Chapter II

Performance Audit relating to Government Companies

2 Performance Audit on Kalisindh Thermal Power Project of Rajasthan Rajya Vidyut Utpadan Nigam Limited

Executive Summary

The Government of Rajasthan (State Government) included setting up of Kalisindh Thermal (coal based) Power Project (KaTPP) in its XIth five year plan (2007-12) and accorded (June 2007) administrative and financial approval of ₹4600 crore for setting up two units (500 MW each) of KaTPP. The proposed capacity was enhanced (June 2007) to 1200 MW (2 X 600 MW) to ensure wider participation of the international bidders. The Performance Audit covers all the activities of KaTPP since preparation of Detailed Project Report (DPR) by TCE Consulting Engineers Limited till commissioning of the plant including operational performance upto 2015-16.

Setting up of KaTPP

The DPR envisaged (October 2007) the cost of setting up of the plant at ₹5495.07 crore. Rajasthan Rajya Vidyut Utpadan Nigam Limited (Company) revised the estimated cost to ₹7723.70 crore (May 2011) and further revised (March 2014) it to ₹9479.51 crore which was approved (August 2011 and August 2014) by the State Government. Both the Units of KaTPP were commissioned at a total cost of ₹9479.51 crore. The actual cost of setting up the plant exceeded the estimated cost (₹ 4600 crore) by 106.08 per cent. The State Government provided equity assistance (20 per cent) of ₹1895.90 crore and remaining funds (80 per cent) of ₹7583.61 crore were arranged by the Company through borrowings from Power Finance Corporation (PFC)/commercial banks.

The cost overrun as compared to the estimated cost in DPR was attributed to increase in cost of 'Engineering, Procurement and Commissioning' (EPC) contract (₹ 1852 crore); water storage system (₹764.05 crore); construction of Railway siding (₹153.85 crore upto March 2015 and work was in progress as on March 2016); and interest and finance cost (₹ 1881 crore) during the period of construction. Besides, various associated works like construction of store shed/hostel; fire tender and dozer; third party inspection were not envisaged in DPR and contributed to cost overrun.

The work orders for setting up the project were awarded (October 2008) to BGR Energy Systems Limited, Chennai (BGR Energy) at a negotiated price of ₹ 4900.06 crore. The contract price included off-shore supplies of US $ 405 million and local (Indian) supplies/services of ₹3296.665 crore.

The contractual commissioning period of Unit-I and Unit-II was October 2011 and January 2012 respectively. The Units were commissioned after delays of 31 months and 42 months on 7 May 2014 and 25 July 2015 respectively. Delay in completion of the project was attributed to delay (seven months) in obtaining environmental clearance and non-adherence to the time schedule in completion of various major activities by BGR Energy. The major activities viz. boiler light up, ash handling plant, coal handling plant and cooling tower, etc. were completed after delays ranging between 18 and 41 months in case of Unit I and 28 and 53 months in case of Unit-II. The work order for supply of the generator transformers was placed (February 2012) after elapse of the contractual date of commissioning of both the Units. Further, BGR Energy observed delays of more than two years in awarding work orders to its sub-vendors for electrical and mechanical works, after award of EPC contract. The sub-vendors delayed supply of material/completion of mechanical and civil works by more than two years. The Board discussed (March 2009 to May 2014) the issue of delay in completion of the project several times but deferred levy of Liquidated Damages (LD) six times between March 2009 and May 2014.

The contract price of BGR Energy was firm. The Company was required to make payments for off-shore supplies at a firm rate of ₹39.59 per US $ and any exchange rate variation was to be borne by BGR Energy. The Company purchased one US $ at a rate ranging between ₹44.32 to ₹66.88 and made payments in US $ without recovering exchange rate variation of ₹295.29 crore. This also resulted into extra burden of ₹19.40 crore on the Company towards payment of taxes to the Central/State Government. Further, the Company extended undue financial benefit to BGR Energy by refunding labour cess of ₹48.21 crore in violation of the clauses of work order and notification (27 July 2009) issued by the State Government.

Civil works

The Water Resources Department (WRD) of the State Government agreed to share 60 per cent of the cost of construction of Dam on Kalisindh River but it did not incur any expenditure and the entire cost was borne by the Company. The Company released funds of ₹696.37 crore to WRD during 2007-16 but did not make any effort to recover the cost to be shared by the WRD. IRCON could not complete the construction of railway siding within the stipulated time period and the Company granted extension seven times (50 months) during February 2012 to October 2015 and made payments of ₹6.26 crore (upto March 2015) towards field supervision/establishment charges beyond the committed charges.

Operational efficiency of KaTPP

The KaTPP could not achieve the operational parameters fixed by Rajasthan Electricity Regulatory Commission in respect of Plant Load Factor; Station Heat Rate; consumption of oil; and auxiliary consumption. Non-achievement/adherence to the operational norms caused shortfall in generation of 4217.86 MUs valuing ₹ 1744.06 crore; excess consumption of coal of 4.34 lakh MT valuing ₹177.34 crore; excess consumption of 22723 kilolitre oil (₹99.25 crore); and loss of 127.70 MUs valuing ₹51.67 crore during 2014-16. The plant availability norms (85 per cent) fixed by Central Electricity Authority were also not achieved. The Unit-I remained inoperative for 4431.45 hours (56.12 per cent) out of 7896 available operational hours due to forced outages during 2014-15.

Environmental issues

The Company did not establish (July 2016) environment management cell at KaTPP as per conditions of the environment clearance. The KaTPP failed to achieve stack emission parameters prescribed by Ministry of Environment and Forest, Government of India (GoI) in respect of particulate matter; Sulphur Dioxide; and Oxides of Nitrogen. Further, equipment to measure the air and noise pollution were also not installed.

Financial management

The Company defaulted in payment of interest/principal to the PFC and had to pay penal interest and interest thereon of ₹ 8.47 crore besides forgoing rebate of ₹ 18.15 crore towards timely payment of installments. Delay in commissioning of Unit-I by 31 months deprived the Company of a rebate of ₹35.40 crore. The Company did not make any effort to seek exemption from the State Government from payment of entry tax (₹22.74 crore) paid to BGR Energy. Further, KaTPP was eligible for availing fiscal benefits under Mega Power Project policy of the GoI but the Company never explored possibilities and was, therefore, deprived of fiscal benefits of ₹431.30 crore.

Audit recommendations

Audit recommendations mainly pertain to recovering LD and other excess payments made to BGR Energy as per tender terms/General Conditions of Contract; recovering cost of Dam to be shared by WRD including prorate charges; adhering to the environmental norms; and exploring possibilities to avail benefits under the policies of GoI and State Government.

Introduction

2.1 Kalisindh Thermal (coal based) Power Project (KaTPP) of Rajasthan Rajya Vidyut Utpadan Nigam Limited (Company) is located in Jhalawar District of the State of Rajasthan. The Government of Rajasthan (State Government/GoR) included KaTPP in its XIth five year plan (2007-12) to meet the growing demand of electricity for rapid economic development of the State. The proposed capacity of the plant was 1000 Megawatt (MW) (2 X 500 MW) to be installed at an estimated cost of ₹ 4600 crore. The State Government enhanced (June 2007) the proposed capacity to 1200 MW (2 X 600 MW) on the request (May 2007) of the Company to ensure wider participation of the international bidders as per the recommendations of the Central Electricity Authority (CEA). The Unit-I (May 2014) and Unit-II (July 2015) of KaTPP were commissioned at a total cost of ₹ 9479.51 crore.

Scope of Audit

2.2 The Performance Audit covers the activities of KaTPP since preparation of Detailed Project Report (DPR) in 2007-08 by the Consultant till commissioning of the plant including operational performance upto 2015-16.

Our scrutiny mainly involved review of DPR; contracts relating to erection/engineering, procurement & commissioning of the plant and associated civil works. The operational performance of the plant has been analysed with reference to the standards of performance projected in the DPR and standards prescribed by the CEA/Rajasthan Electricity Regulatory Commission (RERC)/Government of India (GoI). Further, adherence to the environmental rules and regulations prescribed by Ministry of Environment and Forest (MoEF), GoI has been reviewed.

Audit Objectives

2.3 The Performance Audit was carried out to assess whether:

- engineering, procurement and commissioning (EPC) of the plant was in accordance with the DPR time schedule;
- contract and financial management were effective to minimise the time and cost overruns;
- the plant achieved operational efficiency as per the norms/standards prescribed in DPR and those by CEA/RERC/GoI; and
- environmental Rules/Regulations were adhered to by the Company.

Audit Criteria

2.4 The audit criteria derived from the following sources were adopted for achieving the audit objectives:

- DPR of the project;

- Administrative and Financial sanction/approval of the State Government for implementation of the project;
- tender documents and work orders awarded for erection, procurement and commissioning of plant;
- standards of performance stipulated in DPR;
- standards of performance prescribed by CEA/RERC/GoI;
- joint venture agreement for supply of coal;
- environmental Rules and Regulations of GoI/State Government;
- performance reports submitted to the RERC; and
- Board agenda and minutes, manuals, MIS and other relevant records of the Company.

