8

NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC)

MINISTRY OF POWER

COMMITTEE ON PUBLIC UNDERTAKINGS
(2020-21)

EIGHTH REPORT

SEVENTEENTH LOK SABHA

LOK SABHA SECRETARIAT
NEW DELHI

EIGHTH REPORT

COMMITTEE ON PUBLIC UNDERTAKINGS
(2020-21)

(SEVENTEENTH LOK SABHA)

NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC)

MINISTRY OF POWER

Presented to Lok Sabha on 24.03.2021
Laid in Rajya Sabha on 24.03.2021.

LOK SABHA SECRETARIAT
NEW DELHI

March, 2021/Chaitra, 1942 (Saka)

COMPOSITION OFCOMMITTEE ON PUBLIC UNDERTAKINGS (2020-21)

Smt. Meenakashi Lekhi - Chairperson

Members

LOK SABHA

2. Dr.Heena Vijaykumar Gavit
3. Shri Chandra Prakash Joshi
4. Smt. K. Kanimozhi
5. Shri Raghu Ramakrishna Raju Kanumuru
6. Smt. Poonamben Hematbhai Maadam
7. Shri Arjunlal Meena
8. Shri Janardan Mishra
9. Shri Kinjarapu Ram Mohan Naidu
10. Prof. Saugata Roy
11. Dr. Arvind Kumar Sharma
12. Shri Ravneet Singh
13. Shri Sushil Kumar Singh
14. Shri Uday Pratap Singh
15. Shri Ramdas Chandrabhanji Tadas

RAJYA SABHA

16. Shri Prasanna Acharya
17. Shri Birendra Prasad Baishya
18. Shri Anil Desai
19. Shri Joginipally Santosh Kumar
20. Shri Om Prakash Mathur
21. Shri Surendra Singh Nagar
22. Shri M. Shanmugam

Secretariat

Shri R.C. Tiwari - Joint Secretary
Shri Srinivasulu Gunda - Director

C O N T E N T S

INTRODUCTION

I, the Chairperson, Committee on Public Undertakings (2020-21) having been authorized by the Committee to submit the Report on their behalf, present this Eighth Report on 'National Thermal Power Corporation Limited (NTPC)'.

2. The Committee on Public Undertakings (2020-21) selected the above said subject for detailed examination.

3. The Committee on Public Undertakings (2020-21) were initially briefed about the subject by the representatives of the National Thermal Power Corporation Limited (NTPC) on 27th August, 2020. The Committee then took evidence of the representatives of National Thermal Power Corporation Limited (NTPC) on 7th January, 2021 and further evidence on 25th February, 2021. The Committee also took evidence of the representatives of Ministry of Power on the subject on 25 February, 2021.

4. The Committee (2020-21) considered and adopted the draft Report at their sitting held on 23 March, 2021.

5. The Committee wish to express their thanks to the representatives of National Thermal Power Corporation Limited (NTPC) and Ministry of Power for tendering evidence before them and furnishing the requisite information to them in connection with examination of the subject.

6. For facility of reference and convenience, the Observations and Recommendations of the Committee have been printed in bold letters in Part-II of the Report.

New Delhi;
23 March, 2021
02 Chaitra, 1942 (S)

MEENAKASHI LEKHI
Chairperson
Committee on Public Undertakings

CHAPTER-I

PROFILE OF THE COMPANY

Brief History

1.1 NTPC Limited, a Maharatna Company of the Government of India, is the largest power generator in India. It was incorporated in 1975 as a fully Government owned company. NTPC came out with an Initial Public Offer(IPO) in 2004 and a Follow-on Public Offer(FPO) in 2010. Government of India has reduced its stake through various tranches of Offers for Sale, employee offers for sale, Bharat 22 Exchange Traded Fund (ETF) and CPSE ETF from time to time. Currently, the Government of India, holds 51.02% stake in the company, the rest being held by Institutional Investors and public. The NTPC is listed in Bombay Stock Exchange and National Stock Exchange.

1.2 Over the years, NTPC has attained a global stature. In the Platts Top 250 Global Energy Companies for 2019, NTPC has been ranked as No.2 'Independent Power Producer and Energy Traders' in the world. Further, NTPC has been ranked 497th largest company in the world among 'Global 2000' list of companies compiled by Forbes for 2020.

1.3 Commissioned capacity of NTPC (including JVs and subsidiaries) is 62,910 MW comprising 51,155 MW directly owned by NTPC (45,410 MW coal based stations at 24 locations, 4,017 MW gas/liquid fuel based stations at 07 locations, 800 MW hydro project at 01 location, 870 MW Solar PV plants at 11 locations, 50 MW wind project at 01 location and 8 MW small hydro at 01 location). The total capacity includes 11,755 W under joint ventures/subsidiaries comprising 6,494 MW from 09 coal based, 2,494 MW from gas power plant at 4 locations, 5 MW Solar PV plants at 1 location, 2,625 MW from hydro power plants at 8 locations, 24 MW of small hydro at 1 location and 113 MW wind at 2 locations.

Capacity of 20,533 MW (including 1320 MW in Bangladesh) is under construction at 35 locations.

Pioneering role in Power Sector

1.4 With regard to the role of NTPC in developing the power sector in India, the Committee was informed as under :

"(i) Power generation

NTPC is the largest power generating company in the country with nearly 21% share of total generation. It supplies power to almost all the states in the country and sells power to state utilities, who in turn sell to actual consumers.NTPC's contribution tothe development of the power sector comes through this unique position as a bulk power supplier with very high availability.NTPC's focus has been to provide reliable and affordable power to the states in an environment-friendly and sustainable manner.

(ii) Capacity building in the power sector

NTPC contributes to capacity building in the power sector inthe following ways:

Consultancy

NTPC's Consultancy Wing is providing Project Management Consultancy to several State and central power plants. There has been an all-round improvement in terms of plant parameters and capacity building due to the implementation of best practices and systems in the power plant with the involvement of NTPC's experts.

Procurement

NTPC regularly organizes Vendor development Programmes for MSEs. In addition, it's Public Procurement Policy defines an annual target for procurement from MSEs to encourage participation in the tender for local & small manufacturers including SMEs.Under the Procurement and Works Policy of NTPC, transparent tendering procedures are adopted for all procurements. To encourage Indian suppliers, provisions regarding price preference and deemed export benefits (Customs & Excise Duty benefits) are stipulated in the bidding documents as per the extant policy of the Government of India. Supplier/ Vendor meets are held every year for capacity building.

Training and Development

The company has consistently endeavored to be at the forefront of the creation and dissemination of knowledge for the employees as well as stakeholders in the power sector, which includes the Private sector, as well as the State sector. The learning activities are being driven by a comprehensive infrastructure comprising NTPC Power Management Institute (PMI) at the corporate level, six Regional Learning Institutes (RLIs) located strategically in six large power stations of NTPC and Employee Development Centers (EDCs) at each station."

Contribution to Exchequer

1.5 In respect of the contribution of NTPC to the public exchequer, the Committee was informed as under :

"Since its inception, NTPC has contributed to the central exchequer through dividends and taxes for an amount exceeding ₹1 lac crore. The details of the same in the last two financial years in respect of NTPC's contribution to exchequer consisting of payment of Dividend to the government, payment of Income-tax and payment of Service Tax, GST, Excise, Custom, etc. are as follows:

FY	GOI Dividend incl. DDT (on a cash basis)	Income Tax incl. TDS	Other Taxes	Total (in ₹ Crore)
2018-19	**3,957.40**	**3,065.00**	**983.85**	**8,006.25**
2019-20	**2208.43**	**3,226.55**	**1,345.37**	**6,780.35**

Creation of Employment

1.6 With regard to the role of NTPC in providing direct and indirect employment, the Committee was informed as under :

Since its inception, NTPC has been instrumental in the creation of employment (direct and Indirect). The following are some of the important employment schemes through which NTPC provides direct employment.

NTPC Executive recruitment is focused on attracting young talent across the country, which is further trained and groomed to progress in their career path and take up the key leadership positions in the organization. Imbibing the three basic tenets of (1) Attracting the right young talent through a transparent selection process (2) Providing

equal opportunity to all & (3) Building the right mix of skill, competencies & age through induction of fresh blood; we have a flagship annual scheme of hiring Executive Trainees (ET) presently through GATE (Graduate Aptitude Test for Engineering- an all-India competitive test) for engineering graduates or through nation-wide open competitive examinations for functions like HR, Finance, Chemistry, etc. Equivalents of this scheme for non-executive posts are Artisan Trainees (ATs) & Diploma Trainees (DTs) schemes. During the past 10 years, NTPC has provided direct employment to 5509 candidates.

Lateral hiring for experienced professionals in areas such as Medical, Safety, and Legal, etc. is done from time to time as per requirement.

NTPC takes huge pride in being an equal opportunity employer and consciously promote diversity & inclusion through its hiring practices. It has a robust Recruitment policy that defines the entire process transparently. As on 31.03.2020, out of 19186 employee strength, SC is 2891, ST is 1320, OBC is 3866 and PWD is 506.

To meet fluctuation of demand in manpower requirements for completing time-bound specific projects & specialist tasks as well as a strategic measure to inject fresh ideas, new skill set/competencies & more diverse talent into the organization; NTPC has also started to embrace the industry trend of Fixed Term Employment (FTE) in areas where the job is dynamic, the project for short term period such as Information Technology, Data Analytics/ Scientist, FGD (Flue Gas Desulfurization) work, Scientists for our Research Wing, Business Development, Media Management/Brand Marketing, Corporate Social Responsibility, RE Business, etc.

By way of offering such flexibility in employment, it has been able to create additional job opportunities other than permanent positions at NTPC Ltd.

Further, in addition to regular manpower, indirect employment is generated through outsourcing which is mainly done for the construction and erection of power plants. Besides, in the interest of efficiency, certain categories of non-core and peripheral jobs are being outsourced e.g. security is being outsourced to DGR sponsored agencies to promote resettlement of ex-servicemen, horticulture and housekeeping jobs are being awarded to landoustee cooperative societies, etc. These opportunities have certainly gone a long way in providing indirect employment.

As a responsible corporate, NTPC undertakes Skill development initiatives for generating employment which ranges from Electrical Repairing, Mobile Repairing, Motor Rewinding, Welding, Car Driving including obtaining LMV driving license, Computer Training, Local Handicrafts, etc. For women, the activities range from

cutting, stitching, tailoring, embroidery, dress designing, beautician, food preservation and food processing, nursing, etc. Women undergoing tailoring courses are also provided with sewing machines. This skill development provides both for self-employment (like a car driving including license), and job oriented courses (like welding, bar bending) in the neighborhood of NTPCs power stations.

Developing the Communities around the Plants

1.7 The role of NTPC in developing the communities around the plants and the mines, and its aspirations to become an integrated power player with a presence in the entire value chain of the thermal power sector as furnished by NTPC is as follows :

NTPC has a pan-India presence with most of its projects and stations located in backward regions of the country, in remote rural areas. NTPC has in place a well-defined Corporate Social Responsibility & Sustainability Policy duly approved by the NTPC Board, which sets out the process and mechanism to be adopted for the implementation of CSR activities. To ensure inclusive growth, NTPC takes up most of the CSR activities primarily in the neighboring villages of its stations, with special emphasis on marginalized and downtrodden sections of the society. NTPC spends 2% of the average net profit of the previous 3 years on CSR activities.

CSR activities are primarily in the area of education, health, sanitation, drinking water, rural social infrastructure, skill development, support to physically challenged, and environmental sustainability, augmenting Government efforts and schemes for inclusive growth.

Renewable energy is one central focus of NTPC. To be in step with ambitious targets, the company is attempting all avenues for renewable capacity, in addition, to look beyond conventional large scale solar and wind parks. NTPC is also utilizing roofs of power plant buildings for solar power generation and integrating into the existing plant infrastructure. NTPC is also going ahead with Floating Solar at reservoirs of Projects which is a step towards saving of land and water conservation by reducing water surface evaporation…"

Objectives of NTPC

1.8 The Committee was informed that the objectives of NTPC as per New Article of Association is as follows:-

> "To plan, promote and organize an integrated and efficient development of thermal, hydal, nuclear power and power through Non-Conventional/Renewable Energy Sources including generation from Municipal or other waste materials in India and abroad including planning, investigation, research, design and preparation of preliminary feasibility and define project reports, construction, generation, operation and maintenance, Renovation and Modernisation of Power Stations and projects, transmission, distribution, sale of Power generated at Stations in India and abroad in accordance with the national economic policies and objectives laid down by the Central Government from time to time, the management of front and back-end of the nuclear fuel cycle and ensure safe and efficient disposal of waste."

1.9 In a written reply to the query about the structure of the organization and its adequacy to face the future needs of the power sector especially its foray into renewable energy and its desire to become major player in RE sector, the NTPC submitted as follows :

> "NTPC has a 3-tier structure at Corporate, Region, and Business Units to cater to its power generation business. NTPC has targeted to have an installed capacity of 32 GW by 2032. Presently ED (RE) heads all RE related business. Further, a 100% owned subsidiary company named NTPC Renewable Energy Limited has been formed on 7th October 2020, which will focus only on the RE business."

Composition of the Board of Directors

1.10 The Committee was informed that the NTPC is a Government Company within the meaning of Section 2(45) of the Companies Act, 2013. As per the provisions of the Articles of Association of the Company, the strength of our Board shall not be less than four Directors or morethan twenty Directors. The Articles of Association further provide that the power to appoint Directors vests with the President of India. SEBI (Listing Obligations & Disclosure Requirements) Regulations, 2015, as amended from time to time, (hereinafter referred as SEBI LODR) stipulate that the Board of Directors of the

Company shall have an optimum combination of executive and non-executive directors with at least one woman director and not less than fifty percent of the Board of Directors comprising nonexecutive directors. Presently, the sanctioned strength of the Board of Directors is as under:

(i) Six Functional Directors including the Chairman & Managing Director
(ii) Two Government Nominee Directors and
(iii) Eight Independent Directors as per the requirement of the SEBI LODR.

1.11 The detailed composition of the Board of Directors of NTPC as on 31.01.2021 as furnished by Ministry of Power is as follows:

Category	Sanctioned No. of Director	Actual No. of Director
Functional Director	6	6
Govt. Nominee Director	2	2
Non-official (Independent) Director	8	2

Independent Directors – Need for Domain Expertise

1.12 As per the information submitted to the Committee, the composition of Board of Directors (BoD) reflects that during 2018-19, four Independent Directors were retired civil servants with academic qualification such as physics, mathematics, geology and Botany and only one of the Independent directors has domain expertise of thermal power and none of the independent directors seems to have any background in environment. In written reply to a query as to whether the absence of independent Director with domain expertise in environmental and related sciences is due to non availability of talent in the market, NTPC in a written reply submitted as follows :

> "NTPC being a Government Company under section 2(45) of the Companies Act, 2013, as per the Articles of Association of the Company, the power to appoint or remove the Directors vests with the President of India. Accordingly, it will not be

appropriate to comment on our part regarding the expertise of the independent directors appointed by the Govt. of India. It is also pertinent to inform that after the completion of the tenure of five independent directors on 7th September 2020, presently NTPC has 2 Independent Directors."

1.13 With regard to the Independent Directors in the Board, taking into account the fact thatthere are more retired civil servants,only one Independent Director is having domain expertise of thermal powerandnone of the independent directors seems to have any background in environment, the Committee sought to know whether the absence of domain experts is due to lack of talent available in the market, Ministry of Power, in a reply submitted vide OM no. 13/3//2019-Th.II (part II) dated 10 March , 2021 submitted as follows :

"There is no lack of talent in the Zone of consideration. Ministry of Power (MoP) has been taking up the matter continuously with the Department of Public Enterprise (DPE) and Department of Personnel & Training (DoPT) to fill up the vacancies of independent directors in NTPC Board. Secretary (Power) vide DO letters dated 19.03.20and 04.08.20 addressed to Secretary (Department of Public Enterprises) have requested for expediting the recommendations of search Committee and DO letter dated 05.10.2020Personal and Training) has requested for intervention in the matter. "

1.14 The Para 2.4 of the Report on Corporate Governance as contained in the Annual Reports 2019-20 of NTPC with regard to the Core competence of the Directors states *inter- alia* as follows :

"… Board of Directors, in 288th Meeting held on 26th June, 2006, held deliberated on the areas of experience of Independent Directors required on the Board of the company .In the above Board meeting, the Board decided that the Independent Directors, to be nominated by the Government of India on the Board of NTPC should be having expertise in the diverse areas like Economics, Human Resource Management, Regulatory framework, Management Consultant, Research and Development, Academics, Energy and Power Sector, Finance and Banking etc.

Absence of required number of Independent Directors

1.15 The number of independent directors during the financial year 2018-19 *vis- a- vis* the number of independent directors required under SEBIs Listing Obligations and Disclosure

Period	Functional Directors	Govt. Nominee Directors	Independent Directors	No. of ID required under SEBI LODR Regulation 17(1)(b)	No. of ID required under Companies Act, 2013 Sec. 149 (4)	Requirement as per DPE Guidelines
01.04.2018-27.04.2018*	7	1	7	8	5	8
28.04.2018-29.07.2018*	7	2	7	9	6	9
30.07.2018-06.08.2018*	7	1	9	8	6	8
07.08.2018-02.11.2018*	7	2	9	9	6	9
03.11.2018-07.12.2018	7	2	9	9	6	9
08.12.2018-11.02.2019	6	2	9	8	6	8

Requirements (LODR) , Companies Act, 2013 and DPE guidelines on corporate Governance are as under :

1.16 With regard to the compliance of Corporate Governance principles, the Auditor Certificate as contained in the Annual report of NTPC 2019-20 mentioned as follows:

> "8(i)…the Company has not complied with the Listing regulations , with regard to the appointment of minimum number of independent directors and women independent directors in the composition of Board of directors as per details given below:
>
> (a) from 1 July ,2019 to 11 July, 2019 the number of independent directors were less than 50 % of total number of Directors
> (b) From 16th November to 31st March 2020 when the position of woman independent director was vacant."

1.17 Since only 02 Independent Directors were left on the Board after completion of tenure of five Independent Directors on 7September, 2020, a clarification was sought as to the steps taken to fill up thevacancies. The NTPC in a written reply submitted as follows:

> "NTPC had, vide e-mail dated 14th August 2020 and letters dated 4th September 2020, 6th October 2020 and 9th December 2020 requested the Ministry of Power to appoint six Independent Directors, including five against completion of tenure of five independent directors on 7.9.2020 and one Independent Woman Director, on the Board of NTPC so that the Company remains compliant with the applicable statutory provisions. Ministry of Power has taken up the matter of filling the Independent Directors including Woman Independent Director with Department of PublicEnterprises."

1.18 With regard to the steps taken till 31.12.2020 to fill up the vacancies of the Directors on the Board, Ministry of Power, submitted the following reply

> "Being a Government Company, Directors of the Company are appointed by the Government of India. Ministry of Power (MoP) has been taking up the matter continuously with Department of Public Enterprises (DPE) and Department of Personnel & Training (DoPT) to fill up the vacancies. Secretary (Power) vide DO letters dated 19.03.2020 and 04.08.2020 addressed to Secretary (Department of Public Enterprises) have requested for expediting the recommendations of search committee and DO letter dated 05.10.2020 from

Secretary (Power) to Secretary (Department of Personal and Training) has requested for intervention in the matter. ….xx ….xx…Attention of both DPE and DoPT were drawn towards the fact that in the absence of requisite number of Independent Directors on the Boards of Central Public Sector Enterprises (CPSEs) under MoP, both National Stock Exchange (NSC) and Bombay Stock Exchange (BSE) have levied penalties on CPSEs and Comptroller & Auditor General (C&AG) have also raised several audit paras on CPSEs."

1.19 The Committee has been informed that the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE) have levied penalty on some CPSUs under the Ministry of Power for non-compliance of DPE Guidelines regarding non-filling up of post of Independent Directors. In response to a query as to the suggestions to ensure that the posts of Independent Directors are filled-up immediately as soon as the vacancies arrive in the Board of CPSUs, MoP submitted as follows :

"Ministry of Power, Department of Public Enterprises and NTPC would take necessary steps to fill up the vacancies of Independent Directors in the Board of NTPC."

Representation of Woman in BoD

1.20 As per the provisions of the Companies Act, 2013 and DPE guidelines at least one woman Director should be there in the Board. However, the current composition shows thatthere is no Woman Director. Annual Report 2018-19 about the appointment of Independent Director stated as follows:

"Dr. Gauri Trivedi ceased to be an Independent Director*w.e.f* 15th November, 2018.She was reappointed as an independent Director for a period of one (1) year by the Ministry of Power vide letter dated 22nd November 2018. Subject to the approval of shareholders, she was re- appointed as Independent Director *w.e.f* 16th November, 2018. "

1.21 Report on Corporate Governance contained in Annual Report 2019-20 stated inter-*alia* as follows:

> "During 2019-20 the constitution of the Board of Directors was as per the requirements of Companies Act, 2013, DPE guidelines on Corporate Governance and SEBI LODR except
>
> 1. ….
> 2. 2. From 16th November, 2019 to 31st March , 2020, when the position of woman independent Director was vacant due to cessation of Dr. Gauri Trivedi on 15th November."

1.22 In response to a query as to whether the vacancy of woman independent Director has been filled up , NTPC in a written reply submitted as follows :

> "NTPC had already taken up with the administrative Ministry to appoint one Independent Woman Director on the Board of NTPC in place of Dr. (Ms.) Gauri Trivedi whose tenure ended on 15thNovember, 2019. Reply of the administrative Ministry is awaited."

1.23 In response to a query as to whether any decision has been taken to appoint woman independent Director on the Board of NTPC and if so, the details thereof, Ministry of Power submitted as follows :

> "Ministry of Power (MoP) has been taking up the matter continuously with Department of Public Enterprises (DPE) to fill up the vacancy of Woman Independent Director on the Board of NTPC. However, so far no decision has been conveyed by DPE"

1.24 Furnishing the details of the period during which there was neither independent nor woman directors since the introduction of this stipulation in 2013-14, Ministry of Power in a written reply submitted as follows :

"Since, 2013-14, there was no such instance when there was no Independent Director. There was no Woman Director on the Board of NTPC during the following period:

(i) From 28.02.2015 to 17.11.2015

(ii) From 16.11.2019 to till date

MoU with Ministry of Power

1.25 The details of NTPC's MoU targets and achievements for the years 2019-20 and 2020-21 as furnished by Ministry of Power is as follows :

S. No.	Parameter	2019-20		2020-21	
		MoU Excellent Target	Achievement	MoU Excellent Target	Achievement
1	Revenue from Operations (Net) in Rs. Crore	100,131#	95,478	98,000	71,756.32 (till Dec'20)
2	Capex in Rs. Crore	20,000*	23,606	21,000**	17,422.93*** (till Jan'21)
3	Power Generation (including URS) in BU	310.00	334.16	340.00	307.52 (till Jan'21)
4	Coal Production from NTPC Mines in MMT	10.40	11.15	15.00	8.41 (till Jan'21)

#Target was 12% increase over previous year (2018-19) revenue of Rs. 89,403 Cr.

