Staff Welfare Corporation Limited	2007-08	2012-13	0.06	0.06	0.13	0.50	-0.11	-0.11	-0.61
	Sector Wise Total			**0.06**	**0.06**	**0.13**	**0.50**	**-0.11**	**-0.11**	**-0.61**
	Total C (All Non-Working Government Companies)			**-1.76**	**-4.35**	**1.68**	**40.30**	**-21.28**	**-152.49**	**-192.79**
	Grand Total (A+B+C)			**697.50**	**-1,226.41**	**19,124.25**	**5,655.57**	**9,225.19**	**800.94**	**-4,944.00**

Appendix 7

Statement showing the status of implementation of ERP systems by selected PSUs

(Referred to in Paragraph 5.1)

Sl. No.	Name of the PSU	Scope of ERP	Name of Implementing Agency	Work order		Actual payment		Date of scheduled completion	Date of actual completion
				Date	Amount (₹ in lakh)	Amount (₹ in lakh)	As on		
1	CASHEW CORP	Automation of Head Office and factories	Keltron	05/01/2011	35.00	17.50	31/08/2018	30/04/2011	Not completed
2	FOMIL	Integration of functional departments.	Novasoft Consultancy Services Pvt. Ltd.	05/01/2012	10.24	8.20	28/02/2012	04/04/2012	
3	WAREHOUSING CORP	Interconnecting warehouses, regional offices and zonal offices with head office.	C-DAC	09/02/2011	17.00	19.68	31/10/2019	09/02/2012	
4	KEL	Automation of various functional departments.	Zeta Software Solutions Pvt. Ltd.	04/03/2017	4.90	2.94	16/06/2017	02/06/2017	
5	HORTICORP	Automation of procurement, storage and sales/ distribution.	Fi-es Systems	15/10/2015	76.36	66.91	30/11/2019	16/02/2016	
6	TCCL	Integrated software solution for materials marketing and finance functions.	Syon Solutions	28/07/2012	20.90	14.63	31/01/2015	23/02/2013	01/04/2013
7	COIR CORP	Development of integrated software solution.	Carol Solutions	10/12/2013	20.00	16.36	30/11/2019	08/06/2014	01/02/2014
8	TTPL	Integrated office automation with MIS.	Syon Solutions	30/01/2010	21.00	18.47	31/10/2019	28/06/2011	31/12/2015
Total					**205.40**	**164.69**			

Appendix 8

Details of Bus Terminals-cum-Shopping Complexes implemented by Kerala State Road Transport Corporation as of December 2019

(Referred to in Paragraph 5.4)

Sl. No.	Name of BTSC	Cost of project (₹ in crore)			Status of completion			Built-up area (sq. ft.)			
		Estimate	Revised	Actual	Scheduled	Actual	Delay (months)	Total	Commer-cial	Vacant	
										Area	*per cent*
1	Kottarakkara	1.95	-	2.73	Not available	May 2010	-	Not available	12,523	5,357	42.78
2	Kasargod	4.32	-	6.09	Not available	January 2011	-	Not available	38,731	25,405	65.59
3	Kattakkada	3.23	-	3.52	Not available	November 2011	-	Not available	15,817	4,176	26.40
4	Nedumangad	7.99	9.70	9.66	June 2014	August 2015	13	62,356	10,038	5,535	55.14
5	Neyyattinkara	3.66	3.31	4.02	October 2013	October 2015	24	19,604	6,551	2,918	44.54
6	Payyannur	5.88	5.00	5.14	March 2016	October 2015	Nil	30,390	11,632	4,422	38.02
7	Thodupuzha	12.49	14.98	12.05	March 2015	Ongoing	57	1,10,016	13,342	11,336	84.96
8	Malappuram	7.90	-	3.91	March 2017	Ongoing	33	33,922	3,763	3,763	100.00
9	Haripad	5.35	5.08	3.88	December 2016	Ongoing	36	31,924	6,681	6,681	100.00
10	Kottayam	19.50	-	-	March 2017	Construction not started	33	1,99,778	8,240	Construction not started	
11	Palakkad	5.85	7.10	-	September 2017		27	21,711	Not available		

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