Audit Methodology

2.5 The methodology adopted for attaining audit objectives with reference to audit criteria consisted of:

- explaining audit objectives and audit criteria to the Government/ Company during entry conference held on 22 February 2016;
- review of records at the Head Office of the Company and at KaTPP during January 2016 to May 2016;
- raising of audit queries and interaction with the Management of the Company;
- issue (June and August 2016) of draft Performance Audit Report to the Government/Company for comments and replies thereon; and
- discussions with the Government/Company on the audit findings during exit conference held on 29 August 2016.

The Performance Audit Report has been finalised considering the views of the Company during exit conference and its reply (August 2016) to the draft Performance Audit Report. The Government endorsed (August 2016) the reply of the Company.

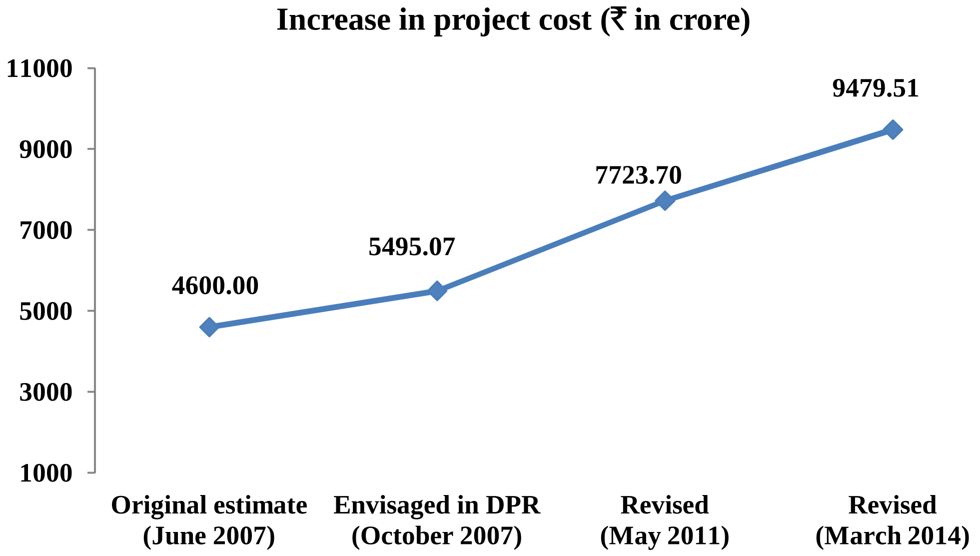
Audit findings

2.6 The audit findings broadly cover issues relating to contract management in setting up of the project and civil works; operational efficiency of the plant; and compliance with the Environmental Rules and Regulations.

Setting up of KaTPP

2.7 The State Government accorded (June 2007) administrative & financial approval of ₹ 4600 crore for setting up the two units (500 MW each) of KaTPP. The terms of sanction provided the funding pattern in the debt-equity ratio of 80:20. The State Government was to provide equity assistance of 20 *per cent* and remaining 80 *per cent* funds had to be arranged by the Company through borrowings from Power Finance Corporation (PFC) and Commercial Banks.

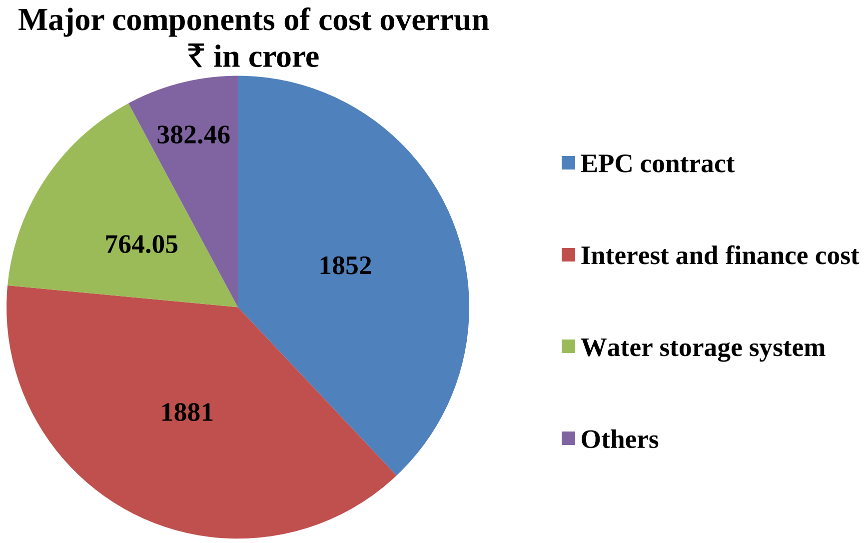
The DPR envisaged (October 2007) the cost of setting up of the plant (2 X 600 MW) at ₹ 5495.07 crore. The Company revised (May 2011) the estimated cost to ₹ 7723.70 crore which was approved (August 2011) by the State Government. The State Government also accorded (September 2012) approval for additional equity assistance. The estimated cost was again revised (March 2014) to ₹ 9479.51 crore and approved (August 2014) by the State Government.



The funding pattern of the project as on March 2016 was as below:

Sources of funds	Amount (₹ in crore)	Percentage contribution
Equity assistance from State Government	1895.90	20.00
Loan from Power Finance Corporation	6583.61	69.45
Issue of Bonds	850.00	8.97
Short-term loans from banks	150.00	1.58
Total	**9479.51**	**100.00**

The Unit-I and Unit-II were scheduled to be commissioned in 39 and 42 months respectively from the date of placement of order for the main plant. The Units were, however, commissioned after delay of 31 and 42 months respectively from the contractual commissioning period. Unit-I was commissioned in May 2014 and Unit-II in July 2015 at a total cost of ₹ 9479.51 crore. The actual cost of setting up the plant, therefore, exceeded the estimated cost by 106.08 *per cent.* The major components causing cost overrun are shown in the pie-chart below:



2.8 The reasons for increased cost are discussed below:

- The cost of 'Engineering, Procurement and Commissioning' (EPC) of both the Units as per DPR prepared by the Consultant and the original sanction issued (June 2007) by the State Government was ₹ 3539 crore. However, the EPC contract was awarded (October 2008) to the lowest bidder at ₹ 4900.06 crore. The value of EPC contract was further increased (May 2011 and March 2014) to ₹ 5391 crore due to foreign exchange rate variation and inclusion of tax liabilities like entry tax. The cost of EPC works, therefore, increased by ₹ 1852 crore (52.33 *per cent*) when compared to the original sanctioned cost and cost envisaged in DPR.

- The DPR envisaged the cost of water storage system at ₹ 50 crore. The Company, however, in addition to the water storage system envisaged in DPR also constructed dam on Kalisindh River and an additional raw water reservoir in the premises of KaTPP. Though the work of construction of dam and additional raw water reservoir was in progress (March 2016), the Company had released payments of ₹ 696.37 crore to the Water Resources Department of the State Government towards construction of dam. The contract for additional raw water reservoir was awarded at ₹ 67.68 crore. The project cost, therefore, increased by ₹ 764.05 crore.

- The original sanctioned cost of the project estimated the interest and finance cost during the period of construction at ₹ 564 crore. However, time and cost overruns increased the interest and finance cost to ₹ 2445 crore.

- The Consultant envisaged cost of ₹ 30 crore for construction of Railway siding. The Company awarded contract to IRCON Limited on cost plus basis. The work was in progress (March 2016) and as on March 2015, the Company had released payments of ₹ 160.56 crore to IRCON Limited. The Company had also made (March 2015) payments of ₹ 23.29 crore to Railways for other works related to construction of railway siding.

- The DPR did not envisage cost of various associated works *viz.* construction of store shed/hostel (₹ 12.97 crore); fire tender and dozer (₹ 8 crore); third party inspection (₹ 3.75 crore), construction of boundary wall (₹ 2.28 crore); expenditure towards corporate social responsibility (₹ 24 crore); which also led to increase in the project cost.

The Company accepted the fact of cost overrun and stated that the project report for setting up of units (2 X 500 MW) was prepared by the Company based on rough estimates considering normative values for getting sanction from the State Government. The fact remained that the project estimates were not realistic.