*** including Capex of Subsidiaries**

****Standalone**

*****includes Rs. 2941.97 Crore as Capex of Subsidiaries and JVs (excluding THDC, NEEPCO)**

1.26 With regard to the parameters considered while fixing the aforesaid targets, the Committee was informed as under :

"The MoU targets are fixed based on the MoU guidelines issued by Department of Public Enterprises (DPE). As per the guidelines, the MoU targets are fixed taking into consideration the trends for the last 5 years, the estimated achievements of the preceding year, Annual plan and Budget and the factors like prevailing scenario in the Power sector and the economy as a whole. The MoU targets are finalized by DPE in consultation with Ministry of Power and NTPC.

1.27 With respect to the progress on MoU parameters for the year 2020-21, the Ministry has submitted the following :

> "Coal Production has been affected adversely at Pakri Barwadih Coal Mine due to stoppage of mining operations by villagers (for about 94 days) demanding land compensation and R&R benefits etc. Further, at Dulanga Coal Mine, Coal production & OB removal activities got affected because of spread of COVID19. However, all efforts are being made to achieve the target of Coal production.Other MoU targets i.e. Revenue, CAPEX and Power Generation are likely to be achieved by March'2021."

CHAPTER II

PHYSICAL PERFORMANCE

Details of the Plants of NTPC :

2.1 The details of the Plants of NTPC with their installed capacity, Gross generation and PLF at the end of the financial year 2019-20 are given below:

S.No.	Station	COD*	Installed Capacity as on last date of FY (MW)	Gross Gen (MU)	PLF (%)/ CUF(%)
	Coal Stations				
1	Singrauli	1-May-88	2000	15333	87.28
2	Rihand	19-Nov-12	3000	23359	88.64
3	Unchahar	30-Sep-17	1550	8527	62.63
4	Tanda	7-Nov-19	1100	4037	62.21
5	Dadri coal	31-Jul-10	1820	6547	40.95
6	Mouda	18-Sep-17	2320	10404	51.05
7	Korba	21-Mar-11	2600	19793	86.67
8	Vindhyachal	30-Oct-15	4760	35659	85.29
9	Sipat STPP	1-Aug-12	2980	22530	86.07
10	Ramagundam	25-Mar-05	2600	17126	74.99
11	Simhadri	30-Sep-12	2000	10650	60.62
12	Farakka	4-Apr-12	2100	13133	71.19
13	Kahalgaon	20-Mar-10	2340	16504	80.30
14	Barh	18-Feb-16	1320	8219	70.89
15	Talcher Kaniha	1-Aug-05	3000	19261	73.09
16	Talcher thermal	3-Jun-95	460	3378	83.61
17	Bongaigaon	26-Mar-19	750	3930	59.65
18	Kudgi	15-Sep-18	2400	4606	21.85
19	Solapur	30-Mar-19	1320	817	7.05
20	Gadarwara	1-Jun-19	800	1076	15.33
21	Lara	1-Oct-19	800	2752	68.73
22	Barauni	15-Dec-18	470	236	16.41
23	Darlipalli	1-Mar-20	800	607	62.66
24	Khargone	1-Feb-20	1320	1222	46.95
	NTPC COAL		**44610**	**249708**	**68.20**
S.no	**CCGT Stations**				
1	Anta	1-Aug-90	419	302	8.20
2	Auraiya	1-Dec-90	663	445	7.63
3	Dadri gas	1-Apr-97	830	1852	25.41

S.No.	Station	COD*	Installed Capacity as on last date of FY (MW)	Gross Gen (MU)	PLF (%)/ CUF(%)
4	Faridabad	1-Jan-01	432	555	14.64
5	Kawas	1-Nov-93	656	1383	23.99
6	Gandhar	1-Nov-95	657	437	7.56
7	RGCCPP	1-Mar-00	360	0	0.00
	NTPC GAS		**4017**	**4973**	**14.09**
1	**Koldam Hydro**	18-Jul-15	**800**	3449.61	49.09
2	**Singrauli Small Hydro**	5-Mar-18	**8**	**13.15**	18.71
	SOLAR STATIONS				
1	Dadri solar	30-Mar-13	5	6.39	14.55
2	AN Solar	31-Mar-13	5	4.73	10.78
3	Ramagundam	29-Jan-14	10	14.06	16.00
4	Faridabad	31-Mar-14	5	6.51	14.82
5	Talcher	28-Mar-14	10	13.78	15.69
6	Unchahar	31-Mar-14	10	14.00	15.94
7	Rajgarh	30-Apr-14	50	75.37	17.16
8	Singrauli	31-Dec-14	15	20.37	15.46
9	Ananthapuramu	10-Aug-16	250	398.44	18.14
10	Bhadla	25-Mar-17	260	438.60	19.20
11	Mandsaur	1-Sep-17	250	379.22	17.27
	NTPC SOLAR		**870**	**1371.47**	**17.95**
1	**RojmalWind**	10-Nov-17	**50**	**103.11**	23.48
	NTPC TOTAL		**50355**	**259619**	

*COD is of last unit of the station

Growth in the Installed Power Generation Capacity

2.2 The growth in thepower generation capacity of NTPC and its Joint ventures and subsidiaries since 2010 as furnished by NTPC has been as follows :

(As on 31 March) (Capacity in MWs)

Fuel mix	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Owned by NTPC											
Coal based	24,885	26,875	28,695	31,855	33,015	33,675	35,085	38,095	40,355	41,580	44,610
Gas based	3,955	3,955	3,955	3,955	4,017	4,017	4,017	4,017	4,017	4,017	4,017
Renewable Energy	----	---	---	10	75	110	110	620	928	928	928*
Hydro	---	---	----	----	----	400@	800	800	800	800	800

Sub total	**28,840**	**30,830**	**32,650**	**35,820**	**37,107**	**38,202**	**40,012**	**43,532**	**46,100**	**47,325**	**50,355**
Owned by Joint ventures &Subsidiaries of NTPC											
Coal based	924	1,424	2,424	3,424	4,034	4,229	4,674	4,999	5,584	5,834	6,494
Gas based	1,940	1,940	1,940	1,940	1,967	1,967	1,967	1,967	1,967	1,967	2,494
Renewable Energy	---	---	--	----	---	---	---	---	----	----	118*
Hydro	---	--	--	---	---	---	---	----	----	---	2,649
Sub total	**2,864**	**3,364**	**4,364**	**5,364**	**6,001**	**6,196**	**6,641**	**6,966**	**7,551**	**7,801**	**11,755**
TOTAL	**31,704**	**34,194**	**37,014**	**41,184**	**43,108**	**44,398**	**46,653**	**50,498**	**53,651**	**55,126**	**62,110**

***As on 22.10.2020 NTPC group RE capacity is 142 MW (NEEPCO: 5 MW (Solar) & THDC:113 MW(Wind) and 24 MW Small Hydro) and NTPC total capacity is 1070 MW.**

@ NTPC's first Hydro project was commissioned on 31.03.2015.

Capacity addition (Installed and Commercial)

2.3 Installed and Commercial capacity addition since 2009-10 (year wise) by NTPC and its group companies as collated from Annual reports of NTPC is as follows:

Year	Installed Capacity addition(MW)	Commercial Capacity addition(MW)
2009-10	1,560	1,490
2010-11	2,490	1,600
2011-12	2,820	1,160
2012-13	4,170	4,830
2013-14	1,835	2,675
2014-15	1,290	1,195
2015-16	2,255	1,960
2016-17	3,845	2,190
2017-18	3,478	4,423
2018-19	2,180	2,180
2019-20	6,984	8,260

2.4 The difference between installed capacity and commercial capacity of a power plant as furnished by NTPC is as follows:

> "The installed capacity of a station is the Rated capacity, i.e. the 'Maximum Continuous Rating' (MCR) of a unit multiplied by the number of the units in the generating station.

For a new unit, for inclusion in Installed capacity, the unit has to successfully complete 72 Hrs. of continuous running at MCR rating.

Commercial capacity includes the capacity of the units that have been declared Commercial, after demonstrating the unit capacity corresponding to its MCR or Nameplate rating through a successful trial run and after getting clearance from the respective RLDC or SLDC."

2.5 Furnishing the details of the capacity addition planned during the year 2020-21, a representative of NTPC deposed before the Committee as under :

"Thisyear,wearetargetingtodothecapacity addition – that is completion of that project, NTPC group as a whole – of 5250 MW out of which we have already achieved 2765 MW. We are in the advanced stage of completing another 2485 MW. Now, we will try our best to meet the target. For next year, we have a target of 6462 MW. A year after that,that is in 2022-23, as Director (Finance) told, it is 5782 MW. By the end of financial year 2023, as he said, 3364 MW will be the last phase of our ongoing construction which is amounting to 19384 MW. Right now, we are developing concurrently around 20,000 MW, roughly. We intend to complete all these thingsby the end of financial year 2023 that is 2023-24."

Coal based Power Generation

2.6 Thecoal based generation capacity of NTPC and its group companies indicate that in the last decade the addition to thermal power to the tune of 6.5 Gigawatt (GW) was through Joint ventures and subsidiaries. In percentage terms, addition by NTPC increased by 76% and 702% by NTPC group companies. In written reply to queries as to (i) whether it is a conscious policy decision to grow through an inorganic route (through acquisitions) or compulsion to bail out the loss making plants;and, (ii) the performance of JV group

companies in terms of value accretion, their financial ratios *vis-a-vis* its (NTPCs) own performance metrics, the NTPC submitted as follows :

> "NTPC has taken policy decision to grow through inorganic route (through acquisitions) as per directions of the Government. Of the 7 Coal-based Power Generating Companies, in the case of BRBCL, NPGCL, and Meja, the units have been declared Commercial in recent years and some Unit (s) are still under construction, while other group Companies such as NTECL & KBUNL have declared profits only in recent years. However, both these Companies have huge debtors and despite regular perusal with DISCOMs, these Companies are unable to recover their dues in time.
>
> APCPL & NSPCL are declaring profits regularly and also paying the dividend to promoters.

Name	**APCPL**	**NSPCL**	**KBUNL**	**NTECL**	**BRBCL**	**NPGCL**	**MUNPL**
Capacity Under Operation (MW)	1500	814	610	1500	750	660	660
NTPC Investment as on 31.03.20 (Rs Cr)	1433.01	490.25	1610.67	1428.11	1774.12	4417.01	1581.64
Dividend recd. by NTPC 2019-20 (Rs Cr)	146.83	50.00	-	-	-	-	-

Aravali Power Company Private Ltd., NTPC –SAIL Power Company Ltd, Kanti Bijlee Utpadan Nigam Ltd (KBUNL); NTPC-Tamilnadu Energy Company ltd., ……., Nabinagar Power Generating Company Ltd (NPGCL) ; Meja Urja Nigam Pvt. Ltd.

2.7 Referring to the shift taking place from coal power,a representative of NTPC appearing before the Committee submitted as under:

> "As *of now, our business plan clearly identifies that going forward will bemore from the renewable and less from the coal as per the trend which is going on worldwide*."

Gas based Power Generation

2.8 As the gas based power generation remained more or less constant during the last decade by NTPC or NTPC group as a whole, NTPC was requested to furnish the reasons for the same. NTPC in a written reply submitted as under:

> "As regards the installation of new gas-based capacity, NTPC had identified various gas-based projects to expand its gas-based capacity by 8550 MW and had requested GoI for the allocation of domestic gas for these projects. However, no gas was allocated for these projects. Later, MoP vide notification dated 14.03.2012 had informed that "no additional domestic gas is likely to be available till 2015-16. Hence, developers are advised not to plan projects based on domestic gas till 2015-16". The domestic gas supply situation has not improved thereafter. Due to the shortage of domestic gas in the country, investment in new gas-based power projects has not been planned."

Renewable based power generation

2.9 The data shows that the renewable capacity of NTPC and NTPC group has gone up by more than 90 and 100 times respectively during the last seven years. The Company however, aims to add 32 GW of renewable both by organic and inorganic route by the year 2032 amounting to 30% of the total power capacity from the present 7%, *i.e*. in the next 12 years. Sharing the concrete plan with the Committee, NTPC submitted as under:

> "Renewable energy is one central focus of NTPC. To be in step with ambitious targets the company is attempting all avenues for renewable capacity addition to look beyond conventional large-scale solar and wind parks. NTPC is also utilizing roofs of power plant buildings for solar power generation and integrating into the existing plant infrastructure. NTPC is also going ahead with Floating Solar at reservoirs of Projects which is a step towards saving of land and water conservation by reducing water surface evaporation.
>
> In order to ensure long-term competitiveness, mitigation of fuel risks, and promotion of sustainable power development, NTPC Issuer is augmenting its capacity, through

renewable sources of energy. NTPC in its latest Business Plan envisages a cumulative installed capacity of 130 GW by the year 2032 with a well-diversified resource mix comprising of coal, gas, nuclear, hydro, and solar along with other renewable energy sources. This includes 32 GW of RE capacity.

Renewable Energy (RE) group of the NTPC came into existence with the culmination of different functions and now comprises groups, which are involved from project conceptualization to implementation & commissioning. Accordingly, the new company "NTPC Renewable Energy Limited (NREL) incorporated on 07.10.2020 under the Companies Act' 2013 (18 of 2013) to move faster towards the target to achieve 32000 MW."

2.10 Referring to the advantages of renewable power *vis- a- vis* the conventional coal fired power plants, a representative of NTPC deposing before the Committee stated as follows :

" If there is a hydel plant, you require hardly anything. It is automatic plant. If it is a renewable plant, nothing is required. If it is a solar or wind plant, hardly anything is required because it is a kind of equipment which itself runs. But in case of the coal-based plants, you have to take the coal from the mine; you have to unload it; you have to feed it; and you have to run the plants. There is a lot of maintenance activity in addition to the operational activities."

2.11 In written reply to a query as to whether NTPC feel that by early 2030's, having 65% coal generation capacity may not be in tune with worldwide trends and the renewable target needs to be revised upwards given India has abundant sunshine, the NTPC submitted as follows :

"NTPC has targeted to achieve a total installed capacity of 130 GW by 2032 with a diversified resource mix, considering various aspects such as; business environment, fuel options, technology options, demands projections by CEA, 175 GW RE capacity target by 2022, India's commitment for climate change under INDC, etc. The Plan has envisaged a massive transition with non-fossil based capacity to be enhanced from ~ 2% in 2016 to 30% by 2032.

With the revised RE target of 450 GW by 2030, NTPC is in the process of preparing a RE roadmap including revisiting its RE capacity addition target. Further, a 100%ownned subsidiary company called NTPC Renewable Energy Limited has been formed on 7 October, 2020 which will help in rapid RE growth."

2.12 With regard to the details of the RE projects under construction/implementation stipulation ofdomestic contents requirements in solar projects the NTPC submitted as under:

"The details of NTPC RE projects under construction are given below:

S. No.	Projects	MW	NOA	Agency	Mode	Domestic contents requirements are stipulated
1	Bilhaur-I Solar-G	140	24.12.18	Vikram Solar	TBCB Tender	No
2	Bilhaur-II Solar-G	85	11.03.19	Vikram Solar		No
3	Auraiya Solar-G	20	16.01.19	Pennar		No
4	Ramagundam,	100	10.06.19	BHEL	Non PPA Mode	No
5	Simhadri, Solar-F	25	02.07.19	BHEL		No
6	Kayamkulam-I,	22	Sept'19	BHEL	PPA Mode	No
7	Kayamkulam-II,	70	Sept'19	Tata Power		No
8	Jetsar, Rajasthan,	160	11.12.19	Tata Power	TBCB* Tender	No
9	Rihand, Solar-G	20	11.12.19	Safety		No
10	Auraiya, Solar-F	20	24.12.19	L&T		No
11	Sambhu Ki Bhurj-I,	250	11.01.20	Tata Power	CPSU Scheme	Yes
12	Devikot-I, Solar-G	150	11.01.20	Hild Energy		Yes
13	Sambhu Ki Bhurj-II,	300	20.03.20	Tata Power		Yes
14	Nokhra, Solar-G	300	20.03.20	Vikram Solar		Yes
15	Fatehgarh, Solar-G	296	20.03.20	Adani		Yes
16	Ettayapuram, Solar-	230	20.03.20	L&T		Yes
17	Devikot-II, Solar-G	90	20.03.20	Hild Energy		Yes
18	Gandhar, Solar-G	20	31.03.20	BHEL		Yes
19	Kawas, Solar-G	56	20.08.20	Vikram Solar		Yes
	TOTAL	2354				

*TBCB – Tariff Based Competitive Bidding

Additionally, 50 MW Ground-mounted Solar is also under Implementation by THDC."

2.13 The details ground mounted and floating solar water projects (separately) completed, under construction, under planning along with their capacities as furnished by NTPC are as follows:

"Ground-mounted solar projects

Sl.No.	Projects	MW
Commissioned		
1	Dadri	5
2	Faridabad	5
3	Ramagundam	10
4	TalcherKaniha	10
5	Unchahar	10
6	Singrauli	15
7	Port Blair	5
8	Rajgarh	50
9	Anantpur	250
10	Bhadla	260
11	Mandsaur	250
	TOTAL (NTPC)	870
	Subsidiary (NEEPCO)	5
	Grand Total	875
Under Construction		
1	Bilhaur-I	140
2	Bilhaur-II	85
3	Auraiya	20
4	Sambhu Ki Bhurj-I	250
5	Devikot	150
6	Sambhu Ki Bhurj-II	300
7	CPSU: Nokhra	300
8	CPSU: Fatehgarh	296
9	CPSU:Ettayapuram	230
10	CPSU: Devikot	90
11	CPSU: Gandhar	20
12	CPSU: Kawas	56
	SUB TOTAL (NTPC)	1937
	Subsidiary (THDC)	50
	Grand Total	1987
Under Planning		
1	Solar- Gujarat	500
2	Solar - Anta	90
3	Solar –Nokh	735
4	Solar -Solapur	23
5	Solar- Rajasthan	600

Sl.No.	Projects	MW
	TOTAL	1948

A) Floating solar water projects

Sl.No.	Projects	MW
Under Construction		
1	Ramagundam	100
2	Simhadri	25
3	Kayamkulam-I	22
4	Kayamkulam-II	70
5	Auraiya	20
	TOTAL	237
Under Planning		
1	Ujjani	140
	TOTAL	140

2.14 The Company aims to add 32 GW of renewable both by organic and inorganic route by 2032 amounting to 30% of the total power capacity from the present 7%, *i.e* in the next 12 years. The company, however, in its reply to Point 1(v) of the List of Points stated that by 2032 it plans to have 32GW of RE capacity constituting nearly 25 % of its overall generation capacity. In a written reply on the difference in data, the NTPC stated as under:

"As NTPC corporate plans 2032, the portfolio fuel mix has been planned as follows:

	Fuel/Source	**Installed Capacity in GW by 2032**	**% Mix in portfolio**
Fossil Fuel	Coal	85	65.4
	Gas	6	4.6
Total Fossil		**91 GW**	**70%**
	Hydro	5	3.8
RE Sources	Solar	30	23.2
	Other RE	2	1.5
Total RE Excluding Hydro		**32 GW**	**24.7=25%**
	Nuclear	2	1.5
Total Non-Fossil		**39 GW**	**30%**
	Total	130 GW	100%

2.15 During evidence, the Committee was informed about the Central Electricity Authority's (CEA) projection of power demand by 2030 as well as prospect of renewable growth in the countryas under:

"सीईएकीलास्टअप्रैलकीजोरिपोर्टहै, जिसमेंउन्होंनेबतायाथाकिवर्ष2030 तक 700 गीगावाटदेशकीअनुमानितइंस्टॉल्डकैपिसिटीहोनीचाहिए, क्योंकिहमारीडिमांड्सबढ़तीरहेगी।आजहमारीइंस्टॉल्डकैपिसिटी370 गीगावाट्सहै, in any case, we will need more capacity. धीरे-धीरेकुछप्लांट्सकीलाइफकंप्लीटहोजाएगी।यहप्लांट्सइनएफिशिएंटहोजाएंगे, वहएन्वायरमेंटकंप्लाएंटनहींहोंगे।रिन्यूएवलज्यादाआएगा।सीईएनेयहरिपोर्टभारतसरकारके पासजमाकीहै।"

2.16 In response to a query as to whether Ministry of Power (MoP) anticipates any bottlenecks in achieving the intended targets for RE capacity addition, in a written reply, MoP in a written reply submitted as follows :

"The possible bottlenecks are:

- Delay in land acquisition
- Absence of specific policy or regulations for floating solar projects
- Upfront development of Transmission system in view of gestation period of 36 months against 18 months timeline for solar project.
- Delay in signing of PPA /PSA and tariff adoption

Domestic Content Requirements in RE projects

2.17 In response to a query as to how will NTPC achieve the targets of 32GW of renewable by 2032 with plants set-up thorough indigenous machinery and equipment while parts for most of such machinery and equipment, particularly in solar sector, are manufactured outside the country, the NTPC submitted as under:

"NTPC has commissioned the following large scale solar projects wherein the critical components of the project such as cells, solar modules, Structures, Inverters and other Balance of System (BOS) Items have been sourced from domestic sources. These projects were developed under CPSU Scheme-I and the details are tabulated as under:

S. No	Name of the Project	Project Capacity
01	Ananthapuram Solar Project	250 MW
02	Bhadla Solar Project	260 MW
03	Mandsaur Solar Project	250 MW

In the recent past, Govt. of India has launched CPSU Scheme-II wherein 12000 MW of Solar PV Projects are envisaged to be developed under the aforesaid scheme. It may be mentioned that NTPC has been developing almost 1692 MW of Solar PV Projects wherein the cells and modules are being sourced from the Domestic Module and Cells Manufacturing Entities. Further, all the major Balance of Systems (BOS) equipment such as Structures, Cables, Transformer, etc. for the development of the Solar Plants are also being sourced from the Domestic Manufacturers. All these projects are in various stages of execution and consist of the major chunk of capacity addition.

The total capacity of Renewable Energy of NTPC Group (under execution and under operation) as on date is 3564 MW. Approx. 60% of this capacity is by way of sourcing solar modules and other critical BOS equipment from domestic manufacturers. In contrary to the above, major developers of the country are sourcing solar modules directly from the South East Asian Countries and China has a major share of 75%.

NTPC is going to play a major role in the CPSU scheme in the near future to develop RE projects of approx. 5000 MW of capacities under the aforesaid scheme in the near future.

2.18 With regard solar panels presently being imported from China and concerns raised by the Committee on the issue and whether there are any plans to promote domestic manufacturing of solar panels and other equipment, a representative of NTPC during evidence before the Committee submitted as under :

"This is an area of concern. Ministry of New and Renewable Energy had also come out with a scheme which is called CPSU scheme. In the CPSU scheme, we are only

going for domestically produced models.We have very limited quantity. It is around 2000 to 5000 megawatt per year."

