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## Chapter 1

# Introduction

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### 1.1 Background

Electricity features in the concurrent list of the Constitution of India. Both the Central and State governments are vested with the responsibility for development of power sector. In the 1970s, Central Sector Generating Stations (CSGS) were established to accelerate power development in the country. The capacity of the CSGS was 'shared' among Beneficiary States<sup>1</sup>, which were given allocations from the CSGS. The installed capacity in the country as on 31 October 2016 was 307278 MW out of which coal based capacity was 186493 MW (60.69 percent). The XII Five Year Plan document noted that, while the pace of addition to generating capacity was commendable, there had not been comparable progress in delivering fuel. Availability of both coal and gas to the new power stations was not assured. Resolution of this problem was accorded high priority in the XII Plan.

### 1.2 Profile of the Company

NTPC Limited (Company) was one of the CSGS incorporated in November 1975 to plan and promote development of thermal power in the country. The first station (200 MW) built by the Company was commissioned in 1982 at Singrauli. The Company became a listed company in November 2004. It became a 'Navratna' company in 1997 and a 'Maharatna' company in May 2010. The Company has five subsidiaries and 21 Joint Ventures (JVs) as on 31 March 2016. The Government of India holds 69.74 percent (as on 31 March 2016) of the total equity of ₹8245.46 crore of the Company.

The Company is the largest power utility in the country with 15.37 percent of the total installed capacity. The number of power stations of the Company including its JVs and installed capacity as of October 2016 were as follows:

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<sup>1</sup> Installed capacity of power stations under the Central Sector Generating Stations is shared among individual States and these States are referred as 'Beneficiary States'.

**Table-1.1: Types of generation facilities commissioned as of October 2016**

Generation facility type	No. of stations	Installed Capacity (MW)
<b>A. Owned by NTPC</b>		
Coal	18 <sup>2</sup>	35,085
Gas/Liquid Fuel	7	4,017
Hydro	1	800
Renewable energy projects	9	360
<b>Total (A)</b>	<b>35</b>	<b>40,262</b>
<b>B. Owned by JVs/Subsidiaries</b>		
Coal	8	4,999
Gas	1	1,967
<b>Total (B)</b>	<b>9</b>	<b>6,966</b>
<b>Grand Total (A+B)</b>	<b>44</b>	<b>47,228</b>

### 1.3 Organisational Structure

The Board of Directors of the Company comprised seven functional Directors including the Chairman and Managing Director (CMD), two Government nominee Directors and nine independent Directors. The Company has eight regional offices located at Dadri (Dadri, Badarpur and Faridabad), Lucknow (Northern Region), Mumbai (Western Region-I), Raipur (Western Region-II), Patna (Eastern Region-I), Bhubaneswar (Eastern Region-II), Secunderabad (Southern Region) and Dehradun (Hydro). The Company also has 26 project offices/power stations spread across the country.

### 1.4 Fuel Arrangements

Coal based capacity of the Company (including JVs/subsidiaries) was 40084 MW (October 2016), which constituted 85 percent of installed capacity of the Company, and 21 percent of coal based capacity in the country. Long term fuel supply agreements (FSA) entered into with subsidiary companies of Coal India Limited (CIL) and Singareni Collieries Company Limited (SCCL) were the main source of coal for the coal fired power stations of the Company. To meet the shortfall of domestic coal, the Company participated in e-auctions conducted by CIL and its subsidiaries since 2009-10. Domestic coal was also being procured through Memorandum of Understanding (MOU) with coal companies. Imported coal was also procured and blended with domestic coal. The Company was allocated eight captive coal blocks with estimated geological reserves of 7 billion tonnes but production from these blocks has not yet started (March 2016)

Details of coal procurement by the Company from different sources during the last six years (2010-11 to 2015-16) are tabulated below:

<sup>2</sup> Out of the 18 coal stations, nine are pit-head stations and nine are rail-fed (non-pit head) stations.

**Table-1.2: Details of coal procurement from different sources**

Year	Total coal procured from all sources	Coal imported	Coal procured through e-auction	Imported coal to total coal procured	Coal through e-auction to total coal procured
	( in Million Tonnes)			In percentage	
2010-11	137.30	10.5	0.08	7.65	0.06
2011-12	140.99	12.0	0.38	8.51	0.27
2012-13	155.00	9.1	2.28	5.87	1.47
2013-14	160.63	10.8	3.20	6.72	1.99
2014-15	167.40	16.4	0.94	9.80	0.56
2015-16	161.80	9.70	0.29	6.00	0.18

### 1.5 Performance Audit

Fuel management is an area of concern for the operational performance of the Company as coal stock fell to critical and supercritical levels<sup>3</sup> at coal fired stations during the period from 2012-13 to 2015-16. Coal cost constitutes 60 to 70 percent of the total generation tariff of a coal based power station and has a major impact on cost of supply of power to consumers. Operational efficiency of power stations is regulated through a parameter called 'Station Heat Rate' (SHR)<sup>4</sup>, which denotes the input heat value incurred by the station to produce one unit of energy. SHR depends on the quantity as well as quality/grade of coal used by the station. Inefficiencies in fuel management would increase the energy charges for the stations and cost of power to the ultimate consumer. The performance audit was carried out keeping in view the significance of fuel management in power stations to affordable power.

<sup>3</sup> Critical level – Coal stock above four days, but below seven days. Supercritical level – Coal stock below four days.

<sup>4</sup> Station Heat Rate =  $\frac{\text{Quantity of coal} \times \text{Gross Calorific Value}}{\text{No. of units of energy generated}}$