Execution of Project

2.9 The major contracts awarded by the Company for setting-up of Units of KaTPP were as below:

Details of Work orders/contracts	Name of the Contractor	Date of issue of the work order	Amount of work order (₹ in crore)
Preparation of DPR	TCE Consulting Engineers Limited	6 October 2007	8.40
Supply of equipment and materials including mandatory spares of off-shore origin	BGR Energy Limited	13 October 2008	US $ 405 million and ₹ 431.296 crore (Total ₹ 2034.691 crore)
Supply of all equipment and materials including mandatory spares of Indian origin	BGR Energy Limited	13 October 2008	1843.216
Supply of additional spare parts	BGR Energy Limited	26 June 2015	166.00
Third party inspection of Boilers, Steam Turbines, Generators material	Lloyd’s Register Asia	16 July 2009	3.00

Outside view of Kalisindh Thermal Power Plant

Appointment of consultant

2.10 The Company engaged (October 2007) TCE Consulting Engineers Limited (Consultant) at a cost of ₹ 8.40 crore for providing comprehensive consultancy services for setting up of KaTPP which included preparation of feasibility report/DPR; design engineering services including procurement assistance, inspection services, field engineering (site supervision) services and start-up; commissioning and initial operation including post commissioning consultancy.

The work order provided for payments in three parts: lumpsum firm price for comprehensive consultancy services; man-day rate for inspection services; and man-month rate for services of qualified and experienced engineers. The man-month rates were valid upto 31 December 2008 while lumpsum prices were valid upto 30 June 2012. The Company was required to pay escalation charges at the rate of eight *per cent* per calendar year or part thereof for availing services beyond the validity period.

We observed that the Company incurred extra expenditure of ₹ 3.75 crore[1] towards man-days and man-months including escalation charges thereon for availing the services beyond the validity period due to delay in commissioning of the project.

The Company stated that supervision services were essentially required for monitoring/supervision of the works as per plan. The fact remained that the Company had to incur extra expenditure due to delay in commissioning of the project.

Implementation of the Project

2.11 The Company issued (July 2008) letter of intent (LoI) to BGR Energy Systems Limited, Chennai (BGR Energy) for setting up of both the units of

1 As per work order, ₹ 2.65 crore was to be paid. However, the total variable charges paid to the consultant were ₹ 6.40 crore due to delay in commissioning of the project.

KaTPP on 'Engineering, Procurement and Commissioning' (EPC) basis at a negotiated price of ₹ 4900.06 crore. The contract included off-shore supplies of US $ 405 million and local (Indian) supplies/services of ₹ 3296.66 crore. Clause 11 of the work order (13 October 2008) provided that the contractual commissioning period of Unit-I and Unit-II would be 39 months and 42 months respectively from the date of issue of LoI. Accordingly, contractual commissioning period of Unit-I and Unit-II was 8 October 2011 and 8 January 2012 respectively. The final handing over of Unit-I and Unit-II was to be done by 17 December 2011 and 17 March 2012 respectively.

The Unit-I and Unit-II were declared commissioned for commercial operations on 7 May 2014 and 25 July 2015 respectively. The contractual commissioning period of Unit-I and Unit-II was, therefore, delayed by 31 months and 42 months respectively as discussed below.

Non-availability of environmental clearance

2.12 The Company applied (19 December 2007) to MoEF for grant of environmental clearance for KaTPP which was accorded on 26 February 2009. As such, BGR Energy could not commence the work from the date of issue (9 July 2008) of LoI resulting in delay of seven months in commencement of work.

The Company stated that the delay in obtaining environmental clearance from MoEF was a procedural delay and beyond the control of the Company.

Non adherence to the time schedule as per PERT Chart

2.13 BGR Energy submitted (September 2008) PERT[2] chart indicating scheduled date of completion for various electrical, mechanical and civil works of the project. The performance of BGR Energy in achievement of major milestones vis-à-vis their scheduled completion date as per PERT chart is given below.

Name of the work	Unit-I			Unit-II		
	Scheduled date of completion	Actual date of completion	Delay in months	Scheduled date of completion	Actual date of completion	Delay in months
Boiler Light up	12 March 2011	30 December 2012	21	07 June 2011	16 April 2014	33
Ash Handling Plant	28 March 2011	03 June 2014	38	20 June 2011	03 June 2014	35
Coal Handling plant	05 May 2011	16 September 2013	28	05 May 2011	16 September 2013	28
Cooling Tower	10 May 2011	21 April 2013	23	25 June 2011	12 December 2015	53
Turbine on barring gear	27 May 2011	03 February 2013	18	06 August 2011	25 August 2014	36
Rolling & Synchronization	14 June 2011	30 May 2014	35	05 September 2011	27 February 2015	41
Readiness of 400KV Switch yard	09 September 2010	31 March 2014	42	20 January 2011	31 March 2014	38

2 Programme Evaluation and Review Technique.

As seen from above, BGR Energy could not complete any of the major activities within the stipulated time period. The major activities *viz.* boiler light up, ash handling plant, coal handling plant and cooling tower, *etc.* were completed after delays ranging from 18 to 41 months in case of Unit I and 28 to 53 months in case of Unit-II. Delay in completion of major activities delayed the trial run of the Units by 32 and 42 months respectively. BGR Energy handed over the Units finally in January 2016.

We observed that there was considerable delay in awarding work orders to the sub-vendors by BGR Energy after award of EPC contract. Out of 87 electrical and 567 mechanical works, work orders to sub-vendors for 17 electrical and 60 mechanical works were placed after delay of more than two years from the date of award of EPC contract. The sub-vendors of BGR Energy also delayed supply of material and in completion of mechanical and civil works. The sub-vendors delayed the supply of materials for three electrical and 85 major mechanical works by more than two years. Further, out of 74 civil works, the sub-vendors delayed 36 works by more than two years.

The monthly progress reports submitted by BGR Energy in respect of both the units disclosed that upto 8 January 2012 (schedule date of completion of Unit-II), the level of completion of construction of Balance of Plant; Boiler; Turbine; and Generator (BTG) was only 73.59 *per cent* against 99.57 *per cent* completion level envisaged in PERT chart. Further analysis disclosed that BGR Energy did not submit 16 mechanical drawings relating to Coal Handling Plant and four civil engineering drawings related to wagon tippler by the stipulated completion date of Unit-II. As regards civil work, 42 *per cent* soling[3] and 60 *per cent* RCC[4] work of Stock Pile area; 40 *per cent* RCC work of Crusher House; and 45 *per cent* work of Conveyor foundation were pending by the scheduled completion date of Unit-II.

We observed that the Company had not made any detailed analysis of the reasons for delay. The Board of Directors (Board) discussed (March 2009 to May 2014) the issue of delay in completion of the project in the Board meetings. However, no concrete action or directions were issued to BGR Energy to ensure timely completion of the project. The Board even deferred the issue of levy of Liquidated Damages (LD) six times between March 2009 and May 2014 on the plea that levy of LD would not in any way relieve the contractor from its obligation and liabilities.

We observed that Clause 5 of the Work order (October 2008) provided that the contractor was required to furnish a contract performance guarantee in the form of Bank guarantee equivalent to 10 *per cent* of the total composite value of EPC contract for timely completion and faithful performance of the contract. Clause 22.1 of the General Conditions of Contract (GCC) and clauses of the work orders awarded to BGR Energy provided for levy of LD at the rate of 0.5 *per cent* of the total contract price per week of delay or part thereof for delay in handing over of the Units. The maximum amount of LD for delay in handing over the Units was 10 *per cent* of the total contract price.

3 Leveling of the ground.
4 Reinforced cement concrete.

As on 31 July 2016, the Company had financial hold of ₹ 109.57 crore and US $ 10.7 million towards LD for delay in completion of the project. In addition, the Company also had financial hold of ₹ 329.67 crore and US $ 40.5 million in the form of bank guarantees[5] towards performance of the equipment supplied by BGR Energy.

The Company stated that various activities mentioned in the PERT chart were interlinked with each other and any delay in providing input had the cascading effect on future activities. The Company attributed the time overrun to delay in getting environmental and railway siding clearances; issues relating to payment to the contractor; long spells of rain during 2011 and 2012; *etc.* The Company also apprised that a committee had been constituted to finalise the LD to be recovered from BGR Energy for delay in completion of the project.

Installation of generator transformer

2.14 As per technical specifications[6] of the EPC contract, BGR Energy was required to install two sets of Indian make generator transformers. The preferred sub-vendors were Bharat Heavy Electricals Limited, Alstom, Transformers and Electricals Kerala Limited, Asea Brown Boveri and Crompton Greaves Limited.

All the terms, conditions and technical specifications were accepted by BGR during finalisation of the tender and there was no specific request for change in the technical specifications of generator transformers even during the pre-bid meetings. However, BGR Energy subsequently sought (February 2009) deviation in the technical specifications of the generator transformers and offered Chinese make generator transformers. During February 2009 to October 2011 several correspondences took place on this issue between the Company and BGR Energy but BGR Energy could not furnish sufficient reasons for not supplying the Indian make generator transformers from the preferred domestic sub-vendors. Finally, BGR Energy agreed (January 2012) to supply Indian make generator transformers and placed (February 2012) supply order on Crompton Greaves Limited. The generator transformers were received at KaTPP during March 2012. By this time, the scheduled date (26 January 2011) of commissioning of the generator transformers at both the Units had already passed.