2.19 On the issue of the domestic manufacturers not able to compete with the imported solar panels/ modules in terms of price and also about the plans to encourage domestic manufacture of solar panels/ modules, the Committee was informed as under :

"My submission is that everybody is different. There is technology developer, technology demonstrator and the manufacturer. For example, BHEL only manufactures the equipment. They never put up the power plant. I think they have taken the technology from someone. If everyone starts doing everything, we will not be able to succeed to the extent others can. You rightly pointed out that there should be some organization which should take up the technological development and manufacturing. I think there is already a policy from MNRE that if somebody is ready to manufacture, then there will be an assured market and they can sign the power purchase agreement even before manufacturing."

Joint ventures with ONGC for RE projects

2.20 Furnishing the details of its JVs with other companies in RE business, the NTPC submitted as follows :

"NTPC has initiated to form the following two Joint Ventures (JVs) in its RE business:

- JV Company with ONGC: MoU signed with ONGC for formation of JV Company (ONGC & NTPC RE Ltd.) for RE projects in India and abroad including off-shore wind projects.

  JV Company with MAHAGENCO: Government approval is awaited for MoU formation of JVC for UMREPP"

Hydro Power Generation

2.21 The addition to Hydro power since NTPC's foray into hydro power generation about six years ago *i.e.* in 2014-15 is a mere 400 MW. The NTPC group as a whole however has added 2,325 MW of Hydro power in the last six years. In response to a query as to the reasons for reasons for low addition of Hydro power during the last decade, the NTPC in a written reply submitted as follows:

> "The major reasons for the low addition of Hydropower during the last decade are the closure of 4 projects out of 7, Environmental issues, Flash floods of 2012 and 2013, the financial crunch of Agencies, Geological Surprises, and frequent local law and order problems, etc.

Sr. No.	Name of Project (Capacity in MW)	Major Issues during construction	Status
1.	Koldam Hydroelectric Project (4x200=800MW) Himachal Pradesh	Environmental issues, Financial crunch of Civil Agencies, Geological Surprises, and local law and order problems, etc.	Under Operation since July 2015
2.	Loharinag Pala Hydroelectric Project (4x150=600MW) Uttarakhand	Environmental issues and local law and order problems.	Discontinued by GoI on 24th Dec-2010 on Environmental issue (declaration of Eco-sensitive Zone by NGRBA)
3.	TapovanVishnugad Hydroelectric Project (4x130=520MW) Uttarakhand	Environmental issues, Financial crunch of Agencies, Geological Surprises, and local law and order problems, etc.	Under construction. Anticipated date of commissioning Dec-2021
4.	RupsiyabagarKhasiabara Hydroelectric Project (4x70=280MW) Uttarakhand	Environmental issues	Project establishment closed in Nov-2012 as forest clearance was denied twice by MOEF.
5.	LataTapovan Hydroelectric Project (3x57=171MW) Uttarakhand	Local Law and order problems and Environmental issues	Under suspension by the Order of Hon'ble Supreme Court dated 07.05.2014.
6.	Rammam III Hydroelectric Project (3x40=120MW) West Bengal	Environmental issues, Financial crunch of Agencies, Geological Surprises, and local law and order problems, etc.	Under construction. Anticipated date of commissioning Dec-2024
7.	Kolodyne	Environmental & Technical	The project closed in

Sr. No.	Name of Project (Capacity in MW)	Major Issues during construction	Status
	Hydroelectric Project (4x115=460MW) Mizoram	issues and local law and order problems etc.	March-2018, as it was financially and technically not viable.

2.22 With regard to the action taken to address the stalled hydel projects of NTPC due to regulatory, environmental issues, etc, MoP submitted as under :

	Project	Capacity	Status	Remark
1	Lata Tapovan HEP	3x57 MW	All Construction activities stopped since 08.05.2014 in compliance with order of the Hon'ble Supreme Court dated 07.05.2014	Matter pending in Hon'ble Supreme Court. Last hearing held on 28.02.2020
2	Loharinag Pala	4 x 150 MW	Project Discontinued	Protests against construction of hydroelectric project on Bhagirathi started in June 2008 (after almost three years of start of project-execution work). NGRBA chaired by Hon'ble Prime Minister in its second meeting of 01/11/2010 decided that Loharinag Pala Project of NTPC may be discontinued. Ministry of Power vide letter dated 24/12/2010 has communicated NGRBA's decision to NTPC.
3	Rupsiabagar Khasiabara HEP	3x87 MW	Forest Clearance denied twice on 26.11.2012	Implantation Agreement Signed with Govt of Uttarakhand on 21.11.2005 TEC by CEA on 16.10.2008 Defence Clearance on 10.11.2008 Environmental Clearance by MOEF&CC on 26.03.2009 (For 10 Years) Diversion of forest land clearance approval denied by MOEF on 26.07.2010. NTPC submitted request for reconsideration to MOEF through Govt of Uttarakhand on 17.09.2010 which was again rejected by MOEF on 26.11.2012. Project office closed.

2.23 In view of the huge amount of public resources spent on the hydro-power projects like Loharinag-Pala, Rupsiyabagar Khasiabara, Lata-Tapovan, Kolodyane etc, which have been closed/suspended/discontinued halfway for varied reasons, the Committee sought to know the monitoring mechanism available to ensure that due-diligence is carried out before giving approval / commencing of the Hydro power projects, MoP submitted as under :

> "At start of project all Technical and Economical Clearances are taken from Central Electricity Authority (CEA), including other clearances from Central Water Commission (CWC), Ministry of Environment, Forest & Climate Change (MoEF&CC), Ministry of Defence (MoD). Quarterly review by CEA is held for monitoring the under construction Hydro Projects and Quarterly Performance Review (QPR) is also done by MoP every quarter.
>
> Lata Tapovan (Hydro Electric Project) HEP was granted all required clearances at the time of approval of project. After the flash flood of 2013 (Uttarakhand Disaster) all Construction activities stopped since 08.05.2014 in compliance with order of the Hon'ble Supreme Court dated 07.05.2014. MoP and MoEF&CC have given its affidavit in Hon'ble Supreme Court in favour of project. Matter is still pending with Hon'ble Supreme Court.
>
> All clearances for Loharinag Pala HEP were accorded and project construction was started on 06.07.2006. Protests against construction of hydroelectric project on Bhagirathi River started in June 2008. Ministry of Power vide letter dated 24/12/2010 has communicated NGRBA's decision to NTPC. The project was discontinued.
>
> Rupsiabagar Khasiabara HEP was denied forest clearance twice; no major works were awarded/ taken up."

Comparison of NTPC with International Peers

2.24 In response to a query as to where does NTPC stand in terms of various plant productivity metrics and HR productivity metrics *vis-a-vis* its major international counterparts, NTPC submitted as follows :

> "As part of its Corporate Plan 2032, NTPC carried out a Benchmarking study in 2016, wherein its rank as compared to peer companies worldwide was as below:

Metrics	NTPC Rank
Plant Productivity	
Total Installed Capacity	13th
Total Generation	7th
Coal based capacity	3rd
Machine Availability	3rd
HR Productivity	
Generation per employee	5th
Training hours	4th

NTPC HR productivity Metrics are planned/designed keeping in line with the changing VUCA (Volatile, Uncertain, Complex, and Ambiguous) world and the organizational strategy. For benchmarking Learning and Development (L&D) practices, NTPC applies for awards in the L&D space. We have received the following awards for Learning and Development.

	ATD BEST award 4 times in succession for the years 2017, 2018, 2019, and 2020. This is an international award given by the Association for Talent Development, the USA recognizing organizations demonstrating enterprise-wide success as a result of employee talent development.
	Brandon Hall Gold Excellence in Learning 2020 (aninternational award) **to Regional Learning Institute, Sipat**for successfully developing learning strategies for the organization and for their extended enterprise partners.
	Silver Medal in the best use of blended learning category 2019 (an international award) by Brandon Hall Group.
	BML Munjal Award for Business Excellence through Learning and Development in the Sustained Excellence category. Runner-up in 2018, Winner in 2019.
	ISTD National Award for Innovative Training practices 3 times in succession for the years 2016-17, 2017-18, and 2018-19.

2.25 With a view to make NTPC more competitive in terms of global parameters and practices in power sector, the following is submitted by NTPC

"NTPC is taking several initiatives for business growth and cost optimization to sustain its leadership position in the sector. The initiatives include

diversification, backward and forward integration, digitalization, among several others. Further, NTPC also benchmarks its performance parameters with global peers. "

Chapter III

FINANCIAL PERFORMANCE

Revenue from Operations

3.1 The information on revenue earned and expenses made by NTPC during the last 10 years has beencollected and compiled from the Annual Reports of NTPC as under :

Particulars	**2010-11**	**2011-12**	**2012-13**	**2013 - 14**	**2014 - 15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Revenue										
Revenue from operations (net)	55,062.65	62,052.23	65,673.93	72,018.93	73,246.05	70,843.81	78,273.44	83,452.70	90,307.43	97,700.39
Other income	2,344.65	2,778.42	3,101.58	2,688.89	2,116.32	1,165.35	1,068.86	1,755.25	1,872.13	2,778.02
Total income /revenue	57,407.30	64,830.65	68,775.51	74,707.82	75,362.37	72,009.16	79,342	85,207.95	92,179.56	1,00,478.41
Expenses										
A.Fuel cost	35,373.78	41,635.46	41,018.25	45,829.71	48,845.19	43,798.59	47,572.19	48,315.47	52,493.74	54,241.82
Electricity purchased for trading					NIL	----	----	1,313.51	2,713.68	2,776.44
Employee benefit expenses	2,789.71	3,090.48	3,360.12	3,867.99	3669.78	3,581.65	4,324.60	4,734.67	4,779.89	4,925.60
Finance costs	1,420.96	1,711.64	1,924.36	2,406.59	2,743.62	3,296.41	3597.20	3,984.25	4,716.74	6,781.97
Depreciation, amortization and Impairment	2,485.69	2,791.70	3,396.76	4,142.19	4,911.65	5,172.34	5,920.82	7,098.86	7,254.36	8,622.85
Other expenses	4,926.28	3,588.79	4,211.22	4,543.85	4,979.31	5,576.49	5,092.38	7,421.73	7,548.63	8,663.81
Total expenses	46,996.36	52,818.03	53910.61	60,790.33	65,149.55	61,425.48	**66,507.19**	72,868.49	79,506.96	86,012.49

3.2 Revenue from operations has witnessed continuous increase since 2010-11 except in 2015-16 when it witnessed decline by Rs.2400 crore despite adding 1960 MW.Furnishing the reasons for the same, NTPC submitted as under:

> "Revenue from operation for FY 15-16 was ₹ 70,844 Cr and Rs. 73,246 Cr in FY 14-15. It is submitted that demand for the electricity is dependent on discoms/customers that determine the Scheduled Energy to be injected into the grid. Although there was a capacity addition of 1960 MW in FY 15-16, the energy sold by the company remained almost the same during 2015-16 and 2014-15 (224.926 BU vs 225.003 BU) based on the schedule received. Further, the tariff for the sale of electricity by NTPC is determined in terms of the applicable Tariff Regulations notified by the electricity-regulator viz. Central Electricity Regulatory Commission. The average tariff (including the impact of previous years) for the financial year 2015-16 was ₹3.18/kWh as against ₹3.28/kWh in the previous year. Thus, the reduction of ₹0.10/kWh on average tariff resulted in a reduction of approx. Rs. 2249 cr in revenue from operation for FY 15-16."

3.3 Revenue from operations grew by Rs 5,179 crore in 2017-18 during which it added 4 GW *vis-a-vis* 2016-17 during which it added 1.42 GW. Accordingly, the profit for the year 2017-18 has not witnessed an increase in revenue from operations commensurate with the increase in commercial capacity addition of 4 GW. In a written reply to the aforementioned observation, NTPC furnished as under:

> "During FY 17-18 there was an increase in revenue from operation by Rs. 5,179 crores for (Rs. 83,452 cr vs Rs. 78,273 Cr). It is pertinent to mention that profit for any year is dependent on different types of costs incurred, tariff as allowed by the Electricity Regulator as per the Tariff Regulations applicable for the respective period, demand for the electricity, and other general economic conditions.
>
> It is to be submitted that Profit for the FY 2017-18 for the company increased by Rs. 958 Cr (Rs. 10,343 cr vs Rs. 9,385 Cr).

3.4 During the year 2019-20, 5.29 GW of commercial capacity was added. Further, other income rose by Rs.900 crore. In written reply to a query as to whether management think that the increase in profit is in syncwith highest ever capacity addition and huge increase in other income, NTPC furnishing their comments on the aforementioned, submitted as follows:

> "It is to be submitted that the actual commercial capacity addition for FY 19-20 is only 3970 MW on standalone basis for the company.
>
> Central Electricity Regulatory Commission periodically issues the tariff regulations for a multi-year period. Regulations for the period 2019-24 were issued in Mar'19. It is pertinent to mention that Tariff Regulations issued for the period 2019-24 were much more stringent from a tariff angle as the operating norms were tightened for various parameters. Also, the methodology of calculation of equity for the stations having already completed their useful life was revised restricting the equity allowed, Compensation allowance allowed in previous regulations was withdrawn and norms of Interest on the working capital component of Capacity charges were further tightened. These had a significant negative impact on the revenue recognized during the year. Further, the Government of India had introduced a scheme for settlement of pending income tax disputes known as the "Vivad Se Vishwas scheme" vide "The Direct Tax Vivad se Vishwas Act". After the introduction of the scheme, the issue was discussed at various fora including the Ministry of Power. Thereafter the company opted for settlement of its pending income tax disputes, as per the approval from the Board of Directors. This also had a huge negative impact on the profits for the current financial year.
>
> Also, the profit for the year FY 18-19 was higher on account of a one-time gain of the first-time recognition of MAT credit for three years.
>
> Considering the above adjustments/factors, profit for 18-19 and 19-20 are not directly comparable.
>
> It is also pertinent to mention that profit for any year is dependent on different types of cost incurred, tariff as allowed by the regulator as per the applicable regulations for the respective period, demand for the electricity, and other general economic conditions"

3.5 Another reason attributed by the management of NTPC for the lower profits , as furnished by the representative of the company during the evidence held is as under

> *"We had to make a write off because there was a plant called Dabhol which was run by Enron. It was given to us and we had to write off. Again and again, we will just say that our performance has been quite consistent"*

Revenues from Renewable Power

3.6 The data on share of revenues from renewables both in absolute and percentage terms of total revenues of the company for the last five years (year wise) (p.193 of 19-20 AR) as furnished by NTPC is as follows :

FY	Revenue from the sale of Renewable Energy* (₹ Cr)	Total Direct Revenue of NTPC (₹ Cr)	% of Revenue from Renewable Energy to Total Revenue of NTPC Limited
15-16	96.96	71833.72	0.13%
16-17	367.92	79167.42	0.46%
17-18	2236.42	84007.49	2.66%
18-19	3867.98	91863.33	4.21%
19-20	3798.63	100007.37	3.80%

* Includes revenue from Solar, Wind, Small Hydro & NSM Trading.

3.7 With regard to the fund requirement for achieving the ambitious goal of RE targets bt 2032, NTPC submitted as under :

> "NTPC estimates capital expenditure of approximately INR 1,44,000 crore to meet the target of 32 GW renewable capacity by 2032. These projects will be financed through debt & equity."

Profits and Profitability

3.8 As per the information submitted to the Committee, theProfit Before Tax (PBT) and ProfitAfter Tax (PAT)of NTPC since 2010-11 has been as under:

Year	Profit Before Tax (PBT)	Profit After Tax (PAT)	Remarks
2010-11	12,049.60	9,102.59	NIL
2011-12	12,326.16	9,223.73	
2012-13	16,578.63	12,619.39	
2013-14	13,904.65	10,974.74	
2014-15	10,546.65	10,290.86	
2015-16	10,583.68 (SFI)* 10,059 (at a glance15-16)	10,769.60 (SFI) 10,243 (at a glance 15-16)	NIL
2016-17	12,052.16 (SFI)* 12,388 (at a glance 16-17)	9,385.26 (SFI)	PBT as per PES 2017-18 is Rs. 12,316.08 crores.
2017-18	12,339.46 (SFI)*	10,343.17	PES 2017-18 shows PBT of Rs. 12,892.46 crore which is different from Rs.12,339.46 crore shown in A.R. 2017-18 . PES 2018-19 shows PBT of Rs. 15,600.31crore as PBT for 2017-18
2018-19	12,672.52	11,749.89	PES 2018-19 shows PBT of Rss. 8831.18 crore for 2018-19.
2019-20	14,465.92	10,112.81	NIL

***from Selected Financial Information (SFI) as given in Annual reports**

3.9 Furnishing clarification on data variation in PBT and PAT as shown above, NTPC submitted as under:

> **"2015-16:** Annual report for the year 2015-16 was prepared as per old Indian GAAP but from the FY 2016-17 IndAS was implemented and figures were reinstated, hence figures as per 2015-16 and as per 2016-17 or later years are different.
> Further, till 2016-17 movement in regulatory (gross) was shown prior to PBT but from 2016-17, movement in regulatory is shown after PBT, and the same is now shown as net of tax.

2016-17: Till 2016-17 movement in regulatory (gross) was shown prior to PBT but from 2016-17, movement in regulatory is shown after PBT, and the same is now shown as net of tax. But the figures are the same.

Differences from PES: As per format for PES, there is no separate item for movement in regulatory deferral account, and the only item mentioned after PBT was the tax and other comprehensive expenses/ income, hence movement in regulatory deferral account was shown before PBT under other expenses, so PBT is different as per AR and PES whereas PAT is same. Further, this issue has already been raised to DPE along with DPE data submitted for correction in formats.

3.10 As per A.R. 2019-20 , the gross disputed statutory dues of Income tax on sales, service tax, customs and excise duties amounts to Rs. 10, 619 crore, out of which Rs.5,300 crore dues have stated to have been deposited under protest/adjusted by tax authorities. In response to a query as to whether NTPC feel that the tax dispute has an adverse impact on P&L and balance sheet and if so, how it is going to tackle the dispute which may impact the profits of the company for years, the NTPC submitted as follows :

"NTPC is in the regulated industry and revenues are allowed on a cost-plus basis. Return on equity forming part of capacity charges is based on grossing of the effective tax rate. Further, the Company is creating regulatory deferral account balances for the deferred tax since it will form part of revenue when it becomes a current tax.
Further, any additional demand on tax during the assessment will also get grossed up in the current year in the return on equity.

As per Annexure-I to Independent Auditors Reports, Gross Disputed Amount is ₹10619.79 crores out of which amount of ₹5300.14 crores has been deposited under protest whereas the amount of contingent liability on account of Disputed tax matters as per AR 2019-20 (Note 69) is ₹612.54 crore which was ₹8047.86 crores in 2018-19.

The gross disputed statutory dues mainly consist of disputed income tax cases which were to the amount of ₹7,488 crores in 2018-19.During the year 2019-20, the GOI has introduced the Vivad se Vishwas Scheme (VsVs) through 'The Direct Tax Vivad Se Vishwas Act, 2020'. The Company has decided to settle its pending Income Tax disputes by opting for the VsVs scheme. Further, the company is in the

process of completion of procedural formalities under the scheme and the same will be settled after reconciliation of dues with the income tax department. Pending the settlement, the same is still appearing in disputed statutory dues and the amount deposited is shown in the amount deposited under protest. The Company has created additional tax provision amounting to ₹2,661.47 crores keeping in view the terms & conditions of the scheme and the amount being disclosed under contingent liabilities towards disputes with Income Tax, which has been considered as Nil."

CERC Guidelines – Impact on Profitability

3.11 Management of NTPC stated that the stricter regulations of CERC also impacted the profits of the Company. In response to the queries as to (i) the CERC regulations that adversely impacted the profits of the Company; and also as to (ii) whether these regulations are equally applicable to private power generating Companies, the NTPC in a written reply submitted as follows :

"The Electricity Act 2003 under section 62 empowers CERC to determine the tariff of inter-state generation and inter-transmission projects set up under the cost-plus route. The terms & conditions of tariff determination are specified by CERC through the framing of Tariff Regulations. These performance-based cost-plus regulations are applicable to the following:

I. Generating companies owned and controlled by the Central Government.
II. Generating stations that have a composite scheme for generation and sale of electricity to more than one State.
III. Inter-state transmission of electricity.

These above Regulations thus are applicable to private power-generating companies also having sale arrangement on cost-plus basis and to more than one state. However, the majority of the companies under CERC's jurisdiction are CPSUs in the areas of thermal generation (NTPC, NLC, DVC, etc.)& hydro generation (NHPC, THDC, SJVNL, etc.) and inter- transmission of electricity (PGCIL).

In the last two decades of the regulatory regime, CERC has tightened various financial and operational norms in its successive Tariff Regulations. Some of the regulations that have had an impact on NTPC's profit are as under:

1. Target availability for recovery of Annual Fixed Charges increased from 80% to 85%.
2. Generation incentive - In the 2009-14 tariff period, it was linked to the availability of generating stations. From 2014 onwards, it is linked to schedule generation (PLF). Thus the payment of incentive is now linked to actual generation instead of capacity made available.
3. In 2014-19 period, GCV for computation of energy charge shifted from "as fired" to "as received" basis. Thus the loss of heat value within the generating station was loaded onto generators. However, in the 2019-24 period, a margin of 85 kcal/kg in GCV as received is allowed because of variation during storage at generating station.
4. Operational Norms – Gross Station heat Rate, Auxiliary Power Consumption, and Specific Fuel oil Consumption Norms have been tightened in successive tariff periods. Tightening of norms has resulted in a loss on this account in many stations unable to achieve the operational norms.
5. A stabilization period of 180 days from COD for newly commissioned units providing for relaxed operational norms discontinued from 2007 onwards.
6. Norms for working capital tightened; namely Number of days of coal and oil stock."

CERC TARIFF REGULATIONS

3.12 As per the information furnished by NTPC, One of the major reasons for dip in profit during 2019-20 vis-à-vis 2018-19 was based on new CERC tariff regulations effective from 01/04/2019 which is substantially different from the previous regulation. The methodology of calculation of equity for stations having already completed their useful life was revised restricting the equity allowed, compensation allowance allowed in previous regulations was withdrawn and norms of interest on the working capital component of capacity charges

were further tightened. These charges in the CERC tariff regulations, 2019 w.r.t. CERC tariff regulations, 2014 resulted in the decrease in profits for FY 2019-20.

3.13 In written reply to a query as to how the new tariff regulation adversely affected the profitability of power companies in the country, MoP has submitted as follows :

> **"**The CERC Tariff Regulations 2019, lays down the terms & conditions of tariff which includes the financial and operational norms. Further recovery of costs incurred is subject to prudence of the regulator and any expenses due to non-achievement of operational and financial norms are not allowed in tariff. The regulator fixes the norms based on past actual data. Further, profitability depends on the return on equity and operational gains that can be retained by the generator on account of achieving and surpassing the norms. Firstly, the Tariff Regulations, 2019 provide that in case of generating station which has completed its useful life as on or after 01.04.2019, if the equity actually deployed as on 1.4.2019 is more than 30% of the capital cost, equity in excess of 30% shall not be taken into account for tariff computation. This has impacted the return on equity of plants older than 25 years where the equity has been reduced from 50% to 30% for tariff purposes. The impact on account of reduction in ROE per annum of such NTPC plants (Installed Capacity around 15,000 MW) in tariff period 2019-24 is around Rupees 657 crores. Secondly, stringent norms also reduce the profitability. The operational norms like station heat rate, Auxiliary Power Consumption, Specific oil consumption have been tightened over successive Tariff periods and made more and more stringent. However, stations are getting older and the existing margins have got squeezed. Further, some of the units are unable to achieve the specified norms and thus losing. This is one of the reasons of stagnant profit. Moreover, increase in RE generation reduces the PLF of thermal plants which further reduces the margin available in operational parameters w.r.t the norms. In some stations, the partial load compensation does not fully compensate the reduction in efficiency due to part load operation."

