सत्यमेव जयते

Report of the Comptroller and Auditor General of India for the year ended 31 March 2021

Performance Audit on Tamil Nadu Cements Corporation Limited

SUPREME AUDIT INSTITUTION OF INDIA

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

Government of Tamil Nadu

Report No. 12 of 2022

Report of the
Comptroller and Auditor General of India
for the year ended March 2021

Performance Audit on

Tamil Nadu Cements Corporation Limited

Government of Tamil Nadu

Report No. 12 of 2022

TABLE OF CONTENTS

PREFACE

This Report of the Comptroller and Auditor General of India for the year ended 31 March 2021 has been prepared for submission to the Governor of Tamil Nadu under Article 151 (2) of the Constitution of India for being placed in the State Legislature.

The Report covering the period 2016-21 contains the results of Performance Audit on Tamil Nadu Cements Corporation Limited.

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

EXECUTIVE SUMMARY

1. Why did we take up this audit?

The performance of Tamil Nadu Cements Corporation Limited (TANCEM) was taken up as risk analysis indicated TANCEM incurring continued losses on account of operational inefficiency coupled with payment of heavy penalty for non-obtaining of Environmental Clearance for operation of limestone mines. The Expansion programme taken up for execution was also unduly delayed. Based on this, the performance audit on TANCEM was conducted between July and December 2020-21 covering the period from 01 April 2016 to 31 March 2021. The audit was carried out both at Ariyalur and Alangulam units of TANCEM.

2. How did we conduct the Audit?

The Performance Audit aimed to assess whether TANCEM has an efficient financial management system, appropriate plan for sourcing of raw material, norms for production were adhered to effectively, implemented the expansion activities of existing plant at Ariyalur efficiently and proper monitoring mechanism for implementation of Amma Cement Supply Scheme (ACSS) was existing.

During the Performance Audit, all the 60 contracts each valued more than ₹1.00 crore and implementation of expansion plant at Ariyalur were taken up for detailed examination. In addition, 92 contracts each valuing less than ₹1.00 crore were also selected on the basis of stratified random sampling method. To assess the effectiveness of ACSS, beneficiary survey was conducted jointly with TANCEM and Godown officials covering all the seven godowns in Chennai District.

3. Main Audit Conclusion

TANCEM earned profit only in two out of five years and the loss during the remaining period was mainly on account of payment of penalty for extraction of limestone without permit and accounting/charging of finance cost and depreciation in respect of the new plant established at Ariyalur. Despite incurring losses, the Company’s financial management was deficient resulting in wasteful expenditure/avoidable losses viz., delay in arranging finance for expansion plant, avoidable import of raw material for a defunct unit, failure to carry forward input tax credit, etc.

TANCEM failed to obtain Environmental Clearance (EC) for eight out of nine limestone mines taken on lease from Government. It operated mines illegally for extraction of limestone without permit and consequently it faced penalty and royalty liabilities.

There was under production of raw meal, clinker and cement by the units of TANCEM mainly on account of controllable factors such as want of fine coal, improper maintenance, etc. Further, TANCEM incurred avoidable additional expenditure on purchase of lower grade of coal and consumption of clinker and electricity beyond the stipulated norm.

On account of avoidable time over run of more than seven years in establishment of expansion plant at Ariyalur, TANCEM suffered cost overrun of over ₹200 crore. The contract management was also tardy as the contract price was fixed higher due to erroneous fixation of base price and the work was awarded by deviating the tender condition. TANCEM extended undue benefit by waiver of Liquidated damages despite delays attributable to the contractor.

Non-revision of price of cement for supply to Government departments resulted in recurring loss to TANCEM since it was bound to supply the stipulated quantity to Government at a price lower than the open market price. Non-finalisation of contract in time with private cement manufacturers for supply of cement to DRDA has not only resulted in additional expenditure of more than ₹160 crore to the Government but also led to loss of profit to TANCEM. Non-reconciliation of dues from DRDA by TANCEM resulted in non-recovery of dues of more than ₹50 crore.

TANCEM which is the nodal agency for Amma Cement Supply Scheme was procuring cement from PCMs without any agreement and hence, it could not impose any legal action against them for short supply of ordered quantity which deprived supply of required quantity of cement to the needy beneficiaries. The quality of cement supplied by the PCMs was not ensured by TANCEM and they were not insisted for production of BIS certificate. Instances of misappropriation of cash and shortage of cement were noticed at godown levels.

TANCEM failed to implement the recommendations stipulated in the Energy Audit reports and also has not implemented the pollution control measures properly. Further, Audit observed that Ariyalur unit of TANCEM placed work orders during 2018-21 by splitting the contract to bring the monetary value within its delegation of powers.

4. *What do we recommend?*

TANCEM's net worth has been decreased gradually and ended up in negative during 2020-21. Hence, TANCEM may work out a strategy to formulate a long-term plan for improving its financial position to recover itself from the eroded net worth.

TANCEM failed to claim the eligible input tax credit within the validity period which resulted in rejection by the tax authorities. Hence, TANCEM has to fix responsibility for the omission in claiming input tax credit.

Since TANCEM has not specified separate clause in the tender conditions for deduction of cess amount from the contractor, no cess was deducted. Hence, TANCEM may initiate appropriate steps to recover the cess amount from the contractor apart from fixing responsibility for non-recovery of cess amount.

TANCEM, despite being a state-owned PSU, failed to obtain Environmental Clearance (EC) for eight out of nine limestone mines. It operated the mines illegally for extraction of limestone and consequently became liable to pay a penalty and royalty. TANCEM may ensure stoppage of illegal mining and explore the possibilities of other sources of limestone till obtaining EC. Further, it may fix responsibility for not following the statutory clearances in obtaining EC and pursue with the Government at appropriate level to obtain EC at the earliest for all the quarries.

Both the Ariyalur and Alangulam units of TANCEM failed to utilise the full installed capacity at all the three stages of production (raw meal, clinker and cement) and consequently incurred loss of production. TANCEM also incurred additional expenditure due to purchase of lower grade coal, excess consumption of clinker beyond the stipulated norm and excess consumption of electricity. Hence, TANCEM may avoid stoppage of production due to controllable factors, take appropriate action for modernisation of old factories, ensure consumption of coal and electricity within the norms and ensure supply of stipulated grade of coal.

TANCEM's contract management in establishment of new expansion plant at Ariyalur was tardy as higher contract price was fixed due to erroneous fixation of base price, deviating the tender condition while award of work and extension of undue benefit by waiver of entire Liquidated Damages (LD) despite delays attributable to contractor. Therefore, TANCEM needs to fix responsibility for fixing erroneous base price, for deviating the tender condition while award of contract and for the decision on waiver of LD.

TANCEM has not adopted the right sales strategy for supply of cement to Government departments and incurred recurring losses. TANCEM also failed to reconcile the data with District Rural Development Agency (DRDA) regarding supply of cement which led to non-recovery of dues. Hence, TANCEM may review the proportion of sales to Government and open market and take up the issue of loss on account of Government supplies to fix a better price so as to benefit the Government and to improve the financial position of the Company. It may fix responsibility for non-finalisation of contract in time. Further, TANCEM may also co-ordinate with government and reconcile the dues and take steps for early recovery of the same.

TANCEM, being the nodal agency for Amma Cement Supply Scheme failed to execute any formal agreement with PCMs and hence, it could not enforce them to supply the ordered quantity. At godown level, irregularities in the form of misappropriation of cash, shortage of cement, etc., were noticed. Hence, TANCEM may enter into valid agreements with the PCMs for ensuring adequate supply of cement to the beneficiaries of the scheme and fix responsibility for non-execution of agreements. It may take up the issue of cost of administrative expenses at appropriate level and get it increased in order to avoid further losses due to implementation of the scheme. Further, it may closely monitor the supply of cement at the godown levels and ensure that the collection proceeds are remitted without delay apart from fixing responsibility for the lapses.

TANCEM has not implemented the mandatory recommendations stipulated in the Energy Audit reports and has not adhered to the pollution control measures. Ariyalur unit placed work orders by splitting the contract to award the works within the delegation of powers. Hence, TANCEM may ensure implementation of recommendations contained in the energy audit report in its financial interests and pollution control measures. It should avoid splitting of the contract as the same violates Tamil Nadu Transparency in Tenders Act, 1998.

CHAPTER-1

Performance Audit on Tamil Nadu Cements Corporation Limited

Introduction

Tamil Nadu Cements Corporation Limited (TANCEM) was incorporated in February 1976 as a wholly owned Public Sector Undertaking of the Government of Tamil Nadu (GoTN) with the basic objective to produce cement and cater to the needs of the Government departments and offer cement at an affordable price to public. TANCEM has two cement plants at Alangulam and Ariyalur. The installed capacity of the Alangulam cement plant was 2.90 Lakh Metric Tonnes Per Annum (MTPA) during the entire audit period (2016–21) and the installed cement production capacity in respect of the Ariyalur unit had increased from 5.00 Lakh MTPA to 16.30 Lakh MTPA due to establishment (March 2020) of an expansion plant with clinkerisation capacity of 10 Lakh MTPA (11.30 Lakh MTPA cement production capacity).

In addition, TANCEM established (1981) Tamil Nadu Asbestos Sheet Unit at Alangulam and acquired (1989) Tamil Nadu Stoneware Pipe Unit, Vridhachalam from Tamil Nadu Ceramic Limited. However, these two units have become defunct since May 2015 and June 2017 respectively.

1.1 TANCEM's share in cement industry in the State

The total manufacturing capacity of all cement plants in Tamil Nadu which was at 390 Lakh MTPA in 2016-17 had increased to 401.20 Lakh MTPA in 2020 –21. During the same period, TANCEM's cement production capacity of 7.90 Lakh MTPA has increased to 19.20 Lakh MTPA and its share of production in the State increased from 2.03 *per cent* (2016-17) to 4.80 *per cent*. TANCEM has been producing two grades of cement *viz.,* Portland Pozzolana Cement (PPC)[1] and Ordinary Portland Cement (OPC)[2]. During the period from 2016-21, TANCEM had produced 29.08 Lakh MT and sold 29.03 Lakh MT of cement.

1.2 Functions as Nodal Agency

GoTN appointed (2007–08) TANCEM as nodal agency for procurement of cement from Private Cement Manufacturers (PCM) and supply to District Rural Development Agency (DRDA) under the administrative control of Panchayat Raj and Rural Development Department (PR&RDD). In addition, TANCEM was also nominated (December 2014) as nodal agency for implementing Amma Cement Supply Scheme (ACSS), a scheme for supply of cement at a concessional price to the public belonging to lower-income group and middle-income group (LIG/MIG).

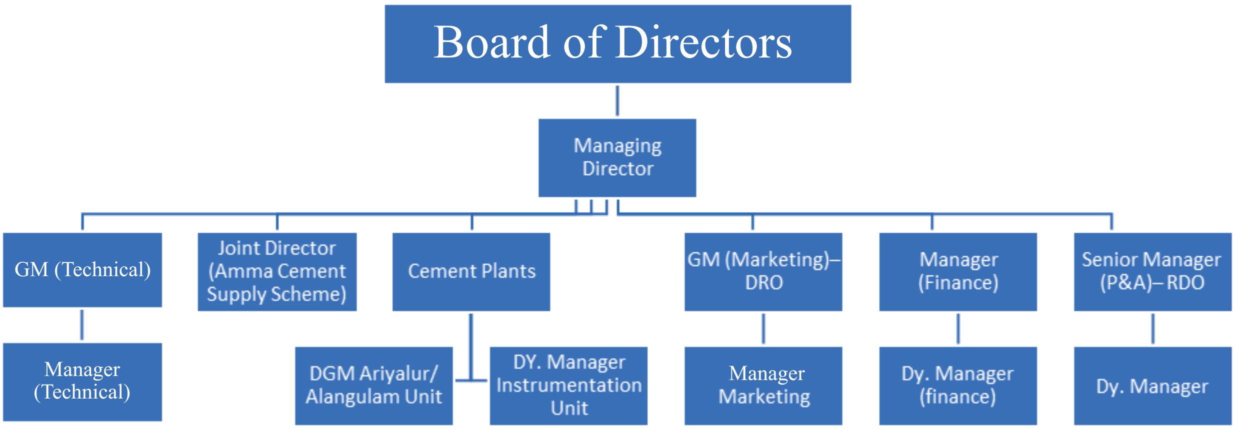
[1] PPC – ratio of Clinker, Fly–ash and Gypsum is 60:35:5

[2] OPC – ratio of Clinker and Gypsum is 95:5

1.3 Organisational set up of TANCEM

TANCEM is functioning under the administrative control of Industries Department of GoTN, and its management is vested with the Board of Directors appointed by GoTN. The organisational structure of TANCEM is given in **Picture–1.**

Picture–1: Chart showing organisational structure of TANCEM



1.4 Audit Objectives

The objectives of the Performance Audit were to assess whether TANCEM has -

- An efficient financial management system to use its funds economically and effectively
- Appropriate plan for sourcing of raw material in compliance to Acts and Rules for mining activities
- Fixed production/process norms in conformity with the industry standards and its adherence to the same
- Efficiently implemented the expansion activities of existing plant at Ariyalur
- Proper monitoring mechanism for implementation of Amma Cement Supply Scheme
- Adequate internal control and monitoring mechanism commensurate with its activities.