This had substantially delayed the commissioning of Unit-I and Unit-II as the work order for supply of the generator transformers was placed after elapse of the contractual date of commissioning of both the Units (January 2012).

The Company stated that any delay in completion of the project on account of delay in supply of generator transformer would be considered along with other reasons of delay while finalizing the closure of contract.

Undue benefit to BGR Energy

2.15 The Company invited (13 August 2007) tenders for setting up two units of KaTPP on EPC basis and received bids from BGR Energy and BHEL. The various clauses of Instructions to Bidders (ITB) and General Conditions of Contract (GCC) provided that:

5 Bank guarantees are valid upto April 2017.
6 Section C-14/Volume-II.

- The bidders shall quote their proposal in lumpsum price for the entire scope of works on firm basis and quoting a system of pricing other than the specified system would run the risk of rejection of bids. The price shall be quoted in Indian Rupees or U.S. Dollar (US $). If a bidder quotes price in US $, then US $ would be converted in Indian Rupees at the exchange rate prevailing on the date of opening Techno-commercial bid. The price thus converted in Indian Rupees would be used for evaluation purpose. Further, the currency for payment would be Indian Rupees (irrespective of the currency indicated by the bidder in the price bid) at the exchange rate prevailing on the date of opening of Techno-commercial bid (Clause 18 of the ITB).
- The contract price would be firm except for statutory variations in taxes and duties applicable in India only (Clause 16 of the GCC).
- The Company would make payments in Indian Rupees/US $ through the financial institution tied up for payments under the contract. If payments were requested in US $ for imported components, the payments in US $ would be made keeping in view the selling price of US $ as on the date of opening of Techno-commercial bid and any variations in the exchange rate shall be on the part of the contractor (Clause 45.5.1 of the GCC).
- No exchange rate variation would be payable; the prices are firm; and any variation in the exchange rate would be on the account of contractor. The exchange rate of US $ as on the date of opening of Techno-commercial bid would be taken into consideration till finalisation of the contract and any charges for arranging US $ would be on the part of the contractor (Clause 47.2 of the GCC).

Audit scrutiny disclosed that BGR Energy sought deviation in Clause 18 of the ITB and 45.5.1 of the GCC during pre-bid meeting (October 2007). It desired that the payments should be made in the quoted currency and payments for foreign portion should be made at the rate applicable on the date of payment instead of the exchange rate existing on the date of opening of Techno-commercial bid.

The Company did not clarify the issue and deferred it stating that the clarification would be issued to the bidders in due course of time. The Company, however, with regard to another clarification sought by BGR Energy in respect of payment in foreign exchange for the foreign supplies portion of the contract, clarified that payments would be made in currencies (US $ or Indian Rupees) in which the contract price had been stated in contractor's bid.

It was noticed that BHEL quoted the contract price exclusively in Indian Rupees while BGR Energy quoted its price bid in two parts *i.e.* off-shore supplies of US $ 405 million and on-shore supplies and civil work of ₹ 3419.61 crore. The Company converted the US $ 405 million into Indian Rupees taking exchange rate (₹ 39.59 per US $) existing on the date (10 January 2008) of opening of Techno-commercial bid. The Company evaluated the price bids as per the terms and conditions of tender and guaranteed performance parameters of the equipment/proposed plant. The contract price of BHEL and BGR Energy was evaluated at ₹ 5083.35 crore and ₹ 5027.51 crore respectively. As BGR Energy was the lowest bidder, the Company entered (July 2008) into negotiations with it and issued (9 July 2008) LoI at ₹ 4900.06 crore. Subsequently, the work order was issued on 13 October 2008.

It was noticed that the Company never issued any clarification on the deviation sought by BGR Energy as regards the date of exchange rate to be reckoned for making payment for supplies quoted in US $. The Company, however, arranged US $ and made payments to BGR Energy without considering the fact that no exchange rate variation was payable. There were wide fluctuations in the exchange rate of US $ after awarding of the Contract and the Company paid at exchange rates ranging between ₹ 44.32 and ₹ 66.88 per US $ during the period from March 2010 to June 2015.

The Company was required to make payments for off-shore supplies at a firm rate of ₹ 39.59 per US $ as per the contract and any variation on account of exchange rate was to be borne by the contractor. The Company, by not observing the terms and conditions of ITB and GCC, paid ₹ 295.29 crore in excess to BGR Energy on the off-shore supplies made by it. Besides, the Company also did not adjust payment of ₹ 8.72 lakh made to the State Bank of Bikaner and Jaipur for arranging US $.

The excess payment which was made on account of exchange rate variation also impaired the process of selection of lowest bidder because payments made to BGR Energy without considering the exchange rate of ₹ 39.59 per US $ were much higher than those quoted by BHEL.

The Company stated that it was a standard practice followed in Government organizations to pay in Indian Rupees at the foreign exchange rate prevailing on the date of lading. Further, the Company issued (November 2007) clarification regarding payment in foreign currency for the foreign supplies portion which stated that the currency or currencies in which payments were to be made to the contractor under this contract should be specified in the bid, subject to the general principle that payments would be made in currency or currencies *i.e.* (US $ or Indian rupees) in which the contract price had been stated in the contractor’s bid. However, applicable taxes, duties and levies payable in India should be paid in local *i.e.* Indian Rupees. This clarification allowed payment in the currency/currencies quoted in the bid without consideration of foreign exchange rate.

The reply is not convincing in view of the fact that Clauses 45.5.1 and 47.2 of the GCC, clearly provided that payments would be made in US $ as per the exchange rate prevailing on the date of opening of techno-commercial bid and any exchange rate variation would be on the part of the contractor. The clarification issued in November 2007 nowhere provided that variation in exchange rate would be borne by the Company. Further, the contract price was firm as per Clause 16 of the GCC and 18 of the ITB.

Excess liability towards taxes/cess

2.16 The Company made statutory deductions of US $ 23.98 million from the bills of BGR Energy for off-shore supplies towards income tax (two *per cent*), works contract tax (three *per cent*) and labour Cess (one *per cent*) during the period 2009-16. The deductions made from the bills were deposited with the concerned tax authorities after converting the US $ at the prevailing exchange rate (₹ 44.32 to ₹ 66.88 per US $) instead of the exchange rate (₹ 39.59 per US $) prevailing on the date of opening of Techno-commercial bid. This caused extra burden of ₹ 19.40 crore on the Company towards payment of these taxes to the Central/State Government.

The Company stated that all offshore payments were made in US $ and as such the taxes were also deducted at source in US $ and deposited with the tax authorities in equivalent Indian Rupees considering the prevailing exchange rate. The fact remained that it resulted into extra burden on the Company due to payments made in US $ when deposited at the prevailing exchange rate which was in violation of Clause 18 of the ITB and Clause 16, 45.5.1 and 47.2 of the GCC.

Refund of Labour Cess to BGR Energy

2.17 Clauses 1 and 2 of the work order awarded (13 October 2008) to BGR Energy provided that the contract price was firm in all respect and inclusive of all taxes and duties applicable on 10 January 2008 irrespective of whether taxes and duties were mentioned. Clause 3 provided that if the tax rates were increased or decreased or a new tax was introduced or an existing tax was abolished during the contractual period, the variation in taxes and duties would be reimbursed/adjusted/recovered by the Company, as the case may be. Clause 4 relating to tax deducted at source provided that in case any deduction of tax was required to be made at source by the Company from any payments made to the contractor under any applicable statute, no reimbursement of such tax would be made by the Company. However, necessary tax deduction certificate would be provided to the contractor. Further, if the State or Central Government brings into effect any other tax to be deducted at source during the validity of the contract, then the same would be deducted at source as per prevailing rules and shall not be reimbursed by the Company.

The GoI notified (October 1996) ‘Building and Other Construction Workers Welfare Cess Act’, 1996 which provided levy of cess at the rate of one *per cent* on the cost of construction incurred by employers. The GoI also notified (March 1998) ‘Building and Other Construction Workers Welfare Cess Rules’, 1998 (Rules) which provided that where the levy of cess pertains to building and other construction work of a Government or of a Public Sector Undertaking (PSU), such Government or PSU shall deduct the cess payable at the notified rates from the bills paid for such works.

The GoR constituted (April 2009) Board as per Rules and notified (30 April 2009) ‘The Rajasthan Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Rules’, 2009. The GoR directed (9 July 2010) all the State Government Departments and PSUs to deduct cess at the rate of one *per cent* from the bills paid for building and other construction works. The notification directed that cess would be deducted on all the running projects in the State of Rajasthan and 27 July 2009 shall be taken as cut-off date[7] for levy and collection of cess.

7 Applicable date after which cess would be levied and collected.

The Company deducted ₹ 48.21 crore from the bills of BGR Energy towards labour cess during the period 2009-15 and deposited the same with the State Government from time to time. The BGR Energy made various representations (2010 to 2012) to the Company as regards non-applicability of labour cess and claimed reimbursement of the deducted amount on the grounds that contract price was firm as per Clause 1 and 2 of the work order and the techno-commercial bids were opened (10 January 2008) prior to the applicability (27 July 2009) of cess by the State Government.