3.14 In written reply to a query as to whether the profitability of private power majors of the country has also been affected by this new tariff regulation, the Ministry submitted as under:

> **"**CERC Tariff Regulations 2019 applies to Central Generating Stations (CGS) and inter-state generating stations (ISGS) whose tariff is determined by CERC under

section 62 of the Electricity Act-2003. However, most of the UMPPs / IPPs that have tariff discovered under competitive bidding and IPPs not having long-term PPAs do not fall under the CERC Tariff Regulations 2019. Further, only few IPPs like Torrent Sugen Power Plant and Udipi Power Plant of Adani Power Limited (APL) fall under CERC Tariff Regulations 2019. Further, these IPPs are not older than 25 years and have not been affected by reduction in equity to 30%.

3.15 In response to a query as to the impact of CERC regulatory norms on the profits and profitability of the public sector power generators , a representative of NTPC during evidence before the Committee submitted as follows :

"In any growing sector, you will have to give lot of incentives to bring the investment. When we were at the deficit stage, in fact, so much so that earlier there used to be full return on equity and that was also higher at post-tax of 16 per cent - I am talking about 15 years back - that was at 68.5 per cent, if availability was there and above that, there will be incentive to make the plant available because generation was considered that if the plant is available, it will run and you will be able to supply the power. Slowly and slowly, the regulator is also keeping a watch and they have taken it to 85 per cent. In fact, first they took it to 80 per cent and then they took it to 85 per cent. What I mean to say is that they took away all the incentives we were in a position to earn out of our performance. They have made the performance standard itself for the same plant, which was relatively younger earlier and now it has become older, stringent".

Increase in generation capacity and Revenue

3.16 Revenue from operations grew by Rs 5,179 crore in 2017-18 during which it added 4 GW vis-a- vis 2016-17 during which it added 1.42 GW. In written reply to a query as to the reasons for the profit for 2017-18 not increasing in commensuration with the increase in capacity addition of 4GW, NTPC submitted that the profit for any year is dependent upon different type of costs incurred tariff allowed the Electricity regulator as per the extant regulations, etc. In written reply to a query as to those specific regulations and other factors which resulted in revenue not increasing in proportion to the huge increase in capacity in 2017-18, NTPC submitted as follows:

"It is submitted that the revenue from power stations is a factor of not only capacity but also generation and other factors, as may be seen from the provisions of the Regulation 20(1) of Chapter 5 of CERC Tariff regulation 2014 quoted below:

"The tariff for supply of electricity from a thermal generating station shall comprise two parts, namely, capacity charge (for recovery of annual fixed cost consisting of the components as specified in Regulation 21 of these regulations) and energy charge (for recovery of primary and secondary fuel cost and limestone cost where applicable)."

Further, capacity addition takes place in a staggered manner at different points of time during the year. Therefore, its contribution to the revenue from operation will also be for the corresponding operating period.

As for energy charge, the same is directly linked to fuel cost, which was reduced during the year primarily due to introduction of Goods & Service Tax. It is pertinent to mention that the average tariff as per the tariff regulation for the financial years 2015-16, 2016-17 and 2017-18 was ₹ 3.18/kWh, ₹ 3.30/kWh and ₹ 3.23/kWh respectively, which reflects into a higher revenue in 2016-17 as compared to 2015-16 and lower revenue in 2017-18 as compared to 2016-17.

Also, there was a marginal reduction in the Plant Load Factor (PLF) (0.69% on coal based station) on a bigger capacity, which is primarily dependent on the demand from the DISCOMs.

These factors have led to a lower increase in revenue from operation in 2017-18, as compared to the increase in commercial capacity addition of 4 GW."

Financial Ratios

3.17 Data on various financial ratios as collated from Annual Reports of NTPC since 2010-11 is as follows:

Ratios	2010-11	2011-1	2012-1	2013-14	2014-15	2015-1	2016-1	2017-18	2018-19	2019-20
Return on capital employed (%)	14.30	14.23	15.95	14.37	13.68	14.56	13.39	11.52	12.51	10.48
Return on net worth (%)	16.92	16.88	19.73	17.72	16.78	19.56	17.68	15.14	16.72	14.80
Book valu	82.34	88.89	97.49	104.08	99.03*	92.27	97.26	102.86	108.55	114.78

per Share (Rs))										
Earnings p Share (Rs.)	11.04	11.19	15.30	13.31	12.48	10.88	9.49	10.45	11.88	10.22
Current rati	2.57	2.26	1.82	1.58	1.22	0.94	0.79	0.86	0.76	0.89
Debt equity	0.64	0.69	0.72	0.78	1.05	1.01	1.09	1.14	1.19	1.35

Return on Capital Employed (RoCE)

3.18 High RoCE at 14-15 % seen during first half of the last decade *i.e* 2010-11 to 2014-15 could not be sustained and came down by 3-4 % in later half of the decade (2015-16 to 2019-20). Moreover, RoCE has seen continuous decline from 13.68% in 2014-15 to 10.48% in 2019-20 except in 2015-16 when it rose by 0.88%. Furnishing the reasons for (a) steep decline in RoCE in the latter half of the last decade *vis-a-vis* earlier half of the decade; (b) continuous decline ofRoCE from 13.68% in 2014-15 to 10.48% in 2019-20 except in 2015-16; and, (c) the steps taken or proposed to be taken to improve RoCE as it is the barometer of efficiency of the capital deployed., NTPC submitted as follows :

> "As detailed above, various factors like tightening of operating norms, restriction of regulated equity, reduction in the working capital component in tariff, discontinuation of compensation allowance, the introduction of Vivad se Vishwas Scheme, increase in finance cost due to increase in the working capital requirement, etc. have led to stagnant profits over the period as mentioned.
>
> Further, it is submitted that as on 01.04.2015, the commercial capacity of NTPC was 37,142 MW. NTPC has increased its commercial capacity to 49,695 MW as on 31.03.2020, by adding 12553 MW capacity during the last 5 years. This has led to a significant increase in the capital employed from 14-15 to 19-20 from Rs. 94,741 Cr to ₹ 1,47,014 Cr.
>
> The constant increase in a commercial capacity, resulting in an increase of Capital employed by ₹ 52,273 Cr combined with the stagnant profits as explained above has led to a lower Return on Capital Employed.
>
> Continual efforts are made for achieving cost efficiencies and revenue maximization including advocacy with CERC for suitable changes in Tariff norms/Regulations to improve the return on capital employed."

3.19 The RoCE for the year 2017-18 & 2018-19 as per Public Enterprises Survey (PES) was at 9.3%and 5.97% respectively which had been different from the data of 11.52% and 12.51% for 2017-18 and 2018-19 respectively shown in other documents. In written reply to the queries as the difference in the data, the NTPC submitted as follows :

> "The formula used by PES for calculation of ROCE may be different which is not known."

Interest Service Coverage Ratio (ISCR)

3.20 A High interest service coverage ratio is considered good as it measures the time a company can cover for its current interest payment with its available earnings. It has been observed from the replies of NTPC that this ratio is declining more or less consistently in the period between 2010-11 and 2019-20. Furnishing the reasons and also its impact on its financial health , NTPC submitted as follows :

> "The figures of ISCR, Finance cost, Borrowings and capacity over the years for NTPC are as below:

Year	ISCR (%)	Finance Cost (₹ crore)	Total Borrowings (₹ crore)	Capacity in MW
2010-11	11.42	1,420.96	43,188.24	30892
2011-12	9.81	1,711.64	50,279.37	32712
2012-13	10.39	1,924.36	58,146.30	35882
2013-14	8.62	2,406.59	67,170.22	37107
2014-15	6.72	2,743.62	86,030.68	38202
2015-16	5.94	3,296.41	91,827.74	40012
2016-17	6.40	3,597.20	1,03,839.65	43532
2017-18	5.93	3,984.25	1,15,104.29	46100
2018-19	5.26	4,716.74	1,27,430.48	47325
2019-20	4.45	6,781.97	1,52,693.62	50355

NTPC is constructing a large number of capital intensive power projects and captive mines which require a huge investment which is financed mainly from the debt. In these years NTPC's capacity has also increased many folds. Due to these reasons, its borrowings have increased from ₹43188.24 crore in FY 2010-11 to ₹152693.62 crore in FY 2019-20 resulting in consequential increase in interest cost. Hence ISCR has reduced."

Cost over runs in under construction and delayed projects

3.21. The details of 'under-construction' power projects of NTPC, across coal, hydro gas, solar etc. indicating (i) their target date of completion; (ii) the number of times the schedule of completion has been postponed; (iii) cost over runs due to delay ; and, (iv) the steps taken by the Ministry to get them completed in time, as furnished by Ministry of Power is are as follows :

" The details of under construction coal based thermal and hydro projects of NTPC are provided below (Excluding THDC India Limited, North Eastern Electric Power Corporaton Limited (NEEPCO), Renewable Energy, Bangladesh India Friendship Power Company (Pvt) Limited (BIFPCL) and NTPC-SAIL Power Company Limited (NSPCL) Projects).

	Project	**Original Project Commissioning Schedule**	**Anticipated Project Commissioning Schedule.**	**Number of times Sch. Revised***	**Cost Overrun as of Now (In ₹ Crs.)**
	Coal based Thermal Projects				
1.	Gadarwara–I (2x800 MW)	2017-18	2020-21	4	2818
2.	Tanda-II (2x660 MW)	2019-20	2020-21	4	Nil
3.	Barh-I (3x660 MW)	2011-12	2022-23	3	11665
4.	Darlipali-I (2x800 MW)	2018-19	2021-22	4	Nil
5.	North Karanpura3x660 MW)	2019-20	2022-23	5	Nil

6.	Telangana-I (2x800 MW)	2020-21	2021-22	4	Nil
7.	Barauni –II	Acquired in 2018	2020-21	---	Nil
8.	NPGCPL Nabinagar (3x660 MW)	2018-19	2021-22	----	2755
9.	BRBCL Nabinagar JV (4 x250 MW)	2012-13	2021-22	1	4396
10.	Patratu(3x800 MW)	2022-23	2024-25	---	Nil
	Hydro Project				
11.	Tapovan Vishnugad HEPP (4x130 MW)	2012-13	2022-23	3	2889
12.	Rammam (3x40 MW)	2019-20	2024-25	3	Nil
13.	Lata Tapovan HEP (4x57MW)	Matter pending in Hon'ble Supreme Court. Last hearing held on 28.02.2020 Original schedule of completion was June 2017		Cost not revised yet.	

*Commissioning schedule Revised through Board Approvals

NTPC projects are being monitored by Ministry of Power for completion through various reports / reviews such as PRAGATI, e-samiksha, Project Monitoring Group (PMG) and CEA reviews. Further, regular reviews are taken by Hon'ble Minister of State (Independent Charge Power)/ Secretary (Power)"

3.22 In response to a query as to whether there was any proposal to recover the amount accrued due to cost over runs of the delayed projects from the consumers and the details in this regard, Ministry of Power submitted as follows :

"NTPC files tariff petition for upcoming stations before CERC for admittance of its capital cost and determination of tariff. Increase in capital cost due to cost overrun and time overrun is considered by the Commission while considering determination of tariff. If the delay is on account of reasons which are beyond the control of the generator, the same is allowed in tariff after prudence check by the Commission. Delays on account of uncontrollable factors like delay on account of grant of clearances, land acquisition issues, law and order issues, natural calamities, force majeure, etc are generally allowed by Commission subject to prudence as per the

Tariff Regulations. The above regulatory mechanism therefore mitigates uncertainty of recovery of costs when the delay is beyond the control of the generator. However, increase in project cost on account of generating company may not be allowed by the Commission.

Average Tariff of Electricity.

3.23 Average cost of electricity produced by thermal power stations of NTPC for the last 10 years as furnished by NTPC is as follows:

"The average tariff of electricity produced by coal-fired stations of NTPC for the last 10 years is tabulated as under:

Year	Tariff of coal-based Stations (Rs. Per KWH)
2019-20	3.76
2018-19	3.38
2017-18	3.17
2016-17	3.21
2015-16	3.10
2014-15	3.12
2013-14	3.10
2012-13	2.81
2011-12	2.81
2010-11	2.44

Payment Guarantee Mechanism

3.24 In Its annual reports for the years 2018-19 and 2019-20 NTPC stated that the company signed **Tri Partite Agreement (TPA)** with various State/ UT Governments and under which, default in payment by state discoms, can be recovered directly from the account of the respective state/UT Government in association with RBI, with 29 out of 31 states/ UTs and the signing of TPAs with balance states is being taken up. Despite efforts of NTPC during the last two years, twostatesare yet to sign the TPA. Furnishing the details in this regard, NTPC stated as below:

"The TPA with the States of Maharashtra and Punjab is yet to be signed. These are under various stages of approval with the respective State Governments"

Payment Guarantee Mechanism for Group Companies

3.25 It is stated that NTPC group companies such as NTECL and Kanti Bijlee Utpadan Nigam Ltd (KBUNL) have declared profits recently. However, both these Companies have huge debtors and despite regular perusal with DISCOMS these companies are unable to recover their dues in time. In written reply to a query as to whether the Tri-partite Agreement that NTPC signed with RBI and State Governments for payment guarantee of power dues from DISCOMs is applicable to NTPC group companies also, NTPC submitted as under :

" It may be mentioned that NTPC is **not** party to Tri- partite Agreements as the same is signed between the Ministry of Power , State Governments and Reserve Bank of India. The subsidiaries are not covered under the Tri-Partite Agreements "

<u>Defaulting DISCOMS</u>

3.26 The details of the DISCOMS of states/UTs that defaulted on payments and also the name of DISCOMS for which NTPC received the amount directly from the accounts of respective states/UTs in association with RBI, is as follows

"Major Defaulting states as on 31.12.20 are as follows:

Outstanding Dues (as on 31.12.2020)	
Discom of	Dues beyond the Due date (Rs Crore)
Uttar Pradesh	4694
J&K	2805
MP	2749
Telangana	1713
AP	312
Tamilnadu	1185
BESCOM (Karnataka)	135
HESCOM (Karnataka)	417

GESCOM (Karnataka)	122
CESCORP (Karnataka)	135
Puducherry	135
Sikkim	102
Meghalaya	593

NTPC has not received any amount directly from the accounts of these states/UTs in association with RBI by invocation of Tri-Partite Agreement (TPA) signed among Central Government, State Government and RBI."

3.27 With regard to the amount of default and percentage recovered and the name of DISCOMS for which the amount could not be recovered as on 31.12.2020 and also other steps taken by NTPC to recover the dues from the defaulting DISCOMS, the company submitted as follows :

"All steps are being explored to ensure payments from the defaulting Discoms / States including rigorous follow up with Discoms for payments from revenue realized by Discoms, subsidies received by Discoms from State Govt., liquidity infused through PFC & REC (under the GOI Atmanirbhar Scheme), through direct payments from State accounts (like Bihar Model) and invocation of Tripartite Agreement (TPA)."

3.28 In written reply to a query as the amount received directly from the accounts of the states/UTs so far since 2000-2001 and the rationale of extending the TPAs for a further period of 10-15 years, the Ministry of Power informed as under :

" As described in the Annual Report 2018-19, NTPC has been able to realize 100% of its dues for 16 consecutive years. In 2019-20, there was outbreak of COVID-19 pandemic which impacted the revenue realization of the Discoms adversely. As a result, NTPC's realizations were also affected. However, after infusion of liquidity through the GOI's Atma Nirbhar Scheme, the situation is improving and NTPC is confident of meeting the realization targets set by GOI.

Further, TPA provides for payment security mechanism which in turn increases the credit rating of the company. As a result NTPC is able to keep its borrowing rate very competitive and the lowest in the sector. The advantage of lower borrowing cost in turn is passed on to the beneficiaries through tariff. NTPC has also initiated action for

invocation of TPA along with other measures of achieving realization of dues as elaborated above. Further, due to comfort of TPA, NTPC is able to achieve discovery of competitive solar bids under developer mode for which NTPC is the intermediary nodal agency."

3.29 With regardto the latest status of pending dues from various discoms,a representative of NTPC during evidence before the Committeesubmitted as under :

"From 2001 to March 2019, NTPC has always recovered 100 per cent billed amount. But there was unprecedented pandemic starting from April' 2020. Suddenly, as of 30th June 2020, our outstanding dues rose up to Rs. 18,000 crore. As of today, that has come down to Rs. 12,000 crore. From July onwards till date, we have been able to realize 100 per cent. from all the DISCOMs put together. Some DISCOMs are paying, some are not. We are able to reduce our outstanding what was available on 30 th June. As far as tripartite agreement is concerned, we have written to Ministry of Power for recovery. Initially, we did not pursue this matter because DISCOMs were facing difficulties. But now we have written to the Ministry of Power. At the same time, we are pursuing with all the States. Primarily, it is five States which are having outstanding – UP, J&K, Madhya Pradesh, Telangana and Karnataka. These five States account for about Rs. 12,000 crore. We are hopeful that once this second tranche of Power Finance Corporation and Rural Electrification Corporation is released and we have some of the bill discounting with the States, we will be able to liquidate these dues by 31st March."

3.30. In a written reply toa specific query as to whether any TPAs were invoked for recovery of dues, MoP in a written communication submitted as follows :

" NTPC has written to Ministry of Power to invoke the TPAs for recovery of their dues from DISCOMS of certain states. NTPC has also issued regulation notices to the concerned states. However, on assurances from the states regulation notices were withdrawn and TPAs not revoked. It is also envisaged that certain states have applied loan from REC/ PFC under liquidity infusion Scheme and they will be able to pay outstanding dues of NTPC"

Performance of Joint Ventures and Subsidiaries of NTPC

3.31 It was informed to the Committee that NTPC has formed various Subsidiaries and Joint Venture companies in order to increase its core business and for strategic business diversification. These are in the areas of power generation, power trading, power distribution, power equipment manufacturing, power services, coal mining and fertilizer. The names of the JVs and Subsidiaries are as under :-

(a) Joint Ventures

1. Utility Powertech Ltd.
2. NTPC Alsthom Power Services Ltd.
3. NTPC – GE Power Services Pvt. Ltd.
4. NTPC – SAIL Power Company Ltd.
5. NTPC – Tamil Nadu Energy Company Ltd.
6. Ratnagiri Gas and Power Pvt. Ltd.
7. Konkan LNG Ltd.
8. Aravali Power Company Pvt. Ltd.
9. Meja Urja Nigam Pvt. Ltd.
10. NTPC – BHEL Power Projects Pvt. Ltd.
11. BF – NTPC Energy Systems Ltd.
12. National High Power Test Laboratory Pvt. Ltd.
13. Transformers and Electricals Kerala Ltd.
14. Energy Efficiency Services Ltd.
15. CIL NTPC Urja Pvt. Ltd.
16. Anushakti Vidyut Nigam Ltd.
17. Hindustan Urvarak and Rasayan Ltd.
18. Trincomalee Power Company Ltd.- Srilanka
19. Bangladesh India Friendship Power Company Pvt. Ltd.- Bangladesh

(b) Subsidiaries

1. NTPC Electric Supply Company Ltd.
2. NTPC Vidyut Vyapar Nigam Ltd.
3. Kanti Bijli Utpadan Nigam Ltd.
4. Bhartiya Rail Bijli Company Ltd.
5. Patratu Vidyut Utpadan Nigam Ltd.
6. Nabinagar Power Generating Company Ltd.

3.32 The NTPC, furnishing the data on the financial performance of JV group companies in terms of value accretion, their financial ratios *vis-a- vis* its (NTPCs) own performance metrics submitted as follows :

"Of the 7 Coal-based Power Generating Companies, in the case of BRBCL, NPGCL, and Meja, the unit(s) have been declared Commercial in recent years and some Unit (s) are still under construction, while other group Companies such as NTECL & KBUNL have declared profits only in recent years. However, both these Companies have huge debtors and despite regular perusal with DISCOMs, these Companies are unable to recover their dues in time.APCPL & NSPCL are declaring profits regularly and also paying the dividend to promoters.

Name	**APCPL**	**NSPCL**	**KBUNL**	**NTECL**	**BRBCL**	**NPGCL**	**MUNPL**
Capacity Under Operation (MW)	1500	814	610	1500	750	660	660
NTPC Investment as on 31.03.20 (Rs Cr)	1433.01	490.25	1610.67	1428.11	1774.12	4417.01	1581.64
Dividend recd. by NTPC 2019-20 (Rs Cr)	146.83	50	-	-	-	-	-

Investments in subsidiaries and Joint ventures

3.33 The data on investments made in subsidiaries and JVs and the dividend the company got from them during 2010-11 to 2016-17 (year wise) as furnished by the company is as follows :

Year	Investments in subsidiaries	Investments in JVs	Dividends@	Remarks
2011	865.88*	3,121.63	33.69	*Investment including Share Application Money Pending Allotment @Dividends excluding Dividend received from Equity Instrument designated at fair value through OCI (Dividend received from PTC India Limited) since investment in JVs exclude investment in Equity Instrument. Up to the year 2017, Share Application Money Pending Allotment (SAPA) was shown under Note "Investment in Subsidiaries and JV Companies" due
2012	1,000.11*	3,660.93	77.36	
2013	1,025.76*	4,811.46	126.86	
2014	1,367.40*	5,090.04	71.98	
2015	1,842.69*	5,297.98	116.61	
2016	1,930.43*	6,004.29	131.76	
2017	1,922.23	6,212.40	163.09	
2018	2,754.62	7,186.58	185.57	
2019	7,351.57	5,702.45	119.39	
2020	19,622.77	6,727.84	205.60	

				to which Investment in Subsidiaries for the year 2017 was shown as Rs. 2438.09 Crore (& not Rs. 2438.00) in Annual Report 2016-17. This included SAPA of Rs 515.86 Cr.