1.5 Audit Scope and Methodology

The performance of TANCEM was last reviewed and included in the Report of Comptroller and Auditor General of India for the year ended 31 March 2008 (Commercial) – Government of Tamil Nadu. The Report was examined (November 2011) by Committee on Public Undertakings (COPU). The summary of recommendations along with the Action Taken Notes submitted by the Government are given in **Annexure–1.**

The present audit covered the period from 2016–17 to 2020–21 to evaluate the performance of TANCEM. Before commencement of Audit, the audit objectives, audit criteria, the scope and methodology for the Performance Audit were explained to the Managing Director of TANCEM in the Entry Conference held on 07 July 2021. The audit was conducted between July 2021 and December 2021 at Corporate Office and at cement plants at Alangulam and Ariyalur. To assess the effectiveness of Amma Cement Supply Scheme, a beneficiary survey was conducted along with TANCEM and Godown officials in one District[3] covering the entire seven godowns. The scope of the Audit did not include the performance of defunct Asbestos sheet unit at Alangulam and Stoneware pipe factory at Virudhachalam.

The audit findings were reported to the State Government in April 2022 and discussed in the Exit Conference held on 07 July 2022 with the Additional Chief Secretary, Industries Department and the Managing Director, TANCEM. The views expressed in the Exit Conference along with the replies received (July 2022) were considered and incorporated, wherever found appropriate, while finalising the report.

1.6 Audit Criteria

The audit criteria adopted in assessing the performance of TANCEM was sourced from the following:

- Industry norms for production of cement and Industrial Policy of GoTN
- Mines and Minerals Development and Regulation Act, 1957
- Targets fixed for capacity utilisation of kilns and cement mills for consumption of raw material, fuel, *etc*.
- Marketing and price fixation policy of TANCEM and GoTN
- Directives of Government of Tamil Nadu for implementation of ACSS

1.7 Audit Sample

During the present audit, the functions of both Ariyalur and Alangulam units were selected and all the 60 contracts each valued more than ₹one crore entered into (during the review period) by the Corporate office for procurement of raw material and spares, logistics, mining, maintenance and civil construction including implementation of expansion plant at Ariyalur were taken up for detailed examination. In addition, 92 contracts each valuing less than ₹one crore were also selected for detailed examination on the basis of stratified random sampling method.

[3] In view of pandemic situation of COVID-19 prevailed during 2021-22, only one District (Chennai) was selected for operational convenience.

1.8 Acknowledgement

Audit acknowledges the cooperation and assistance extended by the Industries Department and the management of TANCEM at various stages of this Performance Audit.

CHAPTER-2

Financial Performance and Management

During the Audit period of five years (2016-17 to 2020-21), TANCEM earned profit in two years only. It incurred loss during the remaining three years mainly on account of payment of penalty for extraction of limestone without permit and accounting/charging of finance cost and depreciation in respect of the new plant established at Ariyalur. Despite incurring losses, the Company's financial management was deficient resulting in wasteful expenditure/avoidable losses viz., delay in arranging finance for expansion plant, avoidable import of raw material for a defunct unit, failure to carry forward input tax credit, etc.

2.1 Financial Performance of TANCEM

The financial performances of TANCEM during the five years ending 2020-21 are given in **Table–1** below:

Table 1: Key Physical and financial indicators of TANCEM during 2016-21

(₹ in crore)

Sl. No	Particulars	2016-17	2017-18	2018-19	2019-20	2020-21
1	Total Revenue	644.23	480.32	488.66	438.16	427.45
2	Total Expenditure including extraordinary items	642.18	532.19	485.36	469.42	480.50
3	Profit (+)/ Loss (-)	2.05	(-) 51.87	3.30	(-) 31.26	(-) 53.05
4	Accumulated Profit (+)/(-)Loss	(-) 13.49	(-) 65.36	(-) 62.06	(-) 93.32	(-) 146.37
5	Net Worth	97.83	45.96	49.26	18.00	(-) 35.05

Source: Data furnished by TANCEM

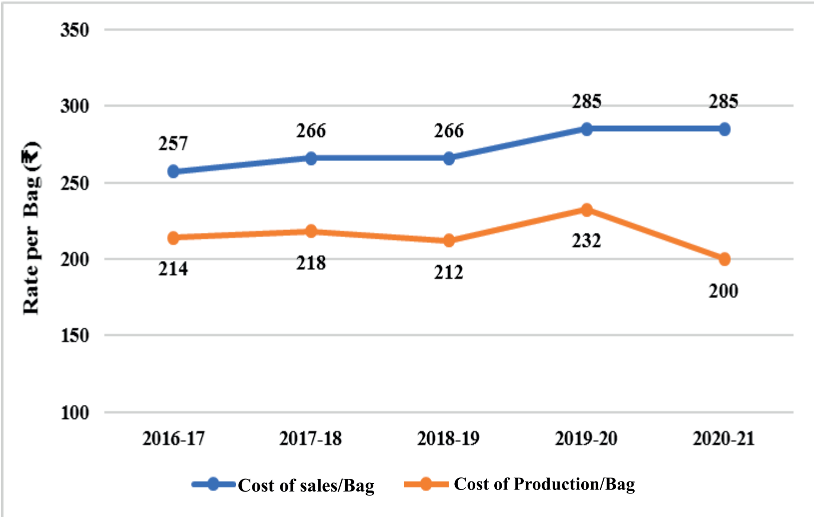
Analysis of the financial performance indicated that -

- TANCEM's income and expenditure fell in 2017-18 due to stoppage of kiln at Alangaulam (March 2017) unit and consequent under production of clinker and cement (discussed in Chapter-4).
- TANCEM earned profit (₹5.35 crore) in two years (2016-17 and 2018- 19) incurred loss (₹136.18 crore) during the remaining three years. It may be mentioned that the provisional profit for the year 2021-22 was ₹117.65 crore due to increase in revenue by ₹376.80 crore as compared to last year (₹427.45 crore).
- The losses were mainly due to payment of penalty for extraction of limestone without permit (2017-18), accounting of finance charges for the new loans obtained (2019-20) and charging of heavy depreciation (₹42.06 crore) for the new plant (2020-21).

- There has been gradual decrease in net worth and ended up in negative during 2020-21.

The average cost of production and average sales realisation of TANCEM for the past five years ending 31 March 2021 are given in the following picture:

Picture–2: Profit margin of TANCEM for the period from 2016-17 to 2020-21



Source: Data furnished by TANCEM

The profit margin ranged between ₹43 and ₹85 per bag during 2016-17 to 2020-21. Audit observed that even though there was enough margin between the average cost of production and average rate of realisation, the Company's financial management was deficient leading to accumulated losses.

Recommendation: TANCEM may work out a strategy to formulate a long-term plan for improving its financial position to recover from the eroded net worth.

Audit further noticed that during the audit period, the Company had incurred wasteful expenditures and avoidable losses to the extent of ₹21.12 crore as discussed in the following paragraphs:

Loss of ₹12.13 crore due to delay in arranging funds

2.2 As per GoTN order (August 2014), the Ariyalur expansion project was to be financed by equity contribution and interest-free loan of ₹73.90 crore from GoTN and the balance amount was to be sourced from banks as long-term loan. TANCEM had obtained the equity contribution and interest-free loan totalling of ₹147.80 crore in February/March 2017 from GoTN. However, on account of belated preparation of accounts for the year 2015-16 followed by revision of accounts (finalised in September 2017 as against the due date of September 2016), TANCEM could not firm up the term-loan from Banks[4]. Due to delay in obtaining the loan from Banks, TANCEM made

[4] Consortium of Banks consisting of Indian Bank, State Bank of India, and Indian Overseas Bank

alternate arrangements by availing (June 2017) ways and means advance of ₹300 crore from GoTN at a higher interest rate of 13.50 *per cent*. Subsequently, SBI sanctioned (November 2017) a term loan ₹602.20 crore carrying interest at 8.175 *per cent* per annum. and TANCEM repaid the high-cost ways and means advance to GoTN in March 2018. Thus, due to delay in finalisation of its annual accounts, TANCEM was forced to incur additional loss of interest of ₹12.13 crore during the period from June 2017 to March 2018.

Government in its reply (July 2022) stated that apart from delay in finalisation of annual accounts, there were multiple revisions in project costs due to which TANCEM approached banks for loan from 2017 onwards, followed by frequent changes in Managing Directors, which resulted in delay in finalisation of loan from the banks.

The reply is not justifiable as the Company got the sanction for the project cost of ₹542.52 crore from the Government in August 2014 and could have secured the sanction of loan by banks at that time itself. Failure to approach the banks immediately after the sanction in August 2014 due to delay in finalisation of Accounts forced TANCEM to resort to ways and means advance from Government as a stop-gap arrangement.

Recommendation: **TANCEM may improvise the system to ensure timely finalisation of accounts.**

Avoidable loss of ₹2.29 crore due to import of raw materials for the defunct Asbestos unit

2.3 Tamil Nadu Asbestos unit at Alangulam was incurring losses from 2010-11 onwards on account of high cost of production and lower realisation of sales. Therefore, the unit stopped its production from 16 May 2015. In the meantime, TANCEM floated (August 2014) a tender for supply of imported raw material for further processing, subject to the condition that payment to the supplier would be made from the funds generated by sale of existing stock of AC sheets. TANCEM placed two purchase orders (January 2015 and May 2015) and procured 405 MT (including purchase of 25 *per cent* additional quantity) of imported fibre valuing ₹2.28 crore. Out of the above quantity, TANCEM produced 2,388 MT of AC sheets but could consume only 211 MT, i.e., 52 *per cent* of the procured fibre, till the closure (May 2016) of the unit. The balance quantity of 194 MT valued at ₹1.14 crore was sold (February 2017) for ₹0.55 crore thereby incurring a loss of ₹0.59 crore. The AC sheets which were produced using this imported fibre were also sold (2,442 MT) below the cost of purchase and TANCEM incurred a loss of ₹1.70 crore on these sales.

Audit observed the following:

1. At the time of floating of tender (August 2014) for imported raw material, TANCEM was having unsold stock of 4,039 MT of AC sheets (July 2014) which was equivalent to average sales quantity of next nine months.
2. Despite having unsold stock, TANCEM purchased raw materials which was unwarranted and ended up in loss.

The purchase of imported raw material for a unit which was already loss making and at the verge of the closure was an imprudent financial decision which resulted in an avoidable loss of ₹ 2.29 crore.

Government has accepted the fact (July 2022) that the Company had incurred loss due to poor marketing and higher cost of production.

Failure to carry forward input tax credit under GST resulted in loss of ₹3.96 crore

2.4 Upon implementation of GST by GoI (July 2017), TANCEM, being a registered dealer, was eligible to carry forward its accumulated Input Tax Credits (ITC) available in its CENVAT account under pre-GST regime. For this purpose, TANCEM filed a return (September 2017) and a revised return (27 December 2017) to account for omitted purchases. However, TANCEM belatedly noticed (June 2020) that it had omitted to report purchases in respect of its Ariyalur Division even in December 2017, thereby failed to claim ITC to the tune of ₹3.96 crore under GST. Subsequent attempts by TANCEM to get the ITC for the omitted amount was not successful as the same was rejected (October 2020) by the Commissioner of GST and Central Excise as it was time barred.

Audit observed that lack of coordination between the Corporate Office of TANCEM (which files the return) and its Ariyalur Unit which receives the invoices for purchases, caused the delay. Thus, failure to claim the eligible CENVAT credit within the validity period resulted in its rejection with consequent loss of ₹3.96 crore to TANCEM.

Government replied (July 2022) that as GoI had filed an appeal in the Supreme Court for a similar issue of availing input credit and the outcome is awaited, it has created a provision in its books of accounts. However, the fact remained that due to lack of co-ordination between the unit office and Corporate Office of TANCEM, this omission of claim occurred.

Recommendation: **TANCEM may fix responsibility for the omission in claiming input tax credit in time and pursue with the Government for availing the same.**

Avoidable loss of ₹2.74 crore due to non-recovery of cess from contractor

2.5 The Government of India notified "The Building and Other Construction Workers' Welfare Cess Act, 1996" (Act) with a view to augment the resources for the welfare of the workers engaged in building and other construction works. As per Section 3(1) of the Act, cess is to be levied and collected at one *per cent* on the cost of construction as "deduction at source" in relation to construction works of a Government or public sector undertakings. Accordingly, GoTN notified (December 2013) that all the persons and agencies engaged in any construction work shall pay one *per cent* of the total estimated cost of the building or construction work proposed to be constructed, as contribution to the workers welfare fund constituted by the Tamil Nadu Construction Workers Welfare Board.

TANCEM awarded (April 2016) commissioning of 10 Lakh MTPA clinkerisation plant to M/s. Larsen & Toubro Ltd on Erection, Procurement and Commissioning (EPC) basis at a cost of ₹572 crore out of which the total cost towards Civil & Structural Construction was ₹272.46 crore. The plant was commissioned during March 2020. The amount of cess to be deducted from the contractor's bill worked out to ₹2.74 crore.