The Company sought (November 2012) opinion of a Tax Consultant[8] on the issue. The Consultant opined (November 2012) that the Company might take legal opinion for interpretation of the contract documents. The Company, however, did not take legal opinion on this issue and refunded (January 2013 to November 2015) ₹ 48.21 crore (upto March 2016) to the contactor.

We observed that the decision of the Company to refund the deducted amount of labour cess from its own resources without taking legal opinion was not justified because the notification (9 July 2010) of GoR clearly stipulated that deduction of cess would be made from 27 July 2009 on all the running projects in the State. The Company being a PSU was required to deduct cess as per the Act and Rules *ibid*. Clause 4 (tax deducted at source) of the work order also clearly stipulated that if the State or Central Government brings into effect any other tax to be deducted at source during the validity of the contract then the same would be deducted at source as per prevailing rules and shall not be reimbursed by the Company.

The Company in its reply and discussion held during exit conference stated that an opinion of the Advocate General, Rajasthan was being sought on the issue and action would be taken based on the opinion of the Advocate General.

Civil works

2.18 The DPR prepared (October 2007) by the Consultant envisaged civil works of ₹ 627.70 crore excluding cost of land. The actual cost of civil works, however, exceeded the estimates significantly. The work order awarded (13 October 2008) to BGR Energy for execution of civil works in relation to erection of plant itself accounted for ₹ 1022.15 crore. Besides, the planning failure in construction of water storage system and railway siding during execution of the project significantly increased the cost of civil works. The Company awarded following major contracts in relation to civil works at KaTPP.

8 M/s Kalani and Company.

Details of Work orders/contracts	Name of the Contractor	Date of issue of the work order	Amount of work order (₹ in crore)
Providing services and execution of civil works	BGR Energy Limited	13 October 2008	1022.152
Construction of Dam	Water resources Department	NA	799.00
Construction of Railway siding	IRCON, New Delhi	22 December 2009	Cost plus factor basis. Expenditure of ₹ 163.83 crore incurred upto March 2015
Construction of township	Manda Developer & Builders Private Limited, Bikaner	17 May 2008	82.89
Engineering and supply for river water system	IVRCL Infrastructures and Projects Limited	30 December 2010	77.85
Construction of additional raw water reservoir	Manda Developer & Builders Private Limited, Bikaner	22 November 2012 and 24 April 2015	67.68
Construction of boundary wall	GMM Construction Private Limited	26 May 2009	5.18
Construction of field hostel	Murari Lal Singhal	18 December 2009	2.64
Supply and commissioning of Diesel Hydraulic Shunting Locomotive	SAN Engineering and Company	15 June 2012	16.49
Supply and commissioning of BEML make Dozers	BEML	20 June 2012	6.40

The major reasons for the increase in cost of civil works are discussed below.

Construction of dam

2.19 The DPR envisaged that the source of water for KaTPP would be Kalisindh River located at an aerial distance of 12 Km from the power plant. Raw water was proposed to be pumped from the river to a raw water pond located within the premises of the plant. The total cost of water storage system was envisaged at ₹ 50 crore. The construction of water storage system was to be completed by September 2010.

During meetings (24 February 2007 and 26 May 2007) held amongst the Company, Energy Department (GoR) and Water Resources Department (GoR), it was decided to construct Kalisindh Major Irrigation Project (Dam) to fulfill the water requirements of KaTPP. The cost of the proposed Dam was to be shared in the ratio of 2:3 by the Company and Water Resources Department (WRD) respectively.

We noticed that the WRD did not incur any expenditure on construction of Dam as decided in the meetings and the entire cost was borne by the Company. The Company, without executing any agreement, released funds of ₹ 696.37 crore to WRD for construction of Dam during 2007-16. The WRD incurred expenditure of ₹ 586.13 crore on construction of Dam; adjusted ₹ 100.18 crore towards prorate charges (fixed overheads); and balance funds of ₹ 10.06 crore were lying unspent with it.

We observed that the construction of a Dam on Kalisindh River had already been planned by the WRD prior to the decision of setting up of KaTPP by the

Company. The Company was also not an exclusive beneficiary of the Dam as the WRD supplied water to the nearby villages and charged for the same. Besides, WRD also raised bills (₹ 1.44 crore upto March 2016) on the Company for supply of water to KaTPP from the Dam.

The Company did not make any effort to recover the cost of Dam to be shared by the WRD including prorate charges. The construction of dam, therefore, increased the project cost by ₹ 696.37 crore. This also would have impacted the cost of generation vis-a-vis approval of higher tariff by RERC as the cost of Dam was part of capital cost of the project.

The Company stated that the total cost of dam was to be borne by it as per the communication (29 April 2008) of Principal Secretary, WRD. The Board also approved (26 March 2010) that the entire cost would be borne by the Company along with the cost of construction of raising height of anicut on Kalisindh River. The reply was not convincing because the communication (29 April 2008) was between WRD (GoR) and MoEF (GoI) and a copy of letter was endorsed to the Company. The State Government had not issued any directions to the Company/WRD that the entire cost of dam would be borne by the Company. The WRD without consulting the Company informed MoEF that the entire cost would be borne by the Company and the Board of the Company accepted the same. This also went against the decision taken in the meetings held in February/May 2007.

During exit conference, the Managing Director of the Company assured that the matter of cost sharing would be taken up with the State Government.

Avoidable expenditure on field supervision charges

2.20 The Company awarded (22 December 2009) the work of design, engineering, manufacturing, construction, installation and commissioning of railway siding[9] to IRCON International Limited, New Delhi (IRCON) on cost plus factor (eight *per cent*) basis. The terms and conditions of the work order provided that the actual payment to IRCON towards field supervision/establishment charges[10] was limited to ₹ 1.50 crore plus eight *per cent* contractor's fee during the completion period of 22 months. The period of 22 months was to be reckoned from the date of acceptance (8 October 2009) of Letter of Authority (LoA) by IRCON. Thus, the field supervision/establishment charges mentioned in the work order were applicable upto the date of completion of entire work *i.e.* 8 August 2011. In case the works got delayed beyond 22 months because of the Company, the field supervision/establishment charges were to be mutually discussed and decided.

We noticed that IRCON could not complete the work within the stipulated time period and the Company granted extension seven[11] times during February

9 The scope of the work included the railway premises and upto the boundary of power plant and also within the premises of KaTPP.

10 Field supervision/establishment charges included salary, special salary, allowances incentives and other perks, contribution to provident funds, leave travel concession, bonus, medical expenses, insurance & compensation.

11 17 February 2012, 26 July 2012, 19 March 2013, 06 June 2013, 17 October 2013, 22 October 2014 and 05 October 2015.

2012 to October 2015 for a period of 50 months. IRCON attributed the delay to non-availability of environmental clearance; non-availability of encumbrance free land; heavy rainfall; free working space not provided by BGR Energy; *etc*. The Company, however, never analysed the delay attributable to it. Further, the terms of payment of field supervision/establishment charges after expiry of the stipulated period of 22 months were also not discussed with IRCON.

The Company consequently paid ₹ 6.26 crore[12] upto March 2015 towards field supervision/establishment charges on the basis of monthly expenditure statement submitted by IRCON beyond the committed charges of ₹ 1.62 crore.

The Company stated that IRCON commenced the part-II works (construction, installation, commissioning and handing over) after final approval of DPR on 18 August 2011. The reply did not address the issue of non-fixation of supervision charges as per terms of contract.

Supply of fuel-demurrage charges

2.21 The Ministry of Coal (GoI) allotted (19/25 June 2007) 'Parsa East and Kente Basan' (Chhatisgarh State) coal blocks to the Company for meeting the fuel requirements of KaTPP. The Company entered (July 2008) into coal mining and delivery agreement with Parsa & Kente Collieries Limited (PKCL)[13] for mining of coal and its supply at KaTPP for a period of 30 years.

Demurrage charges are levied by the Railway authorities for halting of wagons in excess of the permissible free time allowed for loading/unloading of rakes. The Ministry of Railways allowed (7 March 2013) free permissible time of five hours for loading/unloading of coal rakes. Detention of wagons beyond the free permissible time attracted (22 March 2013) demurrage charges at the rate of ₹ 150 per eight wheeled wagon per hour or part of an hour. The number of coal rakes received at KaTPP, rakes attracting demurrage charges and demurrage charges levied by the Railways during 2013-16 were as below.