3.34 In a written reply to a query as to whether the company feel that the returns from its investments in subsidiaries and JVs are in tune with the expected returns from these investments, the NTPC submitted as follows:

> "NTPC has diversified its business operations and Joint Ventures and Subsidiary Companies are engaged in various businesses including power generation, trading, power equipment manufacturing, energy efficiency, etc.
>
> Majority of NTPC's investments has been made in Companies engaged in Power Generation Activities (APCPL, NSPCL, BRBCL, NPGCL, MUNPL, BIFPCL, PVUNL, NTECL, KBUNL etc.) having long gestation period. Investment made during the gestation period does not yield any returns.
>
> Some of the Companies have performed well and are regularly paying dividend such as APCPL, NSPCL & NVVN.
>
> KBUNL and NTECL has started making profits recently and are expected to give dividend in coming years."
>
> BRBCL has declared its 3 units under commercial operation in recent past, while the 4^{th} unit is under construction and has paid first ever Dividend of Rs. 101.48 Cr to NTPC during FY 2020-21.
>
> While other Companies with major investment in power sector such as NPGCL (only one unit is operational), BIFPCL & PVUNL and HURL (Fertilizer) are under construction.
>
> As part of Strategy of Diversification across value chain Joint Venture companies were established for Engineering, Procurement and Construction (EPC) activities in the power sector and manufacturing and supply of equipment for power plants and other infrastructure projects such as. NTPC BHEL Power Projects Pvt. Ltd. (NBPPL) and BF-NTPC Energy Systems Limited (BFNESL) but due to slow down in Power Sector and Government focus shifting from Thermal Power to Renewables, these companies have not achieved the desired success. BFNESL is now under liquidation. NBPPL has incurred losses due to lack of orders and is under consideration for winding up.

NTPC has strong belief that going forward returns from these companies excluding NBPPL and BFNESL, will improve as the projects under construction becomes operational. It is submitted that Total Dividend received during FY 2020-21 (till 18.12.2020) has already reached Rs. 561.73 Cr (excluding Dividend from Equity Instrument i.e. PTC) and Dividend income will increase further with Interim Dividends for FY 2020-21 yet to be announced by the JV and subsidiary companies"

Turning around of sick plants

3.35 In a written reply to a queries (i) as to whether NTPC has acquired any stressed assets (thermal plants) and turned around them during the last 10 years and if so, the details there of the names of the plants with capacity, their financial condition before and after turnaround , etc; and, (ii) whether such turnaround was on sustainable basis, it was stated as under:

" NTPC has acquired the following State-Owned Sick thermal plants in the last 10 years and has taken a turn around measures:
a) Patratu Thermal Power Station in the State of Jharkhand
b) Barauni Thermal Power Station in the State of Bihar
Details of aforesaid acquisitions are as under:

Sl. No	Name of Sick Power Station/State	Capacity	Date of Acquisition	Mode of Acquisition	Status of Project as on takeover of station	Turn around measures by NTPC/Current Status
1.	Patratu TPS, Jharkhand	770 MW (de-rated capacity)	01.04.2016	Statutory Transfer scheme notified by Govt of Jharkhand on 01.04.2016 for transfer of assets to Patratu Vidyut Utpdan Nigam Limited, a JV Company with equity participation by NTPC and Jharkhand Bijli Vitaran Nigam Ltd (JBVNL) in the ratio of 74:26 respectively.	Plant was operating at extremely low level PLF (~15%). Only one unit (unit 10 of 110 MW capacity) was being operated at partial load.	Considering the inefficient operation, vintage of units and high cost of generation, an understanding was reached with Govt of Jharkhand to stop the operations of existing old units in Dec 2016. Accordingly, operations of old units had been discontinued with effect from 24.01.2017. Post takeover development of 3x800 MW expansion project has been undertaken by PVUNL. Units are currently under-construction.
	Acquisition of Barauni TPS, Bihar	720 MW (220 MW in R&M + 500	15.12.2018	Transfer of assets to NTPC through	At the time of acquisition Stage-I (2x110	Post takeover, NTPC took multi-pronged approach for revival of station. Some of

		MW Under Constructio n)		Statutory Transfer Scheme notified by GoB on 27.06.2018.	MW) units were under R&M for long and commissioning were delayed. Stage-II (2x250 MW) units were under-construction and were facing multiple technical, contractual and project management issues resulting in delays in commissioning of units and multiple cost overruns.	the key measures involve deployment of experienced team of NTPC executives, resolution of contractual issues, financial management, adoption of NTPC's best project management and O&M practices etc. Unit-7 (110 MW) balance R&M works were completed and unit has been put to sustained operations w.e.f. 23.05.2019 Balance works of Unit-8 (250 MW) was completed. Commercial operations (COD) has commenced on 01.03.2020. NTPC is taking all measures for revival of Unit-6 (under R&M) and commissioning of Unit-9 (under construction).

Financial Performance of captive coal Mines

3.36 The data on the investments made for developing 10 captive coal mines (mine wise) and coal production from the captive coal mines (mine wise) of NTPC since 2016-17 (year-wise) as furnished by NTPC is as follows :

"Investment made by NTPC in developing the coal mines till Sep.'20:

Sl.No.	Name of the mine	Cumulative Expenditures till 30.09.2020 (Rs. Crore)
1.	Pakri-Barwadih	3,232.70
2.	Chatti-Bariatu	517.17
3.	Dulanga	627.15
4.	Talaipalli	2,106.83
5.	Kerandari	530.61
6.	Banai	62.60
7.	Bhalumuda	59.31
8.	Mandakini-B	87.14
9.	Badam	30.28
	TOTAL	7251.93

Hydro power generation -Cost

3.37 With regard to average per-unit cost of hydropower generated by NTPC and its JVs and subsidiaries, NTPC submitted that :

> "The average per-unit cost of hydropower generated by NTPC hydro plant in 2020-21 till 30th September 2020 is Rs. 4.20 /kWh."

3.38 With regard to per MW cost of Hydropower and also the gestation of Hydropower projects, NTPC submitted the following information:

> "The details of per MW cost of Hydropower and the gestation of Hydropower projects presently being developed by NTPC Ltd are as below:

Sr. No.	Name of Hydroelectric Project (Capacity in MW)	Cost per MW (Crs)	Gestation period since the award of the main pkg (Years)	Remarks
1.	Koldam Hydroelectric Project (4x200=800MW) Himachal Pradesh	9.55	12	Operational since July 2015
2.	TapovanVishnugad Hydroelectric Project (4x130=520MW) Uttarakhand	11.28	16	Under construction, Anticipated date of commissioning Dec-2021
3.	Rammam III Hydroelectric Project (3x40=120MW) West Bengal	11.52	10	Under construction Anticipated date of commissioning Dec-2024
4.	LataTapovan Hydroelectric Project (4x67.75=271MW) Uttarakhand	8.93	-	Construction stopped on 08.05.2014 by order of Hon'ble Supreme Court dated 07.05.2014
5.	Seli Hydroelectric Project (4x100=420MW) Himachal Pradesh	8.4	New Project	MOU for implementation yet to be signed with Govt. of HP.
6.	Miyar Hydroelectric Project (3x40=120MW) Himachal Pradesh	7.2	New Project	

CHAPTER IV

Operational Matters

New Plants Under Construction

4.1 As per information furnished to the Committee, the status of the new Plants of NTPC under construction is as under :

Name of the Plant	Location of the Plant (District, State)	Starting Date of construction^	Expected Date of Completion∞	Cost involved (₹ Crores)	Projected installed capacity (MW)
Barh-I (3X660)	Patna, Bihar	Feb-05	Apr-22	21,312	1980
Gadarwara* (2X800)	Narsinghpur, M.P.	Mar-13	Feb-21	15,105	1600
Darlipali* (2X800)	Sundergarh, Odisha	Feb-14	Apr-21	13,141	1600
North Karanpura (3x660 MW)	Chatra, Jharkhand	Feb-14	Oct-22	15,389	1980
Tanda-II* (2x660 MW)	Ambedkarnagar, U.P.	Sept-14	Mar-21	9,842	1320
Telangana-I (2x800 MW)	Pedapalli, Telangana	Jan-16	Mar-22	10,998	1600
Barauni-II* (2X250 MW)	Begusarai, Bihar	Dec-18#	Mar-21	3,292#	500
TVHEPP (4x130 MW)	Chamoli, Uttarakhand	Nov-06	@	5,867	520
Rammam (3x40 MW)	Darjeeling, West Bengal	Sept-14	Dec-24	1,382	120
Lata Tapovan (3X57 MW)	Chamoli, Uttarakhand	Aug-12	##	1527.08	171
BRBCL** (4x250 MW)	Aurangabad, Bihar	Jan-08	Apr-21	10,566	1000
NPGCPL* (3x660 MW)	Aurangabad, Bihar	Jan-13	Jul-21	17,304	1980
Patratu (3X800 MW)	Ramgarh, Jharkhand	Nov-17	Sept-24	17,112	2400
RENEWABLE ENERGY PROJECTS					
Bilhaur –II Solar G	Kanpur Nagar, UP	11.03.2019	Apr-21	442.58	85
Auraiya-I Solar G	Auraiya, UP	16.01.2019	Feb-21	92.06	20
Auraiya-II Solar-F	Auraiya, UP	24.12.2019	Jan-22	100.30	20
Rihand Solar G	Sonbhadra, UP	11.12.2019	Jan-22	98.75	20
Ramagundam Solar F	Peddapalli, Telangana	10.06.2019	Jul-21	442.03	100
Simhadri Solar F	Visakhapatnam, AP	02.07.2019	Jun-21	114.25	25
Kayamkulam – I Solar F	Alappuzha, Kerala	24.09.2019	Oct-21	403.62	70
Kayamkulam-II	Alappuzha, Kerala	24.09.2019	Oct-21	115.14	22

Solar F					
Gandhar Solar G	Bharuch,Gujarat	31.03.2020	Apr-22	92.58	20
Kawas Solar G	Surat, Gujarat	20.08.2020	Apr-22	293.03	56
Jetsar Solar G	Sri Ganganagar, Rajasthan	11.12.2019	Sep-21	702.28	160
Sambhu Ki Bhurj - I Solar G	Bikaner, Rajasthan	11.01.2020	Feb-22	1522.71	250
Sambhu Ki Bhurj - II Solar G	Bikaner, Rajasthan	20.03.2020	Apr-22	1782.00	300
Devikot – I Solar G	Jaisalmer, Rajasthan	11.01.2020	Feb-22	852.90	150
Devikot – II Solar G	Jaisalmer, Rajasthan	20.03.2020	Apr-22	524.83	90
Nokhra Solar G	Bikaner,Rajasthan	20.03.2020	Feb-22 Apr-22	1803.19	139 161
Fatehgarh Solar G	Ajmer,Rajasthan	20.03.2020	Apr-22	1749.31	296
Ettayapuram Solar G	Thoothukudi, Tamilnadu	20.03.2020	Feb-22	1316.22	230
Anta Solar G	Baran,Rajasthan	07.01.2021	April 22	382.22	90
Bhensada (Jaisalmer) Solar G	Jaisalmer,Rajasthan	20.01.2021	July 22	1221.73	320
Chhatargarh (Bikaner) Solar G	Bikaner, Rajasthan	20.01.2021	July 22	559.99	150

* One unit commissioned

** Three unit commissioned.

Acquisition cost, Project acquired in Dec-18.

@ Being assessed after the natural disaster occurred on 07.02.21

Construction activities stopped at Lata Tapovan since 08.05.14 in line with Hon'ble SC Order dated 07.05.14.

^Investment approval date.

∞Addition of last unit of project to installed capacity.

F- Floating Solar

G- Ground mounted

Life of Thermal Power Plants (TPPs)

4.2 In written reply to a query as to the normal life of a Thermal Power Plant (TPP) operated by NTPC and its group companies, NTPC submitted as follows:

> "As per CEA/CERC guidelines, the normal life of a Thermal Power Plant is 25 years.However, with R&M, life and efficiency of the plants can be extended."

4.3 The data on TPPs of NTPC and its group companies which have completed their normal life span as on date, as furnished by NTPC is as under :

"In some thermal stations, some units have completed 25 years (From 1st Synchronization date) but not the whole station. In NTPC number of units completing 25 years is 79 nos. & for JV, 5 nos. Many of these units have undergone major R&M, for increasing the life of the unit."

A list of Thermal Stations/units which have completed 25 years as on 19.10.2020 is given below:

NTPC Coal Stations	UNIT	Age as on 19.10.2020 from date of 1st Synchronization (in years)
Singrauli	Unit-1	38.71
	Unit-2	37.93
	Unit-3	37.59
	Unit-4	36.99
	Unit-5	36.67
	Unit-6	33.85
	Unit-7	32.93
Rihand	Unit-1	32.58
	Unit-2	31.32
Unchahar	Unit-1	31.93
	Unit-2	31.60
Tanda	Unit-1	32.76
	Unit-2	31.63
	Unit-3	30.59
Dadri Coal	Unit-1	28.85
	Unit-2	27.86
	Unit-3	27.60
	Unit-4	26.59
Korba	Unit-1	37.67
	Unit-2	37.00
	Unit-3	36.62
	Unit-4	33.41
	Unit-5	32.59
	Unit-6	31.60
Vindhyachal (Madhya Pradesh)	Unit-1	33.05
	Unit-2	32.27
	Unit-3	31.73
	Unit-4	30.84
	Unit-5	30.58
	Unit-6	29.74
Ramagundam (Telangana)	Unit-1	37.01
	Unit-2	36.42
	Unit-3	35.88

NTPC Coal Stations	UNIT	Age as on 19.10.2020 from date of 1st Synchronization (in years)
	Unit-4	32.34
	Unit-5	31.59
	Unit-6	31.03
Farakka (West Bengal)	Unit-1	34.82
	Unit-2	33.85
	Unit-3	33.23
	Unit-4	28.09
	Unit-5	26.69
Kahalgaon (Bihar)	Unit-1	28.58
	Unit-2	26.61
	Unit-3	25.59
TalcherKaniha (Odisha)	Unit-1	25.68
Talcher Thermal	Unit-1	52.88
	Unit-2	52.60
	Unit-3	52.31
	Unit-4	51.56
	Unit-5	38.60
	Unit-6	37.60
Barauni	Unit-6	37.83
taken over on 15.12.2018	Unit-7	35.82
NTPC GAS		
Anta	Unit-1	31.77
	Unit-2	31.65
	Unit-3	31.48
	Unit-4	30.65
Auraiya	Unit-1	31.58
	Unit-2	31.27
	Unit-3	31.22
	Unit-4	31.08
	Unit-5	30.83
	Unit-6	30.38
Dadri Gas	Unit-1	28.68
	Unit-2	28.59
	Unit-3	28.36
	Unit-4	28.04
	Unit-5	26.67
	Unit-6	26.59
Kawas	Unit-1	28.60
	Unit-2	28.43
	Unit-3	28.33
	Unit-4	28.17
	Unit-5	27.67
	Unit-6	27.61
Gandhar	Unit-1	26.61
	Unit-2	26.58
	Unit-3	26.44

NTPC Coal Stations	UNIT	Age as on 19.10.2020 from date of 1st Synchronization (in years)
	Unit-4	25.58
JV - NEEPCO		
Assam CCPP	Unit-1	25.62
	Unit-2	25.60
	Unit-3	25.33
	Unit-4	25.24
	Unit-5	25.65

4.4 In response to a query as to whether the categorization/fixing of 'useful life' or 'normal life' of Thermal Power Plants Units guided by regulation of CERC or the Ministry of Power, the NTPC submitted as follows :

> "Thermal power plants are capital-intensive assets and as per industry practice, to balance the interest of the distribution utility and the generating company, these assets are depreciated over the period of their useful life. Further, repayments of loans are scheduled during this period considering the loan tenure. Accordingly, the useful life has been defined in the CERC (Terms & Conditions of Tariff) Regulations, 2019 for the purpose of determination of tariff and servicing of the investment incurred as under:
>
> 3(73) 'Useful life' in relation to a unit of a generating station, integrated mines, transmission system and communication system from the date of commercial operation shall mean the following:
>
> (a) Coal / Lignite based thermal generating station 25 years
> (b) Gas / Liquid fuel based thermal generating station 25 years
> (c) ….
> (d) ….
> (e) …
> (f) ..
> (g) ….
>
> Provided that the extension of life of the projects beyond the completion of their useful life shall be decided by the Commission on case to case basis.
>
> Further, it is seen that thermal generating units typically remain under operation and continue to generate efficiently much beyond the useful life of 25 years. Therefore, the actual or physical life is much longer than the useful life. Thus, the concept of 'useful life' is for reckoning a financial life, which is used for servicing of the depreciation as described above."

4.5 On the issue of TPPs operating well beyond their lifespan of 25 years, arepresentative of NTPC appearing before the Committee submitted as follows:

"technically, there is not a problem for the power station to run if it is maintained and operated well even up to fifty years or sixty years.as per CEA and CERC, that is how it is."

4.6 With regard to the (i)normal life-span of such units in those countries; and, (ii) procedure followed in developed western countries and also in far east countries- Japan, Singapore etc., to replace the outlived units of TPPs, NTPC submitted as follows :

"As per research report of S&P Global, in USA the average age of coal based stations at retirement was 41 years in 2018 and currently coal based units aged more than 50 years are also in operation in US.

Further, as per research report of Climate Analytics, average age of operating coal plants in Japan is 25 years and average retirement age is 40 years"

Renovation and Modernization of TPPs

4.7 **Plants Under Renovation/Modernization**

The status of the Plants under renovation/modernization as furnished by NTPC is as under:

I) <u>ESP Packages</u>

S. No	Name of Plant	Location	Starting date of Renovation /Award Date	Cost (Rs Cr)	Expected Date of Completion
1	Vindhyachal Stage-I (6X210 MW) & St.-II (2X500 MW)	Vindhyachal	26-02-2013	241.09	R&M of both units of St-II completed. R&M of five units of St-I completed. Work in progress in remaining Unit Completion by May 2021
2	Singrauli Stage-I (5x200 MW) & St-II (2x500 MW)	Singrauli	14-11-2013	315.69	R&M of two units of St-I and one unit of stage-II completed. Work in progress in Unit#7 of Stage-II (pass wise). Completion by April2021.
3	Farakka Stage-I (3X200 MW)	Farakka	14-11-2013	85.89	R&M of one unit completed. Balance 2 units Work (pass wise) in progress.
4	Farakka Stage-II (2X500 MW)	Farakka	24-03-2017	124.09	R&M (pass wise) of both units under Progress.
5	Kahalgaon Stage-I (4X210 MW)	Kahalgaon	24-11-2017	194.07	R&M (pass wise) of three units under Progress.

6	Ramagundam Stage-I (3x200 MW)	Ramagundam	23-03-2018	122.29	Work in progress in two units. Pass wise R&M to be taken up during scheduled unit shut downs

II) <u>DDCMIS (Distributed digital control monitoring & information system) Packages</u>

S. No.	Project	Location	Starting date of Renovation /Award Date	Cost Rs.cr	Expected Date of Completion
1	Faridabad GPS	Faridabad	13-09-2019	17.06	Shut down in Mar 2021 for implementation.

III) <u>Othermajor R&M</u>

S No.	Name of Plant	Location	Starting date of Renovation /Award Date	Cost Rs Cr	Expected Date of Completion
1	Ramagundam Stage-I (3x200 MW) TG R&M	Ramagundam	14-12-2016	386	Shut down of Unit #3 taken on Feb 15 for 105 days. Completion all three units by Aug 2022.
2	Ramagundam Stage-I (3x200 MW) SG R&M	Ramagundam			Bid opened on 30-01-2021.Under Evaluation
3	FGUPTS Stage-1-Gravimetric Feeder	Unchahar			Bid opened on 28-01-2021. Under Evaluation

4.8 In written reply to a query as to whether NTPC/ NTPC group extend the life of TPP by renovating and modernizing and if so, the detailed notes on the renovation and modernization including *inter alia* the number of TPPs outlived normal life, no of such TPPs revived by renovation and modernization, the extended life of renovated TPPs, their PLF, etc., NTPC submitted as under:

> "NTPC is carrying out Renovation and Modernisation of TPPs through **Special allowance under expenditure mode without any defined life extension.** Further, an R&M scheme is developed to recover the deterioration in the performance of equipment & systems. Therefore, the performance & life of that equipment that

undergoes R&M increases but other equipment & systems which are equally crucial for performance may also need further renovation for continuous operation and life extension of TPPs."

4.9 The analysis of information shows that 79 Thermal Power Plant units of NTPC have outlived their normal life of 25 years as per the prescribed guidelines of CEA and CERC. Out of these 79 TPP units, 52 units are more than 30 years old and 4 are more than 50 years old. The Company stated that it is carrying out Renovation and Modernization (R&M) of ageing plants. In response to a query as to how long activities of an ageing plant can be continued without compromising the performance of a plant as well maintaining safety standards of the equipment and systems, the NTPC submitted as follows:

"Performance of the power plant depends upon the Operation and Maintenance (O&M) practices being followed by the utilities. Maintaining the parameters and proper maintenance can reduce the degradation of the equipment and enhance the life of the plant. NTPC has a robust O&M practice developed over years of experience and thus has minimum degradation of performance even after the design life of the plant is over. Further, intermitted Renovation & Modernization (R&M) activities adopting modern technology are carried out on the aged equipments which partially regain the performance level of the plant.

Safety of the personnel and the equipments is the topmost priority for NTPC. Safety aspects are in built into NTPC design as well as O&M practices. In case of any probability of safety hazard, immediate action is taken to replace such component/equipment during O&M and R&M phases.

However, where the units are very old and O&M/R&M can't improve the performance/life of the equipment, NTPC is retiring those plants e.g. Badarpur TPS units etc.

Hence, though the design life of the plant is 25 years, with robust O&M practice and R&M interventions, these can be operated efficiently maintaining all safety standards beyond its design life."

4.10 Elaborating further, NTPC submitted as under:

"Planned interventions of identification, augmentation and replacement of the plant components affecting safety, reliability, efficiency and environmental impacts, can effectively extend the life of an ageing plant on a continuous basis and restore the original performance.

Refurbishment or replacement of components like Turbine modules & rotors, Boiler Feed Pump (BFP) cartridges, Boiler components, pulverizers, fans, upgradation of Process Control Systems are required due to ageing and obsolescence. In the process more efficient, the latest design equipment can be incorporated with state-of-the–art technology and improved metallurgy. Retrofitting and augmentation of Electrostatic Precipitators is done to reduce emissions & meet environment norms. After such interventions, the performance and reliability of the plant is restored and safe operation is ensured.

It's pertinent to mention that the oldest unit of NTPC fleet, 38 year old Singrauli Unit 1 of NTPC, commissioned in 1982, has recorded a PLF of 100.24%, the highest in the county, in the first 9 months of the current financial year."

4.11 With respect to the roadmap drawn by NTPC to replace old units of TPPs without having an adverse upward impact on the cost of electricity/unit as well as keeping the environment and safety concerns in mind, NTPC submitted as under:

"The decisions regarding closure of old units are taken on case to case basis based on techno-economic considerations.

Further, the old units established by NTPC are well maintained and still among the best performing units of the country, providing the cheapest power to country, as their fixed costs have been recovered

Moreover, as NTPC has made significant investments in these units for compliance of new emission norms, the decision regarding their replacement needs to be judiciously taken considering all the factors including cost of electricity/unit, environment and safety."

4.12 Elaborating the term *'special allowance through expenditure mode without any defined life extension'* for the understanding of the Committee, NTPC stated as under :

"CERC (Terms & Conditions of Tariff) Regulations 2019 has provisions for enabling coal-based units older than 25 years to continue operation through following enabling options as under:

(i) **Renovation & Modernization (R&M) –** The generating company may make an application (with the consent of the beneficiaries or Discoms) for undertaking R&M along with a detailed proposal before the CERC. CERC may accord approval to the proposal after prudence check and due consideration of reasonableness of the proposed cost estimates, financing plan, schedule of completion, interest during construction, use of efficient technology, cost benefit analysis, expected duration of life extension, etc. Capital expenditure admitted by CERC after deducting the accumulated depreciation already recovered from the admitted project cost, shall form the basis of tariff determination.