Audit observed that TANCEM had not specified separate clause in the tender conditions for deduction of cess from the Running Account bills of the contractor and hence, the same was not deducted in deviation to the notification issued by the GoTN. On this being pointed out by Audit (2018-19), TANCEM had created provision without collecting the amount from the contractor which is yet to be remitted to the GoTN.

Government replied (July 2022) that as per the legal opinion of the Government pleader, the primary responsibility for payment of the labour welfare cess lies with TANCEM and will have to be borne out of its own funds without deducting from the bills of contractors. Further, it was stated that it has made a provision in the books of accounts to the extent of ₹2.74 crore which would be released on demand from the Directorate of Town and Country Planning (DTCP).

The reply is not tenable as cess needs to be collected from the contractor as per section 3(1) of Building and Other Construction Workers' Welfare Cess Act, 1996. Payment from its own funds without deducting from the bills in deviation of the Act will result in loss to TANCEM.

Recommendations:

TANCEM may –

1. **fix responsibility for non-recovery of cess amount from the contractor;**
2. **initiate appropriate steps to recover the cess amount from the contractor. Further, TANCEM may take action to include a specific clause in future tenders for deduction of cess from the contractors.**

CHAPTER-3

Mining of Raw material

TANCEM failed to obtain Environmental Clearance (EC) for eight out of nine limestone mines taken on lease from Government. It operated mines illegally for extraction of limestone without having a valid EC and consequently it faced penalty and royalty liabilities.

Excavation of limestone

3.1 Limestone is the raw material employed in the manufacture of cement which is extracted by quarrying. Limestone is available in two forms – sedimentary at Ariyalur and metamorphic at Alangulam. Sedimentary are available in surface rich in calcium, less overburden and less cost of mining. Metamorphic are crystalline, not rich in calcium, found in depth and cost of mining is therefore high.

Mining of limestone is classified under red category and Environmental Clearance (EC) is a prerequisite. As per Environment Impact Assessment Act 1994 (amended in 1998), EC should be obtained for mines having an area of over 50 hectares at the time of renewal of mining lease.

TANCEM had obtained leasehold rights of various areas under lease for Ariyalur and Alangulam limestone mines from GoTN to meet the limestone requirement for manufacturing of cement. The details of the mining area and potential reserve of limestone are shown in **Table–2** below.

Table–2: Details of mining of limestone by TANCEM

Sl. No.	Particulars	Alangulam	Ariyalur	Total
1	Total number of limestone mines	5[5]	4[6]	9
2	Total area of limestone mines (Hectare)	901.80	611.57	1,513.37
3	Potential reserve of limestone in 2016–17 (Lakh MT) at beginning of audit period	223.4	328.2	551.6
4	Total Installed capacity to meet the cement production (Lakh MT) during the audit period	14.5	36.3	50.8
5	Total limestone required for installed capacity for cement production (Lakh MT) [(4)*1.12 MT of limestone]	16.2	40.7	56.9
6	Limestone mined (Lakh MT)	1.60	29.5	31.1
7	Shortfall in quantity of limestone mined (Lakh MT) [(5) – (6)]	14.6	11.2	25.8
8	Percentage of shortage [(7)/(5)]*100	90.12	27.52	45.34

Source: Data provided by TANCEM

[5] Alangulam – Alangulam Mine-I, II, III, Pandapalli and Pandapalli-Thenmalai

[6] Ariyalur – Kallankurichi Mine – I, II, III and Anandavadi

It may be seen from above that there was a shortfall in extraction of limestone from the mines of TANCEM to the extent of 25.80 Lakh MT (45.34 *per cent*) during 2016–21. The reasons for shortfall in mining are discussed in the following paragraphs.

Stoppage of mining operations due to non-obtaining EC

3.2 TANCEM acquired nine mines between 1978 and 1998 on lease from Government of Tamil Nadu (five at Alangulam and four at Ariyalur) and the total potential limestone reserve was 551.60 Lakh MT. The period of lease ranged between 10 and 20 years. Ministry of Environment and Forest (MoEF), GoI vide notification (September 2006) under Environment (Protection) Act, 1986 (EPA) and Environment Impact Assessment Notification, 1994 (EIA) mandated that prior Environmental Clearance (EC) should be obtained[7] from MoEF for mining activities in an area of five hectares or more or for enhancement of production. The above notification also states that EC is mandatory for renewal of mining lease also.

Out of the nine mines, EC is available only for Anandavadi mine (2.60 Lakh MTPA) at Ariyalur (since 1999) and EC was not obtained for the other eight mines from 1994 onwards. However, in respect of Kallankurichi, mining activities were carried out by the Company with the consent of Pollution Control Board and by obtaining limestone permit from DD (Mines), Ariyalur. Since EC, which was a prerequisite for mining lease was not available, the Tamil Nadu Pollution Control Board (TNPCB) directed (June 2017) to stop the mining activities and the Company stopped mining with effect from August 2017.

On account of failure to obtain EC in time, TANCEM incurred avoidable expenditures and faced penalty/royalty liabilities as detailed in the succeeding paragraphs.

Mining of limestone from mines without permit despite payment of penalty resulted in avoidable liability for payment of ₹119.61 crore

3.2.1 Audit noticed that TANCEM was continuing the mining activities without obtaining valid permit and hence, paid/liable to pay penalty and royalty to Government as explained below:

- A detailed examination of mining activities carried out by TANCEM revealed that it had mined 9.84 lakh MT of limestone from its mines at Kallankurichi up to August 2017 for which the Company paid (July 2017) penalty to the extent of ₹43.60 crore. Audit observed that despite paying penalty, TANCEM continued to extract 6.91 lakh MT limestone in three mines of Kallankurichi (up to March 2021) without permit which may attract similar penalty of ₹28.26 crore (calculated at the rate of ₹409 per MT). It is pertinent to mention that as per Section 21 of the Mines and Minerals (Development and Regulation) Act 1957, the penalty for illegal mining has been fixed as ₹ 5lakh per hectare besides term of imprisonment up to five years. Despite the stringent provisions of the Act, TANCEM continued illegal mining.

[7] By following the due process of approval of Terms of Reference, Environmental Impact Assessment, Public hearing etc.

- Further, as the above quantity was mined by TANCEM without valid permit from Department of Geology and Mines, the Government of Tamil Nadu was deprived of the royalty of ₹7.30 crore (calculated at the rate of ₹105.60 per MT) which was payable under Section 9 of Mines and Minerals (Development and Regulation) Act, 1957.
- In line with the EIA Notification[8], 1994 of MoEF, Hon'ble Supreme Court in its judgement on Common Cause vs Union of India held that 1993–94 should be considered as the base year for the purpose of calculation of exceeding the annual production/extraction of limestone from mines. Based on this, Department of Geology and Mines, GoTN, issued (March/June 2020) notice to TANCEM for payment of penalty of ₹58.03 crore for violating the EIA Notification for the quantity lifted from four mines[9] (36.06 lakh MT) during the period 2000–2017. However, based on the request of TANCEM, the amount of penalty has been revised to ₹40.45 crore.

Government replied (July 2022) that TANCEM has obtained EC (March 2022) in respect of one mine at Kallankurichi for mining lease and Consent to Operate from Pollution Control Board is awaited. Based on this, it is expected that mining of high grade limestone would commence from July 2022 and the consumption of imported limestone would come down. Further, it was stated that TANCEM had continued mining at Kallankurichi mines not with an intention to violate the statute, but to ensure the service to Government Departments and public.

The fact, however, remained that the Company could get EC for only one mine at Kallankurichi and the consent from Pollution Control Board is still awaited (August 2022) for continuing mining activities. Also, being a Government Company, TANCEM should not have mined limestone without obtaining EC and permit from Government. Due to this, TANCEM became liable to pay penalty and royalty to the extent of ₹119.61 crore (₹112.31 crore towards penalty and ₹7.30 crore towards royalty).

Further, non-obtaining EC at appropriate time has also resulted in shortfall in production (as discussed in the subsequent chapter).

---

8 Notification No. S.O. 60(E) dated 27 January 1994 issued by Ministry of Environment and Forest.

9 Alangulam Mine–III: GO-215: ₹21,17 crore, Alangulam Mine–II: GO-871: ₹1.47 crore, Alangulam Mine–I: GO–427: ₹16.81 crore, and Kallankurichi Mine–I: ₹18.59 crore.

Recommendations:

Government may take immediate steps to obtain EC from GoI for all the mines.

TANCEM may –

1. **ensure stoppage of illegal mining and explore the possibilities of other sources of limestone till obtaining EC;**
2. **fix responsibility for not following the statutory clearances in obtaining EC;**

Unfruitful expenditure on lease rent

3.2.2 During the non–operative period (mining activities suspended on various dates between 2013 and 2021) of eight mines, TANCEM paid (₹0.98 crore) towards lease rent and has to pay (₹0.14 crore) for the balance amount out of the total lease rent of ₹1.12 crore to GoTN. This rendered the expenditure as non–beneficial to the Company.

CHAPTER-4

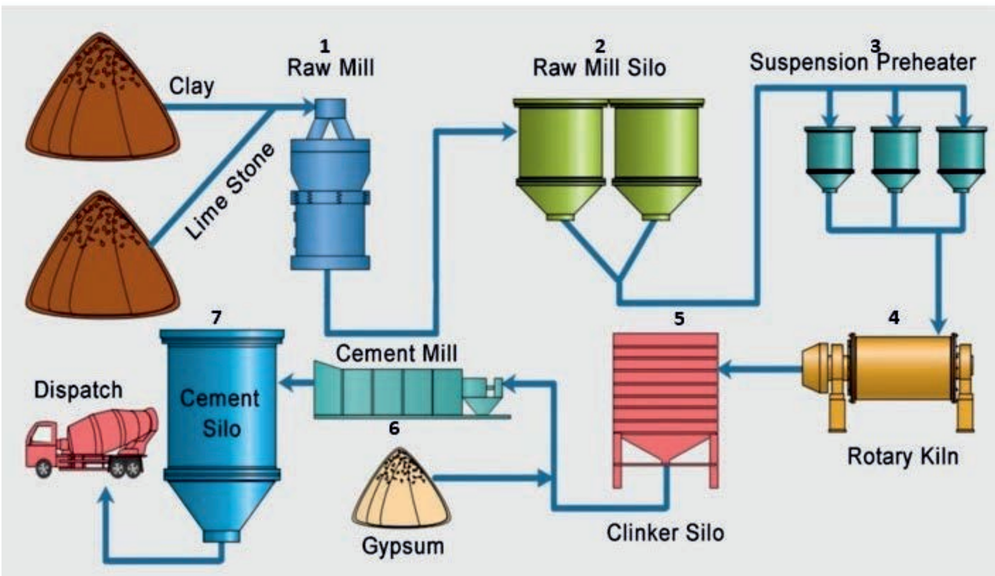
Cement Manufacturing Process

Both the Ariyalur and Alangulam units failed to utilise the full installed capacity of their plants in all the three stages of production (raw meal, clinker and cement). Consequently, TANCEM incurred loss of production leading to loss of revenue on account of controllable factors viz., usage of lower grade coal, improper maintenance, etc. TANCEM also incurred additional expenditure towards purchase of lower grade coal, excess consumption of clinker beyond the stipulated norm and excess consumption of electricity.

Manufacturing of cement involves three stages *viz.*, raw mill stage (dry process)/slurry stage (wet process), kiln stage and cement mill stage. In the first stage, limestone is crushed and fed into the raw mill along with either clay or sand to obtain raw meal. This process is called the dry process which is adopted in the Ariyalur cement plant. Under wet process adopted in the Alangulam plant, the crushed limestone is fed into the slurry mill and water is added up to 33 *per cent* to produce the slurry. In the second stage, the raw meal/slurry is fed into the kiln, where it is burnt with powdered coal and transformed into clinkers. In the third stage, the clinker is grinded and mixed with gypsum in the cement mill and cement is produced.

The flow chart depicting the manufacturing process of cement is given in **Picture–3** below:

Picture–3: Cement manufacturing process stages (Dry Process)



Source: Furnished by TANCEM

The cement thus obtained by mixing clinker and gypsum is OPC grade and in case of PPC, fly ash is also added to the clinker and gypsum. During 2016-17 to 2020-21, out of TANCEM's total cement output, 25 *per cent* (7.33 lakh MT) is OPC and 75 *per cent* (21.67 lakh MT) is PPC.

Production performance of plants

4.1 The installed capacity of the cement plant at Ariyalur plant was increased (March 2020) to 16.30 Lakh MTPA. The clinker production (1.01 Lakh MTPA) at Alangulam plant was discontinued from March 2017 due to breakdown of its kiln. Therefore, the demand for the clinker during 2017–20 for Alangulam cement plant was met by Ariyalur plants only.

The year-wise targets and achievements of production of clinker as well as cement is given in **Table-3**.

