

## DIRECTORS' REPORT

Dear Members,

Your Directors are pleased to present the 44<sup>th</sup> Annual Report on the business and operations of the Company along with the Audited Standalone and Consolidated Financial Statements for the year ended March 31, 2020 and Auditors' Report thereon on behalf of the Board of Directors

Financial Year 2019-20 had been yet another year of achievements for your Company.

**Major highlights of your Company for the year 2019-20 are:**

- Highest ever Commercial capacity of 8,260 MW (including subsidiaries and acquisitions during the year) added during the year.
- Plant Load Factor (PLF) of 68.20% as against all India PLF of 55.99% with Rihand Thermal station of your Company recording 88.64% PLF. 8 Stations (including JVs) were in the top 25 in the country in terms of PLF. 5 coal based stations out of 24 commercial Stations achieved more than 85% PLF.
- Your Company raised a syndicated term loan in JPY, equivalent to US \$750 million-highest foreign currency loan raised by any Indian Company.
- Group Capital Expenditure (CAPEX) including CAPEX of JV/ subsidiaries of your Company for the year 2019-20 was ₹ 47,122.93 crore and on stand-alone basis was ₹ 35,539.37 crore on cash basis.
- Revenue from operations was ₹ 97,700.39 crore and total revenue was ₹ 1,00,478.41 crore. Net Profit after Tax (PAT) was ₹ 10,112.81 crore.
- Dividend of ₹ 3.15 per share comprising interim dividend of ₹ 0.50 per equity share paid in March 2020 and recommended final dividend of ₹ 2.65 per equity share for the year 2019-20, subject to your approval in the upcoming Annual General Meeting.
- Cash contribution of ₹ 5,500.89 crore to Government of

India's exchequer through dividend, dividend distribution tax and income tax in the financial year 2019-20.

- Planted approx. 10 lakh trees during 2019-20 to mitigate the GHG emissions arising out of plant operations, thereby bringing total to about 35.10 million planted trees till end of 31.03.2020.
- Coal mine at Talaipalli coal block become operational. With this, production has started at three mines of your Company. Further in 2019 achieved 11.15 MMT of coal production from captive mines, registering an increase of 52.50% over the previous year.
- Your Company is one of the Best Workplaces and has been adjudged 14<sup>th</sup> in 2019 'Great Place to Work' by the Great Place to Work Institute, further your Company also named as 'Best PSU' in 2019.
- Your Company declared as winner in "Corporate Excellence" category of CII-ITC Sustainability Award 2019, which is the most coveted awards in India in sustainability front.
- Your Company awarded as a Best Performing Power Generation Company in 2019 at the Dun & Bradstreet Infra 2019 Award function.
- Power Management Institute (PMI) has won internationally most coveted ATD BEST award for the 4<sup>th</sup> time in a row.

You will appreciate the fact that the Company recorded growth and excellent performance despite numerous challenges before the sector like coal shortage, strict emission norms, etc.

Further, in the last month of FY 2019-20, the COVID-19 pandemic developed rapidly into a global crisis, forcing governments to resort to lock-down of all economic activity etc. As a responsible corporate citizen, it is our duty to follow the directives issued by Government of India(GoI). Despite challenges of lock-down, Team NTPC worked tirelessly at its Power Plants to keep up the generation and meet the demand of the nation.

### 1. FINANCIAL RESULTS (STAND ALONE)

Particulars	2019-20		2018-19	
	₹ Crore	US \$ Mn*	₹ Crore	US \$ Mn*
<b>Revenue</b>				
Revenue from operations (including energy sales, sale of energy through trading, consultancy fee etc.)	97,700.39	12,845.17	90,307.43	11,873.18
Other income	2,778.02	365.24	1872.13	246.14
<b>Total Revenue</b>	<b>1,00,478.41</b>	<b>13,210.41</b>	<b>92,179.56</b>	<b>12,119.32</b>
<b>Expenses</b>				
Fuel cost	54,241.82	7,131.45	52,493.74	6,901.62
Electricity purchased for trading	2,776.44	365.03	2,713.68	356.78
Employee benefits expense	4,925.60	647.59	4,779.89	628.44
Finance costs	6,781.97	891.66	4,716.74	620.13
Depreciation, amortization and impairment expense	8,622.85	1,133.69	7,254.36	953.77
Other expenses	8,663.81	1,139.08	7,548.63	992.46
<b>Total expenses</b>	<b>86,012.49</b>	<b>11,308.50</b>	<b>79,507.04</b>	<b>10,453.20</b>
<b>Profit before tax and regulatory deferral account balances</b>	<b>14,465.92</b>	<b>1,901.91</b>	<b>12,672.52</b>	<b>1,666.12</b>
Tax expense	9,181.95	1,207.20	(2,918.71)	(383.74)
Profit for the year before regulatory deferral account balances	5,283.97	694.71	15,591.23	2,049.86
Net movement in regulatory deferral account balances (net of tax)	4,828.84	634.87	(3841.34)	(505.04)
<b>Profit for the year</b>	<b>10,112.81</b>	<b>1,329.58</b>	<b>11,749.89</b>	<b>1,544.82</b>



Appropriations	2019-20		2018-19	
	₹ Crore	US \$ Mn*	₹ Crore	US \$ Mn*
Transfer to bonds/ debentures redemption reserve	-	-	1,732.37	227.76
Transfer to general reserve	6,500	854.59	4,500.00	591.64
Dividend paid	2,968.37	390.27	4,922.55	647.19
Tax on dividend paid	607.80	79.91	1,000.49	131.54

\*1US \$= ₹ 76.06 as on March 31, 2020

## 2. ACQUISITION OF THDC & NEEPCO

Your Company based on the in-principle approval of Cabinet Committee on Economic Affairs (GoI) for strategic sale of entire GoI stake in THDC & NEEPCO, entered into share purchase agreement and acquired 74.496% equity stake of GoI in THDC India Limited (THDC) and 100 % equity stake of GoI in North-Eastern Electric Power Corporation Limited (NEEPCO) during the FY 2019-20.

After acquisition, THDC & NEEPCO have become subsidiaries of NTPC w.e.f. 27<sup>th</sup> March 2020.

This acquisition, gives your Company a large portfolio of Hydro capacity.

## 3. DIVESTMENT OF SHAREHOLDING BY GOVERNMENT OF INDIA

The Government of India has, from time to time, disinvested its stake in your Company. During FY 2019-20, the Government of India divested 5.39% of shares of your Company as under:

Sl. No.	Particulars	No. of Shares Divested during 2019-20	Percentage sold
1.	CPSE ETF during July 2019	18,82,47,114	1.91
2.	Bharat ETF during Oct. 2019	3,60,73,713	0.36
3.	CPSE ETF during Feb. 2020	30,87,48,936	3.12
	<b>Total</b>	<b>53,30,69,763</b>	<b>5.39</b>

## 4. DIVIDEND

### Interim and Final Dividend:

Your Company paid interim dividend of ₹ 0.50 per equity share in March 2020 and the Board of Director of your Company has recommended a final dividend of ₹ 2.65 per equity share for the Financial year 2019-20.

The dividend payout is 30.82% and the total dividend payout including dividend tax is 31.82% of profit after tax.

The final dividend shall be paid after your approval at the upcoming Annual General Meeting.

The dividend has been recommended in accordance with your Company's Dividend Distribution Policy. Further, as per regulation 43A of the Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements)

Regulations, 2015 ("SEBI Listing Regulations"), the top 500 listed companies shall formulate a dividend distribution policy. Accordingly the policy was adopted to set out the parameters and circumstance that will be taken into account by the Board in determining the distribution of dividend to its shareholders and/or retained profits earned by the Company. The policy is also available on the Company's website <https://www.ntpc.co.in/sites/default/files/downloads/DividendDistributionPolicyofNTPCLimited.pdf>.

## 5. OPERATIONAL PERFORMANCE

During the year, the power stations of your Company generated 259.62 BUs (290.19 BUs including JVs & Subsidiaries but excluding NEEPCO and THDC) of electricity. This was 18.75 % (20.96 % including generation by JVs and Subsidiaries) of the total power generated in India over the Previous years' generation of 274.45 BUs by your Company (305.90 BUs including JVs & Subsidiaries).

The total generation contributed by coal stations is 249.71 BUs during the year against generation of 262.47 BUs last year. Generation from coal-based units could have been still higher but due to less generation schedule there was opportunity loss of 74.54 BUs. The coal based stations operated at an average Plant Load Factor (PLF) of 68.20% (All India PLF was 55.99%) and average Availability Factor of 81.34% on bus bar during the year.

Rihand Super Thermal Power Station with a PLF of 88.64% was ranked 5<sup>th</sup> in the country and 8 Stations (including JVs) of your Company were in the top 25 in the country in terms of PLF. Five coal based stations out of twenty four commercial Stations achieved PLF more than 85%.

The gas stations having a capacity of 4,017 MW achieved annual generation of 4.97 BUs at a PLF of 14.09 % as against 7.43 BUs last year.

Opportunity loss due to less generation schedule on Gas was still higher at 28.55 BUs.

Generation contributed by Koldam Hydro Power Station was 3.45 BUs against 3.01 BUs achieved in last year, there by achieving a growth of 14.46 % over last year.

Generation contributed by RE Projects/stations (Solar, wind, small hydro) of your Company was 1.49 BUs.

## 6. COMMERCIAL PERFORMANCE

### 6.1 Billing and Realisation

Your Company has successfully achieved the targets set by Government of India (GoI) for energy supplied in 2019-20. Many of the beneficiaries were making timely payments and had availed attractive rebates as per Company's Rebate Scheme.

Your Company has in place a robust payment security mechanism in the form of Letters of Credit (LC) backed by the Tri-Partite Agreement (TPA). Apart from the LCs, payment is secured by the Tri-Partite Agreements (TPAs) signed amongst the State Governments, Government of India (GoI) and Reserve Bank of India (RBI). As per the TPAs, any default in payment by the State owned Discoms can be recovered directly from the account of the respective State Governments in association with Reverse Bank of India (RBI).

The original TPAs signed during 2000-01 were valid up to 31.10.2016. As per the decision of the Union Cabinet and as agreed by the various States and RBI, these TPAs have been extended for a further period of 10 to 15 years. As of now, 29 out of total 31 States / UTs have signed the TPAs extension documents. The signing of TPAs extension by balance States is being taken up.

### 6.2 Rebate Scheme for realization of dues

In order to encourage early and full realization of dues, your Company has issued 'Rebate Scheme' for the year 2019-20. 1.65% rebate shall be allowed for amounts credited to your Company's accounts for any payments against provisional bills and advance payments made on 1<sup>st</sup> day of the Billing Month and graded gradually to 1.590% till 5<sup>th</sup> day of the billing month. 1.575% rebate shall be allowed for amounts credited to your Company's accounts for any payments made on 6<sup>th</sup> day and graded gradually to 1.5% till 11<sup>th</sup> day of the billing month. For amounts credited to your Company accounts from 12<sup>th</sup> day of the Billing Month till 18<sup>th</sup> day of the month next to Billing Month, graded rebate would be offered from 1.485% to 0.020%. An additional rebate of 0.1% (maximum) is proposed for beneficiaries who make payment on time consistently during the year.

### 6.3 Commercial Capacity

Commercial Capacity totaling to 8,260 MW of your Company including those of subsidiary Companies was added during the year 2019-20. The subsidiaries Companies also include 1,457 MW of NEEPCO and 1,513 MW of THDC which was acquired by your Company on 27<sup>th</sup> March 2020:

Project/ Unit	Capacity (MW)	COD*
<b>Units- Coal Based (I)</b>		
Gadarwara Unit#1	800	01.06.2019
Lara Unit#1	800	01.10.2019
Tanda-II Unit#1	660	07.11.2019
Kharzone Unit#1	660	01.02.2020
Barauni-II Unit#1	250	01.03.2020
Darlipalli Unit#1	800	01.03.2020
<b>Total (I)</b>	<b>3,970</b>	
<b>Subsidiaries - Coal Based (II)</b>		
Meja-I Unit#1	660	30.04.2019
NPGCL Unit#1	660	06.09.2019
NEEPCO	1,457	27.03.2020 <sup>@</sup>
THDC	1,513	27.03.2020 <sup>@</sup>
<b>Total (II)</b>	<b>4,290</b>	
<b>Total Capacity declared commercial during 2019-20 (I)+(II)</b>	<b>8,260</b>	

\* COD- Commercial Operation Date

@ - Transferred from GoI with effect from 27.03.2020

As on 31.03.2020, the Commercial Capacity of your Company stood at 49,695 MW (45,725 MW as on 31.03.2019) and your Company Group's Commercial Capacity stood at 61,126 MW (52,866 MW as on 31.03.2019):

Owned by your Company	Capacity MW
Coal based projects	43,950
Gas based projects	4,017
Renewable Energy Projects	928
Hydro Projects	800
<b>Sub-total</b>	<b>49,695</b>
<b>Joint Ventures &amp; Subsidiaries</b>	
Coal based projects	6,494
Gas based projects	2,494
Renewable Energy Projects	118
Hydro Projects	2,325
<b>Sub-total</b>	<b>11,431</b>
<b>Total</b>	<b>61,126</b>

### 6.4 Tariff Regulations

Central Electricity Regulatory Commission (CERC) has issued the CERC (Terms and Conditions of Tariff) Regulations, 2019 on 07.03.2019, which are applicable for the period 01.04.2019 to 31.03.2024. The tariff of electricity generated from your Company's stations would be determined by CERC based on these Regulations for the above mentioned period. The salient features of CERC Tariff Regulations, 2019 are discussed in the Management Discussion and Analysis Report which is placed at Annexure-I of this Director's Report.

### 6.5 Security Constrained Economic Dispatch (SCED)

The mechanism of Security Constrained Economic Dispatch (SCED) in your Company is under implementation on Pilot basis starting from 1<sup>st</sup> April 2019. This mechanism helps in optimization of total schedule of the Inter State Generating Stations based on the variable cost, resulting in savings in cost of procurement for the Discoms. Starting from 1<sup>st</sup> June 2020, this Pilot has been extended till 31<sup>st</sup> March 2021. During this period the scope of the SCED has been expanded to include the state regulated generating stations and the merchant generators also based on their willingness to participate in the scheme and this is expected to result in increased saving in the cost of power procurement of the Discoms.

### 6.6 Strengthening Customer Relationship

Customer Focus is one of the core values of your Company (ICOMIT). In line with this, your Company has taken up several initiatives targeted towards the external Customers. Customer Relationship Management (CRM) and Customer Satisfaction Index (CSI) are some of the most important parts of these initiatives.

As part of the CRM, your Company has been implementing several structured activities with the objective of sharing its experiences and best practices with the customers, capturing their feedbacks and expectations and addressing their issues. Some of these activities are described below:



- Your Company provides various support services to the beneficiaries, which involves identifying potential areas of cooperation and sharing of each other's best practices. In the financial year 2019-20, total 48 such programs have been conducted for the customers on the basis of requirement expressed by them.
- Your Company offers training programs to the representatives of beneficiary companies at Power Management Institute (PMI), the apex training institute of your Company on free of cost basis. In 2019-20, 52 participants from various customer organizations attended training in 18 programs.

Your Company has also put in place Customer Satisfaction Index (CSI) survey scheme, to gather customer's feedbacks through a survey and respond to their requirements. This CSI survey has been conducted in 2019-20 and the Score falls under excellent category.

### 6.7 Power Trading in Power Exchange

In line with CERC (IEGC) (5th Amendment) Regulations 2017, your Company sold more than 568 Million Units of Un-Requisitioned Surplus (URS) power in the Power Exchange through its trading arm NTPC Vidyut Vyapar Nigam Limited (NVVN), a whole owned subsidiary of your Company, based on consents received from most of the beneficiaries. The gains from the sale of URS are being shared with beneficiaries as per applicable provisions.

### 6.8 Real Time Market (RTM)

RTM has been implemented in the country since 1<sup>st</sup> June 2020 on voluntary basis. The main objective of RTM is to provide a market mechanisms to the generating stations to sell their surplus power. This also provides an opportunity to the Discoms to buy power from the market to meet their contingent requirements. RTM is being implemented in the form of 48 half-hourly markets operated round the clock and provides options to the generators and the Discoms to participate in the market through price sensitive bidding.

### 6.9 Renewable Energy:

PPAs for 600 MW solar power projects (under Developer Mode Projects) have been signed with Solar Power Developers, tariff of these projects and 200 MW wind project have been adopted by CERC.

As regard NSM Projects, with commissioning of last 250 MW Kadappa project, entire 3000 MW under NSM Phase-II Batch-II Tranche-I has been successfully completed by your Company.

For your Company owned renewable projects, PPAs signed for 20 MW Floating Solar PV Project at Auraiya and 20 MW solar PV project at Rihand as a successful bidder under UPNEDA Bidding.

Your Company has also signed PPA with SECI to supply 160 MW of solar power to Rajasthan, won through highly competitive tender.

Your Company has also won 769 MW and 923 MW solar projects under CPSU Scheme and entered into 1323 MW Power Usage Agreement with Telangana for end

consumption through government entities of Telangana.

Your Company has also signed PPA with Kerala for supply of 92 MW solar power from Floating PV station at Kayamkulam.

Petition for tariff determination of 100 MW Floating Solar PV Station at Ramagundam for use under MOP Scheme for Flexibility in Generation and Scheduling of Thermal Power Stations dated 5<sup>th</sup> April 2018 Scheme has been filed in CERC.

## 7. INSTALLED CAPACITY

During the year 2019-20, your Company added 6,984 MW to its installed capacity as per details given below:

Project/ Unit installed	Capacity (MW)
<b>Coal Based Power Projects</b>	
Tanda, Stage -II, Unit#1	660
Khargone, Unit#1	660
Barauni Stage-II, Unit#8	250
Darlipali, Unit#1	800
Khargone, Unit#2	660
<b>Total</b>	<b>3,030</b>
<b>Under Subsidiaries and Joint Ventures (Coal Based Power Projects)</b>	
NPGCL Unit#1 (Fully owned subsidiary)	660
NEEPCO (Hydro 1225 MW & Gas 527 MW & Solar 5 MW)	1757*
THDC (Hydro 1424 MW & Wind 113 MW)	1537*
<b>Total by Subsidiaries and JV</b>	<b>3,954</b>
<b>Total Addition during FY 2019-20</b>	<b>6,984</b>

\*Your Company acquired Gol stake in THDC & NEEPCO w.e.f. 27.03.2020.

The total installed capacity of your Company Group as on 31.03.2020 has become 62,110 MW (55,126 MW as on 31.03.2019) as tabulated below:

Owned by your Company	Capacity MW
Coal based projects	44,610
Gas based projects	4,017
Renewable Energy Projects	928
Hydro Projects	800
<b>Sub-total</b>	<b>50,355</b>
<b>Joint Ventures &amp; Subsidiaries</b>	
Coal based projects	6,494
Gas based projects (Including NEEPCO-527 MW)	2,494
Hydro Projects of THDC (1,424 MW) & NEEPCO (1,225 MW)	2,649
Renewable Energy Projects of THDC (113 MW) & NEEPCO (5 MW)	118
<b>Sub-total</b>	<b>11,755</b>
<b>Total</b>	<b>62,110</b>

## 8 CAPACITY ADDITION PROGRAMME

### 8.1 Projects under Implementation

In addition to furthering Capacity addition through Coal based power projects, your Company has been pursuing enhancement of its power generation portfolio through Hydro and Renewable Energy projects.