(ii) **Special Allowance –** The Tariff Regulations also provide that In lieu of capitalization of R&M Expenditure {(i) above} the generating company may avail Special Allowance as compensation for meeting the expenses for R&M beyond the useful life. In this case, the capital cost shall not be revised upwards. Special Allowance of Rs. 9.5 lakhs per MW per year for the tariff period 2019-24 has been fixed for coal-based units after completion of useful life.

In case of gas/liquid fuel based open/combined cycle thermal generating units after 25 years of operation from COD, any additional capital expenditure which has become necessary for R&M of gas turbines/steam turbine or additional capital expenditure on account of obsolescence or non-availability of spares for efficient operation of the stations shall be allowed by CERC in tariff.

CERC Tariff Regulations 2019 also provide for servicing of expenditure incurred by coal-based units for implementation of Revised Emission Standards notified by the MOEF&CC. These regulations envisage determination of supplementary capacity charges and supplementary energy charges for such units from date of operation of Emission Control Systems. Further, CERC has fixed an additional period of 15 years for coal-based units that have completed 25 years from COD, for recovery of depreciation on additional Capitalization admitted in tariff for implementation of Emission Control Systems."

4.13 In response to further query as to whether the performance metrics of renovated/modernized TPPs are on par with other TPPs and if so the details there of; and, if not the reasons therefor, NTPC submitted as follows :

> "The performance of plants taken over by NTPC was improved through R&M. The PLF of TTPS at the time of takeover in 1995 was 18.7% but it is around 84% now with an availability of around 87%. Similarly, Unchahar Stage-I PLF at the time of takeover in 1992 was 18%, but it is around 60% now with an availability of around 90%. Also, the PLF of Tanda Stage-I at the time of takeover in 2000 was 14.9%, but it is around 53% now with the availability of around 72%."

4.14 In written reply toa specific query as to the efforts made to retire/ decommission those TPPs which have completed normal life and in their place to set up renewable energy plants, NTPC submitted as follows

> "Badarpur station has been decommissioned in 2018. Ecopark is being developed in the vacated space."

4.15 In written reply to a query as to whether any cost benefit analysis/ techno commercial analysis was carried out to replace the ageing TPPs by renewable plants keeping in view of the environmental pollution caused by TPP, NTPC ina written reply submitted that:

> "NTPC is planning aggressive capacity addition in renewable, including using the reservoirs and surplus land available in thermal stations. However, at this stage there are no plans to replace the ageing plans with renewable plants."

4.16 The Company has informed that the CERC tariff regulations, 2019 as compared to tariff regulations, 2014 have resulted in the decrease of NTPC's profit due to change in methodology of calculation, withdrawal of compensation amount and tightening of norms regarding interest on the working capital component of capacity charges. In view of the

aforementioned, the Company was requested to furnish as to whether R&M of Thermal Power Plant Units would continue or the company have any future plans to tackle this issue as 79 Power Plant Units are more than 25 years old and the Company has no future plans to set-up Greenfield Thermal Power Plants, NTPC submitted the following reply:

> "The CERC Tariff Regulations 2019 provides for the following options for the operation of coal-based stations after 25 years:
>
> 1. Undertake R&M based on the petition filed before CERC after consent of beneficiaries – CERC shall allow additional expenditure on account of R&M after due diligence as per the process specified in these regulations.
> 2. Special Allowance - Normative Special Allowance @ Rs. 9.5 lakh per MW in lieu of R&M expenditure is provided as compensation for meeting the requirement of expenses including renovation and modernization beyond the useful life of the generating station. In such an event, an upward revision of the capital cost is not permitted and the applicable operational norms are not relaxed. Further, the Special Allowance is included in the annual fixed cost.
>
> Presently, NTPC stations, which are more than 25 years old are availing Special Allowance in the 2019-24 tariff period."

Fuel Security of TPPs

4.17 Fuel supply to TPPs operated by NTPC is being met through long term Coal Supply Agreements (CSAs) with coal producers such as Coal India Ltd (CIL) & its subsidiaries and Singareni Colliery Company Ltd (SCCL), which are valid for 20 years with a provision for review after every five years.

4.18 The data on (i) coal supply through (a) long term CSAs, (b) bridge linkages, (c) short term MoUs, (d) Supplementary Agreements (SAs), (e) 'e' auction and imports (category wise) for the last 10 years (year wise) and (ii) Annual Contracted Quantity (ACQ) of coal from CIL and SCCL, the materialization of such ACQs, the reasons for shortfall, if any, in supplying coal as per ACQ, as furnished y NTPC is as follows :

FY	Annual Contracted Qty (ACQ)* (MMT)	ACQ Receipt (MMT)	Materialization (%)	MoU (Short term/ Bridge Linkage) (MMT)	E-Auction (MMT)	Swapping on a/c of Import Coal (MMT)	Captive Mine (MMT)	Total Domestic Receipt (MMT)	Import Receipt (MMT)	Total Receipt (MMT)	Generation Loss on account of coal shortage (MU)
2010-11	127.78	121.75	95.0%	4.22	0.76			126.72	10.50	137.22	5096
2011-12	129.51	125.56	97.0%	3.05	0.41			129.01	12.00	141.02	7882
2012-13	135.89	142.40	105.0 %	3.11	0.23			145.73	9.10	154.83	12966
2013-14	150.33	144.75	96.0%	1.95	3.15			149.85	10.80	160.65	8232
2014-15	159.59	142.67	89.0%	7.22	0.94	0.21		151.03	16.59	167.62	8985
2015-16	159.20	145.18	91.0%	6.34	0.29	0.53		152.34	9.70	162.04	189
2016-17	161.74	152.08	95.0%	6.78	0.40		0.09	159.35	1.02	160.37	349
2017-18	163.99	156.40	94.8%	7.86	1.53		2.41	168.20	0.32	168.52	10279
2018-19	168.76	161.27	95.6%	6.46	1.73		6.30	175.76	1.04	176.80	8180
2019-20	169.50	155.21	92.8%	6.42	0.45		9.92	172.00	2.84	174.84	6656

4.19 In written reply to queries as to (i) whether enabling provisions are there in CSAs to impose penalties for non-materialization or short supplies *vis-a-vis* ACQs and if so imposition and realization of such penalties for non-materialization/short supply, and (ii) the data on loss of production and revenue due to non-materialization and short supply of coal under ACQs, for the last 10 years (year wise), NTPC submitted as follows :

> "Clause 3.6.1 of the CSAs deals with the issue of penalties for non-materialization or short supplies vis-à-vis ACQs.
>
> "If for a Year, the Level of Delivery by the Seller, or the Level of Lifting by the Purchaser falls below ACQ with respect to that Year, the defaulting Party shall be liable to pay compensation to the other Party for such shortfall in Level of Delivery or Level of Lifting, as the case may be ……."
>
> As per terms and conditions of the agreement, Level of Delivery with respect to a year is calculated in the form of percentage as per the following formula:
>
> $$\text{Level of Delivery (LD)} = \frac{(DQ+DDQ+FM+RF) \times 100}{ACQ}$$
>
> Where:
>
> LD = Level of Delivery of Coal by the Seller during the Year.

DQ = Delivered Quantity, namely, aggregate actual quantities of Coal delivered by the Seller during the Year

DDQ = Deemed Delivered Quantity

FM = Proportionate quantity of Coal which could not be delivered by the Seller in a Year due to occurrence of Force Majeure event affecting the Seller and / or the Purchaser,

RF = Quantity of Coal that could not be supplied by the Seller during the Year owing to the Railways not allotting wagons or not placing wagons for loading, in spite of specific valid indent/offer submitted by the Seller to the Railways against valid program(s) submitted by the Purchaser for the purpose.

Therefore, Compensation for short delivery is applicable only after taking into account all the above-mentioned factors.

Delivery to NTPC has been to the required levels as per ACQ except for a few cases owing to Force Majure conditions such as the closure of Badarpur plant, flooding of mines at SECL, and local disturbances at Talcher mines of MCL.

In view of the above, during the last 10 years, no penalties have been imposed for non-materialization /short supply"

4.20 The data shows that NTPC short supplies of coal vis-à-vis ACQs was in the range of 5% in 2010-11 to 7.2% in 2019-20 with as high as 11% in 2014-15. In response to a query as to whether theshortfall is due to failure of NTPC for lifting of coal from the sites, in a written reply, NTPC submitted as follows :

"During the period mentioned above, upto 2016-17 Fuel Supply Agreement (FSAs) were station specific and from 2017-18 onwards these are aggregated over subsidiaries of CIL. Shortfall indicated above is in respect Annual Contracted Quantity (ACQ) Supplies only. However NTPC was able to arrange the coal quantities equivalent to ACQ from other sources. Therefore, Shortfall cannot attribute to NTPC.

NTPC has been taking up the matter with CIL and MoC for aggregating ACQ at company level. Further, NTPC is also taking up for discontinuing the provisions of

penalties/ incentives in FSAs. Ministry of Power has allowed flexibility and aggregation of coal requirements of NTPC's inter-State Generating Stations (ISGS) and under Security Constrained Economic Dispatch (SCED) system introduced w.e.f. 1st April, 2019, NTPC has been able to save approximately Rs.3 crore per day."

4.21 With regard to the amount of penalties imposed on NTPC for such short take off during the last 05 years as per provisions of CSA:

"Penalties are applicable only in case the materialization is less than the trigger level (90%/80%) in case of 2009 and 2012 Fuel Supply Agreements (FSAs) respectively.

During last 05 years, a penalty of Rs. 9.05 crores has been imposed by Eastern Coalfields Limited (ECL) on NTPC Simhadri for less materialization of coal during 2016-17 (Prior to signing of supplementary agreement under Flexi policy). However, NTPC has refuted the claim.

Subsequent to issuance of policy by Ministry of Power for flexible utilization of domestic coal for reducing the cost of power generation w.e.f. 2017-18, NTPC has signed Supplementary Agreement with CIL subsidiaries with aggregation of Annual Contracted quantities for flexible utilization and reduction of Performance Incentive (PI) and Penalties.

As per Clause 4 of the Flexi agreement, Compensation for short delivery/lifting shall be calculated on the basis of Aggregated ACQ (AACQ) and Cut off level of Delivery/ lifting (CLD/CLL), calculated on the basis of weighted average level of pooled ACQ. It further states that the Supplementary agreement being an interim arrangement both Sellers and Purchaser agree to adopt the formula for calculation of compensation at a later date for short lifting below CLD/CLL or incentives for dispatches as would be decided and accepted in the revised agreement through deliberations among stakeholders.

However, the slabs and applicable rates for Performance Incentive (PI) and Penalties are yet to be finalized by CIL."

Development of NTPC Coal Blocks

4.22 The details of the development of NTPC Coal Blocks with minable reserves as submitted to the Committee are as under:

S.No.	Coal Mining Projects	Estimated Mineable reserves (Million Metric Tonnes)	Peak-rated Coal Production Capacity (Million Metric Tonnes per annum)	Coal Quality (Grade of Coal)
1.	Pakri-Barwadih	642	18	G9/G10
2.	Dulanga	152	7	G12
3.	Talaipalli	861	18	G11
4.	Kerandari	140	6	G10
5.	Chatti-Baraitu	415	7	G12
6.	Mandakini-B	657	20	G11
7.	Badam	91	3	G8
8.	Banhardih(*)	250.5	12	G11
9.	Banai	123.5	12	G12
10.	Bhalumuda	316		
		Total	**103**	

(*) This mine is being developed by Patratu Vidyut Utpadan Nigam Ltd. (PVUNL), a JV company of NTPC and Jharkhand Government

Incorporation of NTPC Mining Ltd (NML)

4.23 With a view to have focused approach for development and operation of 10 coal mines allocated to NTPC since 2016-17, the company with the consent of NITI Aayog has incorporated a company -NTPC Mining Ltd (NML) on 29 August, 2019 and requested the Ministry of Coal to transfer these coal mines to NML.

4.24 Furnishing the rationale behind incorporation of a new entity, namely, NTPC Mining Limited (NML) , NTPC submitted as follows:

> "NTPC formed the wholly owned subsidiary NTPC Mining Limited (NML) on 29.08.2019, aiming to get likely benefits such as de-linking business risks, better financing for NTPC in future, focused management for taking faster decisions and efficient handling of contracts etc.

NML will develop its own cadre for proper utilization of resources /captive mines to ensure reliable fuel supply to NTPC.''

4.25 Responding toa query as to why NTPC needs aseparate subsidiary for coal mining as it is not its core/primary activity and whether the coal mining can't be dealt with as a separate vertical in NTPC itself, a representative appearing before the Committee, submitted as under :

"When we set-up this company, the primary focus of this company was on mining because the skill of NTPC is different"

4.26 In written reply to a query as to whether the Ministry of Coal has given the approval to transfer the coal mines to NML and if so, the details thereof and if not, the reasons there for, NTPC submitted as under :

"Approval for transfer of the mines of NTPC to NTPC Mining Ltd. (NML) is awaited from the Ministry of Coal (MOC). In this regard, NTPC has requested MOC vide its letters dated 17th Jan.'20, 12th Mar.'20, and 26th May'20. Ministry of Power (MOP) has also requested MOC vide OM dated 4th Aug.'20 for early transfer of the mines.

MOC has again referred the matter to the Ministry of Law & Justice (MOL&J). Meeting of NTPC, MOC, and MOL&J held on 10th Sep.'20 in this regard. As learned, opinion from SGI is being taken by MOL&J."

4.27 With regard to the hindrances, if any, faced by NTPC due to the non-transfer of 10 captive coal mines to NML, NTPC submitted the following :

"Ministry of Coal (MOC) has issued "No objection", on 16.12.2020, for transfer of Pakri-Barwadih mine from NTPC to NTPC Mining Ltd. However, the vesting order of mining area land is still awaited.

For balance mines, the matter is under examination at Ministry of Coal and Ministry of Law & Justice. MOC, through MOL&J, is now taking opinion from ASGI.

Considering the delay in coal block development activities since the last two years due to villagers' resistance for their unreasonable demands for land compensation, employment, etc. in Mandakini-B coal block and due to geo-mining constraints & likely less percentage of coal extraction in Banai & Bhalumuda coal blocks, NTPC has decided to surrender all these three blocks. Accordingly, NTPC approached Ministry of Coal (MOC) on 26.12.2020 for surrendering these three coal."

4.28 On being asked about the comparative advantages for NTPC in retaining their coalmines with themselves instead of transferring them to NML, the NTPC replied as under :

"Transferring mines to the subsidiary company will bring additional flexibility for handling the coal miningbusiness. The subsidiary will be able to take on board the right mix of experienced & young professionalsto develop the right processes for ensuring productivity and quality. This will also enable efficient contracthandling as the same will be done by focused management."

4.29 On being further asked tohave a separate mining department in NTPC itself for Captive Coal Mines instead of opening of separate company, the NTPC in a written reply submitted as under :

"Mining is entirely different when compared to managing power business. NTPC mines are located inextremely remote areas with minimal infrastructure. Mining is carried out in boundary-less areas withdense forest cover and timely development of mine with intended infrastructure largely depends on thefactors beyond the control of the mining company. Land acquisition is done progressively in mining unlikepower projects and this becomes the most critical aspect of the development & progression of mine.Keeping in view the different challenges of mining, focused management equipped with experiencedand learned resources are required for handling the business which is different in comparison withNTPC's power business.Therefore, a separate company for developing and operating the mining business is very much required."

Captive Coal Production

4.30 In written reply to a query as to whether the Govt., while allocating the captive coal mines to NTPC, has given any targets and timelines for producing coal from these mines and if so, the details there of including fulfilling or otherwise of such stipulations along with supporting data, NTPC stated as under:

"NTPC has commenced coal production from Dulanga and Talaipalli coal mines within the stipulated target of the Government of India. In the case of the Pakri-Barwadih mine, though no target was given for the start of coal production, but NTPC has already commenced coal production from Dec.'16. For Chatti-Bariatu&Kerandari coal mines, coal production will be started in the FY 21-22 after the appointment of mine developer-cum-operators. In the rest of the mines, block development activities are going on and NTPC expects to achieve the respective schedule of the Government of India for the start of coal production."

4.31 The data on (i) investments made for developing 10 captive coal mines(mine wise) and coal production from the captive coal mines (mine wise) since 2016-17 (year-wise), as furnished by NTPC is as follows:

"Investment made by NTPC in developing the coal mines till Sep.'20:

Sl.No.	Name of the mine	Cumulative Expenditures till 30.09.2020 (Rs. Crore)
1	Pakri-Barwadih	3,232.70
2	Chatti-Bariatu	517.17
3	Dulanga	627.15
4	Talaipalli	2,106.83
5	Kerandari	530.61
6	Banai	62.60
7	Bhalumuda	59.31
8	Mandakini-B	87.14
9	Badam	30.28
	TOTAL	7251.93

4.32 Apprising the Committee of the present status of the issue of transferring mines to NML, MoP submitted as follows:

"Pakri Barwadih Mine:
Ministry of Coal has given its "No Objection" for transfer of Pakri Barwadih mine from NTPC to NML. However, vesting order in favour of NML for mining area land is still awaited from MOC.

Mines other than Pakri Barwadih:
Ministry of Coal is taking opinion from Ministry of Law and Justice for transfer of mines allotted under Coal Mines (Special Provision) Act {CM(SP) Act}./Mines and Mineral(Development and Regulation) (MMDR) Act."

4.33 In written replies to queries as to the data on (i) target date fixed for commencement of commercial production by l0 captive coal mines; (ii) actual date of commencement of commercial operations of the captive coal mines; (iii) the actual date of production has commenced; (iv) the amount of coal targeted for production from these captive coal mines (mine-wise); and, (vi) the actual production form these captive coal mines (mine-wise) and year-wise.

Name of Block	Target date for commencement of Coal production	Actual coal production	Year-wise coal production (in Million Metric Tonnes)					Coal production target for next three years(in Million Metric Tonnes)		
			16-17	17-18	18-19	19-20	20-21 (actual till 03.02.21)	21-22	22-23	23-24
Pakri-Barwadih	Dec'16	Dec'16	0.23	2.67	6.81	9.42	5.62	11.5	12	13
Dulanga	Nov'19	Mar'18			0.5	1.54	2.28	5.25	7	7
Talaipalli	Nov'19	Nov'19				0.19	0.59	1.75	4	8
Kerandari	Nov'19	-						-	1	3
Chatti-Bariatu	Nov'19	-						0.25	1	3
Badam	Nov'23*	-						-	1	2
Banhardih	Sep'23**	-						-	-	1
Total			0.23	2.67	7.31	11.15	8.49	18.75	26	37

For Badam, NTPC has requested MOC for revision of the efficiency parameters of the milestones considering '02.09.2019', the date of the actual transfer of the mine from Bihar SPGCL, by MOC as the 'Zero Date'.

**** For Banhardih, PVUNL has requested MOC for revision of the efficiency parameters of the milestones considering '27.07.2019', the date of the actual receipt of GR from JUUNL, as the 'Zero Date'.**

4.34 With regard to the reasons for the delay for transferring of the mines by the Ministry of Coal to NML, MoP submitted as follows :

"Ministry of Coal (MoC) has given its "No Objection" for transfer of Pakri Barwadih mine from NTPC to NML. For balance mines Ministry of Coal is taking opinion from MoL&J for transfer of mines allotted under CM(SP) Act."

4.35 In written reply to a query as to why the matter has been referred to the Ministry of Law & Justice (MOL&J)? , the reply from Ministry of Coal as furnished by MoP is as under:

"Ministry of Coal has referred to MoL&J for its opinion on the matter as the mines have been allotted under CM (SP) and MMDR Act."

4.36 With regard to the action taken / being taken by the Ministry of Power for transfer of the mines by the Ministry of Coal to NML, the reply of Ministry of Coal as furnished by MoP, is as under:

"MoC Reply: Ministry of Power deliberated the transfer modalities along with NTPC and its transaction advisor. Impact of GST and other taxes were discussed at length in couple of meetings. Ministry of Power has requested Ministry of Coal on 04.08.2020 to consider special dispensation for speedy transfer of mines from NTPC to its wholly owned subsidiary, NML."

Import of Coal

4.37 As the import of coal had increased from a decadal low of 0.32 Million Metric Tonnes (MMT) in the year 2017-18 to 1.04 MMT in 2018-19 and 2.84 MMT in 2019-20,the Committee sought to know the reasons for steps taken to reduce coal imports NTPC in a written reply submitted as follows :

"NTPC has no plan for fresh procurement of imported coal in year 2020-21. However, the total spilled over quantity for year 2020-21 from previous year's awarded contract was around ~3 MMT.

NTPC is having Annual Contracted Quantity(ACQ) of 174.4 MTPA of domestic coal with CIL and SCCL. Further, with incorporation of Flexibility utilization of domestic

coal for reducing the cost of generation since April' 2017, NTPC can rearrange the coal source as per generation plan. NTPC captive mines have come up and started production and year to year it is in increasing trend. In year 2019-20, total coal sourced from captive mines was 7.3 MMT. In year 20-21 total coal supply from captive mines is ~7.8 MMT till date."

4.38 Sharing the reasons for spike in import of coal in 2018-19 and 2019-20 to 1.04 and 2.84 MMTs*vis- a- vis* decadal low imports of 0.34 MMTs in 2017-18, NTPC submitted as follows:

"The reasons for importing coal in year 2018-19 and 2019-20 are as follow:

1. Reduction in Annual Fixed Cost (AFC) under recovery- NTPC rail fed stations viz Mouda, Solapur, Kudgi, Simhadri, Unchahar were facing coal shortage due to less materialization and other logistic constraints in 2017-18, 2018-19. In 2017-18, AFC under recovery due to coal shortage was Rs 724 Crores. In 2018-19, with coal import AFC under recovery could be reduced to Rs 180 Crores.Further, in the year 2019-20, AFC under recovery due to coal could be contained to ~ Rs. 65 Cr which is further reduced to 'nil' in year 2020-21 till date.

2. Poor coal quality from MCL in case of Talcher Kaniha- Talcher Kaniha has been facing acute coal quality issue due to poor coal supply from linked sources and specific coal consumption (SCC) had gone beyond the worst coal design. With the use of imported coal blending with domestic coal, station SCC has improved and also able to generate more power.

3. Poor materialization from MCL in case of Simhadri- Less materialization from MCL due to accident in mine and subsequent industrial unrest. To meet the shortage of coal supply to Simhadri, coal was being supplied from the SCCL under the MoU route. Basic price of the SCCL under the MoU was 181% higher than CIL notified price for G10 grade (i.e. Rs. 2880 /MT of SCCL in comparison to CIL Rs.1024 /MT). So high priced coal under SCCL MoU coal was substituted with imported coal (lowering ECR by 11 Paise/Kwh)."