Table 3 – Details of installed capacity, target and actual production

(in lakh MT)

Sl. No.	Year	2016-17		2017-18		2018-19		2019-20		2020-21			Total	Percentage
A	RAW MILL	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AR(N)		
1.	Installed Capacity	3.96	9.50	–	9.50	–	9.50	–	9.50	–	9.50	20.59	72.05	100
2.	Production Targets	1.39	7.64	–	5.79	–	4.67	–	5.92	–	4.49	8.80	38.70	54
3.	Actual Production	1.41	6.16	–	4.99	–	5.66	–	4.28	–	1.45	6.54	30.49	42
4.	Shortfall with reference to the installed capacity	–	1.48	-	0.80	–	–	–	1.64	–	3.04	2.26	41.56	58
B.	CLINKER	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AR(N)	Total	Percentage
1.	Installed Capacity	2.29	4.75	–	4.75	–	4.75	–	4.75	–	4.75	10.00	36.40	100
2.	Production Targets	1.20	4.40	–	3.53	–	3.13	–	3.90	–	2.95	5.94	25.05	69
3.	Actual Production	1.01	4.05	–	3.27	–	3.75	–	2.79	–	0.97	4.31	20.15	55
4.	Shortfall with reference to the installed capacity	0.19	0.35	-	0.26	–	–	-	1.11	-	1.98	1.63	16.25	45
C	CEMENT	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AR(N)	Total	Percentage
1.	Installed Capacity	2.90	5.00	2.90	5.00	2.90	5.00	2.90	5.00	2.90	5.00	11.30	50.80	100
2.	Production Targets	2.00	5.20	1.80	4.80	1.44	4.25	1.25	5.00	1.65	4.87	6.67	38.93	77
3.	Actual Production	1.42	4.35	0.75	4.22	0.80	4.69	0.88	3.71	1.64	3.51	2.97	28.94	57
4.	Shortfall with reference to the installed capacity	0.58	0.85	1.05	0.58	0.64	-	0.37	1.29	0.01	1.36	3.70	21.86	43

Source: PRM provided by TANCEM
AL represents Alangulam unit
AR(O) represents Ariyalur old unit and AR(N) represents Ariyalur new unit

Audit observed that:

- Obtaining Environmental Clearance for extraction of limestone from the quarries under the control of TANCEM was the first and foremost activity for production of cement. However, shortfall to the extent of 58 *per cent* of the installed capacity in production of raw meal (crushed limestone) and resultant short production of clinker/cement to the extent of 45 and 43 *per cent* respectively of their installed capacities were mainly due to non-obtaining EC for eight out of nine limestone mines owned by it (as already discussed in para 3.1 and 3.2).
- The percentage of target fixed to installed capacity was 45 *per cent* for raw mill, 69 *per cent* for clinker and 74 *per cent* for cement. Even the lesser targets could not be achieved by the plants.

Audit observed various shortfalls in all the three stages of production that led to poor performance as discussed in the subsequent paragraphs.

Performance of Raw mill

4.2 The Ariyalur old unit has a raw mill with production capacity of 120 MT of raw meal per hour and that of the new plant (2020-21) was 260 MT per hour. At Alangulam, the raw mill (50 MT per hour) was shut down (March 2017) due to non-functioning of clinker plant. The actual production of Raw meal from the raw mill stood at an average of 32.5 *per cent* against the installed capacity. Audit observed that the under-utilisation of Raw mill to be the major reason for under-performance, as detailed below:

Under-utilisation of Raw mill

4.2.1 The performance of Raw Mill for producing raw meal (powdered limestone) at Ariyalur (both old and new plant) during the five years 2016–21 is given in **Table 4–** below:

Table–4: Performance of Raw Mill at Ariyalur plants during 2016–21

Sl. No	Year	2016-17	2017-18	2018-19	2019-20	2020-21	2020-21 (New)	Total
1	Available Hours for Operation	8,760	8,760	8,760	8,784	8,760	8,760	52,584
2	Hours Actually Operated	6,371	5,472	5,625	5,182	1,562	3,088	27,300
3	Hours of shutdown	2,386	3,285	3,135	3,602	7,198	5,672	25,278
4	Percentage of Utilisation of Raw Mill (2/6*100)	73	63	64	59	18	35	52
5	Norms for production per hour (in MT)	120	120	120	120	120	260	---
6	Targeted Production for actual hours operated (in MT) [6= (2*4)]	7,64,520	6,60,600	6,75,030	6,21,810	1,87,500	8,02,880	37,12,340
7	Actual production (in MT)	6,16,048	4,99,037	5,63,580	4,27,124	1,45,555	5,78,558	28,29,902
8	Shortfall (in MT) (6-7)	1,48,472	1,61,563	1,11,450	1,94,686	41,945	2,24,322	8,82,438

Source: PRM provided by TANCEM

After the commissioning of expansion plant at Ariyalur (March 2020), the old plant was sparsely operated (18 *per* cent only) during 2020-21. Audit scrutiny revealed that the average percentage utilisation of the raw mill at Ariyalur old plant ranged between 59 and 73 during 2016–20. Further, the unit could not achieve the rated production during the actual operation of the mill which resulted in short fall in production to the extent of 8,82,438 MT. Non-achievement of targeted production of raw meal was due to want of raw materials, hot gas, etc. From 2020-21 onwards, the Ariyalur old plant has been mainly operated as cement grinding unit.

Government replied (July 2022) that non-achievement of rated output was due to outdated technology/age-old machineries, high moisture content in raw material, etc. Since the norms of output was fixed by TANCEM considering the age of the Mill, the non-achievement of low target was not justifiable.

Performance of Kilns

4.3 The Ariyalur unit has two kilns each with production capacity of 31.25 MT of clinker per hour. At Alangulam, there was only one kiln with capacity of 26.25 MT per hour which was completely shut down (March 2017) due to aging. The clinker requirement of Alangulam unit is now being met by transporting clinker from Ariyalur unit. As mentioned in **Table-3**, the actual production of clinker from the Kilns stood at an average of 52 *per cent* against the installed capacity. Audit observed that the underutilisation of kilns, excess consumption of coal and utilisation of lower grade of coal to be the major reasons for under performance as discussed below.

Underutilisation of kilns

4.3.1 The details of capacity utilisation and clinker production by kilns at the Ariyalur plants during 2016–21 and Alangulam plant during 2016–17 is given in **Table–5** below:

Table–5: Production performance of kilns at Ariyalur and Alangulam

Sl. No.	Particulars	2016-17		2017-18	2018-19	2019-20	2020-21		Total
		AL	AR	AR(O)	AR(O)	AR(O)	AR(O)	AR(N)	
1.	Total Available hours	8,760	17,520	17,520	17,520	17,568	17,520	8,760	1,05,168
2.	Total operated hours	5,210	15,534	12,471	13,977	11,211	3,911	4,506	66,820
3.	Total stoppage hours	3,546	1,983	5,354	3,543	6,357	13,609	4,253	38,645
4.	Percentage of stoppage hours to available hours [(3)/(1)]*100	40	11	31	20	36	78	49	37
5.	Actual production per hour (MT)	19.53	26.04	25.71	26.71	24.88	24.82	95.74	---
6.	Loss of production of clinker (Lakh MT) [(3)*(5)]	0.69	0.52	1.38	0.95	1.58	3.38	4.07	12.56
7.	Loss of production of cement (Lakh MT) due to want of clinker [(6)/0.7[10] (usage of clinker in one MT of cement)]	0.99	0.74	2.00	1.36	2.26	4.81	5.80	17.96

Source: Data furnished by TANCEM

[10] For producing one MT of cement, 0.7 MT of clinker needs to be used.

From the Audit analysis, it could be seen that TANCEM has lost production of 17.96 lakh MT of cement with consequent loss of revenue to the tune of ₹991.39 crore for want of clinker. Out of which, Audit observed that ₹446.13 crore loss was on account of controllable factors (45 *per* cent) such as want of fine coal, improper maintenance, etc., and the balance ₹545.27 crore loss was on account of uncontrollable factors (55 *per cent*). Audit observed that Ariyalur unit had failed to take appropriate actions to utilise full installed capacity of both the old and new plants.

The Government replied (July 2022) that the old/outdated technology, aging of machinery, high variation in raw mix and coal ash, kiln speed restrictions, high false air entry and frequent kiln stoppages were the primary reasons for the lower output. As regards new plant clinker production, it was stated that the Company had initial teething problems and hence the rated output could not be achieved.

The reply is not acceptable since the above stated factors could be controlled by taking adequate preventive maintenances. The ash content in coal and variation in GCV could be improved by imposing contractual terms on the coal supplier for supply of coal with high ash content and lower GCV.

Recommendations:

TANCEM may –

1. **avoid stoppage of production due to controllable factors to maximize the utilisation of kiln;**
2. **take appropriate action for modernisation of old factories.**

Excess consumption of coal

4.3.2 For production of clinker, the kilns are fed by raw meal where it is burnt at a very high temperature with the help of fine coal fed by coal mills. Coal constituted 48 *per cent* of total cost of production of clinker.

The position of production of clinker and consumption of coal during the period 2016-21 in respect of both Ariyalur and Alangulam plant is given in **Table–6**:

Table–6: Details of coal consumption by Kilns

Sl No	Particulars	2016-17		2017-18	2018-19	2019-20	2020-21		Total
		AL	AR(O)	AR(O)	AR(O)	AR(O)	AR(O)	AR(N)	
1	Clinker Production (MT)	57,350	4,04,661	1,01,660	2,08,192	2,78,674	44,474	3,68,302	14,63,313
2	Coal consumption (MT)	18,173	91,129	24,365	49,622	70,284	11,385	65,581	3,30,539
3	Norms (per Kg)	310	200	230	230	230	245	160	---
4	Coal consumption as per norms (MT)	17,779	80,932	23,382	47,884	64,095	10,896	58,928	3,03,896
5	Excess consumption of coal (MT)	394	10,197	983	1,738	6,189	489	6,653	26,643
6	Value of excess coal consumed (₹ in crore)	0.07	1.36	0.14	0.27	1.17	0.09	0.87	3.97

Source: PRM Data provided by TANCEM

Audit observed that though the actual consumption of coal marginally exceeded the norm on yearly basis, the consumption exceeded the norm in 53 out of 84 instances[11] (63 *per cent)* on monthly basis. This resulted in excess consumption of coal of 26,643 MT valuing ₹3.97 crore during 2016–21.

TANCEM renewed (April 2017) its two Fuel Supply Agreements (FSA) with the Singareni Collieries Company Limited (SCCL), covering a period of five years (April 2017 to March 2022), for supply of Annual Contracted Quantity (ACQ) of 63,750 MT for Ariyalur plant and 42,000 MT for Alangulam plant. As per the FSA, the grade of coal to be supplied (declared coal) was G-7 and below. In addition, it entered (April 2019) into a E-FSA[12] with SCCL for supply of ACQ of 1,34,000 MT of G-8 grade quality coal to meet the demand of expansion plant at Ariyalur.

As per the FSA, TANCEM is responsible to check the quality of coal at the loading points itself. To ensure the quality of coal supplied, coal sampling and testing shall be undertaken at the delivery points/railway siding of SCCL mines by a third-party agency[13] who would furnish the test results within 18 days from the date of sample collection.

Audit observed the following:

- During 2016–21, TANCEM purchased 4.73 Lakh MT of coal valuing ₹282.74 crore through 120 rakes. Out of this, TANCEM received lower grade of coal in 108 rakes as per TANCEM's laboratory test reports, which is given in **Table–7**.

Table–7: Details showing grade slippage of coal

Year	Grade	Total number of billed rakes	Supplied rakes against billed grade	No. of rakes in which lower grade was supplied against billed grade
2016-17	G5	1	0	1
	G7	4	0	4
	G8	16	1	15
2017-18	G5	2	0	2
	G7	2	0	2
	G8	14	0	14
2018-19	G8	29	6	23
2019-20	G7	25	2	23
2020-21	G7	3	3	0
	G8	24	0	24
Total		**120**	**12**	**108**

Source: Data furnished by TANCEM

- However, TANCEM paid coal bills based on the invoices of SCCL even after knowing the quality of coal supplied was sub-standard. The differential cost due to acceptance of lower grade of coal caused not

11 Ariyalur old plant – 60 months (2016-17 to 2020-21); Ariyalur new plant – 12 months (2020-21) and Alanagulam plant –12 months (2016—17) totalling 84 months

12 Electronic Fuel supply agreement.

13 As per FSA, SCCL shall appoint a third-party testing agency and testing charges shall be paid by TANCEM.

only avoidable extra expenditure to the tune of ₹14.92 crore, but also breach of contract by supplying lower grade of coal by SCCL and lack of testing of coal at the unloading point.

- TANCEM dispensed with (October 2018) testing arrangement by the third-party agency. Hence, TANCEM deprived itself an opportunity to check the quality of coal at the loading point itself and accepted the grade as declared by the SCCL in deviation to the conditions stipulated in FSA.

Thus, excess utilisation of coal and acceptance of lower grade of coal resulted in avoidable expenditure of ₹18.89 crore. Further, utilisation of lower grade of coal may impact the performance of the plants and affect the quality of the cement.

Regarding grade slippage, Government replied (July 2022) that TANCEM had taken the matter with SCCL on many occasions to supply G8 grade coal as per the specifications for which SCCL has not taken any effective action. Government further stated that since TANCEM was the only Company continued for third party inspection, SCCL had informed that it would not be possible to engage third party inspection agency for a single company for inspection purpose and third party inspection was dispensed by SCCL.

The reply is not justifiable as there was a clause in the FSA for third party inspection and TANCEM failed to invoke the same in its own financial interest.

Recommendation:

TANCEM may ensure consumption of coal within norms by procurement of stipulated grade of coal.