Year	Number of rakes received	Rakes which attracted demurrage	Percentage of rakes attracting demurrage	Demurrage levied by Railways (₹ in lakh)
2013-14	05	05	100.00	11.63
2014-15	290	251	86.55	287.03
2015-16	886	602	67.95	133.35
Total	**1181**	**858**	**72.65**	**432.01**

It could be seen that during 2013-14 to 2015-16, KaTPP received 1181 coal rakes out of which 858 (72.65 *per cent*) rakes were unloaded beyond permissible time limit of five hours and, therefore, attracted demurrage charges of ₹ 4.32 crore. Detention of wagons beyond the permissible time of five hours even went upto 54 hours. The Company represented to the Railway authorities for waiver of demurrage charges citing various reasons *viz.*

12 Including service charges of 8 *per cent* on committed charges of ₹ 1.50 crore.

13 PKCL is a joint venture company pursuant to the terms of the Joint Venture Agreement dated 3 August 2007 between Adani Enterprises Limited and Rajasthan Rajya Vidyut Utpadan Nigam Limited.

electrical and mechanical problems, bunching of coal rakes, breakdown of crusher and conveyer belts, *etc.* The Railways, however, waived meager amount of demurrage charges of ₹ 8.04 lakh.

The Company, therefore, incurred infructuous expenditure of ₹ 4.24 crore towards demurrage charges during 2013-16.

The Company accepted the facts and stated that demurrage charges were required to be paid during the initial commissioning period due to various reasons like bunching of rakes and non-electrification of the railway track. It further stated that the track had now been electrified and bunching of rakes had reduced improving the system of unloading of coal rakes.

Operational efficiency of KaTPP

The Company filed tariff petition for Aggregate Revenue Requirement (ARR) before RERC for Unit-I (19 June 2014) and Unit-II (6 November 2015). The RERC approved provisional tariff and ARR for Unit-I and Unit-II on 14 May 2015 and 21 January 2016. The provisional tariff for Unit-I and Unit-II was decided at ₹ 4.216 per kWh and ₹ 3.683 per kWh respectively. The RERC in provisional tariff for Unit-I also approved norms for GCV of the coal; plant load factor; station heat rate; fuel oil (HFO and LDO) consumption; and auxiliary consumption. The provisional tariff for Unit-II did not include these norms as both the units were identical in nature and, therefore, the norms approved for Unit-I were also applicable for Unit-II. The calculations made in this Performance Audit Report in respect of Unit-II are, therefore, based on the norms prescribed by RERC for Unit-I.

Plant Load Factor (PLF)

2.22 PLF is a measure of output of a power plant compared to the maximum possible output it could produce.

The installed capacity of Unit-I and Unit-II of the KaTPP is 600 MW each. The DPR envisaged yearly gross electricity generation of 10512 MUs and net power dispatch of 8409.60 MUs at an average[14] Plant Load Factor (PLF) of 80 *per cent.* The Unit-I and Unit-II were commissioned on 7 May 2014 and 25 July 2015 respectively. The estimated power generation at 80 *per cent* PLF vis-a-vis actual generation of electricity by Unit-I and Unit-II during 2014-15 and 2015-16 was as below:

Power generation in MUs	Unit-I		Unit-II
	2014-15 (7 May 2014 to 31 March 2015)	2015-16	2015-16 (25 July 2015 to 31 March 2016)
Estimated generation at 80 *per cent* PLF	3790.08	4204.80	2883.62
Actual generation	1147.39	3570.70	2350.50
Shortfall	2642.69	634.10	533.12

Besides, the RERC in provisional tariff for Unit-I had fixed PLF norms at 83 *per cent.* The PLF achieved by the Unit-I and Unit-II during the period of their operation was as below:

14 The average PLF of NTPC during 2014-15 was 80.23 *per cent*.

PLF (In percentage)	Unit-I		Unit-II
	2014-15	2015-16	2015-16
PLF fixed by RERC	83.00	83.00	83.00
PLF achieved	24.22	67.75	65.03

The PLF achieved by Unit-I and Unit-II during 2014-15 and 2015-16 was much below the norms fixed by RERC. Monthly reports indicated that the Unit-I achieved the norms of PLF in only three months *i.e.* October 2015, December 2015 and January 2016 wherein the PLF was 86.76, 89.31 and 84.95 *per cent* respectively. The Unit-II achieved PLF norms in only two months *i.e.* January 2016 and March 2016 wherein the PLF was 84.40 and 83.10 *per cent* respectively.

The major reasons for low PLF were non-stabilization of Units after commissioning; forced outages; backing down of plant due to the instructions of SLDC; *etc*. The estimated shortfall in generation due to PLF lower than the norms prescribed by RERC worked out to 4217.86 MUs valuing ₹ 1744.06 crore[15] during 2014-16.

The Company stated that low PLF was due to teething problems occurred at the time of commissioning of Unit-I. It also stated that the net PLF of the plant during 2015-16 was above the national average (62.29 *per cent).* The fact remained that both the Units could not achieve the PLF fixed by the RERC.

Plant availability and outages

2.23 Plant availability means the ratio of actual hours operated to maximum hours available for operation of a plant during a certain period. The normative annual plant availability factor prescribed by the Central Electricity Authority (CEA), GoI is 85 *per cent* for all thermal stations during 2014-19. The plant availability of Unit-I was 43.88 and 82.30 *per cent* during 2014-15 and 2015-16 respectively. The plant availability of Unit-II was 77.92 *per cent* during 2015-16. The total available operational hours; actual operated hours; planned outages; forced outages; and overall plant availability in respect of Unit-I and Unit-II during 2014-15 and 2015-16 were as below:

Particulars	Unit-I		Unit-II
	2014-15	2015-16	2015-16
Total available operational hours [A]	7896.00	8784.00	6024.00
Actual operated hours [B]	3464.55	7229.45	4694.12
Planned outages (in hours) [C]	0.00	613.25	412.93
Forced outages (in hours) [D= A - (B + C)]	4431.45	941.30	916.95
Percentage of forced outages to total Hours [D / A]	56.12	10.72	15.22
Plant availability *(per cent*) [B / A X 100]	43.88	82.30	77.92

It could be seen that the Unit-I remained inoperative for 4431.45 hours (56.12 *per cent*) out of 7896 available operational hours due to forced outages during 2014-15. This indicated that Unit-I could not be stabilized after commissioning during this period. The main reasons for forced outages were boiler tube leakage; tripping of generator and turbine; high/low level of boiler drum level; *etc.,* which could have been avoided with better operation and maintenance of the plant.

15 Valued at provisional tariff approved by the RERC for Unit-I and Unit-II @ ₹ 4.216 and ₹ 3.683 respectively.

The Company accepted the facts and stated that outages of both the Units remained high due to various technical problems/constraints related to adoption of new Chinese technology. It added that familarisation with the technology was not so rapid to get fast and perfect stabilization of Units.

Station Heat Rate

2.24 The Station Heat Rate (SHR) is an important index for assessing the efficiency of a thermal power station. The heat rate of a power plant is the amount of chemical energy that must be supplied to produce one unit of electrical energy *i.e.* heat energy input in Kilocalorie (Kcal) required for generating one Kilowatt-hour (kWh) of electrical energy. It should be the endeavor of any station to operate the unit at as near its design Heat Rate as possible. Station heat rate improvement also helps in reducing pollution from Thermal Power Stations.

The RERC prescribed SHR of 2320.632 Kcal/kWh while approving provisional tariff for Unit-I. The average SHR attained by Unit-I was 2742.19 and 2598.87 Kcal/kWh during 2014-15 and 2015-16 respectively. The average SHR of Unit-II was 2606.16 Kcal/kWh during 2015-16.

High incidence of SHR was attributable to technical problems *viz.* boiler tube leakage, break down of unit, maintenance, *etc.* and load reduction orders by SLDC which resulted in higher SHR than the RERC norms. The high SHR resulted in excess consumption of coal of 4.34 lakh MT valuing ₹ 177.34 crore **(Annexure-3)**.

The Company attributed the reasons for higher SHR towards non-stabilization of Units; frequent tripping; and operation of Units on reduced load due to backing down of Units as per the instructions of SLDC. The fact remained that the company could not maintain SHR within the norms prescribed by the RERC.

Excess consumption of oil

2.25 High Furnace Oil (HFO) and Light Diesel Oil (LDO) are used as starting or ignition fuel in thermal power plants. The RERC in provisional tariff for Unit-I prescribed (May 2015) norms for consumption of HFO and LDO at 0.50 milliliter per kilowatt-hour (ml/kWh) *i.e.* 0.45 ml/kWh for HFO and 0.05 ml/kWh for LDO. The average oil consumption at KaTPP against the prescribed norms during 2014-15 was 11.156 ml/kWh (Unit-I); and 2.474 ml/kWh (Unit-I) and 1.967 ml/kWh (Unit-II) during 2015-16.

The Company, therefore, consumed an excess of HFO and LDO to the extent of 22723 kilolitre as compared to the norms prescribed by RERC resulting in extra expenditure of ₹ 99.25 crore on fuel cost during 2014-15 and 2015-16 **(Annexure-4)**.