Various projects of your Company having aggregate capacity of 21,333 MW (including 9,354 MW being undertaken by Joint Venture and subsidiary companies) are under implementation in India and abroad. Total Capacity under Construction comprises 16,430 MW of Coal (Including 7,560 MW being undertaken by Joint Venture and subsidiary companies), 2,555 MW of Hydro (including 1,744 MW being undertaken by Joint Venture and subsidiary companies) and 2,348 MW of Renewable projects (Including 50 MW being undertaken by Joint Venture and subsidiary companies). The details of such projects are as under:

Ongoing Projects as on 30.06.2020	Capacity (MW)
<b>I.A. Coal Based Projects</b>	
1. Barh-I, Bihar (3x66 MW)	1,980
2. Lara-I, Chattisgarh (2x800 MW)	800
3. Gadarwara-I, Madhya Pradesh (2x800 MW)	800
4. Darlipalli-I, Odisha (2x800 MW)	800
5. North Karanpura, Jharkhand (3x660 MW)	1,980
6. Tanda-II, Uttar Pradesh (2x660 MW)	660
7. Telangana Phase-I, Telangana (2x800 MW)	1,600
8. Barauni St.-II, Bihar (2x250 MW)	250
<b>Sub Total (A)</b>	<b>8,870</b>
<b>I.B. Hydro Electric Power Projects (HEPP)</b>	
9. Tapovan Vishnugad, Uttarakhand (4x130 MW)	520
10. Lata Tapovan, Uttarakhand (3x57 MW)	171
11. Rammam Hydro, West Bengal (3x40 MW)	120
<b>Sub Total (B)</b>	<b>811</b>
<b>I.C Renewable Energy Projects</b>	
12. Auraiya, Solar G, UP	20
13. Bilhaur, Solar G, UP	140
14. Bilhaur, Solar G, UP	85
15. Ramagumdam, Solar F, AP	100
16. Simhadri, Solar F, AP	25
17. Kayamkulam, Solar F, Kerala	22
18. Kayamkulam, Solar F, Kerala	70
19. Jetsar, Solar G, Rajasthan	160
20. Rihand, Solar G, UP	20
21. Auraiya, Solar F, UP	20
22. CPSU-I: Shimbhoo Ka Burj, Solar G	250
23. CPSU-I: Devikot, Solar G, Rajasthan	150
24. CPSU-I: Shimbhoo Ka Burj, Solar G	300
25. CPSU-II: Nokhra, Solar G, Rajasthan	300
26. CPSU-II: Fatehgarh, Solar G, Rajasthan	296
27. CPSU-II: Navalakhapatti, Solar G	230
28. CPSU-II: Devikot, Solar G, Rajasthan	90
29. CPSU-I: Gandhar, Solar G, Rajasthan	20
<b>Sub Total (C)</b>	<b>2,298</b>
<b>Total I (A)+(B)+(C)</b>	<b>11,979</b>
<b>II Projects under JVs &amp; Subsidiaries</b>	

Ongoing Projects as on 30.06.2020	Capacity (MW)
<b>(A) Coal Based Projects</b>	
30. Nabinagar- JV with Railways (BRBCL), Bihar, (4x250 MW)	250
31. Nabinagar (NPGCL), Bihar (3x660MW)	1,320
32. Meja, JV with UPRVUNL (MUNPL), Uttar Pradesh (2x660 MW)	660
33. Patratu Expansion, JV with JBVNL	2,400
34. Rourkela, JV with SAIL (NSPCL), Odisha	250
35. Durgapur, JV with SAIL (NSPCL), West Bengal (2x20MW)	40
36. Khulna, JV with BPDB (BIFPCL), Bangladesh (2x660MW)	1,320
37. THDC - Khurja (2x660 MW)	1,320
<b>Total II (A)</b>	<b>7,560</b>
<b>II (B) Hydro Projects</b>	
38. THDC - Tehri PSP, Uttarakhand	1,000
39. THDC - VishnugadPipalkoti, Uttarakhand	444
40. NEEPCO - Kameng, Arunachal Pradesh	300
<b>Total II (B)</b>	<b>1,744</b>
<b>II C Renewable Projects</b>	
41. THDC - Kasargod Solar, Kerala	50
<b>Total II (C)</b>	<b>50</b>
<b>Total II (A+B+C)</b>	<b>9,354</b>
<b>Total On-Going Projects as on 30.06.2020 (I)+(II)+(III)</b>	<b>21,333</b>

@Work of Lata Tapovan HEPP stopped as per orders of the Hon'ble Supreme Court dated 07.05.2014.

### 8.2 New Technology & Initiatives

Your Company has laid major stress on efficient utilization of resources and use of technological advancements for improving energy efficiency.

With emphasis on efficiency of electricity generation, your Company has adopted ultra-super critical technology by improving the steam parameters for North Karanpura (3X660 MW) to 260 kg/ cm<sup>2</sup>, 593°C/ 593°C. For Khargone (2X660 MW) and Telangana (2X800 MW) steam parameter are 270 kg/ cm<sup>2</sup>, 600°C/ 600°C. Plant efficiency of Ultra Super Critical (USC) units is expected to be around 41.5% which is higher by 3.5% percentage over a conventional sub-critical 500 MW unit. First ultra-super critical based units of Khargone (2X660MW) Super Thermal Power Project (STPP) have already been commissioned.

For the first time in your Company, Air Cooled Condenser (ACC) System has been adopted at North Karanpura STPP and Patratu STPP which will bring a significant reduction in specific water consumption for the project. It is also being planned to install ACC for Singrauli-III (2X800 MW) & Lara-II (2X800 MW). In order to reduce the water consumption further, hybrid cooling system (combination of dry and wet cooling system) is being adopted for auxiliary cooling.



### 8.2.1 Development of Advance Ultra Super Critical technology- Ramping up cycle efficiency of coal fired units to reduce the emissions intensity

Cleaner power has been central to your Company since its inception. Over the timeline, we have witnessed focus change from local pollution to global emission concerns. Your Company has been voluntarily working on improving the energy conversion cycle efficiency by adopting more efficient technologies. Efficiency of units has been continuously improved from sub-critical to supercritical and onto ultra-supercritical technology. All new units are being ordered with USC parameters of 600°C/600°C. Adoption of USC parameters shall result in a reduction of CO<sub>2</sub> emission (as also others like NO<sub>x</sub> and SO<sub>x</sub>) intensity by around 8% when compared to conventional subcritical power plants for every unit of electricity generated.

To achieve even higher efficiency, a program to develop Advanced Ultra Super Critical (AUSC) technology is underway by a consortium of NTPC, BHEL and IGCAR. The programme has been developed under the aegis of office of the PSA (Principal Scientific Adviser) to the Government of India. The project R&D phase was approved by the Government of India in the year 2016 with total outlay of ₹ 1,554 crore. The AUSC Project envisages development of indigenous technology for steam parameters of 310 Kg/cm<sup>2</sup> and 710°C/720°C temperature. Such parameters are way higher than steam parameters used in contemporary plants globally and would result in top of line efficiency of 46%. This is sharp increase from the contemporary efficiency levels of 38% (sub-critical units) and 40% (super-critical units). It will result in reduction of CO<sub>2</sub> emissions to the tune of 20% compared to a sub-critical plant.

The activities of the R&D phase of the Indian AUSC are now in final stages and is likely to be completed in FY 2020-2021. Proactive efforts have been underway for the second phase of the programme which is aimed at setting up of an 800 MW technology demonstration plant. Your Company Sipat plant located in Chhattisgarh has been selected as the site for setting up of the technology demonstration plant (TDP). Incidentally, the site is home to your Company's first Supercritical unit (660 MW). The technology tuning at the TDP shall hold the key for translation of the learning from the demoplant to design, execution and operation subsequent units comprising of the fleet of AUSC units.

### 8.2.2 Biomass Co-firing Utilization of Agro residue for Power Generation & reduce pollution

As part of its commitment towards clean environment, your Company has taken a new initiatives to utilise agro residue for power generation. This is intended to cut down carbon emissions and also to discourage crop residue burning by farmers after harvesting by adding economic value to the crop residue and providing extra income to farmers and employment in rural sector.

Biomass co-firing is a unique method to utilize coal based power plant infrastructure to produce renewable energy by simply replacing some of the coal with biomass

based fuel. Being carbon neutral fuel, biomass co-firing is a technology recognized by UNFCCC as a measure of reducing greenhouse gas emission.

After successfully demonstrating biomass co-firing at your Company Dadri plant, your Company has started commercial scale biomass co-firing at Dadri. Your Company has already fired over 6,000 tonnes of biomass pellets at your Company Dadri plant. Purchase orders of 280 TPD for four years (approx. 4 lakh tonnes) have also been placed for your Company Dadri plant.

Further, in line with advisory of Central Electricity Authority (CEA), your Company had invited expression of interest from entrepreneurs and start-ups for production and supply of agro residue based pellets/ torrefied pellets to majority of NTPC power plants and more than hundred parties have participated in Expression of Interest (EOI). Bids from the interested parties are being invited.

### 8.2.3 Waste to energy (WtE) and disposing municipal solid waste (MSW)

Keeping commitment towards clean & green environment and Swachh Bharat Mission (SBM), your Company has taken several initiatives to support & leverage Government of India's effort towards realising SBM thereby ensuring pollution free environment to people's health and welfare.

Your Company has successfully revamped and made it functional the "Waste to Compost" plant at Karsara, Varanasi and now managing Operation & Maintenance (O&M) of this entire 600 Tons per Day (TPD) capacity plant. The plant is processing about 600 TPD of MSW and generating about 60-80 TPD of compost. Sanitary land fill facility and Leachate treatment facility have also been created at Varanasi to ensure scientific disposal of municipal solid & liquid waste.

In addition, your Company has commissioned 24 TPD thermal gasification based demonstration scale WtE plant at Varanasi to support technology development in India. The Municipal Solid Waste (MSW) is first converted to produce gas, which is then used to generate approximately 200 kW of electric power. Further, to promote Make in India concept, this Project has been awarded to Micro, Small & Medium Enterprises (MSME) vendor.

Further, your Company has also signed in-principle MoU with Surat and East Delhi Municipal Corporations, Varanasi Municipal Corporation and Indore Municipal Corporation for setting up state of the art WtE plant. Process for bid invitation for Surat and East Delhi plants is under progress.

### 8.2.4 Renewable energy

Renewable energy is one central focus for your Company. To be in step with ambitious targets, your Company is attempting all avenues for renewable capacity addition to look beyond conventional large scale solar and wind parks. Your Company is utilizing roofs of power plant buildings for solar power generation and integrating to the existing plant infrastructure. Your Company is

also going ahead with floating solar at reservoirs of its projects which is a step towards saving of land and water conservation by reducing water surface evaporation.

### 8.2.5 Welding

Welding as a joining process, is the most critical activity involved during manufacturing, erection and maintenance / overhauling of units. The advance metallurgy of components exposed to high temperatures in new coal based Super critical / Ultra Super Critical 660 MW & 800 MW thermal units of your Company, imposes greater challenges especially in terms of developing desired competencies & skill sets to achieve sound welds & also to develop desired competencies in latest, advanced NDT techniques for quick results.

To meet all those challenges, several New Initiatives in Welding & NDT were taken especially in Skill development & Competency Building, Welding Failure Analysis, challenges of Welding & NDT in even higher & complex metallurgy involved in AUSC components.

An innovative vision to develop your Company's own state of the art Welding Training Centers at selected projects to train & produce highly skilled welders, Welding & NDT Engineers, and a World Class Welding Research Center has been formalized, extensive studies were carried out to develop suitable blue prints. A Welding Research Institute is envisioned at your Company – Sipat project. These actions are now being carried forward and should impact the complete sector.

### 8.2.6 Smart Township

In Central Public Sector Enterprises (CPSE) conclave 2018, idea to convert some of CPSE townships to “Mini Smart Cities” was mooted, your Company has awarded the work of two of its townships i.e. “Solapur” and “Khargone” to be converted into “Smart Townships”. The work is under execution. Planning and development of further eight (8) Townships have also been completed.

The work in these townships involve application of smart solutions like Pan-Township security and surveillance system, smart water metering, leakage identification and water quality monitoring, smart energy metering and use of renewable energy sources, robust IT infrastructure and FTTH connectivity, rainwater harvesting, waste management, use of smart bicycles, electric vehicle (golf carts), EV Chargers, open gym and citizen services etc.

Application of these smart solutions will provide enhanced quality of life to the residents in an environment friendly and sustainable manner.

### 8.2.7 Initiative for Use of Treated Sewage Water from Municipal Sewage Treatment Plants (STP)

Your Company has already taken initiative to use treated sewage water from municipal STPs nearby for bulk water requirement in its power plants, replacing precious fresh water from rivers/lakes/reservoirs/dams meant for other priority uses like agriculture, drinking, pisciculture, water body preservation, etc. Treated sewage water will be used for Condenser Cooling Water system make-up for

the power stations wherever Municipal STPs are within 50 km distance from Power station complying Tariff Notification of Gol dated 28.01.2016. The Company has already identified some of its projects viz. Dadri, Patratu, Solapur, Meja, Mouda, Korba, Sipat and Ramagundam where there is feasibility of using the STP treated water as STPs already exist/are going to be constructed within 50 km radius of the power plants with substantial availability of STP water. Further after intense discussion with Ministry of Power (MOP), clarity regarding scope of work of power utility was provided by Ministry vide order issued in March 2020. Based on this, agreements with Nagpur Municipal Corporation for Mouda Thermal Power Station of NTPC, Ramagundam Municipal Corporation for Ramagundam Power Station, Korba Municipal Corporation for Korba Super Thermal Power Station, Bilaspur Municipal Corporation for Sipat Super Thermal power station, Solapur Municipal Corporation for Solapur STPP, Ranchi Municipal Corporation for Patratu STPP, Prayagraj Municipal Corporation for Meja TPP are under discussions.

### 8.2.8 Advanced digital and control technology use

Your Company is on the Digital path and implementing its Digital Strategy Roadmap. The initiatives of Advance Process Control (Operation optimization suite) and Advanced Monitoring of Stockyard have been commissioned as a pilot project. Implementation in subsequent units are in progress. Your Company has also taken initiatives of APM (Maintenance optimization suite), AIG (IIOT to enhance process visibility), AIM (digital twin with lifecycle documentation). The initiatives are being piloted at Simhadri power plant and subsequently shall be rolled-out across your Company Fleet. Pilot for ART (Augmented reality / Virtual Reality based training) has been completed and the full-fledged ART based Complete Turbine Training module is under procurement process.

For capacity building of operating personnel on unit operation of different size and make, your Company is building full fledged replica Simulators for all available varieties of supercritical units.

Technology intensive security system is being envisaged in place of manpower intensive security currently in place. It has centralized control and multiple layers of security to enhance security with optimized manpower. Pilot of the same has been completed in your Company, Dadri Plant. In first phase it is being implemented for five (5) your Company projects. Further, your Company has taken the initiative for further secured Control systems, augmenting the present defense in depth Cyber Security Posture for Operational Technology (OT).

Your Company has taken initiative for setting up of Integrated command and control centre (ICCC) having functionalities such as weather forecast, market intelligence, demand forecasting, generation forecasting, integrated planning, scheduling and operation optimization covering hydro, thermal and RE portfolio.



**8.2.9 Dry Bottom Ash Handling System**

Your Company has taken initiative in recent times to minimize water consumption by adopting Dry Bottom Ash Handling System instead of conventional Wet Bottom Ash Handling System for upcoming Coal Based Thermal Power Plants at Patratu, Singrauli-III and Lara-II and for R&M project at Rihand STPP. Dry Bottom Ash Handling System facilitates extraction of bottom ash in dry form and practically, water requirement will be eliminated for handling Bottom Ash with meager quantity of water which would be required for conditioning and dust suppression. The system not only reduces water consumption which is required for disposal of bottom ash in wet form but also results in reduction in power consumption for Bottom Ash disposal and facilitates separation of bottom ash and fly ash which will result in better utilization of ash.

**8.2.10 Change-over to safer Chlorine-di-oxide system from conventional gas Chlorination system for disinfection of plant water system**

Keeping commitment towards green environment and safety, your Company has embarked upon to the more advanced, safer and compact in-situ Chlorine-di-oxide generation system from earlier practice of Gas chlorination system through a comprehensive policy change for its entire fleet of existing power stations as well as all upcoming power stations which is under implementation in various projects and stations of your Company.

**8.2.11 Zero Liquid Discharge (ZLD) from Thermal Power Plants**

Your Company has already taken initiative to become a Zero Liquid Discharge company for all closed cycle operating station by identifying and implementing water management initiative, adopting innovation in water use in its Thermal Power Plant. Some of your Company stations have already become zero liquid discharge compliant and implementation is under progress in balance stations. Under the scheme, plant effluent water is segregated from storm water and is reused after treatment to a large extent in the area of Ash handling plant, Coal Handling Plant, FGD make up, Service Water etc.

**8.2.12 Energy Conservation, Technology Absorption and Foreign Exchange Earnings and outgo**

Details of conservation of energy, technology absorption and foreign exchange earnings and outgo in accordance with Section 134(3) (m) of the Companies Act, 2013 read with Companies (Accounts) Rules, 2014 forms part of this Director report is placed at Annex-III.

**8.3 Project Management**

Your Company has adopted an integrated system for the planning, scheduling, monitoring and control of approved projects under implementation. To co-ordinate and synchronize all the support functions of project management, the issuer relies on a three-tiered project management system known as the Integrated Project Management Control System (IPMCS), which integrates its engineering management, contract management and

construction management control centers. The IPMCS addresses all stages of project implementation, from concept to commissioning.

Your Company has established state-of-the-art IT enabled Project Monitoring Centre (PMC) for facilitating fast track project implementation. PMC has advanced features like Web-based Milestone Monitoring System (Webmiles), Project Review and Internal Monitoring System (PRIMS), etc. PMC facilitates monitoring of key project milestones and also acts as decision support system for the management.

PMC is an integrated enterprise-wide collaborative system to facilitate consolidation of project related issues and their resolution. Features like SMS based information delivery, real time video capture, storage and retrieval facility and video conference facility are extensively utilized for project tracking, issues resolutions and management interventions. PMC has helped in providing effective coordination between the agencies and has provided enhanced/ efficient monitoring of the projects leading to better and faster project implementation.

**8.4 Capacity addition through Subsidiaries and Joint Ventures (JVs) of your Company**

Besides adding capacities on its own, your Company develops power projects through its subsidiaries and joint ventures, both in India and abroad.

The information of Indian Subsidiaries and JV Companies along with details of partners of joint ventures engaged in power generation is given below:

Name of Company	JV Partner(s)	Details
<b>KBUNL</b> (Kanti Bijlee Utpadan Nigam Ltd.), A wholly-owned subsidiary of NTPC	-	Both the units of Stage-I of KBUNL have been declared on commercial operation. This Company has also taken up expansion of the project by installation of (2X195 MW) units. Unit#3 of Stage-II was declared commercial on 18.03.2017 and Unit#4 of Stage-II was declared commercial on 01.07.2017.  Generation in FY 2019-20 was 2905.00 MUs at 54.21% PLF and DC was 92.26%.
<b>BRBCL</b> (Bhartiya Rail Bijlee Company Limited)	Ministry of Railways	A subsidiary of your Company in joint venture with Ministry of Railways with equity contribution in the ratio of 74:26 respectively for setting up power project of 1000 MW (4X250 MW) capacity at Nabinagar in Bihar. Unit#1, 2 & 3 was declared commercial on 15.01.2017, 10.09.2017 and 26.02.2019 respectively. Construction activities of last unit is in progress.  Generation in FY 2019-20 was 4887.10 MUs at PLF 74.18% and DC was 86.28%.