Performance of cement mills

4.4 The production norm of cement mill of Ariyalur old plant was 80 MT per hour. Both grades of cement (PPC and OPC) were produced in the same mill depending upon the market demand. Alangulam unit has two cement mills each is having 53 MT per hour. These cement mills could not achieve the norm and the impacts of the same are detailed below:

Under-utilisation of cement mills

4.4.1 The operational performance of the cement mills at Ariyalur and Alangulam for the period from 2016 – 21 are given below:

Table 8: Production performance of cement mills

Sl. No	Year / Plant	2016-17		2017-18		2018-19		2019-20		2020-21			Total
		AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AL	AR(O)	AR(N)	
1	Total Available hours	17520	8760	17520	8760	17520	8760	17568	8784	17520	8760	8760	140232
2	Total operated hours	4879	6954	2509	6372	2383	6389	2422	5356	4613	4589	2018	48484
3	Total stoppage hours	12641	1806	15011	2388	15137	2371	15146	3388	12907	4171	6742	91708
4	Total hours lost due to controllable factors	3844	1208	5333	1751	8413	1492	9021	1794	7202	2015	1769	43842
5	Loss of production of cement (Lakh MT)	3.68	1.04	4.67	1.61	5.10	1.74	5.45	2.37	4.60	3.19	9.93	43.38
6	Loss of contribution margin due to controllable factors (₹ crore)	5.12	0.80	10.93	1.70	27.12	2.69	25.07	2.23	19.84	-5.10	21.81	117.31

Source: Monthly Performance Reports of TANCEM

From the above, it could be seen that the Ariyalur old cement mill was utilised to the extent of 68 *per cent* while Alangulam cement mill was utilised to the extent of 19 *per cent* only during 2016-21. Further, Ariyalur (old) and Alangulam mills stopped production for 14,163 hours and 70,783 hours respectively during the period 2016-21. Detailed analysis made by Audit to ascertain the reason for stoppages revealed that both the units were stopped for 43,842 hours due to controllable factors like want of clinker, grinding issues, etc., and consequently there was a loss of production aggregating to 43.38 Lakh MT valued at ₹117.31 crore.

Government replied (July 2022) that in respect of Ariyalur unit, it was not able to achieve the budgeted production of clinker because of frequent stoppage of kiln owing to brick lining failure, shell changing etc., and hence, it was not possible to utilise the full grinding capacity of cement mill. In respect of Alangulam, it was stated that due to restriction in the availability of clinker at old plant of Ariyalur, enough quantity of clinker could not be sent from Ariyalur to Alangulam and the cement mill was not operated to the fullest grinding capacity.

The reply is not tenable as the frequent stoppages of the mills of Ariyalur were due to controllable factors only and in respect of Alangulam, no steps were taken to modernise the plants as proposed by the Government.

Excess consumption of clinker for PPC grade cement

4.4.2 As per IS 1489 (Part–I): 2015 – Portland Pozzolana Cement (Fly Ash Based), for manufacture of PPC Grade, the fly ash content shall be 15 to 35 *per cent*. Accordingly, by considering the gypsum content norm at 5 *per cent*, the raw materials mix *viz.,* Clinker: Fly Ash: Gypsum should be in the ratio of 60:35:5. Based on the actual utilisation quantity of clinker, Audit noticed that in Ariyalur Plant, the actual consumption of clinker during 2016-17 to 2019-20 was higher which was in the range of 69.89 to 72.27 *per cent*. The cost of clinker during this period was in the range of ₹2,876.46 to ₹3,647.92 per MT against the cost of fly ash which was in the range of ₹93.44 to ₹218.26 per MT. Considering the low cost of fly ash, the mixing of clinker at the optimum level would have resulted in reduction of overall cost of production. Audit observed that despite installation of separate fly ash feeding system to regulate the dry fly ash feeding, the consumption of clinker was on the higher side only (2019-20). Further, since TANCEM had no action plan to monitor the mix of raw material at the optimum level as prescribed in the IS, it had resulted in excess consumption of 1.20 Lakh MT of clinker valuing ₹36.68 crore during the years 2016-17 to 2019-20, which is avoidable.

The Government replied (July 2022) that it had problems in lifting adequate quantity of dry fly ash to the optimum level during 2016-18 and after installing a separate fly ash feeding system, the dry fly ash feeding was controlled. However, it was seen from the monthly data of the Company that the consumption of clinker even after installation of fly ash feed system was between 65.84 *per cent* and 76.96 *per cent* as against 60 *per cent* and thus, the reply was not justifiable.

Recommendation: TANCEM may prepare an action plan to improve the efficiency in utilisation of plants and improve the production in all the three stages.

Other points of interest

Excess consumption of electricity for production of clinkers

4.5.1 The power consumption constituted about 7 to 19 *per cent* of total direct cost of production of clinker during 2016–21. TANCEM fixed norm for consumption of power for each year. The consumption of power by Alangulam plant in 2016-17 (stopped production of clinker since 2017), Ariyalur old plant during the period 2016–20 and new plant during 2020-21 are given in **Table–9.**

Table–9: Details of power consumption by TANCEM plants

Sl. No.	Particulars	2016-17		2017-18	2018-19	2019-20	2020-21		Total
		AL	AR(O)	AR(O)	AR(O)	AR(O)	AR(O)	AR(N)	
1.	Norm for power consumption (KWh/MT)	45.84	99.37	106.83	106.83	115.71	130.00	53.42	---
2.	Power consumption per MT of clinker production (KWh/MT)	47.86	112.57	114.55	145.81	131.51	131.86	58.93	743.09
3.	Excess power consumption per MT (KWh) [(2) – (1)]	2.02	13.20	7.72	38.98	15.80	1.86	5.51	85.09
4.	Loss due to excess power consumption (₹ in crore)	0.20	4.06	1.81	2.33	3.18	0.23	1.85	13.66

Source: Data provided by TANCEM

TANCEM increased the norm of power consumption by the kiln from 99.3 units per MT of clinker to 115.71 units per MT of clinker for the old plant. For the new plant, the norm was fixed at 53.42 units per MT of clinker for the year 2020-21. Though the norm for kiln at Ariyalur old plant was fixed at higher level compared to the kiln at the new plant by duly factoring the age of the plant, the actual consumption of power was higher than the norm in all the four years and the excess consumption was in range of 7.72 to 38.98 units per MT of clinker for the old plant. Non-achievement of the desired norms for consumption of electricity had resulted in additional expenditure of ₹11.61 crore for the old plant.

Incidentally, the average consumption of 58.73 unit per MT of clinker as against the norm of 53.42 units per MT of clinker was more even for the new plant resulting in excess consumption impacting ₹1.85 crore during 2020–21. However, TANCEM has not analysed the reasons for such excess power consumption leading to avoidable expenditure to the extent of ₹13.66 crore for both new and old units.

Government stated (July 2022) that continuance of the old technology is the main reason for the higher consumption of power in the old plant. The reply is not acceptable since the target was fixed by factoring the age of the plants only and the excess consumption lacked justification.

Recommendation: TANCEM may ensure consumption of electricity within the norms fixed to avoid wasteful expenditure.

Non supply of clinker to Alangulam unit

4.5.2 The Alangulam cement plant has been using clinkers supplied by Ariyalur plant since April 2017 due to breakdown of Kiln at Alangulam plant in March 2017. Audit noticed that production of cement at Alangulam plant was more beneficial to TANCEM as its contribution (₹46.52 per bag) was more than that of Ariyalur plant (₹31.85 per bag). During 2017–21, as against the installed capacity of 2.90 Lakh MTPA in Alangulam, the actual cement production was ranging from 0.75 Lakh MT to 1.64 Lakh MT due to shortage of clinkers. However, adequate clinkers were not supplied to Alangulam plant despite having spare capacity to produce clinker in Ariyalur plant to the extent of 1.00 Lakh MT to 9.47 Lakh MT during 2017–21 which resulted in loss of additional contribution to the extent of ₹0.82 crore.

Government stated (July 2022) that due to non-availability of EC, the limestone mines were closed, and clinker production was affected. It was also stated that due to delay in commissioning of new plant, clinker could not be supplied to Alangulam unit. The reply is not convincing because due to non-obtaining EC, TANCEM was forced to import limestone for its requirement. This could have been continued to a larger extent to avoid the above stated loss of production.

CHAPTER-5

Expansion of Ariyalur Plant

TANCEM suffered cost over-run on account of avoidable time over run of more than seven years in establishment of new expansion plant at Ariyalur. Further, the contract management was also tardy as the contract price was fixed at higher price due to erroneous fixation of base price, deviation to the tender condition while awarding the works contract, extension of undue benefit by waiver of entire Liquidated Damages and incurrence of avoidable extra expenditure towards electricity charges.

TANCEM has a Clinkerisation plant with a production capacity of 4.75 Lakh MTPA at Ariyalur. To meet the increasing demand for cement from Government agencies, TANCEM installed (March 2020) an expansion plant with a production capacity of 10 Lakh MTPA. The discrepancies noticed by Audit on implementation of the expansion plant are highlighted in the succeeding paragraphs.

Time and Cost over-run for the project

5.1 The Board of TANCEM approved (September 2010) the installation of an expanded Clinkerisation plant with a production capacity of 10 Lakh MTPA with a payback period of 5 years and the Government also announced (August 2011) the same in the Assembly. Accordingly, TANCEM appointed (January 2013) a Project Management Consultant (PMC), who submitted (May 2013) the Detailed Project Report (DPR) for an estimated cost of ₹542.52 crore for the project. However, the commercial operation of the plant commenced in March 2020, as against the scheduled completion date of May 2018, with a total cost of ₹771.66 crore. The Performance Guarantee (PG) test was conducted subsequently, and the expansion plant was commissioned in all aspects in March 2022. Audit observed that the project which was conceived in September 2010 was commissioned only in March 2020 after a period of more than seven years. Due to delays at various stages, there was a cost overrun to the extent of ₹229.14 crore[14] in implementing the project.

The time overrun was mainly due to:

i) Delay of four years for getting approval from GoTN (September 2010 to August 2014).

- The Board approved the proposal in September 2010 whereas Government approval was obtained in January 2012 only.

[14] Estimate cost was ₹542.52 crore which was enhanced to ₹771.66 crore

- Tenders for appointment of PMC was floated in February 2012, PMC was selected in June 2012 and Letter of award issued in December 2012.
- DPR was submitted to TANCEM in May 2013 which was approved by the Board in September 2013 and Government approved the same in August 2014.

ii) Delay of 14 months for finalisation of the tender and award of contract (February 2015 to April 2016)

- Tender floated in January 2015, negotiation carried out with bidders in October 2015 and the work order was awarded in April 2016.

iii) Delay of 22 months in commissioning of the plant (COD) by the contractor (May 2018 to March 2020).

- Supply of Plant and Machinery which was scheduled to be completed in November 2017
- Civil and Structural construction was to be completed by December 2017 whereas the same was completed by the contractor in February 2020 only.

Thus, the project which would have been completed and commissioned in 26 months was completed with a delay of more than seven years on account of various procedural delays as stated above.

Erroneous adoption of base price

5.2 M/s L&T Construction Limited was the lowest tenderer for the new plant who quoted a lump-sum price of ₹598.13 crore (exclusive of taxes and duties). As this amount was higher than the estimated price of ₹430.41 crore (as per the DPR proposed in 2013) negotiation was conducted with the tenderer and the quoted amount was reduced (January 2016) to ₹572 crore.

The Project Management Consultant (PMC) justified the revised quoted basic rate (₹572 crore) by adopting consumer price index increase of 27 *per cent* on ₹450.82 crore which worked out to ₹572.54 crore. Hence, the Board approved (January 2016) the recommendation of PMC to award the work order of ₹572 crore to M/s L&T Construction Limited.

Audit observed that:

The PMC had wrongly adopted the base price as ₹450.82 crore which included the cost of 110 KV Sub-station (₹15.91 crore), Miscellaneous Fixed Assets (₹1.00 crore), pre-operative expenses (₹3.00 crore) and expenses on training (₹0.50 crore) instead of adopting ₹430.41 crore, which is the price as per DPR.

Had this price was considered and applied the consumer index price of 27 *per cent* on it, the revised amount would be only ₹546.62 crore and TANCEM could have negotiated for still lesser price.

Erroneous adoption of base price by TANCEM has resulted in additional expenditure to the tune of ₹25.38 crore (₹572 crore- ₹546.62 crore).

Government replied (July 2022) that the project cost as per DPR was only an estimate, not the actual.

The reply of the Company is not convincing as the observation is on the adoption of wrong base price of ₹450.82 crore instead of ₹430.41 crore only and not on the DPR prepared on estimated basis. Responsibility needs to be fixed on the concerned officials for adoption of wrong base price without any negotiations.

Recommendation: TANCEM may fix responsibility for fixing erroneous base price while finalising the contract.