4.39 For ensuring energy security , NTPC submitted as follows :

"To ensure fuel security NTPC has signed long-term agreements for the supply of Coal and gas. As a part of backward integration, NTPC is developing the ten allocated coal blocks with an envisaged peak production capacity of 103 million tonnes per annum by 2028-29.

By 2030, NTPC is aiming to meet 40% of its coal requirement from captive mines.

The Government of India is promoting the usage of electric vehicles as a part of providing energy security by reduction of oil imports along with the advantage of reducing the tailpipe emissions in metropolitan cities. NTPC is actively participating in all GoI initiatives towards energy security, some of the initiatives are as follow;

- Hydrogen Mobility: The pilot projects for Fuel cell electric buses and fuel cell cars are planned to be carried out in Leh and Delhi.
- E-bus Solution: NTPC is offering complete e-bus solutions to State Transport Utilities (STUs) through its subsidiary, NVVN.
- Battery Charging & Swapping solution: NTPC has commissioned a pilot project on the concept of battery charging and swapping at Faridabad.
- Charging Station: NTPC is planning to set-up 400 Nos. of chargers in various locations across the cities.
- Charging Infrastructure under FAME-II: Under this scheme, NTPC has been allotted a total of 282 nos. of charging stations to be set-up in Jabalpur, Bhopal, Hyderabad, Vijayawada, Visakhapatnam, Kakinada and Bengaluru."

Plant Load Factor (PLF) and Plant Availability Factor (PAF) of TPPs.

4.40 The data on Average Plant Availability Factor (APAF) at bus bar, Plant Load factor (PLF) of NTPC coal stations and All India PLF since 2010-11 as collated from the information available in the Annual reports of NTPC is as follows (P.85) :

Year	NTPC (Coal-fired plants) in %			All India in %		Comments/Remarks
	PAF*	Corrected PAF(DC%)	PLF*	PLF	Corrected PLF	

2010-11	91.67	No change	88.29	75.08	No change	10 out of 15 commercial stations have achieved PLF of more than 90 % including three above 95%
2011-12	89.73	88.35	85.00	73.32	73.29	6 out of 15 commercial stations have achieved PLF of more than 90%
2012-13	90.20	87.62	83.08	69.95	69.93	6 out of 16 commercial stations have achieved PLF of more than 90%
2013-14	90.32	91.79	81.50	65.55	65.56	04 out of 16 commercial stations have achieved PLF of more than 90%
2014-15	88.27	88.69	80.23	64.46	64.25	02 out of 17 commercial stations have achieved PLF of more than 90%
2015-16	88.06	92.29	78.61	62.29	No change	03 out of 17 commercial stations have achieved PLF of more than 90%
2016-17	88.81	92.8	78.59	59.88	59.81	06 out of 18 commercial stations have achieved more than 85 % of PLF
2017-18	88.68	87.3	77.90	60.72	No change	07 out of 20 commercial stations have achieved more than 85 % of PLF
2018-19	87.51	87.62	76.81	60.91	60.30	06 out of 20 commercial stations have achieved PLF of more than 85%
2019-20	81.34	89.36	68.20	55.99	No change	05 of 24 commercial stations have achieved PLF of more than 85%

4.41 The above data shows that the capacity utilization of NTPC power plants has declined steeply by 12 % from 80.2% in 2014-15 to 68.2% in 2019-20 in comparison to 8.5 % decline witnessed by All India level during the same period. Furnishing the reasons for such decline, NTPC submitted as under:

> "This is mainly due to an increase in RE power at all India levels (All India RE Capacity addition from 2014-15 to 2019-20 was 48068 MW) and an increase in installed generating capacity of the country, thereby reducing dispatch from

thermal power plants due to less scheduling by beneficiaries. However, availability factor of NTPC has been high."

4.42 In response to a further query as to whether capacity utilization and PLF are the same, NTPC submitted that:

"Capacity utilization and PLF are the same. The plant load factor (PLF) is a measure of the average capacity utilization of a thermal power station /unit."

4.43 The above data shows that the PLF of NTPC coal fired Plants has seen continuous decline during the last decade from 88.29 % in 2010-11 to 68.20 % in 2019-20 (more than 20 %) despite the PAF has seen slight reduction from 91.67 %in 2010-11 to 89.36% in 2019-20. NTPC attributed the reasons for such continuous decline in PLF to increase in RE power generation and reduction in dispatch from Thermal power plants due to less scheduling by the beneficiaries.

4.44 In written reply to a queries as to (i) in view of the Govt. of India's emphasis on green power, whether its share in the total power mix is going to go up in the coming years which may further adversely impact PLF of thermal Plants; and, (ii) how the management of NTPC plans to tackle such a scenario , NTPC submitted as follows:

"NTPC coal-fired Plants have been able to maintain a higher PAF in the range of 81-92% because of better O&M practices and competency of the people. PLF depends on the demand/ schedule from beneficiaries. Demand is governed by various factors such as Economic growth, Manufacturing/Industrial activity, Discom's financial condition, and alternate cheaper sources of power. **RE generation into the grid has increased from 51 BU (in the year 2011-12) to about 138 BU (in year 2019-20), which has also affected the demand from coal-fired power plants**. In the face of such pressure from the market and growing penetration of RE, NTPC has been able to maintain a positive difference of over 12% as compared to the National PLF, over the last decade. For the last four

years, more than 20% of NTPC coal stations have achieved a PLF of more than 85%. For the coming years, demand for flexible operation of generating plantswill increase; in this regard, NTPC has taken necessary steps to make the units compatible for such operations. In pursuance of an energy transition, NTPC has taken the decision not to acquire any further land for thermal projects in near future and bringing in the entire focus on carbon-free sources. Further to optimize cost, improve existing assets' performance, bring synergy in operations, NTPC has taken a few steps such as formation of a separate subsidiary Company for carrying out renewable energy business, deployment of new technologies for flexible operation of thermal plants. NTPC has also focused on carbon free mobility solutions including EV charging, EV transportation / Hydrogen FCEV transportation."

Declining trend in Plant Load Factor (PLF)

4.45 As data on PLF showed the decline in number of stations having 90% and above PLF over the last decade despite increase in number of generating stations due to absence of proportionate demand/schedule, the Committee sought to the impact of such declining trend on NTPC's revenue and cost of per unit of power generated, NTPC in a written reply stated as follows:

Regulation 20(1) of Chapter 5 of CERC Tariff regulation 2014 provide as below:

"The tariff for supply of electricity from a thermal generating station shall comprise two parts, namely, capacity charge (for recovery of annual fixed cost consisting of the components as specified in Regulation 21 of these regulations) and energy charge (for recovery of primary and secondary fuel cost and limestone cost where applicable).

Capacity Charge (e.g., Depreciation, Interest and Operation & Maintenance expenses, Return on Equity, Interest on Loan and Interest on Working capital, etc.) are fixed at a normative level of generation, irrespective of the PLF. However, it is important to submit that PLF is primarily dependent on the power scheduled/demand given by the DISCOMs.

Energy charges are derived by the product of the Energy Charge/unit and the Scheduled Demand.

As such, a decrease in PLF (i.e. the number of units scheduled by the beneficiary) would result in a decrease in total energy charges billed to discoms, leading to a decline in overall revenue from operations.

Cost per unit of power would be determined based on the total capacity charges, energy charges, and energy scheduled as detailed above."

4.46 Also, making a point towards declining obsession with PLF and Renewable Energy vis-a-vis coal based plants, NTPC representatives submitted the following during the briefing:

> "In fact, we are moving towards a situation where the coal-based plants will be called as the 'balancing power' and not the 'based load power'. My apprehension is that this PLF will further come down as the renewable energy share will go up. It is a good sign on the part of the environment".

4.47 With regard to the steps taken by NTPC to make their units compatible for flexible operations , NTPC submitted as follows:

"For flexible operation, Pilot studies have been carried out at many NTPC stations to achieve higher ramp rates and lower minimum technical loading. Based on the observations of the Pilot Study at Dadri unit 6, some interventions in respect of Software & Hardware were recommended and these recommendations are under implementation.

At Simhadri unit 4, Advance Process Control (APC) system has been introduced and the same will be implemented in Simhadri Unit 3 also.

Based on the feedback from Dadri and Simhadri studies, a further course of action will be decided, so that the units can be enabled for flexible operation, without having any adverse effect on the equipment.

Apart from the above, Automatic Generation Control (AGC), is under implementation in all operating stages of NTPC & JVs Coal & Gas units.

All NTPC Coal units are successful in achieving 1 % Ramp rate as per CERC regulations. Also, all units of Coal, Gas & Hydro are capable of responding to Primary Frequency Response (RGMO - Restricted Governor Mode operation / FGMO - Free Governor Mode operation) to meet the Grid requirements."

4.48 In written reply to query as to why the company has been facing such problems due to incompatibility between higher capacity of generating stations and lower schedule/demand for power and it long term impact on the physical and financial health of the company, NTPC in a written reply furnished as follows:

> "NTPC decides to set up the generating stations only after getting long-term commitment of beneficiaries to purchase power. This is done through the signing of long-term Power Purchase Agreements (PPAs) for the entire capacity with the Discoms. The Discoms in turn has committed to power procurement based on their assessment of future requirements of power. However, the actual demand growth in the country has been lower than the projected demand growth in the last few years. Moreover, increased generation share due to focus on renewable energy capacity addition, which is "must-run" has resulted in the lower schedule of conventional generation.
>
> Further, thermal generation shall be required for balancing and grid integration of RE generation. Thermal generators would be required to ramp up and ramp down their generation for absorbing the infirm and intermittent RE generation. This may have an impact on the life of the plant due to increased wear and tear because of the modulation of generation. The schedule of thermal generation in the future shall depend on the level of RE penetration and actual demand growth. Thermal generators, therefore, need to be incentivized for providing balancing services in order to facilitate the growth of RE generation."

4.49 With regard to a specific question of the Committee on PLF, NTPC submitted as under:

> "हमबतानाचाहेंगेकिहमारेद्वाराटोटलपीएलएफकीबेंचमार्किंगएक-दोसालपहलेकरवाईगईथी। The NTPC was at No.2 position in the world in terms of PLF औरहमसेऊपरएकचाइनीजकंपनीथी, क्योंकिउससमयकोलज्यादाचलरहाथा।"

<u>Future Strategy of NTPC</u>

4.50 In written reply to a query as to (i) how the structural and hierarchical framework of the Board organize and gear up to meet the ever increasing challenges before power sector

in relation to India's specific needs and global competitions as well as in the context of Global thrust towards renewable energy, and (ii) the strategies chalked out to become more efficient, productive and competitive in relation to above challenges, NTPC submitted as below:

> "To meet the ever increasing challenges before power sector and specific to NTPC, the company has taken steps to optimize cost, improve competitive edge and bring synergy in operations. In the context of global thrust towards renewable energy, the NTPC Board has decided to form a subsidiary company and have a focussed approach to add renewables. NTPC aims to add 32GW of renewables by 2032 by organic and inorganic route and targeting to become the largest renewable energy Company in India.
>
> Further, NTPC is actively pursuing green hydrogen portfolio, production of methanol through Carbon Capture, Utilisation and Stoarge (CCUS) and focusing on carbon free mobility solutions such as Electric Vehicles (EVs) / Hydrogen Fuel Cell EV which are very much in alignment with its large renewable growth plans. These shall also contribute in addressing India's specific needs related to global commitments.
>
> In the process of becoming more efficient, productive and competitive, NTPC has taken following strategic initiatives:
>
> 1. Digital Initiatives: Pro-Active and Digital Initiatives to become Paperless (PRADIP) portal has been launched by NTPC for faster processing and to avoid paper consumption. Artificial Intellligence (AI)/ Machine Learning (ML) tools for power plant operation are under implementation to increase efficiency, safety, cost optimization and reduce downtime.
> 2. Optimization and technological measures are being taken for resource utilization and keeping expenses under control.
> 3. Adopting a dynamic debt strategy for raising long term debt at optimal cost for meeting its capital requirement and putting emphasis on a proactive refinancing strategy to leverage the market conditions for availing low cost debt.
>
> NTPC Leadership team is in continuous engagement with global strategy and technology leaders in various platforms to remain in sync with energy transition pathway the World is pursuing

Chapter V

HUMAN RESOURCE MANAGEMENT

Manpower strength

5.1 The total manpower strength in technical and non-technical posts in NTPC as on 31.01.2021 is 18333. Out of this strength, there were 2783 SC, 1259 ST, 3865 OBC and 1237 Women employees in the organization. The sanctioned strength and actual strength in technical and non-technical posts in NTPC as on 31.01.2021 is as under:

Sl.No.	Post(Manpower)	Sanctioned	In-position
1.	Technical	16429	15901
2.	Non-Technical	2516	2432
	Total	18945	18333

Performance Metrics

5.2 As per the information submitted to the Committee with regard to the employees of NTPC and employees of its JVs and subsidiaries, various performance metrics such as value added per employees, generation per employee, attrition rate, Man Megawatt Ratio during the last 10 years had been as follows:

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
No of employees	23,797	24,011	23,865	23,411	22,496	21,633	20,593	19,739	18,359	17,398
PAT(Rs.crore)@	9,102	9,223	12,619	10,974	10,290	10,769	9,385	10,343	11,749	10,112
Employee cost^	2,789	3,090	3,360	3,867	3,620	3,581	4,324	4,734	4,779	4,925
Value added per employee (Rs.in crore)	0.80	0.82	0.96	1.11	1.11	1.29* 1.27 (16-17)	1.42	1.58	1.83	2.16
Generation per employee (in Million Units(MUs)	9.27	9.25	9.72	9.96	10.72	11.19	12.16	13.47	14.95	14.92
Attrition rate (in %)	1.0	1.17	1.46	1.68	1.35	1.05	0.93	0.53	0.78	0.82
MMR* NTPC	0.77	0.74	0.67	0.63	0.61	0.55	0.51	0.44	0.40	0.35
MMR* NTPC JVs	0.74	0.69	0.62	0.58	0.56	0.51	0.47	0.42	0.38	0.31$

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
&Subsidiaries.										

***Man Megawatt Ratio (MMR) no of employees per MW**

$ excluding manpower of THDC and NEEPCO which were acquired on 27.03.2020

@ PAT for the years has been around ₹10,000 crore and the value-added per employee is having an increasing trend due to reduction in manpower over the years.

^ The employee cost has increased in recent years due to the implementation of the revision of pay scales w.e.f. 1 January 2017 as per DPE guidelines.

Value addition per employee

5.3 Annual Report (A.R) 2015-16 shows value added per employee as Rs. 1.29 crore. However, A.R 2016-17 shows the same as Rs.1.27crore. Furnishing the reasons for data variation, NTPC submitted as follows:

> "It is to be submitted that Value added per employee in 2015-16 is at Rs. 1.29 crore whereas in 2016-17, the value-added is Rs. 1.42 crore. It is understood that there were some changes in accounting reporting standards in 2015-16 from GAAP to Ind AS."

5.4 Human resources productivity metrics such as value added per employee, Man Megawatt Ratio (MMR) *i.e.* no of employees per MW, generation per employee has seen continuous improvement since 2010-11/2011-12 despite reduction in number of employees and increase in installed capacity which has almost doubled. Responding to a query as to how NTPC could achieve the fete , in a written reply submitted as follows :

> "Human Resource Productivity Metrics such as Value added per employee, Man Megawatt Ratio (MMR) has seen a continuous improvement to optimum utilization of the resources, rationalization of manpower model based on changing business needs, outsourcing, inculcation of shared services for standardized jobs, etc. For example in 2017 the installed capacity of Tanda was 440 MW with a manpower of 436 employees, making Man/MW ratio of 0.99 whereas by the end of 2019, the Capacity increase to 1100 MW with a manpower of 480 employees, making Man/MW ratio of 0.43, thus optimizing the same manpower in the expansion plan. Similar improvements have been done while

adapting the shared services concept thereby optimizing manpower in services departments.

Representation of women in the Workforce

5.5 The data on number of women in NTPC in absolute numbers and percentage terms for the last 10 years (year-wise) as furnished by NTPC is as follows:

"Data on the number of women in NTPC in absolute numbers and percentage terms for the last 10 years (year wise) is as below:

Financial Year	No.	%age
2010-11	1392	5.87
2011-12	1450	6.04
2012-13	1465	6.15
2013-14	1463	6.24
2014-15	1419	6.30
2015-16	1376	6.30
2016-17	1330	6.45
2017-18	1282	6.44
2018-19	1346	7.07
2019-20	1153	6.61

5.6 with regard to the measures taken by NTPC to increase the participation of women in key areas of NTPC and to increase their strength in management, in a written note, the company submitted as under:.

"Despite being an equal opportunity employer and continuous efforts by management to make the organization women-friendly, gender diversity continues to be a challenge. There are around 1278 women employees in NTPC which make around 7% of the total manpower of the organization.

Currently, NTPC has 7 senior Women executives handling Regional Head of HR/ Head of HR level positions and 11 women at Chief General Manager/ General Manager level positions. 105 women are posted in JVs/Subsidiaries.

Moreover, in order to increase the number of women in the organization and to provide them a safe and positive environment to grow and achieve new heights, the number of initiatives are being taken by NTPC. A few of those initiatives are :–

i. Waiver of Application fee for girls while applying for NTPC posts to motivate more girls to apply for the NTPC vacancies. This has created a goodwill and has spread a message in the society that NTPC promotes women empowerment and is working towards it.
ii. Compulsory participation & representation of Women in all decision-making forums to incorporate their point of view on various issues/agenda w.r.t. company policies, system improvements, new initiatives, developmental actions etc.
iii. On-line counselling facility for women employees to provide them psychological and emotional support and a patient hearing by professional experts to handle stress, anxiety and other work-life balance.
iv. Revisiting Policies/ looking through a gender lens to see the possibility of amending/ modifying them to make them more gender-equal rather than gender-neutral.
v. Constitution of Internal Complaints Committee (ICC) at all NTPC Sites for handling and redressing sexual harassment cases.
vi. Creating a safer work place for women by the installation of security web cams, biometrics in office premises, display of site ICC committee details on prominent locations/intranet etc. to enable them to work with freedom and security.
vii. Certification of women employees in Women Leadership & empowerment related modules/ training by renowned/ reputed organizations to provide them an opportunity to gain experience, knowledge and to get on a platform to discuss and deliberate on various issues.
viii. Conducting programme/ training on “Removing Unconscious Bias”/“Gender Sensitization Workshop” for men and women employees to initiate a dialogue and create awareness amongst employees on the issues of Gender bias & gender equality in the organization.
ix. Separate Parking area for Women employees / Pink zone for providing conformable parking zones for them in office premises.
x. Organizing special Leadership programmes such as “LEADER 10X programme of NTPC” for developing more women for leadership pipeline.
xi. Self Defense training to women employees to create awareness among female employees w.r.t. self-defense and providing them information about new safety apps, physical training etc.
xii. Allowing Quarter leave (I/4 CL) option to Women employees.
xiii. Providing Flexi-timings 8 times in a month to all women employees in attending Office.

xiv. Online Discussion forum for women employees in the name of 'SHAKTI'. This platform provides an opportunity to all NTPC women workforce to share their thoughts on various topics, discuss the existing practices, new initiatives, new topics etc.

xv. A five-member committee has been constituted for taking care of women empowerment related issues in NTPC and other PSUs. The committee aims to understand the reasons behind less intake of women employees in NTPC and find out the best possible measures that can be adopted by NTPC and other PSUs."

Awards and Accolades

5.7 Various accolades and awards won by NTPC for the best human resource management practices and also the best places to work for the last five years (year wise) as furnished by NTPC is as follows :

S. No	Award particulars	Year
1.	NTPC best in PSU- Great Places to Work 2016	2016
2.	NTPC awarded for Employee Productivity at the 4th Governance Now PSU Awards 2016	2016
3.	NTPC best in PSU- Great Places to Work 2017	2017
4.	NTPC receives the prestigious ATD Best 2017 Award	2017
5.	NTPC Wins ISTD National Award for Innovative Training Practices 2016-17	2017
6.	NTPC amongst top India's Great Place to Work For 2018	2018
7.	NTPC PMI has won the globally recognized ATD Best Award 2018.	2018
8.	NTPC secures 2nd Position and wins BML Munjal Award for Sustained Excellence in Learning & Development	2018
9.	NTPC Wins ISTD National Award for Innovative Training Practices 2017-18	2018
10.	ATD Best Award 2018 to PMI	2018
11.	NTPC has been awarded the 2019 ATD Global BEST Award by The Association for Talent Development (ATD), USA	2019
12.	NTPC has been ranked 14 in 2019 "Great Place to Work"	2019
13.	NTPC Ranked one of the Best Workplaces in Asia -2019	2019
14.	NTPC was adjudged winner of 14th edition of the BML Munjal Awards	2019

S. No	Award particulars	Year
15.	Silver Medal in the best use of blended learning category 2019 (an international award) by Brandon Hall Group.	2019
16.	The MANAS request transfer system, an in-house development of NTPC (Developed by CC HR Team) won the Award of Appreciation (second highest category) at the CSI e-Governance Awards 2019.	2019
17.	NTPC Wins ISTD National Award for Innovative Training Practices 2018-19	2019
18.	EFI Special Appreciation Award in Employee Relations	2019
19.	NTPC has been awarded the 2020 ATD Global BEST Award by The Association for Talent Development (ATD), USA	2020
20.	NTPC recognized among India's Top 50 Best Companies to Work For 2020 by Great Place to Work	2020
21.	Corporate Wellness Award 2020 for NTPC	2020
22.	India's Best Workplaces in Manufacturing 2020' – Top 30	2020
23.	NTPC has been conferred with the CII award for Significant Achievement in HR Excellence at the 10th CII National HR Excellence Award Confluence in Mumbai on 25th February 2020.	2020
24.	NTPC selected as 2020 ATD Best award winner	2020
25.	NTPC bags an award for Best Use of Blended Learning at Brandon Hall Excellence Award, USA	2020
26.	Brandon Hall Gold Excellence in Learning 2020 (an international award) to Regional Learning Institute, Sipat	2020
27.	NTPC Ranked One of the 2020 Best Workplaces in Asia by Great Place to Work ®	2020
28.	NTPC recognized for CII-National Excellence Best Practice Competition (Outstanding practice during Covid-19)	2020
29.	NTPC Awarded for Innovative Best Practices in Digital Transformation in the 'Service Excellence' and 'Employee Engagement' categories to CLIMS and HRUSS conferred by CII Centre for Digital Transformation	2020
30.	SKOCH Award (Platinum) for NTPC	2020

NTPC has regularly been participating in India's Best Companies to Work for List taken out by the Great Place To Work Institute and The Economic Times.

NTPC's rankings in this study over the past 5 years are as follows:

2020: 47th Rank

2019: 14th Rank

2018: 25th Rank

2017: 38th Rank

2016: 30th Rank

In 2018, NTPC was recognized as a Best Companies Laureates Organization by the GPTW Institute – a recognition which is given to companies that have been recognized as great workplaces for 10 or more years."

5.8 In response to a query as to how NTPC could beat even the established private sector companies in winning various HR awards including the best companies to work for year after year, NTPC submitted as under :

"Competence Building, Commitment Building, Culture Building and System Building are the four blocks on which NTPC's HR systems are based.