The Company accepted the facts of excess consumption of oil and stated that these were the first units of this capacity and technology in the State and it was expected that there would be teething problems at the time of commissioning of the Unit 1. It further stated that the Units were ‘backed down’ as per the instructions of SLDC and the oil support had to be taken which also contributed to increased oil consumption.

Auxiliary Consumption

2.26 Auxiliary power in a power plant is defined as the power consumed by various balances of plant equipment for smooth running of the plant. The DPR of KaTPP envisaged auxiliary consumption at six *per cent* while, the RERC in provisional tariff for Unit-I allowed auxiliary consumption at 5.25 *per cent.* The auxiliary consumption of Unit-I and Unit-II during the period of their operation was in excess of the norms prescribed by RERC as shown below:

Unit and period of operation	Gross generation (MUs)	Auxiliary consumption (MUs)			
		RERC norms	Actual	Actual (in percentage)	Excess
Unit-I					
7 May 2014 to 31 March 2015	1147.39	60.24	89.76	7.82	29.52
April 2015 to March 2016	3570.70	187.46	244.90	6.86	57.44
Unit-II					
25 July 2015 to 31 March 2016	2350.50	123.40	164.14	6.98	40.74

The actual auxiliary consumption of both the Units ranged between 6.86 *per cent* and 7.82 *per cent* during 2014-16. Auxiliary consumption in excess of the norms prescribed by RERC resulted into loss of 127.70 MUs which could have been transmitted to grid and generated revenue of ₹ 51.67 crore.

The Company accepted the facts and stated that a report has been prepared and submitted for petition to be filed before RERC for increase in normative value of auxiliary consumption.

Environmental Issues

2.27 Coal-based power plants significantly impact the local environment. Direct impacts resulting from construction and ongoing operations include:

- Air Pollution - particulates, Sulphur Dioxide, Nitrogen Dioxide, and other hazardous chemicals and toxic metals like Mercury, Lead *etc*.
- Water Pollution - occurs in local water streams, rivers and ground water from effluent discharges and percolation of hazardous materials from the stored fly ash.
- Land Degradation - occurs due to alterations of land used for storing fly ash.
- Noise Pollution - occurs during plant operation and cause occupational as well as public health hazards.

The MoEF, GoI accorded (February 2009) Environmental Clearance (EC) to KaTPP for a period of five years to start production operations. As per condition No. 3 (XXVII) of EC, the Company was required to create a separate environment management cell with qualified staff at KaTPP for implementation of the stipulated environmental safeguards. The Company, however, did not establish (July 2016) environment management cell at the KaTPP.

The Company stated that the environment management cell was being set up under the control of Chief Engineer, KaTPP.

Stack Emission standards

2.28 The MoEF, GoI amended (December 2015) the 'Environment (Protection) Rules, 1986 and prescribed stack emission standards for thermal power stations installed between 1 January 2003 and 31 December 2016. The thermal power stations were required to achieve the standards within two years from the date (8 December 2015) of publication of the notification.

The Unit-I of KaTPP was commissioned on 7 May 2014 but the Company commenced monitoring of stack emission parameters from 1 November 2015. The Company noticed that the equipment installed by the BGR Energy recorded the parameters of stack emission on abnormally higher side. Further, the equipment also recorded negative results and sometimes remained out of order. The Company, therefore, got conducted (21 March 2016) a third party inspection from SMS Envocare Limited. The stack emission parameters measured by the third party against the standards prescribed by MoEF were as below.

Parameter	Standards prescribed by MoEF (Milligram per normal meter cubed per hour)	Results as measured by third party	
		Unit-1	Unit-2
Mercury (Hg)	0.03 mg/Nm^3	N/A	N/A
Particulate Matter	50 mg/Nm^3	47.46	74.32
Sulphur Dioxide	200 mg/Nm^3	1540.97	1787.33
Oxides of Nitrogen	300 mg/Nm^3	415.36	481.77

The results of third party inspection showed that the KaTPP did not maintain the stack emission norms prescribed by MoEF.

We observed that the Company was required to install flue gas desulphurization plant for controlling excess release of Sulphur Dioxide and make modifications in the firing system or install De-Nitrogen Oxide system for curbing excess release of oxides of Nitrogen. The Company did not plan installation of flue gas desulphurization plant even though the bidders had specifically asked (October 2007) the Company during pre-bid conference. However, the Company had submitted (April 2016) an action plan to its corporate office for achieving environmental norms.

The Company accepted the facts and stated that possibilities were being explored by the corporate office to achieve stack emission parameters by all the plants of the Company.

Air and noise pollution

2.29 The MoEF amended (16 November 2009) the Environment (Protection) Rules, 1986 and prescribed certain standards for major pollutants for air. The Company had not installed equipment at KaTPP to measure pollutants prescribed by MoEF even after a lapse of about two years from the date of commissioning of Unit-I.

The Company stated that three offline and one online ambient air quality monitoring stations had been set up and third party agency was being engaged to monitor air quality parameters.

The sources of noise pollution at a thermal power station are steam turbine generator; other rotating equipment; combustion induced noises; flow induced noises; and steam safety valves. The MoEF amended (9 March 2009) Noise

Pollution (Regulation and Control) Rules, 2000 which provided that the level of noise at the boundary of a public place where any source of noise is being used should not exceed 10 decibel (dB) above the ambient noise standards prescribed for the area or 75 dB, whichever is lower.

The Company, however, did not install (March 2016) equipment to measure the noise levels at the KaTPP and, therefore, could not ensure that the noise levels were within the prescribed norms.

The Company stated that acoustic system for measuring noise levels had been mounted on high noise generating sources like turbine and personal protective equipment like ear muffs/ear plugs were being provided to workers in high noise areas. Further, the Company was also planning to monitor the noise of various noise generating equipment.

Financial Management

Penalty for default in payment of loan installment

2.30 The Power Finance Corporation (PFC) sanctioned[16] (March 2008 to September 2014) a loan of ₹ 6583.61 crore against the proposals[17] (September 2007 to August 2014) of the Company for setting up the KaTPP. Clause 2.1 of the sanction issued by PFC provided that the borrower shall pay interest on the loan at the rate of interest prevailing on the date of each disbursement along with interest tax at the rate applicable from time to time. The installment of interest and interest tax was payable quarterly on the 15th day of April, July, October and January every year. The borrower was eligible for a rebate of 0.25 *per cent* in the applicable interest rate in case of timely payment of installments. Further, Clause 6.1 provided that the borrower shall pay a penal rate of interest of two *per cent* over and above the rate of interest at which the loan was sanctioned in case the interest/interest tax or the principal amount was not paid on the due date. The penal interest was to be compounded on quarterly basis.

The Company defaulted in payment of interest/principal to the PFC five[18] times (July 2012 to October 2015). As a result, the Company had to pay penal interest and interest thereon of ₹ 8.47 crore to the PFC. Further, the Company also could not avail rebate of ₹ 18.15 crore towards timely payment of installments.

The Company accepted the facts and stated that the Company was facing financial crunch due to non-receipt of regular payments from the power distribution companies for sale of energy. The loan funds received from PFC had to be utilized for other operating power plants to provide power to distribution companies which was priority of that time to keep these units operational. Further, the financial institutions/commercial banks also refused to give further loans to the power sector companies. The Company had

16 ₹ 3680 crore on 31 March 2008, ₹ 2498.40 crore on 14 November 2011 and ₹ 405.21 crore on 30 September 2014.

17 The Company sent proposals for loan on 11 September 2007, 23 August 2011 and 22 August 2014.

18 July 2012, October 2012, July 2013, October 2013 and October 2015.

incurred losses during this period and no surplus funds were available for debt servicing.

Rebate forgone due to delay in commissioning

2.31 As per Policy in vogue, the PFC allows (2004) a rebate of 0.25 *per cent* in the interest rate for generation projects from the date of commissioning of the first unit of the project. Accordingly, the PFC agreed to allow (May 2014) a rebate of 0.25 *per cent* to the Company on loan availed for setting up of KaTPP. We observed that Unit-I of the KaTPP was to be commissioned by 9 October 2011 as per the LoI issued to BGR Energy. However, the actual date of commissioning was 7 May 2014. The Company was, therefore, deprived of a rebate of ₹ 35.40 crore due to delay in commissioning of Unit-I by 31 months.

The Company accepted the facts and stated that deprival of rebate was a consequential effect of the delay in commissioning of the project.

Additional financial burden due to non-availing of exemption from payment of Entry Tax

2.32 The GoR introduced (March 1999) 'The Rajasthan tax on entry of goods into local area Act, 1999 which provided for levy of tax on entry of any goods brought into the local area for the purpose of consumption/use/sale. Section 9 of the Act empowered the State Government to grant prospective or retrospective exemption from payment of the entry tax in public interest, fully or partially.

The Company did not make efforts to seek exemption from the State Government from payment of entry tax. We observed that private power producers/other Government PSUs/private companies[19] sought exemption from the State Government from payment of entry tax and the same was granted to them.