Deviation to the tender condition in terms of payment to contractor

5.3 As per clause 28 of tender document issued to the bidders in May 2015, 10 *per cent* retention amount would be released within 30 days of successful commissioning of complete plant along with achieving performance guarantee (PG) ***and*** on submission of unconditional, irrevocable performance bank guarantee (PBG) for an equal amount valid for one year. However, the above word '**and**' was wrongly modified as '**or**' while issuing work order, i.e., clause 7 of the work order states that the retention money of 10 *per cent* would be released within 15 days (amended by the Board in the pre-bid meeting) of successful completion of erection and commissioning of complete plant upon achieving performance guarantee ***or*** on submission of unconditional, irrevocable performance bank guarantee for an equal amount with validity up to warranty period.

The plant was completed and commissioned in March 2021 after the Performance Guarantee (PG) test. However, the contractor submitted (July 2019) PBG for ₹57.20 crore before erection and commissioning of the plant and the Company, based on the wrong modification, released (August/September 2019) the retention amount so far withheld without deducting 10 *per cent* retention amount on subsequent bills submitted by contractor. This has resulted in potential interest loss of ₹6.74 crore at the Company's borrowing rate of 8 *per cent* as detailed in **Annexure - 2.**

Government replied (July 2022) that the mistake might be due to typographical error. Further, it was stated that ₹56.95 crore was paid against ₹57.2 crore on submission of PBG only and hence, there was no loss to the Company.

The reply is not tenable as the company deviated the tender condition and the amount was released in contravention to the original tender document resulting in loss of interest to the extent of ₹6.74 crore. During the Exit Conference, the Additional Chief Secretary to Government, Industries Department accepted the Audit observation and agreed to fix responsibility on the erred official.

Recommendation: TANCEM may fix responsibility for deviating the tender condition while award of contract.

Non-levy of liquidated damages

5.4 As per the contract awarded (April 2016) to M/s. L&T Construction Limited, the installation of the main Clinkerisation Plant at Ariyalur was to be completed in May 2018. However, the works were completed and the plant was commissioned in March 2020 (COD) with a delay of 22 months. Though as per clause 8, read with clause 31 of General Conditions of Contract, Liquidated Damages (LD) was leviable at 0.5 *per cent* per week subject to the maximum 5 *per cent* of the contract value, the Board of Directors attributed (December 2020) the delay on the part of TANCEM citing its inability to provide the power supply and make the payments of bills on due dates and waived the levy of LD amounting to ₹28.60 crore.

Audit observed that –

- As per the contractual obligation, raw material and power supply was the only responsibility of TANCEM and should be made available to the contractor before trial run. However, TANCEM effected the power supply in December 2018 and imported limestone in July 2019, i.e., well before the trial run.
- The contractor took 20 months thereafter in completion of project in all aspects and the delay is attributable to the contractor as well.

The unreasonable waiver of LD was clearly an imprudent financial decision which had favoured only the contractor at the cost of TANCEM.

Government replied (July 2022) that TANCEM and the contractor were jointly responsible for the delay and hence, it might not be proper to invoke LD clause.

The reply is not acceptable as there was abnormal delay in supply of plant and machinery and completion of civil and structural construction portion which was the sole responsibility of the contractor

Thus, waiver of LD on unjustified grounds resulted in undue favour to the contractor to the tune of ₹28.60 crore in spite of delay in the completion of the project.

Recommendations:

TANCEM may –

1. **fix responsibility for the decision on waiver of LD;**
2. **revisit the decision on waiver of LD by reworking the delays on the part of the contractor.**

Wasteful expenditure on electricity charges

5.5 The power demand for the existing cement plant (5.00 Lakh MTPA) was 11 MVA. As per the DPR, the additional demand for power for the expansion plant (10 Lakh MTPA) was estimated at 17 MVA which was modified to 20.47 MVA during the finalisation of tender. TANCEM, therefore, availed 31.47 MVA power load since December 2018 as a single service connection for both the old and the new plant. The main clinkerisation plant of the new unit commenced production in November 2019 only. Audit observed that TANCEM paid minimum demand charges to the tune of ₹6.37

crore towards additional demand of 20.47 MVA up to October 2019 without any beneficial use on account of delay in commissioning of the new plant. Further, after the commencement of commercial operation (March 2020) of the expansion unit, TANCEM realised (April 2020) the fact that the combined power requirement did not exceed 25 MVA and surrendered (March 2021) unwanted load of 6.47 MVA. Hence, due to delay in surrendering the unwanted power load, TANCEM incurred additional avoidable expenditure of ₹2.45 crore[15] towards minimum demand charges from April 2020 to March 2021. Thus, due to erroneous estimation of power requirement and delay in surrendering the excess power, TANCEM incurred total avoidable expenditure of ₹8.82 crore

Government replied (July 2022) that it is not possible to obtain the demand in a phased manner to avoid the payment of minimum demand charges and for any additional / surrender of demand, TANCEM has to obtain approval of the Board. The fact, however, remained that the initial estimation of power requirement itself was on the higher side and also any additional demand from TANGEDCO could be obtained in a short spell of time. This is evident from the fact that TANCEM obtained the additional load in three-and-half months' time. Hence, the Company could have obtained the additional load at a later stage after watching the progress of installation of new plant. Thus, improper planning had resulted in wasteful expenditure.

---

[15] 6,470 KVA x ₹350 per KVA x 12 months x 90 *per cent*

CHAPTER-6

Marketing and Sales

TANCEM has not adopted the right sales strategy for supply of cement to Government departments. As TANCEM is bound to supply a stipulated quantity to Government at a reduced price than the open market rate and since the price was not revised, TANCEM incurred recurring losses. Further, non-finalisation of contract in time with private cement manufacturers for supply of cement to DRDA has resulted not only in additional expenditure to the Government but also led to loss of profit to TANCEM. It also failed to reconcile the data with DRDA regarding supply of cement which led to non-recovery of dues.

Sales Strategy

6.1 TANCEM was selling its products (PPC/OPC) to both Government and in open markets. The details of cement sold (in MT) to Government and open market during the last five years are given below:

Table 10: Details of cement sold to Government and in open market during 2016-17 to 2020-21

Year	Government Department (DRDA) (MT)	Average Price (₹)	Open Market (MT)	Average Price (₹)	Total (MT)	Ratio of sales DRDA: Open Market
1	**2**	**3**	**4**	**5**	**6 (2+4)**	**7**
2016-17	2,19,047	257	3,58,359	302	5,77,406	38:62
2017-18	3,02,989	266	2,02,128	280	5,05,117	60:40
2018-19	4,07,811	266	1,42,465	280	5,50,276	74:26
2019-20	3,39,731	285	1,22,620	290	4,62,351	73:27
2020-21	3,36,543	285	4,71,373	317	8,07,916	42:58
Total	**16,06,122**		**12,96,945**		**29,03,066**	**55:45**

Source: Data provided by TANCEM

Audit observed that the installed capacity for production of cement by TANCEM was to the extent of the of 50.8 lakh MT during the period 2016-21. However, TANCEM produced and sold 29 lakh MT of cement only (57 *per cent*) mainly due to want of raw material. Considering the fact that TANCEM was able to sell approximately 100 *per cent* of its production in the same year, if only the production was maximised to the level of installed capacity, the same would have benefited TANCEM with increased revenue.

Supply of cement to Government Departments

During the review period, the Company sold 16,06,122 MT of cement to government and 12,96,945 MT of cement in open market (55 and 45 *per cent* respectively) at an average price ranged from ₹257 to ₹285 and ₹280 to ₹317 per bag respectively during the above period. It is pertinent to mention that out of DRDA's total requirement of around 7.65 lakh MT per annum (average for three years from 2013-14 to 2015-16), TANCEM was supplying cement around 3.21 lakh MT per annum[16] (42 *per cent)*. The balance required quantity (4.41 lakh MT) was being purchased by DRDA from open market at an average price of ₹340 to ₹360.

- The rate for sales to government departments was fixed by the government while in the open market, the Company has to compete with the private players and hence, the rate will be based on the market demand.

Audit noticed that the rate fixed by the government to supply cement to DRDA was less than the open market rates and hence, TANCEM was incurring loss of around ₹5 to ₹45 per bag on account of this sale. TANCEM would have earned profit of ₹64.55 crore had the entire supply of TANCEM is made to open market during the period from 2016-17 to 2020-21. It is to be noted that DRDA itself is procuring cement from the open market at rates higher than TANCEM rate for majority of its cement requirements and hence, procurement from TANCEM for a lower rate is not justifiable as this sales strategy is pushing TANCEM into losses. Despite TANCEM's request, the rate was not revised by the Government and it was stagnant from October 2018 to till date.

Non finalising the tender for procurement of cement in time to meet the demand of DRDA resulted in loss to TANCEM and Government

6.2 GoTN approved (June 2007) the proposal for purchase of cement on behalf of DRDA by TANCEM through open tenders. For this agency service, TANCEM could collect a margin money of ₹2 per bag. During 2016-17, TANCEM received indent for 9.20 Lakh MT from RD&PRD. Accordingly, TANCEM invited (June 2016) tenders for procurement of 9.20 Lakh MT for which the Private Cement Manufacturers quoted price in the range of ₹279 to ₹297 per bag. After negotiations, the PCMs agreed (April 2017) to supply at ₹255 per bag whereas TANCEM offered (April 2017) a price of ₹245 per bag. No finality was reached in this regard and the finalisation of tender was being dragged for more than one year. In view of inordinate delay, GoTN permitted (December 2018) DRDA to procure cement directly from open market citing the delay in execution of the on-going projects by DRDA. Thus, the role of TANCEM in procurement of cement on behalf of DRDA ended.

Audit observed that during 2015-16 to 2017-18, TANCEM was selling its own cement in the open market in the price ranging between ₹265 and ₹302 per bag whereas the price demanded by the private cement manufacturers was only ₹255 per bag. Thus, the rejection of lower price offered by the private cement manufacturers was in violation of the provisions Section 12 (1) of Tamil Nadu Transparency in Tenders Act 1998 (Tender Act) which stipulates that the tender accepting authority shall reject the tender only if the price quoted by the tenderer is higher than the schedule of rates or prevailing market price. Thus, unjustified rejection of tender by TANCEM resulted in loss of revenue of ₹3.06 crore[17] per annum.

---

[16] Supply to DRDA only considered and supply to other Government departments excluded

[17] By way of margin money at the rate of ₹2 per bag on 153 lakh bags equivalent to 7.65 Lakh MT (being the average quantity supplied per annum by PCM)

In the absence of department supply, the RD&PRD included the cement cost in estimate adopting the schedule of rate (SOR), which ranged between ₹340 and ₹360 per bag whereas the Government rate for TANCEM's cement prevailed during the period was ₹298 per bag.

Even though GoTN directed (2001) DRDA to procure cement from TANCEM to overcome the disadvantage of purchasing at different rates by various DRDAs, the purpose was defeated as GoTN, after 17 years, allowed DRDAs to resort back to procuring cement at district level only because of inability of TANCEM to finalise tender for annual requirement of DRDA. Thus, by allowing the contractors to procure a minimum quantity of 7.00 Lakh MTPA of cement in the open market for the Government works, the DRDAs/Government departments incurred an additional expenditure of ₹168 crore [18] in three years (2018-19 to 2020-21).

Government replied (July 2022) that TANCEM could not finalise the tender since the PCMs demanded higher cement price and the issue was taken up with Government for which no action was taken at Government level.

The fact, however, remained that the offered price by the private cement manufacturers were lower (₹255 per bag) than the prevailing market price (ranging from ₹265 to ₹305 per bag). Despite this, TANCEM could not finalise the tender in time thereby it lost the opportunity of earning ₹3.06 crore per year and avoidable additional expenditure to DRDA.

Recommendations:

TANCEM may -

1. **review the proportion of sales to Government and open market and take up the issue of loss on account of Government supplies to fix a better price so as to benefit the Government and to improve the financial position of the Company;**
2. **fix responsibility for non-finalisation of contract in time.**

Dues recoverable from District Rural Development Agency

6.3 As per the directions of GoTN, TANCEM was procuring cement from PCMs and supplying to District Rural Development Agency (DRDA) in addition to its own supply and DRDA will make the payment to TANCEM for onward payment to PCM. For this activity, TANCEM was entitled to charge margin money of ₹2.00 per bag procured. Up to September 2016, TANCEM had procured 55.71 lakh MT and thereafter, the procurement on behalf of DRDA was stopped by TANCEM as it started to supply to DRDA from its own production which is continued till date (March 2022). At the end of this period, a sum of ₹57.26 crore was outstanding from DRDA regarding payment towards PCM, margin money and payment for own supply. The age-wise analysis for the dues is given below:

[18] 7 lakh MT*20 bags*₹40*3 years

Table 11: Details showing year-wise outstanding amount from DRDA

Period	PCM supply to DRDA	Margin Money	On supply from own production
2007-11	1.69	0.06	5.68
2012-15	3.54	1.35	1.60
From 2015	3.36	0.37	39.61
Total	**8.59**	**1.78**	**46.89**

Source: Data furnished by TANCEM

Audit observed that the major reasons for the outstanding dues were non-reconciliation of the quantity of cement supplied to DRDA by TANCEM and year-wise pendency of the amount recoverable from DRDA. This impacted the working capital requirement of TANCEM.

Audit further observed that TANCEM had migrated (2012) from oracle software to ERP package and while migrating, TANCEM failed to take the required back up of records and hence, it is not having customer-wise details for the outstanding amount of ₹5.68 crore. In the absence of such details, the possibility of collecting this outstanding amount is very remote.