Name of Company	JV Partner(s)	Details
<b>NSPCL</b> (NTPC-SAIL Power Co. Ltd.) (now converted into a Public Limited Company from NTPC-SAIL Power Company Private Limited)	Steel Authority of India Ltd. (SAIL)	<p>A 50:50 Joint Venture Company between your Company and SAIL, owns and operate Captive Power Plants of SAIL at Durgapur (2 x 60 MW), Rourkela (2 x 60 MW) and Bhilai (2x30+1x14 MW). NSPCL has also implemented (2x250 MW) Bhilai Expansion Power Plant. Total installed capacity of NSPCL is 814 MW.</p> <p>NSPCL generated 5,165.40 MUs at 72.24% PLF and DC was 92.19% in FY 2019-20.</p> <p>NSPCL has paid dividend of ₹ 50.00 Cr during FY 2019-20 to your Company.</p> <p>Under Implementation - New Coal based Capacity at Rourkela PP-II Expansion (1x250 MW) &amp; Durgapur PP-III (2x20 MW) is under construction.</p>
<b>NTECL</b> (NTPC Tamil Nadu Energy Co. Ltd.)	Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) (erstwhile TNEB)	<p>A 50:50 JVC has commissioned (3x500 MW) coal based power project at Vallur, Tamil Nadu.</p> <p>All the units have been declared on commercial operation. Generation of NTECL during FY 2019-20 was 5,675.00 MUs at 43.07% PLF and DC was 87.85 %</p>
<b>APCPL</b> (Aravali Power Company Pvt. Ltd.)	Indraprastha Power Generation Company Ltd. (IPGCL) and Haryana Power Generation Corporation Ltd. (HPGCL).	<p>This JVC is operating (3X500 MW) coal based Indira Gandhi Super Thermal Power Project. Your Company, IPGCL and HPGCL have contributed equity in the ratio of 50:25:25.</p> <p>Generation of APCPL during FY 2019-20 was 3,842.79 MU at 29.17% PLF &amp; DC was 91.97%.</p> <p>APCPL has paid dividend of ₹ 146.83 crore to your Company during FY 2019-20.</p>
<b>MUNPL</b> (Meja Urja Nigam Pvt. Ltd.)	Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL)	<p>A 50:50 JVC is implementing (2X660 MW) coal based power project in the state of Uttar Pradesh. Construction activities are in progress.</p> <p>Unit-1 of 660 MW capacity has been declared commercial on 30 April 2019. Unit-2 is under construction.</p> <p>Generation of MUNPL during FY 2019-20 was 1,051 MUs at 17.93% PLF and DC was 26.62%.</p>

Name of Company	JV Partner(s)	Details
<b>NPGCL</b> (Nabinagar Power Generating Company Ltd.)		<p>NPGCL is setting up a (3x660 MW) Coal based plant at Nabinagar. Construction activities are in progress.</p> <p>Unit#1 declared commercial on 06.09.2019 and Unit#2 was synchronized on 12.02.2020.</p> <p>Generation of NPGCL during FY 2019-20 was 2784.00 MUs at 77.85% PLF and DC was 88.11%.</p>
<b>RGPPL</b> (Ratnagiri Gas and Power Pvt. Ltd.)	GAIL, ICICI Bank, SBI, IDBI, Canara Bank and MSEB Holding Co. Ltd.	<p>Your Company has a stake of 25.51% in RGPPL.</p> <p>PPAs have been signed by RGPPL with Indian Railways for supply of 500 MW for 5 years w.e.f. 01.04.2017 and Gas Supply Agreements were signed with GAIL for supply of 1.75 MMSCMD of RLNG w.e.f. 01.04.2017 for 5 years.</p> <p>Demerger scheme was approved by NCLAT on 28.02.2018 thereby separating the R-LNG business from RGPPL to the new entity Konkan LNG Private Limited (KLPL). With this, the LNG business and all its associated assets and liabilities have been merged in to a separate company, namely Konkan LNG Limited (KLL) (erstwhile KLPL).</p> <p>Generation of RGPPL during FY 2019-20 was 4263.67 MUs at 24.68% PLF and DC was 33.64%.</p>
<b>ASHVINI</b> (Anushakti Vidhyut Nigam Ltd.)	Nuclear Power Corporation of India Ltd. (NPCIL)	<p>Your Company is having a stake of 49%. The company was formed to set up Nuclear Power Project with two reactor units of mutually agreed capacity and at a mutually agreed location, which may be extended to setting up additional NPPs at the same location or elsewhere, as may be mutually discussed and agreed between the parties, subject to establishment of techno-commercial viability. JVC may also explore the possibilities of entering into business activities related with the Nuclear Power generation and front-end fuel cycle such as uranium mining, setting up of ancillary facilities, etc. at an appropriate stage.</p> <p>Currently, no activities are being taken up by the Company.</p>



Name of Company	JV Partner(s)	Details
PVUNL (Patratu Vidyut Utpadan Nigam Limited)	Jharkhand Bijli Vitran Nigam Limited (JBVNL)	PVUNL has been incorporated on 15.10.2015 as a subsidiary of your Company with 74% stake in the Company and 26% of stake held by JBVNL to acquire, establish, operate, maintain, revive, refurbish, renovate and modernize the performing existing units and tie-lines, sub-stations and main power transmission lines connected therewith and setting up of the new units. Supplementary Joint Venture Agreement was signed on 01.03.2018 for expansion units (Phase-I 3X800 MW).EPC package was awarded to BHEL and Construction work is in progress at full swing.

### 8.5 Hydro Power Projects

Your Company, as you are already aware, has been in renewable energy and now has solid footprints in green energy by developing hydro projects as detailed below:

- A. **Koldam HEPP (4x200 MW)** is on the river Satluj, in District Bilaspur (Himachal Pradesh). All the four units of 200 MW were declared commercially operational in 2015. Since then the project is running exceedingly well. The generation for the financial year 2019-20 has been 3,449.60 MUs against design energy of 3055 MUs. Station has achieved best ever yearly DC of 108.97% in FY 2019-20, which is highest amongst all the Hydro Power Stations in the country for the last 4 years in a row. Station has taken initiatives for environment friendly disposal of plastic waste by signing MoU with nearby Cement Factory. For water conservation, backwash water from the Water treatment plant and effluent from the Sewerage treatment plant is being used for Horticulture purposes in Township area. Koldam was bestowed with HP Environment Leadership award by Hon'ble Chief Minister on the occasion of World Environment day at Shimla.
- B. **Tapovan Vishnugad HEPP (4x130 MW)** is on the river Dhauliganga, District Chamoli (Uttarakhand). Project is under advanced stage of construction. Generator Transformer (GT) and Switchyard Package has been completed in FY 2019-20. Powerhouse works are completed except finishing works, which are in progress. Further other important construction activities of Projects are at full swing. Head Race Tunnel (HRT), which is 12 Kms long, the construction of approximately 8 Kms has been completed. This year a significant break through was achieved by making Tunnel Boring Machine (TBM) operational which had been stuck inside tunnel since 2012 due to adverse geological conditions. The construction activities on all balance fronts are in progress.
- C. **Lata Tapovan HEPP (3x57 MW)** is in upstream of Tapovan-Vishnugad HEPP, in District Chamoli (Uttarakhand). All Construction activities at LTHPP have been stopped since 08.05.2014 in line with Hon'ble Supreme Court order dated 07.05.2014 for 24 Hydro Projects in the

State of Uttarakhand including Lata-Tapovan. MOEF&CC had constituted an expert body which, in Oct 2015, recommended for implementation of Lata Tapovan with compliance of certain additional conditions. Your Company submitted in Court on 19.11.2015 that the conditions recommended by expert body shall be strictly complied. On the hearing held on 26.04.2016 also, Additional Solicitor General of India had informed the Court that Lata – Tapovan Project must be implemented. Last hearing was held on 28.02.2020. The Court asked GoI to submit a combined affidavit of all three concerned ministries. The said affidavit is yet to be submitted. The matter is still pending with Hon'ble Supreme Court.

- D. **Rammam-III HEPP (3x40 MW)** is situated on river Rammam in Teesta Basin, Darjeeling (West Bengal) in south and Sikkim in north. Construction activities are in progress at site.
- E. **Seli HEP (4x100 MW) & Miyar HEP (3x40 MW)** are the two new projects allotted to your Company in Chenab Valley by Govt of Himachal Pradesh. MoU was signed with GoHP on 25.09.2019. Finalization of terms and conditions with Govt of Himachal Pradesh (GoHP) is in progress as one of the earlier awardee company has approached the High Court of Shimla for redressal of its grievances with GoHP.

### 8.6 Capacity Addition through Renewable Energy (RE Sources)

Your Company is adding capacity through renewable sources of energy, to broad base its generation mix to ensure long-term competitiveness, mitigation of fuel risks and promotion of sustainable power development. Renewable energy is the central focus for the company. To be in step with ambitious targets of the Government of India (GoI), your Company is attempting all avenues for renewable capacity addition to look beyond conventional large scale solar and wind projects.

Your Company is also going ahead with floating solar projects at reservoirs of its projects which is a step towards saving of land and water conservation by reducing water surface evaporation.

Your Company's Corporate Plan envisages a target of 32 GW capacity of RE power comprising around 25% of the overall installed capacity of 130 GW by 2032. Your Company contributes to RE capacity addition in the following two pronged approach namely own capacity addition mode and Developer Mode. In own capacity addition mode, your Company sets up Renewable Energy projects on its own investment. In Developer Mode, your company acts as an intermediary procurer where it procures power from the Developers and sells to DISCOMs with a trading margin:

- (a) **Projects under Own Capacity Mode:** These projects are Company's own projects with its own investment. These projects are setup in surplus land/ reservoirs in the Company's stations. The off take is tied up through direct Power Purchase Agreement (PPA) with state utilities.

Your Company has already commissioned as on date 1070 MW of RE projects including 142 MW owned by the subsidiaries of your Company.

Further, 2,348 MW of RE projects are under implementation comprising of Ground Mounted Solar Projects and Floating Solar projects.

The Ground Mounted Solar projects of 2,111 MW are spread across UP, Rajasthan, TN and Kerala. Further 1,636 MW out of 2,111 MW are being implemented under CPSU scheme. Under this scheme it is envisaged to set up solar projects using domestically manufactured cells and modules with VGF support from Ministry of New and Renewable Energy (MNRE). The power is sold in WTO compliant manner only to Govt entities under a Power usage agreement (PUA).

Floating Solar projects of 237 MW are spread across Telengana, AP and Kerala. Your Company is first mover/leader in setting up large scale Floating Solar projects. Ramagundam 100 MW Floating Solar being set up under non PPA mode is the largest in the country.

- (b) **Developer Mode:** Under this mode, your Company acts as an intermediary procurer and calls for tenders from developers under tariff based bidding mode in accordance with the targets set by MNRE from time to time. There is no investment from the Company. Your Company act as a designated agency for issue of tenders for setting up of renewable power projects including wind and solar power projects.

Your Company has commissioned 3,983 MW RE projects under Developer mode and 1,600 MW of RE projects are under implementation.

**Some of the New Initiatives and major Highlights of your Company has taken in RE Projects are :**

#### Winning in Competitive bidding of SECI/States

- 300 MW Solar projects won under Tariff Based Bidding
- 1,692 MW Solar projects won under CPSU scheme under Viability Gap Funding (VGF)

#### Signing of Implementation Support Agreement (ISA)

- Implementation Support Agreement (ISA) signed with Rajasthan Renewable Energy Corporation Limited (RRECL) for setting up 735 MW solar projects in own capacity addition mode and also for setting up 190 MW solar project under developer mode in Nokh Solar Park in Rajasthan.

#### UMREPP (Ultra Mega Renewable Energy Power Park)

- MNRE has undertaken a scheme to develop UMREPPs. The objective of the UMREPP is to provide land upfront to the project developer and facilitate transmission infrastructure for developing Renewable Energy (RE) based Ultra Mega Power Projects (UMPPs) with solar/wind/hybrid and also with storage system, if required. The scheme is under finalization by MNRE.
- MOU has been signed with Maharashtra for setting up 2.5GW UMREPP. Discussions in progress with other States.

#### Floating of tenders with Land in scope of Bidder

- To surmount land availability issues, tenders floated with land included in scope of bidder.

#### Hydrogen Energy

- Your Company is in the process of exploring opportunities for production of Green Hydrogen using power produced from RE sources and using the Green Hydrogen for various applications namely Mobility Application, Production of Synthetic fuel (Methanol) etc. As a part of technological tie up MoU has been signed with Siemens.

#### 8.7 Capacity addition through acquisition

**THDC India Limited (THDC) :** Your Company has acquired 74.496% equity stake held by Government of India (GoI) in THDC on 27.03.2020 for a total consideration of ₹ 7,500 crore. Balance 25.504% equity stake is with Govt. of Uttar Pradesh. With this acquisition, THDC is now a subsidiary of your Company. THDC has an Operating portfolio of 1,513 MW and an under-construction portfolio of 2,838 MW.

**North Eastern Electric Power Corporation Limited (NEEPCO):** Your Company has acquired 100% equity stake held by Government of India (GoI) in NEEPCO on 27.03.2020 for a total consideration of Rs. 4,000 crore. With this acquisition, NEEPCO is now a wholly-owned subsidiary of your Company. NEEPCO has an operating portfolio of 1,457 MW and another 600 MW is under advance stage of Commissioning.

#### 9. STRATEGIC DIVERSIFICATION- INCREASING SELF-RELIANCE

- 9.1 In order to strengthen its competitive advantage in power generation business, your Company has diversified its portfolio to emerge as an integrated power major, with presence across entire power value chain through backward and forward integration into areas such as coal mining, power equipment manufacturing, power trading and distribution.

Your Company continuously explores business opportunities through market scanning and adopts new business plans accordingly.

- 9.2 The details of subsidiary companies engaged in business other than in power generation are as under:

- 9.2.1 **NTPC Electric Supply Company Limited (NESCL)**, a wholly-owned subsidiary, transferred and vested all its operations, with effect from April 1, 2015, to your Company.

NESCL was incorporated for the distribution business and later started deposit and consultancy works. The transfer and vesting of existing operations would enable a focused business approach in the area of distribution, the objective for which NESCL was incorporated. Although currently NESCL does not have any business operations in retail distribution, the same will be taken up at an appropriate time when the opportunity becomes visible.

- 9.2.2 **NTPC Vidyut Vyapar Nigam Limited (NVVN)**, a wholly-owned subsidiary, is engaged in the business of Power trading. NVVN has a trading License under Category I (highest category). It undertakes sale and purchase of electric power, to effectively utilize installed capacity and thus enable reduction in the cost of power.

The Company has been nominated as Settlement Nodal



Agency (SNA) for settlement of Grid operation related charges with neighboring countries, namely, Bangladesh, Bhutan, Nepal and Myanmar. The Company is also implementing a 50 MW gas power project in Andaman & Nicobar.

In the FY 2019-20, NVVN traded 14.53 approx. billion units (BUs).

- 9.2.3 NTPC Mining Limited (NML),** In order to ensure focused management of mining business, your Company has incorporated a wholly owned subsidiary, NTPC Mining Limited (NML), on 29<sup>th</sup> August 2019 for handling its mining business. It is expected that undertaking of mining business by this subsidiary would result in timely development of mines with efficient handling of contracts by dedicated team. This will ultimately achieve substantial efficiency and increased competitiveness.
- 9.3** The details of joint venture companies incorporated in India which are taking up activities in other business related areas are given below:

Name of Company	JV Partner	Activities Undertaken
UPL (Utility Powertech Ltd.)	Reliance Infrastructure Limited, Space Trade Enterprises Private Limited, Skyline Global Trade Private Limited and Species Commerce and Trade Private Limited	A50:50 JV Company, takes up assignments of construction, erection and supervision of business in power sector and other sectors like O&M services, Residual Life Assessment Studies, non-conventional projects etc. UPL has paid dividend of ₹ 4 Cr. during to your Company for FY 2019-20.
NGPSL (NTPC GE Power Services Private Limited)	GE Power Systems GmbH	A 50:50 JV, provide R&M services for coal based power plants in India. To renovate, modernise, refurbish, rehabilitate, upgrade, reverse engineering and component damage assessment. Also for undertaking residual life assessment, reengineering in India and on a project by project basis elsewhere abroad, utilising state-of-the-art technology. R&M including RLA work orders are under execution. NGSL is diversifying to take up new business assignments in area of FGD, Ash Utilization, O&M and RE. NGSL has paid dividend of ₹ 0.30 Crore during FY 19-20.

Name of Company	JV Partner	Activities Undertaken
EESL (Energy Efficiency Services Ltd.)	PFC, PGCIL and REC	Your Company is having stake of 47.15%. Your Company was formed for implementation of Energy Efficiency projects and to promote energy conservation and climate change. EESL is working on Energy Audit of Buildings, Perform Achieve Trade (PAT) scheme work and standard & leveling work of BEE, Consultancy work, implementing Bachat Lamp Yojana and Agricultural & Municipal Pump replacement for various State Govts. Your Company is taking up different energy efficiency improvement related works like replacement of bulbs, Street Light National Programme (SLNP), & other new business areas like Electric Vehicle (EV), Electric Charging Infrastructure etc. EESL gave ₹ 4.47 Crore during FY 19-20 as Dividend.
NHPTL (National High Power Test Laboratory Pvt. Ltd.)	NHPC, PGCIL, DVC and CPRI	Your Company is having a stake of 20.0% in JVC. The Company was formed to establish a research and test facility for the power sector such as an "Online High Power Test Laboratory" for short circuit testing facility and other facilities as may be required for the same in the country. HVTR test Laboratory set up at Bina, M.P. was declared Commercial w.e.f 01.07.17, MVTR test lab is expected to be commissioned by July'2020.
NBPPL (NTPC-BHEL Power Projects Pvt. Limited)	Bharat Heavy Electricals Limited	The Company was incorporated for taking up activities of engineering, procurement and construction (EPC) of power plants and manufacturing of equipment. The promoters have decided to wind-up the Company. As Company was formed by a directive from the GOI, approval of exit from GOI is required. MoP has advised your Company to consider buying out the stake of BHEL and thereafter decide either to continue it as an in-house arm or close it after completion of the EPC work at Unchahar project. Your Company communicated to MoP the decision regarding buying out the stake of BHEL may be taken after completion of the balance works of Unchahar project.

Name of Company	JV Partner	Activities Undertaken
(BF-NTPC) BF-NTPC Energy Systems Limited	Bharat Forge Limited	Your Company is having a stake of 49.00% in JVC. This Company was incorporated to manufacture castings, forgings, fittings and high pressure piping required for power projects and other industries. However, since the project could not take off, it has been decided to wind up BF-NTPC. Liquidator has been appointed and voluntary liquidation of the Company is in progress.
TELK (Transformers and Electricals Kerala Limited)	Acquisition of 44.6% stake in TELK from Government of Kerala on June 19, 2009	Your Company is having a stake of 44.6% in JVC. The Company deals in manufacturing and repair of Power Transformers. Your Company has accorded in-principle approval for withdrawal of your Company from TELK on 28.04.2016. Further, discussion is in progress.
ICVL (International Coal Ventures Private Limited)	CIL, SAIL, RINL, NMDC	Your Company is having a stake of 0.11% in JVC. ICVL was formed for acquisition of stake in coal mines/ blocks/ companies overseas for securing coking and thermal coal supplies. In view of lack of suitable commercially viable opportunities for thermal coal, your Company has decided to exit from ICVL. As the Company was formed by a directive from the Government of India, approval of the Government is awaited for exit.
HURL (Hindustan Urvarak & Rasayan Limited)	Coal India Limited, Indian Oil Corp. Limited, Fertilizer Corp. of India Limited (FCIL), Hindustan Fertilizer Corp. Limited (HFCL)	Your Company is having a stake of 33.33 % in JVC. HURL was incorporated on 15.06.2016 to establish and operate new fertilizer and chemicals complexes (urea- ammonia and associated chemical plants) at Gorakhpur, Sindri and Barauni and market its products. Lumpsum Turnkey contract was awarded for Gorakhpur, Barauni and Sindri with a completion schedule of 36 months. Construction work in all the three projects are in progress.
KLL (Konkan LNG Limited)	GAIL, ICICI Bank, SBI, IDBI, Canara Bank and MSEB Holding Co. Ltd.	Your Company is having a stake of 14.82% in JVC. The Demerger scheme filed by RGPPL was approved by NCLAT on 28.02.2018 thereby separating the R-LNG business from RGPPL to the new entity Konkan LNG Private Limited (KLPL). Post de-merger, the LNG facility/undertaking of RGPPL had been transferred in KLPL with minor shareholding of RGPPL. KLPL has been converted to Public Limited Company and has been renamed as Konkan LNG Limited (KLL) on 18.02.2020.

Name of Company	JV Partner	Activities Undertaken
CNUPL (CIL NTPC Urja Private Limited)	Coal India Ltd. (CIL)	A 50:50 JVC was incorporated on 27 April 2010 between NTPC Ltd. and Coal India Ltd to undertake the Development of Brahmini and Chichro-Patsimal coal mine blocks in Jharkhand and subsequently their operation and maintenance and integrated coal-based power plants. In June'2011, Ministry of Coal, Gol has de-allocated Brahmini and Chichro-Patsimal coal blocks which were earlier allotted to the JV Company. CNUPL is exploring new business area for implementation of solar projects.

#### 9.4 Diversification in Electric Vehicle (EV) Segment

Your Company is envisaging providing hydrogen and pure electric powertrain based green mobility solutions for public transport which includes providing hydrogen fuel cell based electric vehicles as well as pure battery operated electric buses. It is also playing an important role of e-Mobility 'enabler' by creation of public charging infrastructure. Following initiatives are under various stages of implementation:

- a. **Hydrogen Mobility:** The pilot projects are planned to be carried out in Leh and Delhi with 5 nos. of Fuel cell electric bus and 5 nos. of fuel cell cars at each location. The pilot project is being designed with complete value chain of Hydrogen including Hydrogen generation from renewable energy, Hydrogen storage and dispensation. An EoI has been invited in this regard from Global fuel cell electric vehicle (FCEV) manufacturers.
- b. **E-bus Solution:** Your Company is also offering complete e-bus solutions to STUs through its subsidiary, NVVN. An agreement has already been signed with Department of Transport, A&N Islands for deploying electric bus solution. Similar solutions with other STUs are also under discussion.
- c. **Battery Charging & Swapping solution:** Your Company has already commissioned a pilot project on the concept of battery charging and swapping at Faridabad. The station is under operation and is catering to electric 3 wheeler's energy service requirement.
- d. **Charging Station:** Your Company plans to set-up 400 Nos. of chargers in locations across the cities. So far 90 Nos of Chargers have been installed.
- e. **Charging Infrastructure under FAME-II:** Your Company had participated in the Expression of Interest (EOI) floated by Department of Heavy Industries, Government of India under Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-II) scheme. A total of 282 nos. of charging stations will be set-up in Jabalpur, Bhopal, Hyderabad, Vijayawada, Visakhapatnam, Kakinada and Bengaluru under this project.



### 9.5 Foray in Packaged Drinking Water Business

Your Company's research arm, i.e. NETRA, has developed technology for sea water desalination/waste water treatment using waste heat from flue gas from the power plant. The cost effective technology is now being utilized for packaged drinking water. An MoU in this regard has been signed with IRCTC for setting up a packaged drinking water facility at your Company Simhadri Station. Commercial arrangements are being finalized with IRCTC. Award of contract by IRCTC for setting up packaged drinking water project is in progress.