The Company estimated (May 2011) the lumpsum amount of entry tax at ₹ 19 crore. However, the actual reimbursement of entry tax to BGR Energy was ₹ 22.74 crore during 2009-14. The Company filed (June 2014) Aggregate Revenue Requirement with RERC for determination of provisional tariff and claimed ₹ 19 crore against the payments made towards entry tax. The RERC approved (May 2015) the claims of the Company in the provisional tariff.

The Company by not seeking exemption for entry tax had not only caused an increase in the project cost but also the cost of generation, ultimately putting an additional burden on the consumers.

The Company stated that entry tax was paid to BGR Energy as per applicable laws and terms and conditions of the contract. The State Government granted exemption of entry tax to private entrepreneurs to attract private investment in the State. The reply was not tenable because the State Government also allowed exemption from payment of entry tax to the Government PSUs on their application. The Company also added that the matter would be taken up with the State Government.

19 Adani Power Rajasthan Limited (April 2011), Jaipur Metro Rail Corporation Limited (December 2012), Mangalam Cement Limited (January 2013), *etc*.

Non-inclusion of additional cost of spares in project cost

2.33 The terms of sanction (June 2007) of the GoR provided the funding pattern of the project in the debt-equity ratio of 80:20 *i.e.* the GoR would provide 20 *per cent* equity assistance and remaining 80 *per cent* funds had to be arranged by the Company through borrowings from PFC/Commercial Banks.

The main BTG equipment and auxiliaries for the plant had been supplied by Dongfang Electric Company, China (DEC China) through BGR Energy. Mandatory spares of BTG package were included in the EPC contract but keeping in view the difficulty in arranging spares, lead time in supplies from China and generation loss, the Company placed (June 2015) an additional purchase order with BGR Energy at a negotiated price of ₹ 166 crore for additional spare parts recommended by the DEC China and BGR Energy.

The project cost was revised from ₹ 4600 crore in June 2007 to ₹ 7723.70 crore in May 2011 and finally ₹ 9479.51 crore in March 2014. The project cost revised in March 2014 was approved by the State Government in August 2014. However, the Company did not include the cost of additional spare parts in the project cost.

The Clause 16 (6) of the RERC 'Terms and Conditions for Determination of Tariff Regulations, 2014' also allowed capitalization of initial spares upto 2.5 *per cent* of the capital cost upto the cut-off date. As such the Company was authorised to capitalize an expenditure of ₹ 236.99 crore[20] towards initial spare parts. However, the Company capitalized only ₹ 51.21 crore towards the cost of mandatory spares.

The Company, therefore, understated the project cost by ₹ 166 crore and failed to avail 20 *per cent* equity assistance of ₹ 33.20 crore from the State Government.

The Company stated that the Board accorded approval for purchase of spare parts subject to the condition that the cost of spare parts might be booked against the revised project cost of KaTTP (₹ 9479.51 crore) to the extent possible and the remaining cost of spares over and above the project cost, if any, might be taken under Operation and Maintenance budget of the unit as per regulatory norms. The fact remained that the company could have capitalized the cost of spare parts upto 2.5 *per cent* of the project cost as per regulation which was not done causing understatement of the project cost and non-receipt of 20 *per cent* equity from the State Government.

Non-availing of fiscal benefits under Mega Power Policy

2.34 The Ministry of Power (MoP), GoI introduced (November 1995) the Mega Power Project (MPP) Policy aimed at improving the overall power supply scenario in the Country by setting up power plants. The policy provided certain benefits to MPPs such as exemption from Excise and Custom duty; tax holiday for any block of ten years within the first fifteen years; and exemption from sales tax and other local levies. It was considered that these concessions would bring down the tariffs and provide much needed relief to

20 2.5 *per cent* of ₹ 9479.51 crore.

the State Electricity Boards from rising cost of power generation, both in public and private sector.

As per the MPP policy, projects having capacity of 1000 MW or more were eligible for concessions after complying with some other conditions like constitution of Regulatory Commission; inter-state sale of power; and tendering through International Competitive Bidding (ICB) route.

The KaTPP was eligible for availing fiscal benefits under the MPP policy as the combined capacity of the project was 1200 MW and tenders were invited on ICB basis. However, the Company never explored possibilities and was, therefore, deprived of fiscal benefits which tentatively worked out to ₹ 431.30 crore towards taxes and duties on off-shore supplies. Further, the KaTPP would have also been exempted from sales tax/VAT levied by the GoR.

The RERC while determining the tariff for Unit-I asked the Company to clarify the admissibility of MPP status for the project and efforts made in this direction for availing benefits of the MPP policy. The Company did not furnish (May 2016) details to the RERC in this regard.

It is worth mentioning that other thermal plants (1320 MW Chhabra Thermal Power Plant and 1320 MW Suratgarh Thermal Power Station) of the Company were granted MPP status by the MoP.

The Company stated that inter-state sale of power was a mandatory condition for availing benefits under MPP policy which was not fulfilled. The reply was not convincing because the Board of the Company directed (January 2007) to explore possibilities for inter-state sale of power but no action was taken. Further, the GoI had removed (December 2009) the condition of inter-state sale of power but the Company did not explore the possibilities for availing benefits under MPP policy.

Conclusions and Recommendations

The Kalisindh Thermal Power Project (KaTPP) had significant time and cost overruns. The actual cost (₹ 9479.51 crore) of commissioning of the project exceeded the estimated cost (₹ 4600 crore) by 106.08 *per cent*. The cost overrun was mainly attributed to increased cost of ‘Engineering, Procurement and Commissioning’ contract; water storage system; Railway siding; interest and finance cost due to time overruns and execution of works not envisaged in Detailed Project Report (DPR).

The contractual commissioning period of Unit-I and Unit-II was 8 October 2011 and 8 January 2012 respectively. The Units were commissioned after delays of 31 months and 42 months on 7 May 2014 and 25 July 2015 respectively. Delay in completion of the project was attributed to delay (seven months) in obtaining environmental clearance from Ministry of Environment and Forest (MoEF), Government of India and non-adherence to the time schedule in completion of various major activities by BGR Energy. The Board discussed (March 2009 to May 2014) the issue of delay in completion of the project several times but deferred levy of Liquidated Damages (LD) six times between March 2009 and May 2014.

We recommend that the Company should identify the delay attributable to BGR Energy and recover LD as per the terms and conditions of the contracts.

The contract price of BGR Energy was firm and the Company was required to make payments for off-shore supplies at a firm rate of ₹ 39.59 per US $ as per various clauses of 'Instructions to Bidders' and 'General Conditions of Contract' (GCC). Any variation on account of exchange rate was to be borne by BGR Energy. However, the Company purchased one US $ at rates ranging from ₹ 44.32 to ₹ 66.88 and made payments in US $ without recovering exchange rate variation of ₹ 295.29 crore. This also resulted in extra burden of ₹ 19.40 crore on the Company towards payment of taxes to the Central/State Government. Further, the Company refunded labour cess of ₹ 48.21 crore to BGR Energy in violation of the clauses of work order and notification (27 July 2009) issued by the State Government.

We recommend that the Company should review the payments made to BGR Energy and recover excess payments incurred towards exchange rate variation as per the tender terms/GCC. The Company should also recover the amount of labour cess refunded to BGR Energy.

During meetings (24 February 2007 and 26 May 2007) held between the Company, Energy Department (GoR) and Water Resources Department (WRD) of the State Government, the WRD agreed to share 60 *per cent* of the cost of construction of Dam on Kalisindh River. The WRD did not incur any expenditure on construction of Dam and in addition also charged prorate charges from the Company.

We recommend that the Company should take up the matter with the State Government/WRD and recover the cost of Dam to be shared by the WRD and the prorate charges.

The Company could not adhere to the operational parameters fixed by Rajasthan Electricity Regulatory Commission (RERC)/Central Electricity Authority (CEA) as regards plant load factor; station heat rate; auxiliary consumption; plant availability due to non-stabilization of Units after commissioning; forced outages; technical problems, backing down of plant due to the instructions of State Load Dispatch Centre; *etc*.

The Company had not established environment management cell at the KaTPP. The Company had also not installed equipment at the KaTPP to measure air and noise pollution levels prescribed by MoEF. Further, the stack emission norms prescribed by MoEF were also not adhered to.

We recommend that the Company should establish environment management cell and install equipment to measure air and noise pollution levels at KaTPP. Further, the air pollution standards, noise levels and stack emission norms prescribed by the MoEF should be adhered to.

The Company had defaulted in payment of loan installments and had to pay penal interest and was also deprived of rebate from Power Finance Corporation.

The Company did not make efforts to seek benefits under the Mega Power Project Policy of the Government of India. It also did not seek exemption from the Government of Rajasthan from payment of entry tax.

We recommend that the Company should explore possibilities to avail benefits under the policies of Government of India and Government of Rajasthan.