Government replied (July 2022) that it was taking serious efforts for reconciliation which was affected due to manpower constraint. It was also stated that an amount of ₹2.04 crore (out of ₹10.37 crore) was collected as on date.

Recommendation: TANCEM may co-ordinate with government and reconcile the dues and take steps for early recovery of the same.

CHAPTER-7

Amma Cement Supply Scheme

TANCEM, being the nodal agency for Amma Cement Supply Scheme (scheme) failed to execute any formal agreement with PCMs and hence, it could not enforce them to supply the ordered quantity. During the Audit period, TANCEM has received lesser quantity of cement from PCMs than the ordered quantity and it could not supply the required quantity of cement to all the beneficiaries. Further, TANCEM incurred loss on implementation of scheme due to non-reimbursement of administrative expenses in full. Discrepancies were noticed at godown level regarding misappropriation of cash, shortage of cement, etc.

Government of Tamil Nadu launched (December 2014) the 'Amma Cement Supply Scheme' (ACSS) for sale of cement at a concessional price to mitigate the hardships faced by the lower income group (LIG) and middle-income group (MIG) of the public. As per the scheme guidelines, a beneficiary is eligible for a maximum of 750 bags for new construction of houses and 100 bags for carrying out repairs based on the certificate by Village Administrative Officer. GoTN, which appointed TANCEM as a nodal agency for implementing the Scheme, shall procure two lakh MT of PPC cement per month from seven[19] designated Private Cement Manufacturers (PCM). The review on implementation of this scheme up to May 2017 was included in the Report of the Comptroller and Auditor General of India on Public Sector Undertakings[20] for the year ended 31 March 2017. This Report was yet to be discussed by Committee on Public Undertakings (February 2022). During previous review and the present Audit, it was observed that TANCEM was yet to draw an action plan for procurement of adequate quantity cement required for the scheme. Further, it was noticed that the cement supply to the public under this Scheme was decreasing year after year and the targeted level was not achieved during the subsequent periods. The deficiencies noticed in this regard are discussed below:

Non-execution of formal agreements

7.1 The Scheme was evolved during the meeting convened by GoTN on 13 January 2014 with PCMs wherein it was decided that PCM should supply two lakh MT cement *per month* at concessional rate of ₹185 per bag which will be sold to public at ₹190 per bag. The balance ₹5 per bag[21] were to be adjusted towards other expenses. Following the above decision, GoTN issued

---

19 The India Cements Limited, Dalmia Cement (Bharat) Limited, The Ramco Cements Limited, Chettinad Cement Corporation Private Limited, Ultratech Cement Limited, ACC Limited, Zuari Cement Limited

20 Report No.5 of 2017

21 Godown charges ₹3.50 per bag, TANCEM's margin ₹0.41 per bag and tax ₹1.09 per bag.

(December 2014) detailed instructions specifying the objectives, modalities of the scheme, the role of the PCMs and the procedure to be followed by TANCEM for the implementation of scheme. Audit observed that TANCEM which was the nodal agency for implementation of the scheme did not execute any agreement specifying the obligations and responsibilities of PCMs to formalise a contract enforceable under law. In the absence of any agreement, TANCEM could not enforce PCM to supply the ordered quantity as the PCMs were supplying less than the ordered quantity (discussed in para 7.2).

Government replied (July 2022) that as the suppliers were supplying cement under this scheme as a Corporate Social Responsibility and since the Government had fixed the lower price for cement, PCMs were not willing to enter into agreements.

The reply of the Government is not convincing because notwithstanding the fact that the supplier was supplying cement as a corporate social responsibility, they were supplying the cement only because of the Government's directions in this regard. A formal agreement between TANCEM, the nodal agency and PCMs would have placed TANCEM in a better position to take corrective action at the times of short supply of cement by the PCMs.

Recommendation: TANCEM may enter into valid agreements with the Private Cement Manufacturers and fix responsibility for non-execution of agreements.

Non-supply of quantity by PCMs

7.2 The details of quantity demanded as per the scheme, quantity ordered by TANCEM and quantity supplied by the PCMs during 2016-21 are given in **Table–12.**

Table–12: Details showing the demand, order and the supply of cement during 2016-21

Year	Total Beneficiaries (lakh)	Registered beneficiaries to whom cement supplied (lakh)	Registered beneficiaries to whom cement not supplied (lakh)	Quantity ordered by TANCEM (lakh MT)	Supplied Quantity by PCM (lakh MT)	Percentage of supplied quantity to ordered quantity
1	2	3	4	5	6	7 (6/5x100)
2016-17	9.09	3.77	5.32	24.12	10.00	41.46
2017-18	8.96	3.30	5.65	23.54	8.68	36.87
2018-19	3.43	1.68	1.75	17.21	8.42	48.93
2019-20	2.65	1.84	0.81	11.78	8.18	69.44
2020-21	2.11	0.66	1.46	7.41	2.30	31.04
Total	**26.24**	**11.25**	**14.99**	**84.06**	**37.58**	**44.71**

Source: Data provided by TANCEM

Audit observed the following:

- Even though TANCEM placed orders on PCMs for supply of cement, they have not supplied the intended quantity during the entire audit period.
- The entire quantity supplied (37.58 Lakh MT) during the five years ending 2020-21, was sold to 11.25 lakh beneficiaries only and the short

supply of 46.48 lakh MT[22] by PCM, deprived the 14.99 lakh eligible beneficiaries (57 *per cent*) to get the cement at a concessional rate of ₹190 per bag against the market price ranging from ₹265 to ₹325 per bag during the above period.

- TANCEM could not take stringent action against the PCMs for non supply of ordered quantity of cement due to not entering of formal agreements with PCM, for the supply of cement.

Audit while test checking the data related to 2021-22 (up to February 2022) noticed that out of 8.92 lakh beneficiaries requiring 1,490.53 lakh bags under this scheme, TANCEM had sold 504.62 lakh bags to 5.88 lakh beneficiaries (representing 33.86 *per cent* quantity) only. Also it was noticed that as of March 2021, 5,804 beneficiaries who had remitted ₹5.17 crore were in the waiting list for delivery of 2.72 lakh bags which indicated that the supply to the beneficiaries were limited to the quantity of cement supplied by the PCM and not to the requirement of beneficiaries.

Government replied (July 2022) that ACSS is a beneficiary-oriented scheme and since it is demand-based, no enforcement can be made on any beneficiary to purchase cement.

The reply is not tenable, since even though the Government fixed (December 2014) a target to procure two lakh MT (₹185 per bag) of cement per month by TANCEM from seven PCMs, the ordered quantity was less than the target (except in 2018-19) and even that quantity was not supplied by the PCMs. The sales quantity to beneficiaries was reduced only due to short supply of cement by PCMs which resulted in not achieving of target to supply the cement at concessional rates under this scheme.

Recommendation: TANCEM may ensure placement of order and supply of cements as per the demand so as to fulfil the needs of LIG and MIG people.

Loss to TANCEM on implementation of the scheme

7.3 When the scheme was introduced in 2014, it was decided that out of sale realisation of ₹190 per bag, ₹185 will be paid to the PCMs by TANCEM after deducting ₹5 towards administrative expenses, godown charges and tax. In that ₹5, TANCEM would retain ₹0.87 per bag towards administrative expense. However, since the introduction of GST in 2017, the allocation towards administrative expenses of TANCEM was reduced to ₹0.41 per bag in order to adjust the entire expenses within the allotted ₹5. Further, the administrative expense of TANCEM increased to ₹1.19 per bag after revision of sale price to ₹216 per bag (from ₹190) in December 2020 whereas the TANCEM's margin continued to be at ₹0.41. During 2016-21, TANCEM incurred ₹8.14 crore and ₹1.05 crore respectively towards administrative expenses for salary/establishment and installation of software exclusively for the implementation of the Scheme against which it could recover only ₹4.17 crore as administrative expenses. Thus, TANCEM had to absorb the balance of ₹5.02 crore as loss. Audit observed that the fixation of administrative expense by GoTN without considering the financial and administrative

[22] 84.06 lakh MT minus 37.58 lakh MT

requirements for implementation of the Scheme resulted in loss of ₹5.02 crore for TANCEM which was already facing financial constraints.

Government replied (July 2022) that TANCEM has requested for price revision to ₹220 per bag from the existing price of ₹216 per bag thereby increasing TANCEM's share to ₹4.31 per bag from existing share of ₹1.19 per bag and the decision is pending.

The fact, however, remained that the proposal for price revision raised by TANCEM in June 2021 is not yet approved by the Government (August 2022) and the Company's loss in implementing the scheme continues.

Recommendation: TANCEM may take up the issue of cost of administrative expenses at the appropriate level and get it increased in order to avoid further losses due to implementation of the scheme.

Beneficiary survey

7.4 To assess the effectiveness of the implementation of the Scheme, out of 38 districts in the State, the beneficiary survey was conducted in Chennai district by Audit along with TANCEM and Godown officials from December 2021 to February 2022. A total of 73 beneficiaries who had purchased cement from seven godowns situated in Chennai district were interviewed through a questionnaire. The details of the response of the beneficiaries are given in given in **Table–13.**

Table-13: Summary of survey of the beneficiaries of Amma Cement Supply Scheme

Sl. No.	Questions	Response of the Beneficiaries			
		Very Good	Good	Bad	Very bad
1	Quality of the cement supplied	----	52	21	----
		Yes		No	
2	Any extra payment made by the beneficiary in addition to the original price	16		57	
3	Delay in supply of cement to beneficiary	4		69	

From the above, it is evident that 16 out of 73 beneficiaries (22 *per cent*) revealed that godown officials were taking extra money for the supply of cement and instances of delay in supply of cement were also noticed which had an influence over the lower turnover of the scheme. Therefore, TANCEM may evolve a monitoring system to arrest unhealthy practice of godown officials demanding excess money from the beneficiaries. They also need to make suitable publicity about the scheme for a better reach to the public.

The Government stated that, it has given direction to give publicity to the scheme and however, it was silent on the deficiencies noticed during beneficiary survey.

Non-testing the quality of Cement supplied and non-verification of BIS certificate for PCMs

7.5 As per the Bureau of Indian Standards Act, the PPC cement should conform to the specifications of Clause 4.1.1 to 4.1.3 which stipulates that the fly ash content of PPC cement should not exceed 35 *per cent*. Even though TANCEM is adopting this standard for its own production, it had not specified the same for cement to be supplied by PCM for the scheme. It is pertinent to note that clause 9.1 of the BIS standard requires a certificate in the required form to be furnished by cement manufacturer to the purchaser. Audit noticed that:

- During the period 2016-21, TANCEM had purchased a total of 37.58 lakh MT of cement valuing ₹1,128.01 crore. However, it did not evolve a system for testing of cement even on a sample basis before supply to the beneficiaries. During the beneficiaries' survey, along with TANCEM and Godown officials, Audit found that 21 out of 73 beneficiaries (29 *per cent*) reported that they were not satisfied with the quality of the cement supplied.
- TANCEM did not ensure that PCM was supplying cement as per the quality standards specified by BIS. Further, TANCEM accepted the cement bags from PCM without certificate relating to fly ash content and quality of the cement. The PCMs also have not produced any BIS certificates for the cement supplied by them.

Government replied (July 2022) that, all PCM have BIS certificate for their own production and supply was made based on this certificate and there were no quality complaints. However, Audit observed that, as per the Government directions (December 2014) all the PCMs were supplying the cement in the brand name of ACSS only and none of the PCMs obtain BIS certificate under the scheme even though they have obtained the BIS Certificate for their own brand.

Deficiencies in implementing Amma Cement Supply Scheme at Godown level

7.6 To assess the impact of monitoring and effectiveness of the implementation of the Scheme at the godown level, a detailed examination of records of seven godowns situated in Chennai district was conducted and the following deficiencies were noticed.

i) Discrepancies in stock

At the end of the financial year 2017-18, the closing stock of cement bags as per books in godowns was 4,89,375 bags, whereas it was 2,27,268 bags as per physical verification report, resulting in a shortage of 2,62,107 bags. The company and godown staff have to reconcile and take action to recover the shortage of bags amounting to ₹4.98 crore.

Government replied (July 2022) that reconciliation work was going on and the variation would be sorted out soon.

ii) Issue of cement more than the norm

As per the scheme guidelines, the beneficiary is eligible for a maximum of 750 bags for new construction of houses and for a maximum of 100 bags for repairs which is based on the certificate by the Village Administrative Officer. During the test check of seven godowns at Chennai, it was noticed that in ten cases (five godowns), 200 bags of cement were issued for repair works which was against the norm. This indicated the absence of proper mechanism to check the issue of eligible quantity as per the norms especially when there were many eligible beneficiaries who could not receive cement due to less supply by PCM.