### 9.6 Foray into cement business

Your Company is collaborating with CCI for reviving the cement plants of CCI supplementing both your Company's & CCI's resource requirement and increasing ash utilization.

An MoU was signed with CCI for establishing a cement blending unit at Solapur Station of your Company by utilizing the fly ash and the proposal is being assessed. Land identification & feasibility report for the proposed plant is in progress.

### 9.7 New Business Areas

Your Company has entered into Joint Venture Agreement with East Delhi Municipal Corporation (EDMC) for setting up Integrated Waste to Energy (WtE) project in EDMC control area. The JV Company named NTPC EDMC Waste Solutions Pvt. Ltd. was incorporated as a subsidiary of your Company with 74% equity participation by your Company and balance 26% equity participation by EDMC on 1<sup>st</sup> June 2020. The Integrated WtE Project shall consist of Pre-Processing Facilities for Municipal Solid Waste (MSW), Bio-Methanation Plant, Power Plant (12 MW), Construction and Demolition (C & D) Waste Processing Plant.

MoU was signed on 16.07.2019 with Indian Oil Corporation Limited to explore possible business opportunities in the areas of mutual interest like Power Supply to Refineries, Setting up of new Power Plants/Acquisition of Power Plants under NCLT, Fuels & Lubricants, Biogas & ethanol plants, Waste to Energy, Technical Consultancy, O&M and R&M services, Knowledge sharing etc.

MoU was signed on 24.07.2019 with BHEL for forming a joint venture Company to set up 800 MW Technology Demonstration Plant (TDP) based on Advanced Ultra Supercritical Technology at Sipat, Chhattisgarh

Your Company has evinced its interest to develop Seli HEP (400 MW) and Miyar HEP (120 MW) in Chenab Valley, Himachal Pradesh subject to establishment of techno-economic viability. An MoU with Govt. of Himachal Pradesh (GoHP) has been signed on September 25, 2019.

## 10. GLOBALISATION INITIATIVES

**10.1 Trincomalee Power Company Limited (TPCL)**, a 50:50 joint venture between your Company and Ceylon Electricity Board was formed to undertake the development, construction, establishment, operation and maintenance of a electricity generating station Trincomalee at Sri Lanka.

Existing JV Company i.e. TPCL shall develop 50 MW solar power project at Sampur and a new JV Company to be incorporated to develop the LNG based Power Project.

The Joint Venture & Shareholders' Agreement (JVSHA) for incorporating a new JV Company in Sri Lanka to develop the LNG Power Project at Kerawalapitiya has been signed between your Company and CEB on 25.10.2019.

The Capacity of first phase was decided as 300 MW±15%. The project shall be developed on BOOT basis.

**10.2 Bangladesh-India Friendship Power Company Private Limited**, a 50:50 joint venture Company between your Company and Bangladesh Power Development Board (BPDB) was formed for developing a (2X660 MW) Coal based power project (Maitree Super Thermal Power Plant) at Khulna Division, Rampal, Bangladesh. Engineering, Procurement, Construction(EPC) contract of the project except township was awarded to BHEL. Construction activities are going on in full swing.

**10.3 Other Opportunities Abroad:** Business opportunities in Bangladesh, Nepal, Bhutan, Myanmar, Indonesia, Vietnam Oman, UAE, Egypt, Saudi Arabia, Qatar, Uzbekistan, Maldives, Malawi, Togo, Morocco, Botswana, Zimbabwe, Kenya and other countries are being explored in the areas of power generation, PMC, O&M contracting, R&M of power plants, capability building and cross border power trading etc.

Your Company has been awarded three consultancy jobs abroad (i) Togo: Appointed as PMC consultant for (250+35) MW solar PV Project, (ii) UAE: Energy Audit of Factories in Ras Al Khaimah and (iii) Myanmar: Appointed as PMC for solar+DG based village electrification in Rakhine.

Your Company has been registered as an overseas corporation in Myanmar and new business opportunities are being tapped by your Company branch office in Myanmar and has been registered as an overseas Company in Kenya.

Further your Company is associated as a corporate partner with International Solar Alliance (ISA) and has now been selected as Project Management Consultant / Solar Project Developer to implement solar projects in ISA member countries. In line with this endorsement, your Company has been appointed by Govt. of Togo, Africa as PMC for implementation of a 35 MW solar project and a 250 MW solar park in Togo.

## 11. CONSULTANCY SERVICES

Your Company offers Consultancy services "From Concept to Commissioning and beyond..." in areas of Engineering, O&M, Project Management, Contracts & Procurement, Renovation & Modernization, Quality & Inspection, Training & Development, Human Resource, IT, Solar & renewable power projects, compliance to Environmental norms for power stations etc. These services are being provided in India and abroad viz. Gulf countries, Bangladesh, Nepal, Sri Lanka and Bhutan.

Presently, the Consultancy Wing is associated with a capacity of around 29,100 MW:

- Owner's Engineers Services & Project Management Services- 19,000 MW.
- O&M Services / O&M studies (Performance Improvement Plan (PIP) & Gap Analysis) – 9,800 MW.
- Solar PMC: 300 MW

On international front, Consultancy Wing is providing PMC services for Solar Power Project in Dalwak in Dapaong (33 MWp) and in Mango (250 MW) in Savanes Region, Govt. of Togo. There has been an all-round improvement in terms of plant parameters and capacity building due to implementation of best practices and systems in this power plant with involvement of your Company's experts.

On the domestic front, Consultancy Wing is providing Project Management Consultancy (PMC) for implementation of (2X660MW) Khurja STPP of THDC and (2X660MW) Buxar TPP of SJVN.

Consultancy Wing is executing assignments for various clients like UPRVUNL, APGENCO, CSPGCL, HPGCL, DVC, PSPCL, GSPGCL, SCCL, OCPL, MPPGCL, RVUNL and your Company JVs for FGD Systems, Project Management, FR/ DPR Preparation, Procurement & Inspections, HR, IT, Performance Improvement services and other advisory services.

#### Highlights of FY 19-20

- Consultancy wing received orders of ₹ 285.79 Crore during the year
- About 24 nos. assignments pertaining to FGD & ESP augmentation works amounting to around ₹ 92 crore for 25,000 MW capacity are under various stages of execution
- Post Award Review Engg. & Project Monitoring services at (1X660MW) Panki Extn.TPP, (2X660MW) Obra Extn. TPS & (2X660MW)Jawaharpur TPS of UPRVUNL
- Commissioning support to UPRVUNL Harduaganj Extn -II (1x 660 MW)
- Engineering review of (2x20 MW) AFBC Unit of NSPCL Durgapur
- PMC of Multi-function Simulators for NPTI at six locations covering coal based TPP; Gas based CCPP, Hydro Power, Smart Grid.
- Consultancy Wing is looking ahead for future business opportunities in areas such as Complete O&M of your Company JV / Govt. body, Solar & Renewable power projects, Owner's Engineer for major power projects, PMC for implementation of new environmental norms e.g FGD, ZLD, DNOx & ESP R&M, IT services e.g. ERP implementation, PRADIP, Dreams 2.0, PI systems, etc.

Consultancy Wing is also looking ahead for future business opportunities in areas such as Solar & Renewable power projects and O&M for power plants of other utilities in addition to new assignments as Owner's Engineer for major power projects, FGD & ESP R&M business for meeting new environmental norms etc.

## 12. FINANCING OF NEW PROJECTS

The capacity addition programs shall be financed with a debt to equity ratio of 70:30, in case of thermal and hydro projects of your Company and that of 80:20 in case of solar/ wind projects. Your directors believe that internal accruals of the Company would be sufficient to finance the equity component for the new projects. Given its low-g geared capital structure and strong credit ratings, your Company is well positioned to raise the required borrowings.

Your Company is exploring domestic as well as international borrowing options including overseas development assistance provided by bilateral agencies to mobilize the debt required for the planned capacity expansion program.

Further, your Company is consistently doing debt swapping in case of domestic loan and cheaper loans are being utilised to repay the older loans with higher rate of interest without paying any repayment penalty to bank.

The details of funding are discussed in the Management and Discussion Analysis Report at Annexure-I, which forms part of this Report.

## 13. FIXED DEPOSITS

Your Company has discontinued the acceptance of fresh deposits and renewals of deposits under Public Deposit Scheme with effect from 11.05.2013. As such, there were no deposits which were not in compliance with the requirements of Chapter-V of the Companies Act, 2013.

The details relating to deposits, as per the Companies Act, 2013 are as under:

(a)	Accepted during the year	Nil
(b)	Remained unpaid or unclaimed as at the end of the year	6 Deposits amounting to ₹ 15.91 lakh*
(c)	Whether there has been any default in repayment of deposits or payment of interest thereon during the year and if so, number of such cases and the total amount involved:	
	i. At the beginning of the year	NIL
	ii. Maximum during the year	NIL
	iii. At the end of the year	NIL

\* Pending for completion of legal formalities/ restraint orders/ non-receipt of claims.

## 14. FUEL SECURITY

During the year 2019-20, the supply position of coal and gas is given as under:

### 14.1.1 Coal Supplies

#### Long Term Coal Supply Agreements

- In line with the Model Coal Supply Agreements signed between your Company and Coal India Limited (CIL) in 2009, 2012 and under SHAKTI Policy, Long-term Coal Supply Agreements (CSAs) are in place with the subsidiary coal companies of CIL for an Annual Contracted Quantity (ACQ) of 163.63 Million Metric Tonnes (MMT) for the existing thermal stations. In



addition, CSA is in place with Singareni Colliery Company Ltd. for Ramagundam for an Annual Contracted Quantity(ACQ) of 11.20 MMT. Fuel Supply Agreement (FSAs) are valid for a period of 20 years with a provision of review after every 5 years.

- In FY 19-20, your Company signed new Long Term Fuel Supply Agreements (FSA) for 1.19 Million Tonnes Per Annum(MTPA) with CCL for Unchahar St-IV Unit-6, 0.44 MMTPA with WCL and 1.63 MTPA with SECL for Gadawara (2X 800 MW) and 0.85 MTPA with ECL for Bongaigaon Unit-3. However, 2.805 MTPA from NCL for Gadawara and quantity of 1.851 MTPA with NCL for Vindhyachal Unit-13 stage -V is also expected to be signed in FY 20-21. Further, Linkage under SHAKTI policy for upcoming units of your Company i.e Talcher -III and Singrauli-III has been allocated from MCL and NCL respectively and Letter of award for all above expected to be issued in FY 20-21.

#### Short Term Coal Supply Agreements Signed and coal supply agreement modified during the financial year 2019-20

##### Agreement with SCCL

- A bilateral coal supply agreement was signed with SCCL for financial year 2019-20 with the validity of one year for a quantity of 8.00 MMT, which can be further increased to 10 MMT, on best effort basis. MOU with SCCL has been signed for non-bridge linkage station on additional price of 20% of the notified price for non-power consumers and for bridge linkage station on additional price of 20% of notified price for power consumers.

##### Bridge Linkages

- Ministry of Coal issued policy guidelines on 8 February 2016 for grant of 'Bridge Linkage' to specified end-use plants of Central and State Public Sector Undertakings (Both in Power as well as Non-Power sector) which have been allotted Schedule-III coal mines under the Coal Mines (Special Provisions) Act, 2015 [CM(SP) Act] and coal blocks allotted under the Mines and Minerals (Development and Regulation Act), 1957 (MMDR Act) for a period of 3 years from the date of allotment of coal mine/block. Your Company's stations having capacity of 12,200 MW were covered under this policy.
- Your Company had been allocated bridge linkages for five stations, viz. (i) Barh-II (2X660 MW), (ii) Darlipalli-I (2X800 MW), (iii) Tanda-II (2X660 MW), (iv) Lara-I (2X800 MW), (v) Kudgi-I (3X800 MW) for a period of three years from the date of allocation of captive block. Subsequently, based on Company's requests, SLC (LT), Gol in its meeting dated 10 April 2018 has accorded extension of bridge linkages for Barh-II (2X660 MW), Lara-I (2X800 MW), Darlipalli (2X800 MW), Tanda (2X660 MW) and Kudgi (3X800 MW) on tapering basis as per approved mining plan of respective linked mine. The extension is valid up to 2022 for all the above stations except Barh-II, for which it is valid up to 2023.

- Bridge linkage MoUs were signed for (i) Barh Stage-II with CCL & ECL, (ii) Lara with SECL and MCL, (iii) Darlipalli with MCL and SECL (iv) Tanda Unit 5 & 6 with ECL and CCL for financial year 2019-22 and up to 2023 for Barh -II.
- SLC (LT), in its meeting held on 18.11.2019, recommended for grant of Bridge Linkage for Barauni Extn. – Unit 8 and Unit 9 (2x250 MW) for 03 years from the date of transfer /allotment of linked Badam coal block. The linked Badam coal block was allotted by MoC on 02.09.2019. As such, the Bridge Linkage is valid up to 01.09.2022.

#### Agreements for supply of imported Coal

- To mitigate the shortage of coal from domestic sources and for the blending purpose to improve the quality of coal, your Company has awarded imported coal contracts for procurement of 1.5 MMT in October 2019 and restored the contract of 2.25 MMT in Dec 2019 for supply of Imported coal to Mouda and Dadri. Your Company received 2.84 MMT of imported coal during the financial year 2019-20.

#### E-auction of coal

- To supplement deficiencies in FSA coal quantity, your Company participated in e-auction of 0.06 MMT of coal and the same was allotted. Your Company received 0.45 MMT of coal under E-auction during FY 2019-20 from current year allocation and carry forward quantity from earlier year contracts.
- To leverage potential of rationalization of coal linkages, your Company had signed a Supplementary Agreement with CIL and CIL subsidiaries for all owned and JV/ Subsidiary stations on 12.04.2017 for implementation of Govt. policy on "Flexibility in utilization of domestic coal for reducing cost of power generation". Under the Supplementary Agreement, your Company can allocate coal to any station of its own or any JV/ Subsidiary for optimising the Energy Charges. During the year 2019-20, your Company has used 7.9 MMT of coal under Flexibility Utilization to address AFC under recovery and generation loss.
- As per directives of Govt., Central Institute of Mining and Fuel Research(CIMFR) started coal sampling in Jan'16. During the year 2019-20, sampling at all loading end sidings except Shivpur Tori, Bukru, Phulbasia, Rajdhar, and Bhalumath of CCL and sampling at unloading end of all your Company stations has been started. Sampling at unloading end at Barauni and NPGCL (JV Company) is expected to start in FY 20-21.

#### 14.1.2 Domestic Coal and Imported Coal

During 2019-20, your Company received 174.84 MMT of coal as against 176.80 MMT in 2018-19. Out of 174.84 MMT of coal, 155.21 MMT was from Annual Contracted Quantity of coal, 6.42 MMT through Bridge linkage/ SCCL Bi-lateral MoU, 9.92 MMT from Captive Mines, 0.45 MMT from e-auction and 2.84 MMT from Import Coal.



### 14.1.3 Gas & RLNG supplies

- Your Company has long-term Gas Supply Agreements (GSAs) with GAIL for supply of Administered Price Mechanism (APM) gas and Non-APM gas, which are valid upto 6<sup>th</sup> July 2021. Your Company also had Panna Mukta Tapti (PMT) gas agreements with GAIL, which was valid till 21 December 2019. Post 21 December 2019, MoP&NG, Gol has assigned PMT field to ONGC on nomination basis and gas from this field is allocated as Non-APM gas. Your Company also has a long-term agreement with GAIL for supply of 1.1 MMSCMD RLNG on firm basis, valid upto December 2023.
- To meet the shortfall in supply of long-term domestic gas/RLNG, your Company procures Spot RLNG on limited tender basis from domestic suppliers and on 'Single Offer' basis from Public Sector gas marketing companies. These RLNG supplies are contracted on 'Reasonable Endeavour' basis with no penalty on either party for short supply/short off take. Further, your Company has started procuring Spot RLNG on commitment basis from domestic suppliers, subject to consent of the beneficiary Discoms. Further, adequate stock of liquid fuel is maintained for meeting Grid's requirement.
- Further, in line with MoP&NG guidelines for 'Clubbing/diversion of gas between two or more power plants' and with the approval of MoP, your Company entered into arrangement with GAIL for flexibility of diversion of APM and Non-APM gases between its gas stations in NR and WR region on daily basis. With the diversion of unutilized gas from your Company's WR stations to NR stations, additional 1923 MUs (approx.) of electricity has been generated at NR gas stations during financial year 2019-20.
- During 2019-20, your Company received annual average 2.53 MMSCMD of Domestic gas as against 3.66 MMSCMD of Domestic gas received during 2018-19. Long Term RLNG & Spot RLNG off-takes during 2019-20 were 0.49 & 0.14 MMSCMD as against 0.13 & 0.86 MMSCMD during 2018-19 respectively.
- There has been no loss of station availability on account of lack of availability of Domestic gas / RLNG / Liquid fuel during the year.

### 14.2 Development of Coal Mining projects

Your Company has been allocated ten coal blocks namely: Pakri-Barwadih, Chatti-Bariatu & Chatti-Bariatu (South), Kerandari, Dulanga, Talaipalli, Banai, Bhalumuda, Mandakini-B, Badam and Banhardih by Government of India. Banhardih coal block has been allocated to Patratu Vidyut Utapadan Nigam Ltd. (PVUNL), a JV Company incorporated between your Company & Government of Jharkhand. Your Company plans to produce about 103 Million Tonnes of coal per annum from these mines, when all the mines shall reach the peak-rated capacity (in the year 2028-29).

Out of ten mines, three mines, Pakri-Barwadih, Dulanga & Talaipalli are in operation. During FY 2019-20, coal production from captive mines of your Company

was 11.15 MMT against GOI MOU target of 10.4 MMT. Cumulative about 21.37 MMT of coal produced from these mines till the end of FY 2019-20. Further, two mines i.e Chatti-Bariatu & Kerandari are in advanced stage of development and remaining five are in various stages of approval/clearances.

Coal production commenced from Pakri-Barwadih coal block in Dec'16. During FY 2019-20 about 9.42 MMT coal has been extracted and cumulative coal production from this mine since inception is 19.14 MMT.

In Dulanga block, coal extraction started in Mar'18. During FY 2019-20 about 1.54 MMT coal has been extracted and cumulative coal production from this mine since inception is 2.04 MMT.

In Talaipalli (South pit) Coal extraction commenced in Nov'19 and during FY 2019-20 about 0.19 MMT coal has been extracted. For Talaipalli (Main), earlier MDO was appointed on 13.11.17. However, because of contractual issues, the contract was terminated on 04.07.19. Fresh NIT for appointment of MDO was issued on 19.08.19, Reverse e-auction for price discovery was completed on 12.02.2020 and award is under process.

In Chatti-Bariatu coal block all major statutory clearances and priority land to start mining activities are in place. MDO was appointed on 13.11.17. However, because of contractual issues, the contract was terminated on 04.07.19. Fresh tendering has been done and MDO is in advanced stage.

For Kerandari coal block also all major statutory clearances and priority land to start mining activities are in place. In this block mining operation would be carried out departmentally with limited outsourcing.

In the above five coal blocks i.e. Pakri-Barwadih, Dulanga, Talaipalli, Chatti-Bariatu & Kerandari, your Company has incurred an expenditure about ₹ 9.72 crore on community development in FY 2019-20 (Cumulative expenditure of more than ₹ 135.87 crore), which has helped in improving the socio-economic conditions of the local community.

For Mandakini-B coal block, detailed Exploration was completed and Integrated Geological report has been prepared. Mining Plan (Part-I) has also been approved by MOC. Feasibility Report prepared, financial appraisal is in progress. Mine infrastructure development activities are in progress. Section-7 notification (CBA Act) issued by Ministry of Coal (MOC). Start of mining operation is expected by Oct'23. Your Company is following up with State Government of Odisha for early finalization of land rates for speedy processing of block development activities.

At the time of allotment the Banai & Bhalumuda coal blocks were unexplored. The exploration has been completed and Geological Report(s) are available. These two coal blocks are surrounded by coal bearing areas. Because of high stripping ratio (>7.5 Cu.M./Tonne), and due to non-availability of non-coal bearing areas for OB dump, your Company, in consultation with CMPDIL, prepared the scheme for optimum utilization of coal



from these two blocks by merging it. Accordingly, your Company requested MOC in Mar'18 for merger of these 2 coal blocks. Numerous meetings and discussions held with Ministry of Coal (MOC). Based on the advice from MOC your Company has now again approached Central Mine Planning & Design Institute Limited (CMPDIL) to re-work & prepare separate Mining Plans of these two blocks.

MOC allotted Badam coal block to your Company on 02.09.19 after acquisition of Barauni Power plants from Bihar Govt. Stage-I FC transferred to your Company from BSPGCL on 14.01.20. Transfer of EC in favor of your Company is done on 21.5.2020. Mining lease, land transfer/acquisition and other block development activities are in progress.

