
Chapter 8

Conclusion and Recommendations

8.1 Conclusion

The installed electricity generation capacity in the country as on 31 October 2016 was 307278 MW out of which coal based generation capacity was 186493 MW (60.69 percent). Coal cost constitutes 60 to 70 percent of the total generation tariff of a coal based power station. Audit of fuel management in the power stations indicated inefficiencies which increased fuel cost of the power stations and cost of energy to the ultimate consumers.

Supply of domestic coal to power stations was governed by National Coal Distribution Policy (NCDP) notified by Ministry of Coal. Domestic coal was supplied to power stations by coal linkages established through Fuel Supply Agreements (FSAs) at prices notified by Coal India Limited (CIL). However, inadequate coal linkages of power stations, delay in signing of FSAs and intra year shortfall in supplies led to procurement of coal at prices higher than the notified rates. Power stations also incurred additional cost by way of performance incentives even for quantities within Annual Contacted Quantity (ACQ) and on deemed delivered quantities, premium on MoU procurement, e-auction *etc.* Besides, the power stations paid performance incentives for additional annual supplies even as they suffered generation loss due to intra year shortfall in coal supply. The Company incurred additional expenditure of ₹6869.95 crore over 2010-16 in procurement of domestic coal even as it lost an opportunity to generate revenue of ₹4299.80 crore due to full or partial outages of stations on account of shortage of coal.

Though the Company has been importing coal since 2005-06, no comprehensive policy for import of coal had been designed resulting in non-uniform decisions regarding splitting of packages among bidders, qualification requirements, re-tendering and annulment of packages. Imported coal having higher Gross Calorific Value (GCV) compared to domestic coal but was stored in the same yard affecting the blending ratio of domestic and imported coal. Besides, Audit noticed that despite the very significant quality difference (GCV difference) between domestic and imported coal, the specific coal consumption of the power station was not significantly affected by a change in the quantity of imported coal blended.

Fuel price depends on the quantity and quality of coal. To accurately determine the 'quantity of fuel procured', proper weighment of coal was necessary. Weighment of domestic coal was not carried out regularly when the rakes arrived, despite the provision of in-motion weigh bridges. Instead of ascertaining transit loss of coal (difference between quantity of coal dispatched from the mines and quantity of coal received by stations) by weighing the railway rakes, an indirect method called 'volumetric method' was used. There were also concerns regarding accuracy of the stock reported at the stations, considering that some stations reported larger stocks than the storage capacity of yard.

The quality of coal (represented by GCV) was measured by three different methods; while paying for coal imports, Air Dried Basis (ADB) method was used, while paying to domestic

coal companies for supplies Equilibrated Moisture (EM) method was used and for energy billing Total Moisture (TM) method was used. ADB method gives the highest value of GCV while TM gives the lowest. As fuel cost is directly proportional to GCV, working out GCV on ADB and EB method increased the fuel cost for the power stations. Energy charges are however inversely proportional to GCV and employing the methodology to generate the lowest GCV value (TM method) increased energy charges recoverable from consumers. Besides, there were significant differences in GCV of coal 'as received' in the power stations and 'as fired' by them. Such significant differences were not technically expected and were within the control of the power stations. The energy charges were worked out on the basis of GCV 'as fired'. Audit worked out the energy charges on the basis of GCV 'as received' for a one year period (October/ November 2012 to September 2013) and noted that energy charges would have been lower by ₹1440.33 crore had it been worked out on GCV 'as received' basis.

Audit of fuel management of coal based power stations in NTPC indicated inefficiencies in coal procurement (domestic procurement and import), storage, supply and consumption which led to higher fuel cost of the stations which were passed on to the final customer through higher energy charges.

8.2 Recommendations

8.2.1. In order to undertake corrective measures for overcoming the deficiencies in fuel management, following recommendations are made for implementation by NTPC:

1. The Company may review the procedures for procurement of coal above notified rates such as incentive procurement, MOU, e-auction and imports.
2. The Company may invoke, wherever feasible, provisions in the existing Fuel Supply Agreements for inter-station transfer of coal to tide over temporary coal shortages.
3. The Company may formulate a policy for import of coal. Action may also be taken to ensure source and quality of imported coal.
4. Methods for measurement of GCV for procurement of coal and billing of energy may be standardized in coordination with competent authorities.
5. Weighment of coal may be carried out at the time of receipt of coal at unloading point to ascertain the actual transit loss and take remedial measures.

8.2.2. The Company is the largest power generating utility in the country and the inadequacies noticed by Audit also require intervention at the Ministry/Regulatory level for appropriate remedial action for the power sector as a whole. The following recommendations are, therefore, suggested to Ministry of Power:


6. Pricing of energy is based on Station Heat Rate, which, in turn, is based on quantity and quality of coal (GCV) consumed by the stations. While quantity of coal received is not weighed by the stations, quality assessment of coal has inherent as well as manmade infirmities due to heterogeneous nature of coal and sampling errors. There is a need to appropriately review the method for energy pricing. Ministry may coordinate with

Central Electricity Regulatory Commission to examine this aspect in the light of the audit findings.

7. The commercial terms in FSAs were not in accordance with New Coal Distribution Policy and FSAs did not have safeguards for intra-year shortfall in deliveries. Ministry may, therefore, review the terms of FSAs in consultation with Ministry of Coal/Coal India Limited to rectify these inadequacies.

The above recommendations were discussed in the Exit Conference held in October 2016 and Ministry/NTPC Limited were generally in agreement with the recommendations.

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Countersigned

New Delhi
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