Government replied (July 2022) that the Company had installed online software system to avoid the issue of excess bags over the norm. However, Audit observed that even after implementation of this system, there were ten cases (five godowns) on issue of cement in excess of the norms.

iii) Misappropriation of collections

Initially, when the Scheme was implemented, godown staffs were permitted to accept Demand Draft (DD) from any nationalised/scheduled banks from consumers/ beneficiaries for the sale of cement. Further, the consumers were also permitted to pay cash in the local branch of nationalised/scheduled banks and cement would be issued on confirmation of remittance. However, it was observed that during the period up to 2017-18, the godown staff received cash and there were eleven instances of misappropriation of cash at the visited godowns amounting to ₹1.59 crore due to lack of inspection by TANCEM at the godown level. Audit further observed that even though more than three years had elapsed from the period of misappropriation, the company could recover a meagre amount of ₹0.22 lakh only till date. It was further noticed that no responsibility was fixed on the officials by following the procedures of departmental inquiry and the recovery is still pending. This indicated lack of internal control at various levels of TANCEM and responsibility has to be fixed on the concerned godown staff. It is pertinent to note that the system of cash collection has been withdrawn from February 2018.

Government accepted (July 2022) the observation and stated that action would be taken against the concerned officials.

iv) Delay in remittance of Demand Drafts (DD) received from beneficiaries resulting in non-realisation of ₹ 0.89 crore

As per the scheme, the eligible public were required to remit the purchase value of cement by way of Demand Draft to godown which in turn to be deposited into the bank. To monitor the deposit of DDs and its collection, TANCEM had installed (July 2017) Highly Integrated Supply Chain Management System (HISCMS) software at a cost of ₹1.05 crore. Audit noticed that HISCMS was deficient and the remittance into the banks were not monitored properly. There were delays in remittance of DDs collected from the beneficiaries and the banks did not honour payments in respect of 766 DDs valuing ₹0.89 crore. Further, though the validity of these DDs expired, no legal action was initiated to realise this amount which may result in loss to that extent.

Government stated (July 2022) that the problem was solved by introduction of V-Collect (NEFT transfer) system. However, the reply is silent about the action taken/proposed to realise the amount of ₹0.89 crore.

Recommendation: TANCEM may closely monitor the stock of cement and ensure that the collection proceeds are remitted and fix responsibility for the lapses.

CHAPTER-8

Monitoring and Internal Control

TANCEM has not implemented the mandatory recommendations stipulated in the Energy Audit reports and has not implemented the pollution control measures.

Ariyalur unit placed work orders by splitting the contract to award the works.

Monitoring mechanism provides assurance that compliance with law and regulations have been made while carrying out the operations. Audit, however, observed that monitoring mechanism was not effective for the reasons stated below.

Violation of the provisions of the Companies Act, 2013

8.1 As per Section 2 (60) of the Companies Act, 2013, a director can be made liable as an 'officer in default' for a contravention of the provisions of the Act if, inter alia, that such director was aware of the contravention by virtue of having received proceedings of the Board or participating in such proceedings without objecting to the same, or such contravention took place with his consent or connivance.

Audit observed that TANCEM had not complied with the notifications issued by GOI under Environment Protection Act, 1986 in respect of the requirement for obtaining Environmental Clearance. Even after Board's decision (September 2014) that 'violation of various rules as notified by MoEF will not be repeated in future', TANCEM continued to operate the mines without EC till date (February 2022) (as discussed in paragraph (3.2)).

Government replied (July 2022) that the mining operations were carried out without obtaining EC to fulfil the accountability of the Corporation in ensuring continuous supply of quality cement at subsidised rates to the Government departments/public in open market which was not intimated to the Board.

The fact, however remained that from 2017-18 onwards, cement was produced with illegally mined raw material along with legally available raw material by a State-owned PSU without intimating the fact to the Board.

Non-compliance to Energy Audit regulation

8.2 Energy audit is mandatory for the cement industry as per the notification (May 2014) issued by GOI under the Energy Conservation Act 2001 to help in identifying various energy saving opportunities in energy intensive industries. As per the Bureau of Energy Efficiency (Manner and intervals of time for conducting Energy Audit) Regulation, 2010, the first mandatory energy audit should be conducted by an accredited energy auditor within 18 months of the date of notification (May 2014) and the subsequent audits should be conducted once in every three years from the date of submission of the previous energy audit report. In compliance with the notification, TANCEM conducted an energy audit (October 2015) through an accredited energy auditor at a cost of ₹ 0.25 crore for Ariyalur old plant.

Audit observed that TANCEM did not conduct first energy audit for the Alangulam plant so far and second energy audit for the Ariyalur plant also which was due since 2018. Audit, further, observed that TANCEM did not implement the recommendations of energy audit and the impact on electrical system alone could have fetched annual savings of ₹1.15 crore with one time investment of ₹0.54 crore in the Ariyalur plant.

Government stated (July 2022) that Ariyalur Unit has implemented most of the recommendations with minimum and medium investments category in a phased manner and processing the rest of the similar recommendations for implementation. In respect of the capital-intensive recommendations, no action has been taken so far as it requires huge investment.

Recommendation: TANCEM may ensure implementation of the recommendations contained in the energy audit report in its financial interests.

Non-establishment of pollution control measures

8.3 The cement industry is a red[23] category industry as it has impact on the ecology of its surrounding areas due to mining as well as plant operation. Non-compliance with the environmental regulations by TANCEM had been brought out in the Report of the Comptroller and Auditor-General of India (Commercial) for the year ended 31 March 2008. The COPU directed (June 2014) TANCEM to take appropriate steps to keep the pollution under control and to undertake periodical inspection to ensure the norms prescribed by TNPCB are maintained.

Audit observed that TANCEM was yet to comply with the environmental regulations as below –

- TANCEM has not established the bag house technology[24] (as directed by TNPCB in 2018-19) in the clinker cooler and the silo in the Ariyalur old plant.
- Ariyalur unit had not achieved Thermal Substitution Rate (TSR) of 10 *per cent* by usage of Alternate Fuels and Raw materials.
- For Ariyalur and Alangulam units, Company had not installed retrofit emission control device to control emission of particulate matters generated by Ariyalur and Alangulam plants.

Government replied (July 2022) that certain pollution control measures could not be installed at old plant due to paucity of funds and the same were deferred since new plant was commissioned. In respect of TSR, it was stated that TANCEM has taken efforts to install Alternate Fuel Feeding system for which DPR was prepared. Regarding installation of retrofit emission control device, it was stated that TANCEM is taking steps to control the emission particulate matter within the level.

Recommendation: TANCEM may ensure establishment of bag house technology and install retrofit emission control device early to comply with the pollution control regulations.

[23] Red category will not be permitted in ecologically fragile or sensitive areas

[24] Bag house is advanced filter to remove soot and ash from exhaust fumes before they exit the smokestacks at 99.97 *per cent* efficiency.

Splitting of tenders in violation of Tamil Nadu Transparency in Tenders Act, 1998

8.4 As per the approved (September 2014) delegation of powers, the head of Ariyalur plant was empowered to award contracts valuing up to ₹2.00 lakh in each case. However, the head of Ariyalur plant placed 549 work orders valuing ₹8.17 crore for breaking of limestone mine, loading and transportation of limestone from Kallankurichi mines to the plant during the period from 2018-19 to 2020-21 by splitting the contract to award works within its delegation of powers. Further, Ariyalur unit made payment to the contractors without obtaining evidence for fulfilling statutory provisions relating to labour laws.

Government replied (July 2022) that the contract had been awarded to more than one contractor in order to ensure continuous supply of limestone to the cement plant. Government further assured that the mining operations in future will be carried out by floating annual tenders at the Registered Office so as to fulfil statutory provisions relating to the tender procedure and also labour laws.

Recommendation: TANCEM may avoid splitting of the contract as the same violates Tamil Nadu Transparency in Tenders Act, 1998.

Non-weighment of limestone while loading at mines

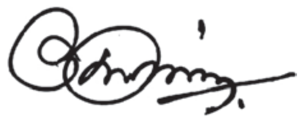
8.5 The Anandavadi mine is located 17 km away from the Ariyalur plant. Though mine is equipped with a weigh bridge for weighing limestone, the mined limestone were loaded in tippers / lorries at mine site and transported to Ariyalur plant without indicating weight of limestone loaded into lorries. The weighment of limestone was done after entering the Ariyalur plant. Audit observed that TANCEM could not ascertain the loss/theft of limestone (if any) during en-route to the Ariyalur plant in the absence of weighment at the loading points of Anandavadi mine. Audit, further, observed that TANCEM never conducted any annual physical verification of limestone stock at mines.

Government replied (July 2022) that TANCEM had not weighed the tippers in the weigh bridges earlier and now they are being weighed at the weigh bridges located at the mines before transportation of limestone. It was further stated that annual physical verification of limestone stock would be conducted from the upcoming years.

Recommendations:

TANCEM may -

1. **fix responsibility for non-weighment of limestone before loading to plant;**
2. **ensure neither loss nor theft of limestone in transit;**
3. **ensure physical verification of stock at mines every year.**



Chennai **(K.P. ANAND)**
The 27 January 2023 **Principal Accountant General (Audit-II)**
Tamil Nadu and Puducherry

Countersigned

New Delhi **(GIRISH CHANDRA MURMU)**
The 30 January 2023 **Comptroller and Auditor General of India**

ANNEXURES

Annexure – 1

(Referred to in paragraph 1.5)

Recommendations of Committee on Public Undertakings (COPU) and its latest position

Recommendations of COPU	Latest position
The Committee recommends to take steps to expedite the disposal of the case in the Supreme Court and to report the latest position in the regard immediately (Para No. 4.4)	The Supreme Court dismissed petitions filed by PCM and granted liberty to file application under section 24 of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 before Honourable High Court or appropriate authority. Based on judgement, PCM had gone on appeal. The outcome of the case is awaited.
The Committee desires to have detailed report on the merits and demerits of modernization of Alangulam plant (Para No. 8.6).	The Company requested (July-2021) the GoTN to drop proposal for modernization of Alangulam Cement Unit due to escalation of project cost due to time and cost overrun and higher cost of production coupled with interest commitment for expansion plant at Ariyalur. The Board advised to operate Alangulam plant as Cement grinding unit by mixing clinker from Ariyalur and imported clinker. The order of the Government is awaited.
The Committee has pointed out that TANCEM was supplied 'D' Grade coal of ₹2.83 lakh MT along with 'C' Grade coal. The CMD had stated that necessary steps had been taken to collect the differential cost for grade slippage. The Committee desires to have a detailed report in this regard (Para No. 9.3.4)	The coal supplier (SCCL) refused to pay for the grade slippage and TANCEM accepts lower grade of coal than agreed in Fuel Supply Agreement (discussed separately).
The Committee desired to take appropriate steps to keep the pollution under control in both mills and to undertake periodical inspections to ensure that the norms prescribed by TNPCB are maintained. Possible efforts should also be taken to run both the mills in profit. (Para No. 11.6)	TANCEM had complied with PCB norms by installing Ambient Air Quality equipments.

Source: Data extracted from COPU Reports

Annexure – 2

(Referred to in paragraph 5.3)

Loss of interest due to deviation in tender condition

Sl. No.	Withheld retention amount particulars	10% amount (₹ in crore)	Actual date of payment against PBG	Date in which the bill should have been paid	Total amount (₹ in crore)
1	Bills towards Plant & machinery, Civil & structural construction and Erection & commissioning activities up to July 2019	51.93	01-08-2019	14-03-2021	6.60
2	Bills towards Design & Engineering activity up to July 2019	2.04	01-09-2020	14-03-2021	0.08
3	Plant & machinery bill no.12 dated 24.07.2020	1.36	22-01-2021	14-03-2021	0.01
4	ETC bill no.11 dated 10.10.2019	0.46	31-03-2020	14-03-2021	0.03
5	CSC bill no.12 dated 18.12.2019	1.19	01-05-2020	14-03-2021	0.02
		56.98			**6.74**

Source: Data furnished by TANCEM

GLOSSARY OF ABBREVIATIONS

Abbreviation	Description
ACC	Annual Compensation Charge
ACSS	Amma Cement Supply Scheme
ACQ	Annual Contracted Quantity
BIS	Bureau of Indian Standards
C&AG	Comptroller and Auditor General of India
CENVAT	Central Value Added Tax
COVID 19	Coronavirus Disease 2019
DD	Demand Draft
DPR	Detailed Project Report
DRDA	District Rural Development Agency
DTCP	Directorate of Town and Country Planning
EC	Environmental Clearance
EIA	Environment Impact Assessment Notification, 1994
EPA	Environment (Protection) Act, 1986
EPC	Erection, Procurement and Commissioning
ERP	Enterprise Resource Planning
FSA	Fuel Supply Agreements
GCV	Gross Calorific Value
GoI	Government of India
GoTN	Government of Tamil Nadu
GST	Goods and Services Tax
HISCMS	Highly Integrated Supply Chain Management System
ITC	Input Tax Credit
LD	Liquidated Damages
LIG	Lower Income Group
MT	Metric Tonne
MIG	Middle Income Group
MoEF	Ministry of Environment and Forest
MTPA	Metric Tonne Per Annum
OPC	Ordinary Portland Cement
PBG	Performance Bank Guarantee
PCM	Private Cement Manufacturers
PMC	Project Management Consultant
PPC	Portland Pozzolana Cement
PSU	Public Sector Undertaking
PR&RDD	Panchayat Raj and Rural Development Department
SBI	State Bank of India
SCCL	Singareni Collieries Company Limited
SOR	Schedule Of Rate
TANCEM	Tamil Nadu Cements Corporation Limited
TNPCB	Tamil Nadu Pollution Control Board