#### 14.3 Initiatives through Joint Ventures and Subsidiaries:

In Banhardih coal block, to be developed by PVUNL, the JV between your Company & Government of Jharkhand, Geological Report was received by PVUNL on 27.07.19, Mining plan was submitted to MOC on 30.03.20. For land acquisition, Section 7(CBA act) was notified by MOC on 10.10.19. NOC under Section 8 was obtained from Coal Controllers Organization on 31.12.19.

NTPC Mining Limited (NML), a wholly-owned subsidiary of your Company, has been incorporated on 29.08.19 to meet various business/strategic objectives viz. fuel security, focused management, readiness for future, de-linking business risks and enhancement of shareholder value and to take care of entire mining business of your Company. Further, M/s. E&Y has been appointed as transaction adviser for transfer of Coal Mining business to NML. For transfer of all the mines to this Company, your Company has approached Ministry of Coal. For transfer of mining area land and the mining rights for the first mine, Pakri-Barwadiah, your Company has requested Ministry of Coal. Similarly, for transfer of land for infrastructure, R&R Colony, etc. pertaining to Pakri-Barwadiah, your Company has requested Revenue Department of Government of Jharkhand.

#### 15. BUSINESS EXCELLENCE: GLOBAL BENCHMARKING

Your Company has developed and adopted a customized business excellence Model called 'NTPC Business Excellence Model' in line with globally accepted Performance Excellence frameworks such as the Malcolm Baldrige Model USA and EFQM Model of Europe.

The assessment process is aimed at identifying the area for enhancing stakeholders' engagement, improving critical processes and developing leadership potential.

The outcome of this model is identification of organizational strength, opportunities for improvement, issues of concern and best practices.

In the financial year 2019-20, 22 generating stations were assessed by a team of certified assessors. Business Excellence Award for holistic excellence was given to your Company's sipat Project.

In its pursuit to embrace digital and paperless working environment, your Company has implemented an IT enabled initiative- Corporate Performance Management and Business Intelligence system for robust strategy execution, communication, analytics and query response. The system enables reporting and automating few business processes that provides effective decision support for the management across different tiers.

Other contemporary TQM concepts and techniques like ISO, Quality Circles, Professional Circles, 5S etc. have been deployed across the organization. Two Quality Circle teams Lakshya from Barh station and Lakshaya from Jhanor-Gandhar station of your Company had participated in International QC Convention held at Tokyo, Japan during 23<sup>rd</sup>-26<sup>th</sup> September 2019. Barh QC team "Lakshya" was awarded Silver Medal.

#### 16. RENOVATION & MODERNISATION

Renovation and Modernization (R&M) of various units of your Company and in particular the units which have completed 25 years of operations from commercial operation date is considered essential to achieve the objectives such as safe operation of the units, compliance of latest statutory norms/revised Environmental norms / IEGC Code, Recovery/improvement of Efficiency of the Units, Reliability Improvement, flexible operations to enable large scale integration of renewable, Sustenance of operations considering equipment health assessment observed during last 2-3 years, overcoming constraints on account of current operating conditions (changes in coal quality, water supply arrangements, change in law, etc.). Further, Renovation and Modernization (R&M) of power plants is considered to be a cost-effective option and is considered as a key thrust area.

Investment approval has been accorded till date for R&M in 20 stations (Coal & Gas based) is ₹ 14,603.60 Crores. As against this, cumulative expenditure till 31.03.2020 is ₹ 8,033.44 Crores which includes R&M capital expenditure of ₹ 514.88 Crores during FY 2019-20.

As a responsible Corporate citizen, it has always been your Company's endeavor to ensure low levels of emission from its power stations. With a view to maintaining a clean atmosphere by reduction of particulate emission levels from generating stations, Renovation and Retrofitting of Electrostatic Precipitator (ESP) packages have been awarded for 60 units in 20 stations totaling 16.70GW and is under implementation.

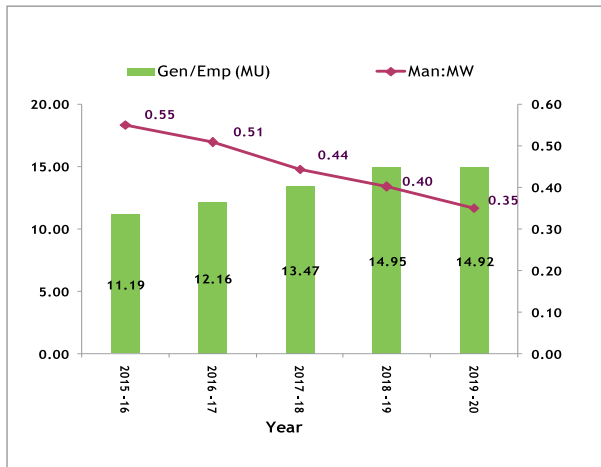
With a view to removing technological obsolescence, renovation of Control & Instrumentation (C&I) has been taken up in 9 coal based stations namely Singrauli-I (5X200MW) & Singrauli - II (2X500 MW), Korba -I (3X200MW) & Korba - II (3X500 MW), Ramagundam -I (3X200MW) & Ramagundam - II (3X500MW), Farakka-I (3X 200 MW) & Farakka-II (2X500 MW), Dadri Thermal-I (4X210MW), Unchahar- I (2X210MW), Talcher STPS-I (2X500MW), Kahalgaon-I (4X210 MW) and Rihand - (2X500 MW) comprising a total of 38 units. The total no. of units in which C&I R&M completed till date is 34. Renovation of Control & Instrumentation (C&I) has also been taken up in 05 gas based stations namely Anta

(419.33 MW, 3 GT + 1 ST), Auraiya (663.36 MW, 4 GT + 2 ST), Kawas (656.20 MW, 4 GT + 2 ST), Dadri Gas (829.78MW, 4 GT + 2 ST) and Faridabad (432 MW, 2 GT + 1 ST) prior to FY: 2019-20. The total no. of units in which C&I R&M has been completed in Gas Stations till Mar'20 is 15 GT/WHRB and 7 STG. On completion of these schemes, C&I systems in these units have now been brought nearly on par with the new builds.

R&M of Gas Turbines was completed in 14 Gas Turbines in 4 stations namely (4x106 MW) in Kawas, (4x111.9 MW) in Auraiya, (3x88.71 MW) in Anta and (3x144.30 MW) in Gandhar.

## 17. HUMAN RESOURCE MANAGEMENT

17.1 Your Company takes pride in its highly motivated and competent Human Resource that has contributed its best to bring your Company to its present heights. The productivity of employees is demonstrated by increase in generation per employee and consistent reduction of Man-MW ratio year after year. The overall Man-MW ratio for the year 2019-20 excluding JV/subsidiary capacity is 0.35 and 0.31 including capacity of JV/ Subsidiaries (excluding manpower of NEEPCO and THDC which is recently acquired on 27<sup>th</sup> March 2020). Generation per employee was 14.92 MUs during the year based on generation of your Company's stations.



The total employee strength of your Company (including JV/ subsidiaries) stood at 19,165 as on 31.3.2020 against 20,244 as on 31.3.2019.

Particular	FY 2019-20	FY 2018-19
Your Company		
Number of employees	<b>17,398</b>	18,359
Subsidiaries & Joint Ventures		
Employees of your Company in Subsidiaries & Joint Ventures	<b>1,767</b>	1,885
Total employees	<b>19,165</b>	20,244

The attrition rate of your Company executives during the year was 0.82% in comparison to last year at 0.78%.

## 17.2 Employee Relations

Employees are the driving force behind the sustained stellar performance of your Company over all these years of Company's ascendancy. As a commitment towards your Company's core values, employees' participation in Management was made effective based on mutual respect, trust and a feeling of being a progressive partner in growth and success. Communication meetings with unions and associations, workshop on production and productivity, etc. were conducted at projects, regions and corporate level during the year.

Both employees and management complemented each others' efforts in furthering the interest of your Company as well as its stakeholders, signifying and highlighting overall harmony and cordial employee relations prevalent in your Company.

## 17.3 Safety and Security

Occupational health and safety at workplace is one of the prime concerns of your Company Management. Utmost importance is given to provide safe working environment and to inculcate safety awareness among the employees. Your Company has a 3-tier structure for Occupational Health and Safety Management, namely at Stations/ Projects, at Regional Head Quarters and at Corporate Centre. Safety issues are discussed in the highest forum of Management like Risk Management Committee (RMC), Management Committee Meeting (MCM), Regional Operation Performance Review (ROPR), Operation Reviews (ORTs), Project Reviews (PRTs) etc. Consultants are also engaged to strengthen the systems and processes of safety in your organization.. On the occasion of "National Safety Day" CMD along with the Board of your Company addressed all project / Stations.

All of your Company's stations are certified with OHSAS-18001/IS-18001. Six of our stations are going for international level NOSA accreditation in Safety and Environment. Regular plant inspection and review with Head of Project/Station is being done. Internal Safety Audits by Safety Officers every year and External Safety Audits by reputed organizations as per statutory requirement are carried out for each Project/ Station. Recommendations of auditors are regularly reviewed and complied with. Company level documents like Operation Directives (OD), Operation Guidance Note (OGN), Hazard Identification and Risk Assessment (HIRA) etc. have been prepared and shared with all stations.

Height permit and height check-list are implemented to ensure safety of workers while working at height. Adequate numbers of qualified safety officers are posted at all units as per statutory rules/ provisions to look after safety of men & materials. Mock drills were conducted with NDRF to prepare for any extreme on-site emergency. Sites are engaging the safety consultant of international repute to uplift safety standards.

For strict compliance & enforcement of safety norms and practices by the contractors, safety clauses are included in General Conditions of Contract/ Erection Conditions of Contract. Non-negotiable safety terms and conditions are a part of the corporate awarded packages during tendering.



Detailed emergency plans have been developed and responsibilities are assigned to each concerned to handle the emergency situations. Mock drills are conducted regularly to check the healthiness of the system.

Most of your Company's plants have been awarded with prestigious safety awards conferred by various Institutions/ Bodies like Ministry of Labour & Employment-Govt. of India, National Safety Council, Institute of Directors, Institution of Engineers (India), in recognition of implementing innovative safety procedures and practices.

The standard operating procedures are being followed for maintaining utmost safety in operations and processes in your Company to avert accidents.

**Security:** Your Company recognizes and accepts its responsibility for establishing and maintaining a secured working environment for all its installations, employees and associates. This is being taken care of by deploying CISF at all units/ RO Office/ Projects of your Company as per norms of Ministry of Home Affairs. Concrete steps are being taken for upgrading surveillance systems at all projects/ stations by installing state-of-the-art security systems.

#### 17.4 Learning and Development

Your Company is successfully attracting, nurturing and engaging people talent. We believe in motivating and managing the talent that leads to sustainable competitive advantage. Your Company have very pervasive three tier Learning and Development (L&D) system starting from Employee Development Centre (EDC) at every station, six Regional Learning Institutes (RLI) one at each region.

Power Management Institute (PMI), the apex L&D centre of your Company, is actively engaged in making our people ready to lead in VUCA world. PMI take people through courses that make them ready for agile technology adoption, process innovation, strategic business alignment and demonstrating leadership. All the L&D initiatives are derived from business needs and designed to achieve Company's strategic objectives, actualize business plan and create value for stakeholders.

PMI has a campus full of greenery and the state-of-the-art physical and digital infrastructure that creates globally comparable L&D ecosystem. Its classrooms are equipped with modern facilities including smart boards, video conferencing and session recording, which supports contemporary pedagogy.

Your Company takes pride in being people friendly organization and strives to ensure safe work place with zero incident reported. PMI in its role espousing the safety as core value in L&D by establishing NTPC Safety Academy (NSA) at Unchahar, UP. The academy is conducting safety related certificate courses across the organization. It has successfully conducted 20 IOSH (Institute of Occupational Safety and Health) and one NEBOSH (National Examination Board for Occupation Safety and Health) program in 2019-20.

Our training delivery methods include a blend of classroom learning through simulation and case studies, theater workshop, community service module (for first hand CSR feel to young ETs), e-learning platform, video and web platforms etc. PMI has covered 6,000 executives in management learning through HMM (Harvard Manage Mentor) and 2,000 executives in the power plant technical skills domain by licenses from General Physics (GPILearn).

Various in-house e-platforms that provide access to diverse e-Learning resources to complement the learning to meet the unique learning needs across demographic spectrum of generations engaged at work place have been provided. An e-library of 25,000 e-books, 10,00,000 articles, reports and journals supports employees' knowledge up-gradation.

The L&D interventions are designed after a multidimensional 'Training Need Analysis' (TNA) for enhancing technical, functional, strategic and leadership skills with focus on business objectives of the Company. PMI conducted 300+ training programs during FY19-20, covering nearly 9,000+ professionals, resulting in a total of approximately 50,000 learning man-days.

Your Company is aware of pivotal role of effective leadership and to ensure continuity in leadership pipeline, 138 middle level executives were given rigorous inputs under 2 weeks strategic leadership development program (10X). The program is designed to equip the participants with ten strategic competencies to enable them to take leadership roles and strategic positions in the days to come.

Besides creating capabilities by providing training to the employees across Indian power sector, PMI is extending its support towards building capability among SAARC & Middle East countries. In the year 2019-20 PMI has trained multiple teams from Bangladesh and Saudi Arabia.

In recognition to its pioneering efforts, Your Company was awarded the globally acknowledged ATD Best Awards (in continuous succession of four years i.e 2017, 2018, 2019 & 2020), nationally acclaimed ISTD award for 2017-18 and 2018-19 and the BML Munjal Award 2018 (Sustained Excellence Category).

Further, your Company was awarded HCM Excellence Award (Silver Medal) in 2019 by Brandon Hall group in the best use of blended learning category. These awards recognize organizations that demonstrate enterprise-wide success as a result of L&D and talent development practices.

#### 17.5 Employee Welfare Trusts

Your Company has established following Trusts for welfare of employees:-

- NTPC Limited Employees Provident Fund Trust manages Provident Fund of employees of your Company.
- NTPC Post Retirement Employees Medical Benefit Trust manages post retirement medical benefit fund of the employee including separated employee of your Company.

- NTPC Employee Gratuity Fund manages the gratuity fund of the employees for payment of gratuity as per the "The Payment of Gratuity Act" of your Company.
- NTPC Limited Defined Contribution Pension Trust manages the defined Contribution Pension fund of the Employee of your Company.

### 17.6 Women Empowerment

Women employees constituted nearly Seven percent (as on 31.03.2020) of your Company's work force. During the year, programmes on women empowerment and development, including programmes on gender sensitization were organized. Your Company actively supported and nominated its women employees for programmes organized by reputed agencies. To maintain work life balance and to manage career aspiration, paid child care leave is provided to women employees.

### 17.7 Other Welfare Measures

In your Company, an entire gamut of benefits, from paid Childcare leave, telemedicine, medical smart card for hospitalization cases to Post-retirement Medical benefits (PRMS) to Family Economic Rehabilitation named Sneh Kiran Scheme are extended to employees to meet any exigency that may arise in a person's life.

### 17.8 Employee Welfare & Quality of Work-Life

Your Company is committed to provide quality work life for its employees. Far removed from the buzz of cities, our townships are the epitome of serenity, natural beauty and close community living. A range of welfare and recreation facilities including schools, hospitals, shopping centres, recreation centres, club, gym, pool etc. are provided at the townships to enhance the quality of life & the well-being of employees and their families. In addition, cultural programmes involving employees and their families are also conducted.

## 18. SUSTAINABLE DEVELOPMENT

Sustainability at your Company is being driven by two motives:

- a. To make fundamental changes in the way we operate our businesses to transform ourselves as the most sustainable power producer
- b. To become more transparent in the timely disclosure of our social, environmental and economic performances.

To achieve the first objective, your Company has identified Decarbonization, Water, Biodiversity, Circular Economy, Safety, Supply chain and Business Ethics as priority sustainability areas and strategizing on them to ensure the Company's business sustainability. Your Company is developing short-term and long-term measurable goals and objectives pertaining to these areas which is also aligned to the Company's Corporate Plan 2032. To start with, for reducing water footprint, a cross-functional water committee has been formed to do benchmarking of the Company's systems and practices with peers and identify best practices across industries. Your Company has adopted the triple

bottom line approach for focusing on people, planet and profit treating them as primary pillars for business sustainability. We believe that development should not endanger the environment & natural eco-systems.

Your Company is preparing the sustainability report adhering with the global reporting initiative standard and as per IIRC pattern. We accord due importance for report assurance process and thereby sustainability report of 2018-19 assurance was got done using GRI standard and as per ISAE 3000 assurance standard. Sustainability report is assured with reasonable level of assurance in comprehensive option by M/s EY India Limited. EY has used an important management tool helping your Company to relook into the systems, processes and procedures. Further, your Company has developed and deployed CSR & SD policy proactively meeting requirements of schedule VII of Company act 2013. Sustainable Development Plan for FY 2019-20 was prepared and approved by CSR & SD Board Sub Committee of your Company.

Your Company is focusing on waste management, water management, promotion of renewable energy and biodiversity / afforestation activities. Action plan based activities have been implemented at various stations of your Company during the year. To further strengthen sustainable development activities, following new initiatives were taken during 2019-20.

- Capacity building programs on stakeholders engagement and materiality analysis were organized at all the major stations of your Company for widespread Sustainable Development initiatives.
- Development of Supply Chain Policy for evolving environmental, social and governance aspects of sustainable development at the supplier end business activities and their compliance for progressively making supply chain system greener in your Company. Policy with strategy is in advance stage of finalization.
- Your Company was declared winner of CII-ITC Sustainability Award 2019. It is the most coveted sustainability award in the country. Winning the Award has placed your Company among the top performers and further enhanced brand image of your Company.
- Now your Company is focusing on improvement in ESG – ESH rating, being carried out by International Analysts i.e. MSCI Sustainable ratings, Sustainalytics and DJSI who benchmark your Company with International Power Utilities involving compliance of International statutory laws and norms.
- Your Company is working on increasing RE Capacity content further and targeting 10,000 MW by 2022.

### 18.1 Inclusive Growth-Initiatives for Social Growth

#### 18.1.1 Corporate Social Responsibility:

CSR has been synonymous with your Company's core business of power generation. Your Company's spirit of caring and sharing is embedded in its mission statement. Your Company has a comprehensive Resettlement & Rehabilitation (R&R) policy covering community development (CD) activities, which has been revised



and updated from time to time. CD activities in green field area are initiated as soon as project is conceived and there after-extensive community / peripheral development activities are taken up along with the project development. CSR Policy was formulated in July 2004 and revised in 2010, 2016 and 2019 as “NTPC Policy for CSR & Sustainability” in line with Companies Act 2013 and Department of Public Enterprises (DPE) Guidelines for CSR. It covers a wide range of activities including implementation of a few key programmes through NTPC Foundation.

Focus areas of your Company's CSR & Sustainability activities are Health, Sanitation, Safe Drinking Water and Education. However, Capacity Building, Women Empowerment, Social Infrastructure livelihood creation and support through innovative agriculture & livestock development, support to Physically Challenged Person (PCPs), and activities contributing towards Environment Sustainability have also been taken up. Your Company commits itself to contribute to the society, discharging its corporate social responsibilities through initiatives that have positive impact on society, especially the community in the neighborhood of its operations by improving the quality of life of the people, promoting inclusive growth and environmental sustainability.

Preference for CSR & Sustainability activities is being given to local areas around your Company's operations, ensuring that majority CSR funds are spent for activities in local areas. However, considering Inclusive Growth & Environment Sustainability and to supplement Government effort, activities are also taken up anywhere in the country. During the year, about 500 villages and more than 450 schools have been benefitted by your Company's various CSR initiatives at different locations. Your Company's CSR initiatives have touched, in one way or the other, the lives of around 18 lakhs people, residing at remote locations.

Apart from the CSR activities undertaken in and around stations to improve the living conditions of the local communities, other CSR initiatives undertaken pan-India are mentioned in the Annual Report on CSR activities annexed with this Director Report.

Your Company spent ₹ 304.92 Crore during the financial year 2019-20 towards CSR initiatives, which surpassed the prescribed two percent amount of ₹ 252.68 Crore, thus achieving a CSR spend of 2.41%.

### 18.1.2 NTPC Foundation

NTPC Foundation, funded by your Company, is engaged in serving and empowering the differently abled and economically weaker sections of the society.

Details of expenditure incurred and initiatives undertaken by your Company under CSR are covered in the Annual Report on CSR annexed as Annex-VII to this Director Report.

### 18.1.3 Rehabilitation & Resettlement (R&R)

Your Company is committed to help the population displaced on account of land required for execution of the projects and has been making efforts to improve the Socio-economic status of Project Affected

Families (PAFs). In line with its social objectives, your Company has focused on effective Rehabilitation and Resettlement (R&R) of PAFs and carrying out Community Development (CD) works in Project Affected Villages (PAVs) and vicinity.

R&R activities are initiated at your Company's projects by undertaking need based community development activities in the area of health, education, drinking water, capacity building, infrastructure, etc. by formulating 'Initial Community Development (ICD) Plan' in consultation with concerned Panchayats, District Administration and opinion makers of the locality. Your Company addresses R&R issues in line with extant R&R Policy of your Company/Central Govt. / State Govt. Policy/ Guidelines with an objective that after a reasonable transition period, the conditions of affected families improve or at least they regain their previous standard of living, earning capacity and production levels. Your Company revised its R&R Policy 2010 in the year 2017 to incorporate R&R entitlements as per 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013' (RFCT LARR Act, 2013). As per the your Company R&R Policy-2017 aligned in line with the RFCT LARR Act 2013, a Social Impact Assessment (SIA)/Census Survey will be conducted by the State Govt. during the process of land acquisition for the project so as to collect detailed demographic data of the area which shall form the basis for the preparation of 'Rehabilitation and Resettlement (R&R) Scheme by the appropriate Govt. The R&R Scheme consists of measures for Rehabilitation & Resettlement and infrastructure in Resettlement Colony (RC).

In addition, in the R&R Policy-2017 of your Company a provision has been kept for need based community development (CD) activities to be taken up in project affected villages where Project Affected Families (PAFs) continue to reside even after land acquisition as also in vicinity of the project so as to ensure that the displaced families in the RC or the affected families settling in neighboring villages may secure for themselves a reasonable standard of community life.

R&R Plan expenditure is a part of Capital cost of the project and the Plan is implemented in a time bound manner so as to complete its implementation by the time the project is commissioned. On completion of the R&R Plan implementation, a Social Impact Evaluation (SIE) is conducted by a professional agency to know the efficacy of R&R Plan implementation for future learning.

R&R activities were implemented at the Greenfield / Brownfield Thermal Power projects -Barh, North-Karanpura, Darlipali, Gadarwara, Khargone, Lara, Kudgi, Telangana, Mouda, Solapur, Tanda-II, Meja, NPGC, Kanti, Patratu, Hydro projects - Tapovan Vishnugad & Rammam-III and Coal Mining Projects at Pakri-Barwadih, Chhatti-Bariatu, Kerendari, Dulanga and Talaipalli where R&R / CD Plans were finalized in consultation and participation of the stakeholders and approved earlier.

Re-appropriations in R&R / CD Plans as required on case-to-case basis for specific projects were also approved to take care of the local requirements and

requests from district administration/ stakeholders during implementation.

**Focus areas for Community Development activities were:**

- **Drinking water** – Planning and implementation for access to drinking water for 100% coverage of all project affected villages of your Company projects under construction is being undertaken.
- **Capacity building / Skill upgradation** – Training programs are conducted by various projects towards skill enhancement. The support to dependents of PAFs for ITI training was also extended by various projects.
- **Education** – Construction activities are almost complete for Medical College cum Hospital at Sundargarh (Odisha) while a portion of the same for 200-bed facility has already been handed over to Govt. of Odisha which has started functioning as Covid-19 Care Centre cum Isolation ward for Corona virus infected patients. Construction of an Engineering College at Shivpuri (MP) has been completed which is ready for handover to State Govt. of MP. Support has been extended for construction of Hydro Engineering College, Bilaspur (Himachal Pradesh). Your Company is providing financial assistance to the Govt. of Chhattisgarh towards upgradation of infrastructure and other basic amenities including setting-up of latest equipment in the Govt. Medical College at Raigarh.
- **Health** - For the benefit of PAFs and neighboring population, Mobile Health Clinic, Medical camps and dispensaries are being operated for comprehensive health coverage of PAFs at various projects. Support is being extended to District Administration, Peddapalli (Telangana) for augmentation of another floor and equipment at Govt. Hospital.

## 18.2 Environment Management –

**Environment Policy of your Company:**

**“To provide cleaner energy by committing to highest possible levels of performance in environmental compliance, practices and stewardship.”**

Your Company has always envisaged environment protection and management along with optimized usage of natural resource as inherent feature at the time of inception of all project and focuses its efforts to minimize the impact of its plant operations on surrounding environment and concerned ecosystem.

Your Company undertakes comprehensive environment management plan right from conception of project, selection of site, resource selection (Land, Coal & Water source) and technology for power generation and pollution control. In case of old stations, your Company undertakes massive renovation & modernization to upgrade pollution control equipment wherever necessary. Your Company has also taken initiative for installation of Flue gas desulfurization (FGD) system for SO<sub>x</sub> emission control and optimization & implementation of appropriate technology for NO<sub>x</sub> emission control to comply with revised emission norms as per stipulated timeline for respective station/ unit.

In new projects, around 13-15% of the project cost is spent on main environment pollution control systems for air, water and soil such as Electrostatic Precipitators (ESPs), Liquid Waste Treatment Plants (LWTP), Ash Water Recirculation System (AWRS), Coal Settling and Separation Pit (CSSP), Dry ash extraction system (DAES), dust extraction & suppression system, sewage treatment plant and desulfurization and DeNO<sub>x</sub> systems. Continuous emission monitoring system (CEMS), Effluent quality monitoring system (EQMS), Continuous ambient air quality monitoring system (CAAQMS) are operational at the operating stations and included in EPC packages for the upcoming units/ projects. Your Company has adopted advanced and high efficiency technologies such as super critical boilers at new stations, DeNO<sub>x</sub> and FGD in all upcoming green field projects.

Your Company is augmenting its capacity with green power by installing hydel power, wind power, solar power systems in a big way, hybrid power plant in combinations e.g. Wind & Solar, Solar & Thermal and small hydel power systems attached to its thermal power stations to encourage garnering of renewable energy resources. These measures are aimed not only to achieve reduction in pollution along with optimized consumption of precious natural resources but also to lead to reduction in specific water and Carbon footprints of your Company. All stations of your Company are ISO 14001 certified for their sound environment management systems and practices.

Your Company has signed Memorandum of Understanding (MoU) with Central Pollution Control Board (CPCB) for participation with financial support for installation & commissioning of 25 number of Continuous Ambient Air Quality Monitoring System (CAAQMS). The MOU enables total sponsorship of ₹80.0 Crore for procurement, installation, commissioning and O&M of these stations in 13 cities of six states and three Union Territories for a period of 7 seven years. Data from these CAAQMS will be inputs for Air Quality Index evaluation of these cities.

Towards its commitment to recycle, recover energy/ material from entire plastic waste in eco-friendly manner your Company has released “Integrated Plastic Management Policy-2019” to ensure Zero contribution of single-use plastic waste to environment from Company’s establishment & operations.

### 18.2.1 Control of Air Emissions:

High efficiency Electro-static Precipitators (ESPs) with efficiency of the order of 99.97% and above with advanced control systems have been provided in all coal based stations to maintain Particulate Matter (PM) emissions well below the applicable permissible limits. All upcoming units have been planned & designed with state of art Air Pollution Control systems (ESPs, DeNO<sub>x</sub> and FGD system) with high efficiency to meet new emission norms. Performance enhancement of ESPs operating over the years is being enhanced to achieve the desired emission level to meet revised emission levels by augmentation of ESPs size (increased height, additional fields, charging of dummy fields, retrofitting of advanced ESP controllers, new technology i. e. MEEP



(Moving electrode Electrostatic Precipitators) and adoption of sound O&M practices.

For control of  $SO_x$ , first wet FGD has been commissioned and operational at Vindhyachal Station. Erection of wet FGD at Dadri Stage-II is in advanced stage. FGD based of dry sorbent injection (DSI) system erection work completed at Dadri (St-I) and in advanced stage of erection in two units of Tanda (St-I) to meet the emission norms for  $SO_x$ . Your Company has awarded FGD packages for 56GW+ capacity and execution is in progress to comply the new norms for  $SO_x$  emission as per the timeline stipulated by the regulator.

$NO_x$  control in coal-fired plants is presently achieved by controlling its production by adopting best combustion practices (primarily through excess air and combustion temperatures optimization). To lower down the  $NO_x$  emission to the extent possible levels, combustion modification has been awarded for 20GW+ capacity and completed at majority of units and rest is in advanced stage of execution. To comply with new norms for  $NO_x$  emission, pilot study based on SCR/SNCR technology at 11 locations conducted and report submitted to concerned authorities for consideration and to find out the optimal solution and suitable technology for De $NO_x$  system suitable for Indian Coal.

Change of secondary fuel from HFO to alternative fuel (LDO or LSHS having low sulfur content) scheme implemented in all stations in NCR and state of UP and Haryana to minimize the  $SO_x$  emission during the startup of coal based units.

### 18.2.2 Control of water pollution:

Your Company as a responsible corporate entity for environment has proactively initiated steps towards water stewardship in power generation sector. Company released its Water Policy-2017 followed by Rain Water harvesting Policy-2018 to set own benchmark in water consumption in power generation by setting its aim & objectives for various water conservation and management measures by using 3Rs (Reduce, Recycle & Reuse) as guiding principle. Water bodies rehabilitation, rejuvenation & restoration, water withdrawal optimization depending on the sustainable water withdrawal capacity and rejection of water bodies as probable water source, which are recognized as environmentally sensitive due to their relative size and habitat for ecologically sensitive species.

All stations of your Company are equipped with advanced waste water treatment facilities such as state of art technology based sewage Treatment Plant (STP), Liquid Waste Treatment Plants (LWTP), Coal Slurry Settlement Pit (CSSP), Ash Water Recirculation System (AWRS) for treatment and reuse of treated effluents. For optimum use of water in all stations of your Company are having closed cycle condenser cooling water systems with higher Cycle of Concentration (COC), adoption of high concentration slurry disposal (HCSD) system, rain water harvesting system, reuse of treated effluent in ash slurry disposal and reuse of treated sewage effluent for horticulture purposes are few measures implemented in all stations. For effective monitoring of water use,

flow meters with integrators installed at all designated locations in all stations.

### 18.2.3 New Environmental Norms Implementation Plan and Challenges:

#### ➤ Online Coal Ash Analyser

New environmental norms have mandated use of coal with ash content not exceeding 34% on quarterly average basis for coal based Thermal Power Plants located far away from coal mines/sources. To ensure compliance to that your Company has taken initiative and Online Coal Analyser is being installed in all non-pithead power plants and all upcoming coal based thermal power plants. Further the type of analyser selected not only represents the ash content but also the various elements of coal which will be useful for enhancing the process efficiency and ease of operation & maintenance. "Approval to operate" has already been accorded by AERB, for operation of coal analysers installed at Dadri, Kahalgaon and Unchahar STPPs.

#### ➤ Fly Ash Classification & Bagging System

With the changing environmental norms and land acquisition issues, ash disposal is a serious challenge. To mitigate the issue, increased ash utilization is a potential solution. Your Company in its endeavour to promote ash utilization, is considering implementation of fly ash classification system and Bagging Plant for its upcoming coal based thermal power projects at Singrauli III and Lara II. Further feasibility report has been prepared for implementation of Classification & Bagging system at your Company Simhadri Project.

#### ➤ $SO_x$ , $NO_x$ & SPM reduction

In order to comply with the applicable new environmental norms notified by MOEF & CC vide gazette notification dated 07.12.2015 pertaining to  $SO_2$ , FGD system will be required to be installed in the existing as well as under construction coal fired power plants. Your Company along with its JV Companies is having around 155 units of 65 GW capacity i.e. all operating as well as under construction units. Your Company is taking a lead role in the implementation of FGD. Till date your Company has issued tenders for 139 units of around 63 GW capacity that covers all units operating as well as under construction except some smaller units. Further, FGD in Vindhyachal stage-V is already in operation and Dry Sorbent Injection (DSI) system for reduction of  $SO_2$  commissioned in 2 units of 210 MW at Dadri. FGD installation Work in 57,260 MW is underway. This has also set up an example in Industry for NTPC's commitment towards the greener environment.

For controlling the  $NO_x$ , various De- $NO_x$  technique shall be implemented based on the limit prescribed in the norms. Your Company has started working on this. Combustion Modification in five units consisting of 2 units of Dadri, 2 units of Jhajjar and 1 unit of VSTPP have already been completed.



The SO<sub>2</sub> & NO<sub>x</sub> emission levels in the country will plummet to 30% of what it is presently after installation of FGD technology even after adding capacity of another 70 GW from the present year.

#### 18.2.4 Real Time Environment Monitoring System

Your Company remains a benchmark setter in Environment monitoring & protection. As pioneer in environment monitoring we have already installed Ambient Air Quality Monitoring Stations (AAQMS) consisting of SO<sub>2</sub>, NO<sub>x</sub>, CO, PM 2.5, PM10 analysers and Continuous emission monitoring systems (CEMS) consisting of SO<sub>2</sub>, NO<sub>x</sub>, CO, CO<sub>2</sub>, Particulate matter analysers for Stack emission and Effluent Quality Monitoring System (EQMS) consisting pH, Conductivity, BOD, COD, TSS, oil in water analysers for Effluent monitoring in all our Stations/ Units.

Mercury analysers for emission and air monitoring are installed in all 800 MW units. All required environmental monitoring data is made available to CPCB & SPCB as per their requirement.

Your Company is already installing additional air and water pollution control systems at various projects to comply with the applicable new environmental norms notified by MOEF & CC vide gazette notification dated 07.12.2015.

Your Company has brought out Bio-Diversity Policy on 31.07.2018 and developed strategy for its implementation in and around its business units for conservation and enrichment of bio-diversity.

#### 18.2.5 Tree Plantation:

Your Company has been undertaken tree plantation covering vast areas of land in and around its projects and till date more than 35 million trees have been planted throughout the country including 10 lakh trees planted during 2019-20 under accelerated afforestation programme.

Your Company has taken initiative on pilot project of Miyawaki plantation technology and planted more than 3000 saplings at Ramagundam station whose biomass production per unit area is 16 times higher than the conventional plantation. Replication of this technology in plantation will create more efficient carbon sink for Company.

The afforestation has not only contributed to the 'aesthetics' but also helped in carbon sequestration by serving as a 'sink' for pollutants and there by protecting the quality of ecology and environment. Further, your Company has embarked upon long-term Memorandums with State authorities to assist National Commitment of NDC in COP 21, by planting 6.0 million saplings during 2020-26 @ 1 million per year.

Your Company has also planned to take up project of forestry in Khargone, and Indore Districts of Madhya Pradesh, located on right bank and left bank of Narmada River respectively for managing selected watershed, forests and riparian landscapes along Narmada River and submitted a joint proposal along with Global

initiative (GGGI), India and Indian Institute of Forest Management (IIFM), Bhopal to USAID.

#### 18.2.6 ISO 14001 & OHSAS 18001 Certification:

Amongst all commercially operational stations of your Company, 19 stations have ISO-14001 and OHSAS 18001 certifications and for four stations, certifications are under renewal by reputed National and International certifying agencies in recognition of its sound environmental management systems and practices. Certification is in process for newly commercial stations of your Company.

#### 18.3 Quality Assurance and Inspection (QA&I)

Your Company lays great emphasis on the quality of plant and machinery that are sourced for power plant construction and also on the spares and consumables that are required to support the day to day operations of the plant.

The model followed for Quality Assurance seeks to ensure that the Plant Reliability is realized through thoughtful planning and building, Quality Attributes starting from raw materials, manufacturing, inspection and testing up to erection and commissioning up to erection and commissioning. Each item secured for construction is subject to rigorous tests and inspection at the appropriate stages to ensure conformity to specified requirements.

Your Company has committed adequate resources for maintaining effective Quality Management System. This includes Corporate level Quality Assurance team, Inspection Engineers at various demanding locations and projects.

Your Company's robust performance on all operational parameters, is a testimony to the soundness of the quality system which is in operation. Your Company is represented in various technical committees of ISO, BIS and IEC and is actively contributing to upgrade of power sector related standards and technology to promote alignment with best practices followed internationally. Quality assurance and inspection related business processes are being made digital in line with organization emphasis of going digital.

#### 18.4 Clean Development Mechanism (CDM)

Your Company is pioneer in undertaking climate change issues proactively. Your Company has taken several initiatives in CDM Projects in Power Sector.

Five of its renewable energy projects viz. 5 MW Solar PV Power Project at Dadri, 5 MW Solar PV Power Project at Port Blair (A&N), 5 MW Solar PV Power Project at Faridabad and 8 MW small hydro power project at Singrauli and 50 MW Solar PV Plant at Rajgarh (MP) have already been registered with United Nations Framework Convention on Climate Change (UNFCCC) CDM Executive Board.

15 MW Solar PV Power project at Singrauli, 10 MW Solar PV project at Talcher and 10 MW Solar PV Power Project at Unchahar is registered in UNFCCC CDM Programme of Activities (PoA).



61,73 nos. of Certified Emission Reductions (CERs) for 5 MW Solar PV Power Project at Port Blair (A&N) have been issued by UNFCCC CDM Executive Board. Further, another 5842 nos of CERs have also been issued by UNFCCC CDM Executive Board for 5 MW Solar PV Power Project at Dadri and 21011 nos. of Certified Emission Reductions (CERs) has been issued for 5 MW Solar PV Power Project at Faridabad.

Further Registration of 50 MW Solar PV power project at Anantpur, 260 MW Solar PV power project at Bhadla, 250 MW Solar PV power project at Mandasaur and 50 MW Wind power project at Rojmal has been done in Verified Carbon Standard (VCS) program.

Total of 1085005 Voluntary Emission Reduction (VERs) has been issued for these projects registered with VCS Board.

For the remaining capacity of Anantpur Solar project, prior consideration form has been sent to UNFCCC and MOEF. Also, prior consideration forms have been sent to UNFCCC and MOEF for our upcoming following Solar Projects: 140 MW and 85 MW at Bilhaur, 20 MW at Auraiya, 100 MW floating solar at Ramagundam, 25 MW floating solar at Simhadri, 70 MW & 22 MW floating solar at Kayamkulam, 160 MW at Jetsar, 20 MW floating solar at Auraiya, 20 MW at Rihand and 400 MW CPSU Scheme Tranche-I projects.

Further, Prior consideration form for our upcoming Solar Projects under CPSU scheme Tranche-II totaling 1292 MW is in the process to be sent to UNFCCC and MOEF .

**18.5 Ash Utilisation**

During the year 2019-20, 604.76 lakh tonnes of ash was generated and 73.31 % viz. 443.33 lakh tonnes of ash had been utilized for various productive purposes by your Company.

Important areas of ash utilization are - cement & asbestos industry, ready mix concrete plants (RMC), road embankment, brick making, mine filling & land development. Your Company are also pursuing new initiatives for fly ash utilization like fly ash based geo-polymer road, transportation of fly ash from pithead power stations to fly ash consumption centers, setting up ash based light weight aggregate plant.

Pond ash from all stations of your Company is being issued free of cost to all users. Fly ash is also being issued free of cost to fly ash/ clay-fly ash bricks, blocks and tiles manufacturers on priority basis over the other users from all coal based thermal power stations. The funds collected from sale of ash is being maintained in the separate account and this fund is being utilized for development of infrastructure facilities, promotion and facilitation activities to enhance ash utilization.

Your Company has an Ash Utilization Policy, which is a vision document dealing with the ash utilization issue in an integral way from generation to end product. This policy aims at maximizing utilization of ash for productive usage along with fulfilling social and environmental obligations as a green initiative in protecting the nature and giving a better environment to future generations.

The quantity of ash produced, ash utilized and percentage of such utilization during 2019-20 from your Company's Stations is at Annex- VIII of this Director Report.

**18.6 CenPEEP – towards enhancing efficiency and protecting Environment**

Your Company initiated a unique voluntary program of GHG emission reduction by establishing 'Center for Power Efficiency and Environmental Protection (CenPEEP)' and under this program, it is estimated that cumulative CO<sub>2</sub> avoided is 49.61 million tonnes since 1996, by sustained efficiency improvements.

CenPEEP is instrumental in implementation of Energy Efficiency Management System (EEMS) consisting of periodic assessments, field tests, performance gap analysis deviations and updation of action plans at all stations.

CenPEEP is working for efficiency and reliability improvement in stations through strategic initiatives, development and implementation of systems and introduction of new techniques & practices. Critical efficiency parameter, draft power consumption, efficiency improvement through overhauling are monitored. PI based real time programs and dashboards are in use for real time tracking of plant parameters. These programs also assist operating engineers in tracking the gaps in heat rate and auxiliary power consumption, trending the degradation of equipment performance and taking corrective measures.

CenPEEP is also working towards reduction in specific water consumption and auxiliary power consumption in coal and gas stations. A dedicated group conducts regular energy audits to identify potential improvement areas and improvement actions. Further CenPEEP is also associated in carrying out water audit of stations and taking corrective actions for reduction in water consumption.

**Water Withdrawal per year (in lakh KL)**

Sl. No.	Type of Water	Quantity Consumed
		2019-20
1	Total Water withdrawal	5994.97*
2	Per unit withdrawal	3.15* Litre/kwh

\*Water calculated on closed loop systems

CenPEEP is also involved in structured and statutory energy audits, which helps to identify potential areas of improvement in APC reduction to be addressed within time bound implementation schedule.

CenPEEP is actively involved in training and development of power professionals of your Company and other utilities in the power sector in the areas of Boiler & Auxiliaries, Turbine & Auxiliaries, Cooling Towers, RCM, PdM technologies etc.

Your Company has taken Electric Power Research Institutes' membership (EPRI) in the areas of Boiler life & Availability improvement, Steam Turbine-Generators & Aux. system and Combustion & Coal Quality impacts to increase the knowledge, expertise of the Company and undertake collaborative research projects for improving efficiency and reliability of units.

CenPEEP coordinated implementation of Perform, Achieve & Trade (PAT) scheme under Prime Minister's National Mission on Enhanced Energy Efficiency (NMEEE) in your Company's coal & gas plants. As per notification, your Company's coal and gas stations exceeded the Net Heat Rate improvement targets and earned net 170653 EScerts (Energy saving certificates) in PAT-1 cycle. Your Company participated in EScerts trading & purchased required EScerts. Subsequent to the trading, your Company is having 161759 EScerts that will be used for PAT - II cycle. After completion of PAT cycle II in March 2019; M&V audits have been carried out in all stations. Notification of EScerts earned in PAT cycle II is awaited.

Performance & Guarantee tests are being coordinated by CenPEEP which includes approval of procedure, conducting test & its evaluation.

Your Company has taken an initiative for complete replacement of existing lighting with LED light fittings at its all stations including townships. Till March 2020, 10.1 lakh LED fittings (83.2 % of the population) have been replaced on pan- NTPC basis.

## 19. NETRA

Your Company understands the importance of R&D in the ever-changing dynamics of the energy sector. It also firmly believes that assimilation of knowledge and its conversion into technologies shall be the key differentiator in coming times. Technological progress thus achieved, in aggregation, improves the country's energy security, economic growth and environmental sustainability. Concurrently, it plays a crucial role in determining the competitiveness of companies in the marketplace - both nationally and internationally.

Your Company has assigned 1% of PAT for R&D activities focused to address the major concerns of the sector as well as the future technology requirements of the sector. In this effort, your Company has established NTPC Energy Technology Research Alliance (NETRA) as state-of-the-art center for research, technology development and scientific services in the domain of electric power to enable seamless work flow right from concept to commissioning.

Through our R&D center, NETRA, we are constantly making efforts to address the major concerns of the power sector - as well as exploring and tapping the potential opportunities available.

The focus areas of NETRA are - Efficiency Improvement & Cost Reduction; New & Renewable Energy; Climate Change & Environmental protection, which includes water conservation, Ash utilization & Waste Management. NETRA also provides Advanced Scientific Services to its stations and other utilities in the area Non-Destructive Examination (NDE), Metallurgy & failure analysis, oil/water chemistry, environment, electrical, Computational Fluid Dynamics (CFD), etc. for efficient and reliable performances. NETRA laboratories are ISO 17025 accredited.

Research Advisory Council (RAC) of NETRA comprising eminent scientists and experts from India and abroad is in place to steer research direction. Padma Bhushan Dr. V.K. Saraswat, former Secretary, DRDO, and member of NITI Aayog is the Chairman of RAC.

Scientific Advisory Council (SAC) chaired by Functional Director, Director (Operations) and other senior NTPC's Officials as its member, provides directions for undertaking specific applied research projects aimed to develop techniques in power plant for efficient, reliable and environment friendly operation with emphasis on reducing cost of generation.

NETRA focused on both in-house technology development as well as collaborative research. Your Company networked with various prestigious national and international institutions to harness the specialized knowledge and expertise lying with those institutes. By collaborating with various institutes, your Company has been successful in promoting research in the field of Ash Utilization, Hydrogen, Carbon Capture, Sensors CFD, Robotics, Drones, Renewables, Environment, NDE and Water chemistry, etc.

NETRA has collaborations with National Institutes such as IIT-Delhi, IIT-Bombay, IIT-Madras, IIT-Kanpur, IIT-Kharagpur, IIT-Dhanbad, IISc-Bangalore, RGIPT-Amethi, CSIR lab's such as IIP- Dehradun, CMERI- Durgapur, CGCRI- Kolkata, CBRI-Roorkee, etc.

NETRA also has collaborations with international institutions such as NETL-USA, Curtin University-Australia; Newcastle University-Australia, VGB-Germany, DLR / ISE-Germany, Tokyo University etc.

NETRA efforts are constantly directed towards Institutional Capacity Building. Various activities such as workshops on applied robotics in Power plant, ESP Efficiency Improvement using CFD modeling, Capacity Building Training on NDE practices and Concentrated Solar Thermal (CST) were carried out by NETRA. Further, NETRA Meet was also conducted for the very first time to promote synergy between R&D Centre and various your Company's stations. Further, 'NTPC Innovation Scheme' was also launched to foster R&D activities within your Company.

Five (5) books were also published in addition to various research papers.

Further to boost your Company R&D activities, Phase-II of NETRA infrastructure is under construction with approx. 21000 sq. m floor area.

The details of activities undertaken by NETRA are given in Annex-III of this Director Report.

## 20. IMPLEMENTATION OF OFFICIAL LANGUAGE

Your Company took several initiatives for the progressive use of Hindi in the day to day official work and implementation of Official Language policy of the Union of India in your Company. The compliance of Official Language policy in our projects and regional headquarters was inspected and need based suggestions were given to the respective Heads of offices in this regard.

Quarterly meetings of Official Language Implementation Committee were held in which extensive discussions took place on progressive use of Hindi and the ways and means to bring about further improvements.

Hindi Divas was celebrated on 14<sup>th</sup> September 2019 and Hindi Fortnight was organized from 01-15 September 2019 at the Corporate Centre as well as regional headquarters and projects/stations to create



awareness among the employees, associates and their family members. Our biannual Hindi magazine “Vidyut Swar” was published (in digitized form) to promote creative writing in Hindi. A mega Kavi Sammelan was organized during November 2019. Your Company had awarded the 2<sup>nd</sup> prize in the best magazine category by TOLIC (NARAKAS) Delhi in February 2020.

Employees were motivated to use Hindi in official work by organizing Hindi workshops, Unicode Hindi Computer Training along with Hindi e-tools and popularization of Hindi incentive schemes. Hindi webpage was updated with important information of Rajbhasha for employees.

The second sub-committee of Parliament on official Language had inspected our units reviewed the progress of Rajbhasha implementation and appreciated our efforts.

Your Company’s website also has a facility of operating in a bilingual form, in Hindi as well as in English.

## 21. VIGILANCE

### 21.1 Vigilance Mechanism:

Your Company ensures transparency, objectivity and quality of decision making in its operations, and to monitor the same, your Company has a Vigilance Department headed by Chief Vigilance Officer, a nominee of Central Vigilance Commission. The Vigilance set up in your Company consists of Vigilance Executives in Corporate Centre and Projects. In Projects, the Vigilance Executives report to the Project Head in administrative matters but in functional matters, they report to Chief Vigilance Officer.

Your Company’s Corporate Vigilance Department consists of four Cells as under:

- Vigilance Investigation and Processing cell;
- Departmental Proceedings cell;
- Technical Examination cell; &
- MIS cell

These cells deal with various facets of vigilance mechanism. The vigilance works have been assigned region wise Vigilance Officers at Corporate Centre (Regional Vigilance Executive) for speedier disposal. Senior officials of Vigilance Department comprising GM (Vigilance), Regional Vigilance Executives and Head of DPC/MIS Cell meet regularly to discuss common issues having in order to ensure efficient and uniform working in all Regions. This facilitates transparency, efficiency and effectiveness of Vigilance functionaries by making use of collective knowledge, experience and wisdom of Vigilance Executives as well as breaking of compartmentalization and abridging of strengths & weaknesses.

During 2019-20, Vigilance department of your Company investigated 84 complaints, out of which 68 complaints were finalized while the remaining 16 complaints were under various stages of investigation as on 31.03.2020. Appropriate disciplinary action was initiated against the involved employees alongwith system improvements, wherever found necessary. 187 surprise checks were conducted during the period and recovery of ₹ 0.87 crore was affected against various discrepancies detected during investigation. During the last year,

a total of 54 Preventive Vigilance Workshops were conducted at various projects/ places in which 1252 employees participated.

### 21.2 Implementation of Integrity Pact

The Integrity pact has been implemented in your Company since 2009. Presently, tenders having estimated value of ₹ 10 crore (excluding taxes and duties) and above are covered under the Integrity Pact.

### 21.3 Implementation of various policies

Fraud Prevention Policy has been implemented in your Company and suspected fraud cases, referred by the Nodal Officers to Vigilance Department are investigated immediately to avoid/ stop fraudulent behaviors as defined in “Fraud Prevention Policy”. Whistle Blower Policy has also been in place in your Company as per SEBI guideline to strengthen a culture of transparency and trust in the organization, providing employees with a framework/ procedure for responsible and secure reporting of improper activities (whistle blowing) within the Company and to protect employees wishing to raise a concern about improper activity/serious irregularities within the Company. A complaint handling policy is also in place, which is designed to provide guidance on the manner in which your Company receives and handles complaints against its employees, suppliers / contractors etc.

### 21.4 Vigilance Awareness Week and Workshops

Vigilance Awareness Week-2019 (VAW) was observed in your Company, its Subsidiaries & Joint Venture Companies from 28<sup>th</sup> October to 2<sup>nd</sup> November 2019. The observance of the Vigilance Awareness Week commenced with the Integrity Pledge taken by employees across the country on 28<sup>th</sup> October 2019 steered by the respective heads of Projects/Stations/ Regions/Offices & Corporate Centre. CMD of your Company, Sh. Gurdeep Singh led the pledge at the Corporate Center, Delhi.

The events & activities across in your Company were organised focusing on the theme of VAW-2019 “Integrity-A Way of Life”. To ensure wider participation of students & citizens, events & activities were organised at Schools and Colleges and Gram Sabhas in rural areas’ & seminars in the urban areas were organised in the vicinity of our Stations / Projects / Offices / Corporate Centre. Special focus was given to the cities assigned to your Company for outreach activities namely New Delhi, Varanasi, Farakka, Korba & Talcher. For general awareness, FM Radio / Prasar Bharati medium was also used to air the CVC message on “Integrity-A Way of Life” at New Delhi, Patna, Hyderabad, Visakhapatnam & Raipur.

Vigilance Quiz-2019 was organized for the first for wards of employees of your Company with questions ranging from varied areas of vigilance and general studies. Shri Rajit Punhani, Ex-Chief Vigilance Officer, your Company Senior Executives Shri Rakesh Prasad, ED (HR), Shri A.K. Das, CGM, Dadri, Ms. Vijaya Lakshmi Muralidharan, Head of HR, Dadri presented the awards to the winning teams.

E-magazine special issues were released at many projects & regional offices. Your Company Corporate

Vigilance compendium of E-flyer VIGDOM on vigilance awareness was released by CMD of your Company on 28.10.2019 and your Company Vigilance Mobile App was launched by CVO on 29.10.2019.

The Vigilance Awareness Week at Corporate Center concluded with a befitting Kavi Sammelan of Padma Shri Ashok Chakradhar who enthralled the audience with his satiric poetry on corruption and its ill effects. Further, activities during VAW-2019 were organized across India covering 20 states involving more than 40,000 students & 40,000 citizens besides employees of your Company, its Subsidiaries & Joint Ventures.

## 21.5 System improvement measures undertaken during 2019-20

### a) Modification in Guidelines w.r.t Sampling & Weighment of Imported coal

- The earlier Guidelines for Sampling and Weighment of Imported Coal at NTPC Station have been modified w.r.t current Scenario/Contractual provisions, wherein methodology for collection and testing of Coal Samples, maintenance of Weigh Bridges for Weighment of Coal, up-keepment of Chemical Labs for testing of Coal Samples, installation of Cameras at Labs & Weigh bridges for surveillance, surprise checks by Vigilance etc. has been deliberated.

### b) Minor Penalty Proceedings to continue even after retirement

- As per NTPC's CDA Rule, only Major Penalty Proceedings could be continued after Superannuation. In line with advice of CVC & MOP, CDA Rules have been modified w.e.f 28.05.19, incorporating provision of continuation of Minor Penalty Proceedings also after Retirement.

### c) Online submission of property return by executives

- Hard copy submission of Property Return by the Executives of your Company had been discontinued. System circular in this regard was issued to all Project Heads at Site, Regional & Corp HR, REDs stating that –

- ✓ Up to E8 (excluding BUH/CEO/HOP), Hard Copy submission is not required. Only online submission of Annual Property Return (APR).
- ✓ Hard Copy of APR will be kept for all HOP/BUH, ED & RED only.

### d) Vigilance Clearance through PRADIP Portal

- A Module has been developed in Paperless office system (PRADIP) for introducing online Vigilance clearance of the Employees of your Company for speedy disposal with least possible human intervention. This Module was rolled out w.e.f 01.10.2019.

## 22. REDRESSAL OF PUBLIC GRIEVANCES

Your Company is committed for resolution of public grievance in efficient and time bound manner. Executive Director (HR-USS) has been designated as Director (Grievance) to facilitate earliest resolution of public grievances received from President Secretariat, Prime Minister's Office, Ministry of Power etc.

In order to facilitate resolution of grievances in transparent and time bound manner, Department

of Administrative Reforms & Public Grievances, Department of Personnel & Training, Government of India has initiated web-based monitoring system at [www.pgportal.gov.in](http://www.pgportal.gov.in).

As per directions of Government of India (GoI), public grievances are to be resolved within two months time. If it is not possible to resolve the same within two months period, an interim reply is to be given. Your Company is making all efforts to resolve grievances in above time frame.

## 23. RIGHT TO INFORMATION (RTI)

Your Company has implemented Right to Information Act, 2005 in order to provide information to citizens and to maintain accountability and transparency. Your Company has put RTI manual on its website, i.e [www.ntpc.co.in](http://www.ntpc.co.in) for access to all citizens of India and has designated a Central Public Information Officer (CPIO), an Appellate Authority and APIOs at all sites and offices of your Company.

During 2019-20, there were 1,732 applications (including 102 pending applications from FY 2018-19), out of which 1,553 were replied and 179 are pending to be replied/resolved, under the RTI Act, 2005.

## 24. USING INFORMATION AND COMMUNICATION TECHNOLOGY FOR PRODUCTIVITY ENHANCEMENT

The Information Technology Department in your Company is not only a service provider but also being used as a key business driver. Since 2008, your Company has implemented Enterprise Resource Planning (ERP) application to integrate all its business functions. PI data system has been implemented to capture, display and analyze the plant performance parameters on real time basis which is helping the operation and maintenance of our power plants. Non-ERP web based applications have been developed in balance areas such as Engineering Drawings approval, Quality Control Management, Hospital Management, Labour Management, Transit Camp Management, RTI, Security Control etc.

As a commitment towards environment, your Company has re-engineered and re-designed the business processes to paperless mode. The digitization initiative "Project PRADIP" resulted in implementation e-Office, digitization of documents and paperless processes for different functions. This has not only saved tons of paper but also resulted in faster decision making, transparency and improved efficiency for your Company. Further, during COVID-19 period all the file movement are digitally moved and approved.

Your Company plants and Offices across India, are connected to Corporate Office and main Data-Centre (DC) through 2x34 mbps MPLS links at each site to facilitate seamless communication. The DC and DR (Disaster Recovery) site is connected with 2x291 mbps MPLS links for data replication. Both the Data centers at Noida & Hyderabad have been certified with ISO 27001 certification during this period. The progress of ongoing projects and issues of the running power stations are discussed regularly over high definition Video Conferencing system at Project Monitoring Centre of Corporate Office. Desktop to desktop VC facility also has been provided to senior executives to conduct review meeting from their respective seat.



To further leverage IT in your Company, an IT Strategy has been finalized. The IT Strategy aims to achieve 100% Paperless Office, Data Analytics for decision making, induction of new technology such as IIOT, AI, Machine learning etc. over next 2 years.

Some of the highlights of the progress in IT/ERP area during the year 2019-20 were as follows:

- **Digitization** - E-Office was implemented. Processes were redesigned for working in paperless mode.
- **ERP** – A number of new modules were introduced in ERP. An all new PMS system with many new features was launched. A new process for procurement budget and automatic PR creation put in place. New CERC tariff norms for 2019-24 implemented.
- **HCI**- New server technology has been adopted by installing and commissioning the state of art Hyper Converged Infrastructure server (HCI) system. The HCI system is hosting all the critical business Non-ERP applications. The HCI system is acting as on premises private CLOUD service by delivering Virtual Machines (VMs) of various configuration to host various applications as and when they are required by users, centralized backup and management etc.
- **Mail and Messaging Services** – The mail and messaging services were upgraded. All users were provided with min. 20 GB of mail box size. DR set up for mailing system was commissioned.
- **Security** – No major security breach was observed during the year 2019-20. A (24x7) Security Operation Centre(SOC) is in operation where round the clock monitoring of all external and internal data traffic is being done with latest tools through SOC and latest threat management tools are being applied to prevent any cyber-attack or data theft. Timely communication being sent to all users based on threat perception. Your Company's data centers at Noida and Hyderabad are ISO 27001 certified for security compliance.
- A number of new web applications and mobile apps such as Coal Monitoring Portal, Ash Management Portal, CPSE Conclave action points monitoring portal etc. have been launched to take care of requirements of various internal departments and Ministry of Power.
- **ERP** - CERC Tariff regulation 2019-24 configured and implemented in ERP system. Management Reports related to Operations have been modified to reflect new KPIs for CERC Tariff norms. Activity Based Budgeting and Automatic PR generation have been successfully adopted by the power stations for Procurement Budgeting and Action. PAP vendor creation processes automated. Auto creation of PRMS Vendors. Automation of Employee Joining process. SAP-FIORI based PMS Final assessment implemented.
- **SAP Integration with other external Systems** – The following systems were integrated :
  - GeM portal for procurement,
  - TREDS platform M1Exchange to facilitate MSME payment
  - SBI and GepNIC Portal for enabling on-line payment.
- **E-Tendering** – GePNIC Portal has been implemented in all subsidiaries of NTPC. Online EMD and Tender fee payment on GePNIC platform with automatic entry and accounting in ERP system and auto generation of GST invoice implemented in your Company.
- **New Technology** - A ChatBot was developed for your Company vendor portal and Payment Tracking Portal. A PoC was successfully done with RPA tool in fetching & updating Medical Health records of Employee. Real-time data analytics is being explored with PI-Asset Framework and Event Frames tools of the OSI PI System.
- **Corporate Dashboard** was enhanced with new Analytic Reports based on BW data and BW system was upgraded to make it HANA compliant.
- **IT Consultancy assignments towards power sector improvement** – Implemented the following
  - o SAP-PM module in SCCL
  - o PI System in JV companies of your Company
  - o Advising NEEPCO in their ERP implementation
  - o DREAMS 2.0 in PGCIL
- Due to COVID-19, your Company provided Work from Home (WFH) facilities during the lock down by enabling VPN access to critical applications to all the required employees and a Video Conferencing (VC) facility through MS teams to all employees.

## 25. GROUP COMPANIES: SUBSIDIARIES AND JOINT VENTURES

Your Company has Nine number of subsidiary companies as on 31<sup>st</sup> March 2020 (including NTPC Mining Limited and take over Company i.e North Eastern Electric Power Corporation Ltd. and THDC India Ltd. acquired on 27<sup>th</sup> March 2020) and 19 nos. joint venture companies for undertaking specific business activities.

In these 19 nos. joint venture companies, your Company has decided to exit from International Coal Ventures Private Limited, in view of lack of suitable commercially viable opportunities for thermal coal and in BF-NTPC Energy Systems Limited, after getting approval from Ministry of Power is under the Process of Winding Up and Liquidator was appointed for voluntary Liquidation of JV Company.

A statement containing the salient feature of the financial statement of your Company's Subsidiaries, Associate Companies and Joint Ventures as per first proviso of section 129(3) of the Companies Act, 2013 is included in the consolidated financial statements.

## 26. INFORMATION PURSUANT TO STATUTORY AND OTHER REQUIREMENTS

Information required to be furnished as per your Companies Act, 2013 and as per SEBI (Listing Obligations & Disclosure Requirements) Regulations, 2015 and any amendments thereto are as under:

## 26.1 Statutory Auditors

The Statutory Auditors of your Company are appointed by the Comptroller & Auditor General of India. Joint Statutory Auditors for the financial year 2019-20 were (i) M/s S K Mehta & Co., Chartered Accountants, New Delhi (ii) M/s S.N. Dhawan & Co. LLP, Chartered Accountants, New Delhi, (iii) M/s Varma & Varma, Chartered Accountants, Hyderabad, (iv) M/s Parakh & Co., Chartered Accountants, Jaipur, (v) M/s C K Prusty & Associates, Chartered Accountants, Bhubaneswar, (vi) M/s B C Jain & Co., Chartered Accountants, Kanpur and (vii) M/s V K Jindal & Co., Chartered Accountants, Ranchi.

The appointment of the Statutory Auditors for the financial year 2020-21 is appointed by the Comptroller & Auditor General of India.

## 26.2 Management comments on Statutory Auditors' Report

The Statutory Auditors of the Company have given an un-qualified report on the accounts of the Company for the financial year 2019-20. However, they have drawn attention under 'Emphasis of Matter' to the following notes:

- (i) Note No.32 (a) regarding billing and accounting of sales on provisional basis.
- (ii) Note No.44 in respect of one of the projects of Company consisting of three units of 800 MW each, where the order of National Green Tribunal (NGT) on the matter of environmental clearance for the project has been stayed by the Hon'ble Supreme Court of India, the matter is sub-judice and the units have since been declared commercial.
- (iii) Note No.57(iii)(b) with respect to appeal filed by the Company with the Hon'ble High Court of Delhi in the matter of Arbitral award pronounced against the Company and the related provision made/ disclosure of contingent liability as mentioned in the said note.
- (iv) Note No.41, which describe the assessment of the impact of Covid-19 pandemic by the management on the business and its associated financial risks.

The issues have been adequately explained in the respective Notes referred to by the Auditors.

## 26.3 Review of accounts by Comptroller & Auditor General of India (C&AG)

The Comptroller & Auditor General of India, through letter dated 21.08.2020, has given 'NIL' Comments on the Standalone Financial Statements of your Company for the year ended 31 March 2020 after conducting supplementary audit under Section 143 (6) (a) of the Companies Act, 2013.

The Comptroller & Auditor General of India, through letter dated 21.08.2020, has also given 'NIL' Comments on the Consolidated Financial Statements of your Company for the year ended 31 March 2020 after conducting supplementary audit under Section 143 (6) (a) read with Section 129 (4) of the Companies Act, 2013.

As advised by the Office of the Comptroller & Auditor General of India (C&AG), the comments of C&AG for both

the stand-alone and consolidated financial statements of your Company for the year ended 31 March 2020 are being placed with the report of Statutory Auditors of your Company elsewhere in this Annual Report.

## 26.4 COST AUDIT

As prescribed under the Companies (Cost Records and Audit) Rules, 2014, the Cost Accounting records are being maintained by all stations of your Company.

The firms of Cost Accountants appointed under Section 148 (3) of the Companies Act, 2013 for the financial year 2019-20 were (i) M/s Dhanjay V. Joshi, Cost Accountants, Pune, (ii) M/s K.L. Jaisingh & Co., Cost Accountants, UP, (iii) M/s Chandra Wadhwa & Co., Cost Accountants, New Delhi, (iv) M/s DGM & Associates, Cost Accountants, Kolkata, (v) M/s Tanmaya S Pradhan & Co., Cost Accountants, Sambalpur, (vi) M/s A.C. Dutta & Co., Cost Accountants, Kolkata, (vii) M/s Niran & Co., Cost Accountants, Bhubaneswar and (viii) M/s S C Mohanty & Associates, Cost Accountants, Bhubaneswar.

The due date for filing consolidated Cost Audit Report in XBRL format for the financial year ended March 31, 2019 was upto September 27, 2019 and the consolidated Cost Audit Report for your Company was filed with the Central Government on September 25, 2019.

The Cost Audit Report for the financial year ended March 31, 2020 shall be filed within the prescribed time period under the Companies (Cost Records & Audit) Rules, 2014.

## 26.5 Exchange Risk Management

Your Company is exposed to foreign exchange risk in respect of contracts denominated in foreign currency for purchase of plant and machinery, spares and fuel for its projects/ stations and foreign currency loans.

During financial year 2019-20, your Company has not entered into any derivative contract in respect of foreign currency loans exposure.

## 26.6 Policy for Selection and appointment of Directors and their remuneration

Your Company being a Government Company, the provisions of Section 134(3)(e) of the Companies Act, 2013 do not apply in view of the Gazette notification dated 05.06.2015 issued by Government of India, Ministry of Corporate Affairs.

## 26.7 Performance Evaluation of the Directors and the Board

Ministry of Corporate Affairs (MCA), through General Circular dated 5<sup>th</sup> June, 2015, has exempted Government Companies from the provisions of Section 178 (2) of the Companies Act, 2013 which requires of performance evaluation of every director by the Nomination & Remuneration Committee. The aforesaid circular of MCA further exempted listed Govt. Companies from provisions of Section 134 (3) (p) of the Companies Act, 2013 which requires mentioning the manner of formal evaluation of its own performance by the Board and that of its Committees and Individual Director in Board's Report, if directors are evaluated by the Ministry or Department of the Central Government which is administratively in charge of the Company, or, as the case may be, the State Government as per its own evaluation methodology.



Further, MCA, through Notification dated 05.07.2017, has amended Schedule IV to the Companies Act, 2013 with respect to performance evaluation of directors of the Government Companies that in case of matters of performance evaluation are specified by the concerned Ministries or Departments of the Central Government or as the case may be, the State Governments and such requirements are complied with by the Government companies, such provisions of Schedule IV are exempted for the Government Companies.

In this regard, Deptt. of Public Enterprises (DPE) has already laid down a mechanism for performance appraisal of all functional directors. DPE has also initiated evaluation of Independent Directors.

Your Company enters into a Memorandum of Understanding (MOU) with Government of India each year, demarcating key performance parameters for your Company. The performance of the Company are evaluated by the Department of Public Enterprises vis-à-vis MOU entered into with the Government of India.

In terms of Regulation 25 of SEBI LODR, 2015, the performance of the Board as a whole and non-independent directors including Chairman & Managing Director were evaluated by the Independent Directors in a separate Meeting held by them on 14<sup>th</sup> Feb., 2020.

**26.8 Declaration by Independent Directors**

During the year, all the Independent Directors have met the requirements specified under Section 149(6) of the Companies Act, 2013 for holding the position of 'Independent Director' and necessary declaration from each Independent Director under Section 149 (7) of the Companies Act, 2013 was received. Also declaration under Regulation 25 of SEBI (LODR) Regulations, 2015 and Rule 6 of the Companies (Appointment and Qualification of Directors) Rules, 2014 are also obtained from all the Independent Director of your Company.

**26.9 MANAGEMENT DISCUSSION AND ANALYSIS**

In addition to the issues stated in the Directors' Report, some issues have been brought out in report on Management Discussion and Analysis placed at Annexure-I and forms part of this Directors' Report, as per the terms of regulations 34(2)(e) of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015.

**26.10 Corporate Governance**

A detailed report on Corporate Governance as stipulated under Regulation 34(3) of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 is placed at Annexure-II and forms part of the Directors' Report.

**26.11 BUSINESS RESPONSIBILITY REPORT**

The Business Responsibility Report, as stipulated under Regulation 34 (2) of the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015, is given in Annexure-X and forms part of this Directors' Report.

**26.12 Investor Education and Protection Fund (IEPF)**

Details of transfer of unclaimed dividends and eligible shares to IEPF have been placed in the Corporate

Governance Report at Annx-II, which forms part of the Directors' Report.

**26.13 Secretarial Audit**

The Board had appointed M/s Akhil Rohatgi & Company, Company Secretaries, to conduct Secretarial Audit for the financial year 2019-20. The Secretarial Audit Report for the financial year ended March 31, 2020 is annexed herewith placed at as Annexure XI to this Directors' Report.

The Managements' Comments on Secretarial Audit Report are as under:

Observations	Management's Comments
Compliance of Regulation 17 (1) (a) of Securities and Exchange Board of India (Listing Obligations & Disclosure Requirements) Regulations, 2015 with respect to the appointment of Independent Woman Director on the Board of the Company.	During the financial year 2019-20, w.e.f 16.11.2019, there is no Woman Independent Director as required under SEBI LODR. As per the provisions of the Articles of Association of the Company, the power to appoint Directors vests with the President of India. The Company had requested Ministry of Power, Government of India, being administrative ministry for appointment of Woman Director from time to time for compliance of the above regulations.
Compliance of Regulation 17(10) of Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015, the Company has not carried out the performance evaluation of the Directors.	Refer Para 26.6 & 26.7
Compliance of Regulation 19(4) read with Schedule II Part D (A) of the Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015, the required policies/criteria were not formulated	As the Government of India (GoI) is making appointment of Directors evaluation of Directors are done by the GoI.
The Registered office of the Company at Scope Complex, 7, institutional Area, Lodi Road, New Delhi 110003 has not been registered under the Shops and Establishment Act	Application for change of Registered office address was made to the office of the Deputy Labour Commissioner.



#### 26.14 Particulars of contracts or arrangements with related parties

During the period under review, your Company had not entered into any material transaction with any of its related parties. The Company's major related party transactions are generally with its subsidiaries and associates. All related party transactions were in the ordinary course of business and were negotiated on an arm's length basis except with Utility Powertech Limited, which are covered under the disclosure of Related Party Transactions in Form AOC-2 (Annex- IX) as required under Section 134(3) (h) of the Companies Act, 2013. They were intended to further enhance your Company's interests.

Web-links for Policy on Materiality of Related Party Transactions and also on Dealing with Related Party Transactions have been provided in the Report on Corporate Governance, which also form part of the Annual Report.

#### 26.15 Significant and material orders passed by the regulators or courts or tribunals impacting the going concern status and Company's operations in future:

No significant and material orders were passed by any regulator or court or tribunal impacting the going concern status and Company's operations during the FY 2019-20.

#### 26.16 Adequacy of internal financial controls with reference to the financial reporting:

Your Company has in place adequate internal financial controls with reference to financial reporting. During the year, such controls were regularly tested and no reportable material weakness in the design, implementation and operation effectiveness was observed.

#### 26.17 Loans and Investments

Details of Investments covered under the provisions of Section 186 of the Companies Act, 2013 forms part of financial statement, attached as a separate section in the Annual Report for FY 2019-20.

The loan granted by your Company to its Joint Venture Company namely National High Power Test Laboratory Private Limited (NHPTL) during 2017-18 for a period of six months of ₹ 6 Crore was extended up to 31<sup>st</sup> October 2032. Further, a new loan was also granted to NHPTL for ₹ 12.40 crore during the financial year. The loan granted by your Company to its Subsidiary Company namely Kanti Bijlee Utpadan Nigam Limited (KANTI) of ₹ 150 crore for meeting its capital expenditure covered under Section 185 and 186 of the Companies Act, 2013.

Details of Loans granted to subsidiaries and Joint venture companies are disclosed at Note 53 to the stand-alone financial statements for the year 2019-20

#### 26.18 Prevention, Prohibition and Redressal of Sexual Harassment of Women at Workplace

Your Company has in place a Policy on Prevention, Prohibition and Redressal of Sexual Harassment of Women at Workplace in line with the requirements of the Sexual Harassment of Women at the Workplace (Prevention, Prohibition & Redressal) Act, 2013. Internal Complaints Committees (ICCs) have been constituted at all Projects/ locations to redress complaints received regarding sexual harassment. All female employees

(regular, contractual, temporary, trainees) are covered under this policy. Every three years, the constitution of these committees is changed and new members are nominated.

During the year 2019-20, two cases were reported to different ICCs across your Company, four cases were resolved (including two from the last year) and currently no case is pending.

#### 26.19 Procurement from MSEs

The Government of India has notified a Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012. The total procurement made from MSEs (including MSEs owned by SC/ST entrepreneurs) during the year 2019-20 was ₹ 1,667.50\* crore, which was 46.22% of total annual procurement of ₹ 3,608.21\* crore against the minimum threshold target of 25% as stipulated by the Public Procurement Policy for Micro and Small Enterprises (MSEs) Order.

The total procurement made from MSEs owned by SC/ST and Women entrepreneurs during the year 2019-20 was ₹ 0.42\* crore and ₹ 0.18\* crore respectively.

\*It excludes Primary fuel, Secondary fuel, Steel & Cement, the Project procurement including R&M packages and procurement from Original Equipment Manufacturer (OEM)/ Original Equipment Supplier (OES)/ Proprietary Article Certificate (PAC).

In FY 2019-20, Your Company has recorded highest ever procurement from MSEs in terms of absolute value and procurement percentage. Further, in FY 2019-20, Your Company has also recorded highest procurement percentage from MSEs among all Maharatna CPSUs.

Your Company organized 17 vendor development programmes (VDPs), including 8 Special VDPs for MSEs owned by SC/ST and Women entrepreneurs across the Company in FY 2019-20.

Annual procurement plan for 2019-20 from MSEs is uploaded on [www.ntpc.co.in](http://www.ntpc.co.in).

#### 26.20 Particulars of Employees

As per provisions of Section 197(12) of the Companies Act, 2013 read with Rule 5 of the Companies (Appointment and Remuneration of Managerial Personnel) Rules, 2014, every listed Company is required to disclose the ratio of the remuneration of each director to the median employee's remuneration and details of employees receiving remuneration exceeding limits as prescribed from time to time in the Directors' Report.

However, as per notification dated 5<sup>th</sup> June, 2015 issued by the Ministry of Corporate Affairs, Government Companies are exempted from complying with provisions of Section 197 of the Companies Act, 2013. Therefore, such particulars have not been included and does not form part of this Directors' Report.

#### 26.21 Extract of Annual Return:

Extract of Annual Return (MGT-9) pursuant to Section 92 (3) of the Companies Act, 2013 and rule 12 (1) of the Company (Management & Administration) Rules, 2014 is annexed herewith as Annexure VI to this Directors' Report. The Extract of Annual Return for the Financial Year ended 31<sup>st</sup> March 2020 is also available on the Company's website i.e [www.ntpc.co.in](http://www.ntpc.co.in).



**26.22** Information on Number of Meetings of the Board held during the year, composition of committees of the Board and their meetings held during the year, a chart or a matrix setting out the skills/expertise/competence of the board of directors, Total fees for all services paid by the listed entity and its subsidiaries, on a consolidated basis, to the statutory auditor and all entities in the network firm/network entity of which the statutory auditor is a part, Details of utilization of funds raised through preferential allotment or qualified institutions placement as specified under Regulation 32 (7A), if any, establishment of vigil mechanism/ whistle blower policy and web-links for familiarization/ training policy of directors, Policy on Materiality of Related Party Transactions and also on Dealing with Related Party Transactions and Policy for determining 'Material' Subsidiaries have been provided in the Report on Corporate Governance, which forms part of the Director's Report at Annex-II.

**26.23** Para on development of risk management policy including therein the elements of risks are given elsewhere in the Annual Report.

**26.24** Your Company has complied with all the applicable Secretarial Standards.

**26.25** No disclosure or reporting is required in respect of the following items as there were no transactions on these items during the year under review:

1. Issue of equity shares with differential rights as to dividend, voting or otherwise.
2. Issue of shares (including sweat equity shares) to employees of your Company under any scheme.

The particulars of annexure forming part of this report areas under:

Particulars	Annexure
Management Discussion & Analysis	I
Report on Corporate Governance	II
Information on conservation of energy, technology absorption and foreign exchange earnings and outgo	III
Statistical information on persons belonging to Scheduled Caste / Scheduled Tribe categories	IV
Information on Differently Abled persons	V
Extract of Annual Return	VI
Annual Report on CSR Activities	VII
Project Wise Ash produced and utilized	VIII
Disclosure of Related Party Transactions in Form AOC-2	IX
Business Responsibility Report for the year 2019-20	X
Secretarial Audit Report in Form MR-3	XI

## 27. BOARD OF DIRECTORS & KEY MANAGERIAL PERSONNEL (KMP)

Shri A K Gautam had been appointed as Chief Financial Officer w.e.f. 1.8.2019 and Director (Finance) w.e.f. 18.10.2019.

Shri Ashish Upadhyaya, AS & FA, Ministry of Power has been appointed as Government Nominee Director w.e.f. 22.1.2020.

Shri Dillip Kumar Patel had been appointed as Director (HR) w.e.f. 1.4.2020.

Shri Ramesh Babu V. had been appointed as Director (Operations) w.e.f. 1.5.2020.

Shri Chandan Kumar Mondol had been appointed as Director (Commercial) w.e.f. 1.8.2020.

Shri Seethapathy Chander ceased to be Independent Director w.e.f. 12.6.2019 on completion of three years' tenure.

Shri Anurag Agarwal, AS&FA, Ministry of Power has been appointed as Government Nominee Director w.e.f. 1.7.2019 and ceased to be a Director w.e.f. 12.7.2019.

Shri P K Mohapatra ceased to be Director (Technical) of the Company w.e.f. 31.7.2019 on attaining the age of his superannuation.

Shri K. Sreekant, Director (Finance), Powergrid Corporation of India Limited had been entrusted with the additional charge of the post of Director (Finance) of your Company w.e.f. 19.3.2018. His tenure was extended from time to time as additional charge of the post of Director (Finance) of the Company, ceased to be Director (Finance) w.e.f. 12.8.2019.

Dr. (Ms.) Gauri Trivedi ceased to be Independent Director w.e.f. 15.11.2019 on completion of one year extended tenure.

Shri S K Roy ceased to be Director (Projects) of the Company w.e.f. 30.11.2019 on attaining the age of his superannuation.

Shri S Roy ceased to be Director (HR) of the Company w.e.f. 31.3.2020 on attaining the age of his superannuation.

Shri Prakash Tiwari ceased to be Director (Operations) of the Company w.e.f. 30.4.2020 on attaining the age of his superannuation.

Shri Anand Kumar Gupta ceased to be Director (Commercial) of the Company w.e.f. 31.7.2020 on attaining the age of his superannuation.

The Board wishes to place on record its deep appreciation for the valuable services rendered by Shri Anurag Agarwal, Shri Seethapathy Chander, Shri P K Mohapatra, Shri K Sreekant, Dr. (Ms.) Gauri Trivedi, Shri S K Roy, Shri S Roy, Shri Prakash Tiwari and Shri Anand Kumar Gupta during their association with your Company.

The Board welcomes Shri A.K.Gautam, Shri Ashish Upadhyaya, Shri Dillip Kumar Patel, Shri Ramesh Babu V. and Chandan Kumar Mondol on the Board of your Company.

## 28. Material changes and commitments affecting financial position between the end of the financial year and date of the report

There have been no material changes and commitments, which affect the financial position of the Company, that have occurred between the end of the financial year to which the financial statements relate and the date of this report.

**29. DIRECTORS' RESPONSIBILITY STATEMENT**

As required under Section 134(3)(c) & 134(5) of the Companies Act, 2013, your Directors state that:

1. in the preparation of the annual accounts for the year ended March 31, 2020, the applicable accounting standards had been followed along with proper explanation relating to material departures;
2. the Directors had selected such accounting policies and applied them consistently and made judgments and estimates that are reasonable and prudent so as to give a true and fair view of the state of affairs of the Company as at March 31, 2020 and of the profit of the Company for the year ended on that date;
3. the Directors had taken proper and sufficient care for the maintenance of adequate accounting records in accordance with the provisions of the Companies Act, 2013 for safeguarding the assets of the Company and for preventing and detecting fraud and other irregularities;
4. the Directors had prepared the Annual Accounts on a going concern basis;
5. the Directors, had laid down internal financial controls to be followed by the Company and that such internal financial controls are adequate and were operating effectively; and
6. the Directors had devised proper systems to ensure compliance with the provisions of all applicable laws and that such systems were adequate and operating effectively.

**30. ACKNOWLEDGEMENT**

The Directors of your Company acknowledge with deep sense of appreciation, the co-operation received from the Government of India, particularly the Prime Minister's Office, Ministry of Power, Ministry of New & Renewable Energy, Ministry of Finance, Ministry of Environment, Forests & Climate Change, Ministry of Coal, Ministry of Petroleum & Natural Gas, Ministry of Railways, Ministry of Corporate Affairs, Department of Public Enterprises, Department of Investment and

Public Asset Management, Central Electricity Authority, Central Electricity Regulatory Commission, Comptroller & Auditor General of India, Appellate Tribunal for Electricity, State Governments, Regional Power Committees, State Utilities, Stock exchanges and Office of the Attorney General of India.

The Directors of your Company also convey their gratitude to the shareholders, various international and Indian Banks and Financial Institutions for the confidence reposed by them in the Company.

The Board also appreciates the contribution of contractors, vendors and consultants in the implementation of various projects of your Company.

We also acknowledge the constructive suggestions received from the Office of Comptroller & Auditor General of India, Statutory Auditors and Cost Auditors of your Company.

We wish to place on record our appreciation for the untiring efforts and contributions made by the NTPC's family at all levels to ensure that the Company continues to grow and excel.

The Directors of your Company regret the loss of life due to COVID-19 pandemic and are deeply grateful and have immense respect for every person who risked his life and safety to fight this pandemic.

For and on behalf of the Board of Directors



(Gurdeep Singh)

Chairman & Managing Director

Place: New Delhi

Date: 21<sup>st</sup> August, 2020