NTPC has consistently focused on building a strong employer brand.

Over the years NTPC has always placed "People before PLF (Plant Load Factor)". This is the guiding philosophy behind the entire gamut of HR policies at NTPC. This philosophy encompasses a culture of learning and performance.

The analysis of the survey findings of the studies conducted by the Great Place To Work Institute and The Economic Times has shown that our people practices are at par with the Top 10 companies. These people practices include areas like Hiring, Welcoming, Inspiring, Speaking, Listening, Collaborating, Grievance Redressal, Thanking, Developing, Balancing, Supporting, Including, Celebrating, Rewarding and Contributing.

NTPC practices have scored well on parameters like Variety, Originality, All-Inclusive, Human Touch, and Integration.

Further, apart from the above, there is also a constant focus on ensuring that the employees have a positive employee experience at the company. Leaders across the company emphasize on the culture and core values of the company. Reporting Officers of employees are developed to take ownership of their employees and

enhance their experience in the company. We have also leveraged technology in improving and simplifying our processes.

NTPC believes that the above factors have been responsible for us being able to win various HR awards."

5.9 In written reply to a query as to whether these best HR practices of NTPC be replicated in other Maharatna Companies? NTPC furnishing its considered views, submitted as under:

"Yes. The practices can be replicated in other Maharatna Companies as well.
NTPC feels so considering the fact that NTPC's own HR practices have been refined and improved due to NTPC's participation in various benchmarking and assessment exercises through which NTPC has learned from other companies.
Furthermore, since NTPC practices are within the framework of the prescribed guidelines of DPE, hence other Maharatna companies can also take a leaf out of NTPC practices for enhancing their own systems and processes."

Vigilance matters

5.10 The data on details number of cases and their processing in the following format from 2015-16 (year-wise) onwards as furnished by NTPC is as follows:

Year-wise Number of Cases and their Proceeding from 2015 to Jun'2020																	
SN	**Year**	**Broad Nature/Category of the cases***								**No. of cases brought forward from previous year**	**No. of cases added /regd in the year**	**No. of cases settled in the year**	**No. of cases carried forward**	**Nature of Punishment/Penalty imposed (Employee-wise)**			
														Major Penalty		**Minor Penalty**	
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**a**	**b**	**c**	**d=a+b-c**	**Added**	**Imposed**	**Added**	**Imposed**
Pending Penalty as on 01.01.2015														**35**	**NA**	**49**	**NA**
1	2015	7	19	26	12	5	3	19	0	62	**91**	97	56	11	10	31	31
2	2016	3	15	19	16	0	3	14	0	56	**70**	74	52	1	19	15	29
3	2017	0	4	8	11	1	0	15	0	52	**39**	55	36	15	14	37	30
	2018	2	8	9	11	1	4	9	1	36	**45**	45	36	7	2	17	29
	2019	4	7	6	15	6	0	2	20	36	**60**	75	21	20	8	41	35
	2020	3	3	1	6	5	1	1	0	21	**24**	25	20	4	5	5	22
	Total	**19**	**56**	**69**	**71**	**18**	**11**	**60**	**21**	**62**	**329**	**371**	**20**	**93**	**58**	**195**	**176**
Pending Penalty as on 01.07.2020														**35**		**19**	

1	Administrative Lapses	5	Fraud by Employee
2	Award of Contract	6	Misuse of Power by Employee
3	Execution of Contract	7	Others
4	Forged Documents	8	Delay in payment by NTPC

5.11 With regard to (i) the mechanisms put in place to ensure that a fair, ethical and transparent governance system prevail within the organization, (ii) frequency of review of transparency and fairness measures across the organizational hierarchy,, (iii) external review , if nay? , (iv) role of vigilance departments within the organization both at headquarters and branch offices to ward-off corrupt and fraudulent practices, etc, NTPC submitted as follows :

> "NTPC endeavors to ensure transparency, objectivity and quality in decision making in its operations, and to monitor the same, it has a Vigilance Department headed by a Chief Vigilance Officer, appointed by the Central Government. The Vigilance set-up in NTPC 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.
>
> Corporate Vigilance Department consists of four Cells as under:
>
> - Vigilance Investigation and Processing Cell;
> - Departmental Proceedings Cell (DPC);
> - Technical Examination Cell; &
> - MIS Cell
>
> These cells deal with various facets of the vigilance mechanism. The vigilance works have been assigned to region-wise Vigilance Officers at Corporate Centre (Regional Vigilance Executive) for speedier disposal. Senior officials of the Vigilance Department comprising General Manager (Vigilance), Regional Vigilance Executives and Head of DPC/MIS Cell meet regularly to discuss common issues 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 bridging of strengths & weaknesses.

Strengths, Weaknesses, Threatsand Opportunities(SWOT) Analysis

5.12 Furnishing the Company's SWOT analysis to effectively tackle the world wide shift to green power, NTPC submitted as follows:

"NTPC's SWOT for growth in green power is as below:

Strengths	**Weakness**
▪ Access to the market through a strong relationship with Discoms ▪ Government support ▪ Low cost of finance and strong balance sheet ▪ Efficient project management ▪ Passionate workforce ▪ System and process orientation ▪ Strategic partnership ▪ Payment security mechanism ▪ Diversified portfolio	▪ Land acquisition ▪ Lack of manufacturing facility ▪ Working under strict statutory guidelines ▪ Organization agility ▪ Risk aversion ▪ Lack of diversity in RE portfolio
Opportunities	**Threat**
▪ Low-cost power for the nation ▪ Growth opportunity ▪ Sustainable development ▪ Ancillary services market ▪ Storage business- battery and hydrogen ▪ Inorganic growth ▪ Enhance non-regulated assets ▪ Enhance utilization of thermal assets	▪ Quantum & pace of capacity addition ▪ Competition from IPPs across the globe and venture capitalists ▪ Volatile market due to fast-changing business ▪ Enhanced risk due to global energy landscape and technology

5.13 With regard to immediate and long term measures requires to be taken to tackle the changing power sector scenario in terms of business strategies, environment sustainability and RE augmentation by NTPC , Ministry of Power submitted as follows :

“Ministry of Power is aware of transition taking place in energy sector towards clean and sustainable energy and is also closely tracking the transition and taking necessary steps to maintain leadership position of the company. As a part of its immediate and long term actions, NTPC has taken steps to optimize cost, improve competitive edge and bring synergy in operations. In the context of its Renewable Energy (RE) augmentation, the Company has decided to form a subsidiary company and have a focussed approach to add renewables. NTPC aims to add 32GW of renewables by 2032 by organic and inorganic route and targeting to become the largest renewable energy Company in India.

Further, NTPC is actively pursuing green hydrogen portfolio, production of methanol through CCUS and focusing on carbon free mobility solutions such as EV / Hydrogen FCEV which are very much in alignment with its large renewable growth plans and environmental sustainability.On the financial front NTPC is adopting a dynamic debt strategy for raising long term debt at optimal cost for meeting its capital requirement and putting emphasis on a proactive refinancing strategy to leverage the market conditions for availing low cost debt.”

CHAPTER VI

OCCUPATIONAL HEALTH AND SAFETY ISSUES

Safety Accreditation of Plants

6.1 All NTPC stations are certified with Occupational Health and Safety Assessment Series (OHSAS) 18001/IS 18001. Further it was stated that six of NTPC stations are going for international level National Occupational Safety Association (NOSA). In written reply to queries as to (i) Why only six out of 70 stations are selected for obtaining international level NOSA accreditation and (ii) the criteria for selecting six stations for the purpose, NTPC submitted as under :

> "As decided in the top management meeting,six stations (One each from Northern Region, Hydro Region, Eastern Region-1, Western Region-1, Southern Region & DBF Region) in phase-I are identified for NOSA accreditation.

6.2 With regard to the number of Stations of NTPC and its group companies which have obtained OHSAS18001/IS 18001 and also ISO 14,001 certification, NTPC furnished as under:

> "All the running stations are having OHSAS 18001 and many stations have upgraded to ISO 45001 certification. New projects which are getting operational, have also applied for OHSAS certification and are in process. Presently, 28 stations have OHSAS 18001/ISO 45001."

6.3 Furnishing a clarification as to whether all these stations are coal fired ones or also plants based on other fuels, NTPC stated as under:

> "33 NTPC stations (24 NTPC and 09 JVs/ Subsidiaries) are coal based, 11 NTPC stations (07 NTPC and 04 JVs/ Subsidiaries) are Gas based plants."

Safety Audit

6.4 In response to a query as to whether safety audit is conducted at stipulated intervals and if so, the parties that conduct such audits, etc, NTPC submitted as follows :

> "An internal safety audit is conducted every year and an external audit is conducted a minimum of once in two years through national agencies like National Safety Council, Mumbai; Disaster Management Institute, Bhopal; QCFI Hyderabad, etc. It is now being taken up to conduct Internal Safety Audit twice in a year and External safety audit once in a year."

6.5 Furnishing the details of the budget for safety related matters, a representative of NTPC appearing before the Committee submitted as follows :

> " you were asking about the budget for safety and safety equipment. We have got a budget called O&M Budget. Our O&M Budget is around Rs.40,000 crore and that has provision that it can be reappropriated to any amount with the approval. Secondly, for equipment we have got Miscellaneous Vote Out Budget of around Rs.500 crore. If need arises, that budget also can be re-appropriated to other items with the approval of the Chairman and Managing Director. So far as safety is concerned, safety is of prime importance to NTPC. We have appointed the international consultant DuPont to assess safety aspects and suggest measures that NTPC should take into consideration. We have also created a Safety Institute at our Tanda project to impart training to the contract workers as well as NTPC personnel. In addition to that, for each and every contract, we have a clause regarding safety which prescribes how safety is to be ensured by the contractor and contractor's labour. So, safety is given prime importance in NTPC".

Incidents &Accidents

6.6 Furnishing the details such as the number of accidents that occurred at NTPC plants, if any, the casualties occurred , the nature of such casualties, the action taken or proposed to be taken against those responsible for such accidents<NTPC submitted as under:

> "The details of fatal accidents in NTPC are as below:

	O&M works	C&E works	Reason	Action taken
2019-20	14	07	Fall from height, Fall of material, hit by moving object, flashover, road accident, etc.	Enquiry of the accident is conducted as per guidelines to analyze the root cause and responsibilities are fixed. Recommendations there off are discussed & circulated to all the stations for implementation.
2020-21 (Till 30 Sep 2020)	04	02	Fall of material, Slip, and Fall.	

6.7 With regard to the existence or otherwise of safety committees in plants, their composition, mandate, tenure and method of representation to such Committees, NTPC submitted as follows:

"Yes, all the operational plants of NTPC are having a Safety Committee consisting of an equal number of representatives of workers and management to promote co-operation for proper safety and health at work and to review periodically the measures taken in that behalf. These are as per the requirement of Rule No. 41 of Factories Act 1948, Model rules under Factories (Amendment) Act, 1987.

(1) In every plant wherein 250 or more workers are ordinarily employed have a Safety Committee.

(2) The representatives of the management on the Safety Committee includes:

- A senior official, who by his position in the plant can contribute effectively to the functioning of the Committee, works as the Chairman;
- A safety officer and a factory medical officer, wherever applicable and the safety officer in such a case is the secretary of the committee;
- A representative each from the production, maintenance and purchase departments.

(3) The Workers' Representatives on this committee are selected by the workers.

(4) The tenure of the committee is two years.

(5) Safety Committee meets as often as necessary, but at least once in every quarter. The minutes of the meeting are recorded and produced to the Inspector on demand.

(6) Safety Committee has the right to:-

- Ask for necessary information concerning the health and safety of the workers
- Seek any relevant information concerning the health and safety of the workers"

6.8 With regard to the budget provision and expenditure on (i) purchase of safety equipment for plant workers, and (ii) training of officials on safety issues, for the last 10 years , NTPC submitted the following data:

> "There is no separate budget for safety in NTPC plants. Safety is part of our core values and is integrated in all our activities. Cost on purchase of safety equipment for NTPC employees is included in the O&M budget of the plant. For contract workers, the cost of basic safety equipment is included in their respective contracts.
>
> Trainings to NTPC officials are planned as per their training need assessment and the same are conducted through Employee Development Center at plants, Regional Learning Centers in different regions of NTPC and Power Management Institute, Noida. If required, officials are also sent to outside institutes.
>
> The consolidated year-wise expenditure of the last 10 years on Safety Equipment and appliances and total Training cost which includes training on safety is as under:-

FY	Safety Equipment and Appliances	Training Cost and Others (in Crore)
2010-11	1.33	24.46
2011-12	1.66	26.30
2012-13	1.26	22.79
2013-14	1.83	24.88
2014-15	1.69	23.42
2015-16	1.67	26.78
2016-17	4.24	28.23
2017-18	4.70	46.72
2018-19	7.52	37.49
2019-20	5.25	42.77
Total	**31.15**	**303.84**

Occupational Health Certifications

6.9 All NTPC stations are certified with Occupational Health and Safety Assessment Series (OHSAS) 18001/IS 18001. Further, six of NTPC stations are going for international level National Occupational Safety Association (NOSA).

6.10 In written reply to a query as to why only six out of 70 stations are selected for obtaining international level National Occupational Safety Association (NOSA) accreditation, NTPC submitted as follows:

> "As decided in the top management meeting, six stations (One each from Northern Region, Hydro Region, Eastern Region-1, Western Region-1, Southern Region & DBF Region) in phase-I are identified for NOSA accreditation."

6.11 As no specific reasons were given for selecting six only out of 70 stations for NOSA certification, the same were sought form NTPC. The company in a written reply stated as under:

> "For NOSA, the six projects referred to were picked as pilot projects based on geographical locations and type of projects for cross-sectional representation. Performance of the Six Stations would be monitored post accreditation and if found satisfactory then the same shall be implemented for remaining plants."

6.12 In written reply to a query as to the number of Stations of NTPC and its group companies which have obtained Occupational Health and Safety Assessment Series (OHSAS) OHSAS18001/IS 18001 and also ISO 14001 certification, NTPC submitted that:

> "All the running stations are having OHSAS 18001 and many stations have upgraded to ISO 45001certification. New projects which are getting operational have also applied for OHSAS certification and are in process. Presently, 28 stations have OHSAS18001 /ISO 45001"

6.13 In written reply to a query as to why only 28 as against total 70 stations have obtained these certifications? NTPC submitted as follows :

“Some of the stations are still under construction stage. Under construction sites will go for Occupational Health and Safety Assessment Series (OHSAS) 18001/IS 18001 and also ISO 14001 certification after project completion.

All the running stations are having OHSAS 18001 and many stations have upgraded to ISO 45001 certification. New projects which are getting operational have also applied for OHSAS certification and are in process. Presently, 27 stations have OHSAS18001 /ISO 45001.

Moreover, many Solar plants are part of the main station and get a logical extrapolation and plans are afoot to bring the rest under purview.”

CHAPTER VII

SUSTAINABILITY AND ENVIRONMENTAL MATTERS

Fly Ash

7.1 It is stated that NTPC has fly ash utilisation policy to deal with fly ash in a integrated way from generation to end product and aims at maximizing utilization of ash for productive purposes in addition to fulfilling social and environmental obligations. The salient features of Ash policy of NTPC is as follows:

(a) " NTPC Policy envisages the sale of fly ash through a transparent bidding process to user industries like Cement, RMC, etc. Tender for sale of fly ash initially needs to be done for end-users and if it is not successful, tender is to be done for all users including traders. At Present, fly ash is being issued at 14 no of NTPC stations on price and is being issued "free of Cost" at the rest of 10 no of NTPC stations.

(b) Pond ash is issued "free of charge" at all NTPC stations. In addition to this, NTPC Policy envisages bearing of cost of transportation of ash by NTPC to fly ash brick manufacturing Units & Road projects of NHAI and State Government in line with MoEF& CC Gazette Notification amendment dated 25.01.2016. The rate of transportation of ash in road projects is discovered through the competitive bidding process. Urgent requirement of ash is supplied through the MoU route at DSR/SOR rate for a period of 3/4 months only until rates are discovered through Competitive bidding.

(c) NTPC Policy envisages auctioning of Ash Ponds for the collection and sale of the Cenosphere. The contract is awarded to the H1 bidder quoting equal or higher than the reserve price.

(d) NTPC has its policy for the allocation of ash sale funds in line with Government Notification and its amendments. Ash fund generated through the sale of ash is being utilized for bearing the cost of transportation of ash & other promotional and infrastructure development activities helpful in enhancing ash utilization at its stations.

(e) NTPC Policy permits long-term agreement with Cement Companies and offers a discount on the prevailing price of fly ash for long term agreements done with Cement Companies

(f) NTPC policy envisages supply of at least 20 % of fly ash to brick manufacturing on priority @ Rs 1/MT in line with NITI Aayog recommendation.

(g) Providing an incentive to research institutes/organizations, which develops fly ash products with ash content at least 75 % through R& D activities and established sustainable application of such fly ash products in the industry."

7.2 The data on the quantity of fly ash generated, utilized for various productive purposes (both in absolute figures and percentage terms), and the amount earned from 2015-16 to 2019-20 (year-wise) as furnished by NTPC is as follows:

Ash Generation and Utilization Data for NTPC stations												
Year	**Ash Production (Lakh MT)**	**Land Devpmt (Lakh MT)**	**Issue to cement & other ind.(LMT)**	**Issue to Brick/ Block/ Tiles Ind.(LMT)**	**Brick NTPC(LMT)**	**Ash Dyke Raising (LMT)**	**Roads/ Rail Embankment(LMT)**	**Mine filling (LMT)**	**Others (LMT)**	**Total (LMT)**	**Total Ash Utilization (%)**	**Revenue generated through the sale of ash & ash pond auction (₹ in Crores)**
2015-16	588.28	14.37	58.25	36.37	1.59	68.58	6.26	24.15	33.66	243.23	41.35	117.21
	%	2.44	9.90	6.18	0.27	11.66	1.06	4.11	5.72	41.35		
2016-17	584.60	29.72	53.37	41.04	1.47	80.98	30.24	26.55	32.33	295.69	50.58	111.91
	%	5.08	9.13	7.02	0.25	13.85	5.17	4.54	5.53	50.58		
2017-18	603.13	46.68	58.69	44.44	0.81	79.41	31.50	31.66	29.18	322.36	53.45	130.20
	%	7.74	9.73	7.37	0.13	13.17	5.22	5.25	4.84	53.45		
2018-19	610.32	52.06	73.84	52.96	0.92	100.51	50.02	20.44	38.07	388.81	63.71	168.31
	%	8.53	12.10	8.68	0.15	16.47	8.20	3.35	6.24	63.71		
2019-20	604.76	39.93	65.89	50.61	0.89	125.96	111.81	22.67	25.55	443.33	73.31	162.62
	%	6.60	10.90	8.37	0.15	20.83	18.49	3.75	4.23	73.31		

7.3 Annexure VIII to the Directors Report for the year 2019-20 furnishes the data on ash generation from 23 plants only. In written reply toa query as to whether that means fly ash generated in other coal fired stations of NTPC is not being utilized and if so, the reasons therefore along with the plans to utilize the same,NTPC submitted as follows:

"At present NTPC is operating 24 no of coal-based TPPs. A total of 23 power stations of NTPC generated a significant amount of ash in 2019-20. Darlipalli generated a negligible amount of ash in 2019-20 as the station declared commercial operation in March 20 only."

7.4 The new environmental norms mandated use of coal with ash content not exceeding 34% on quarterly average basis for coal fired plants which are far away from coal mines / resources. In written reply to query as to the data on number of Pit head and non pit head TPPs of NTPC, the following data is submitted:

Stations	**NTPC**	**JVs and Subsidiaries**	**Total**
Pit Head	12	2	14
Non Pit Head	12	7	19
Total	24	9	33

7.5 In response to further query – How many stations, out of the non-pit head plants, are complying with the above stipulation, NTPC submitted that:

"All stations except NTPC Unchaharare complying with the above notification."

7.6 With regard to the Roadmap, if any, to comply with the norms by all TPPs of NTPC and its group companies,NTPC submitted as under :

"This is to mention that MoEF& CC, Government of India has issued notification dated 21.05.2020, which permits the use of ash without any stipulation of ash content and distance."

Ash production and utilization

7.7 The data on station wise quantity of ash produced, ash utilized and percentage of such utilization during 2018-19 from NTPC Stations is as under:

Sl.	Stations	2018-19	2019-20

No.		Ash Produced	Ash Utilization	% Utilization	Ash Produced	Ash Utilization	% Utilization
		Lakh MTs	Lakh MTs		Lakh MTs	Lakh MTs	
1	**Dadri**	---	--	---	15.195	15.195	100.00
2	Badarpur	2.94	2.91*	98.98	---	--	---
3	Dadri	22.35	22.36*	100.04	---	---	---
4	Singrauli	28.90	10.17	35.19	32.060	12.581	39.24
5	Rihand	35.16	13.04	37.09	39.017	16,849	43.18
6	Unchahar	17.21	20.30*	117.95	21.654	19.569	90.37
7	Tanda	5.44	15.59*	286.58	9.692	15.237*	157.21
8.	Vindhyachal	81.86	26.29	32.12	88.569	28.409	32.08
9	Mouda	26.47	23.88	90.22	23.226	23.439	100.61
10	Solapur	4.24	5.39	127.12	1.516	1.768*	116.57
11	Korba	54.12	27.65	51.09	49.976	33.499	67.03
12	Sipat	48.00	23.78	49.54	49.052	24.084	49.10
13	**Lara**	--	---	---	6.935	0.019	0.27
14	**Gadarwara**	---	---	---	2.885	0.015	0.52
15	**Khargone**	---	--	---	0.950	0.063	6.3
16	Ramagundam	42.75	47.16*	110.32	38.163	45.115*	118.22
17	Simhadri	29.76	29.81*	100.17	26.283	44.301*	168.55
18	Kudgi	13.70	8.86	64.67	8.930	8.970*	100.45
19	Farakka	31.34	25.11	80.12	31.810	40.912*	128.61
20.	Kahalgaon	43.18	20.87	48.33	48.479	37.102	76.53
21	**Barauni**	---	---	---	0.726	0.131	18.04
22	Barh	22.97	11.50	50.07	20.636	13.843	67.08
23	Kanti	8.12	3.29	40.52	----	----	----
24	Talcher-Thermal	11.29	11.34*	100.44	11.845	11.895*	100.42
25	Talcher-Kaniha	75.85	38.07	50.19	70.092	47.155	67.28
26	Bongaigaon	4.68	1.44	30.77	6.998	3.176	45.38
	Total	**610.33**	**388.81**	**63.70**	**604.76**	**443.33**	**73.31**

***figures include ash utilized from ash produced during previous years**

7.8 The above data shows that 09 only out of 26 plants of NTPC could use ash cent percent or more (including earlier years' production) in the last two years. The average utilization of ash has gone up from 63.70% to 73.31% in 2019-20. In response to a query as to whether any complaints have been received about the disposal of ash by the

stakeholders? and if so, nature of such complaints and their disposal or otherwise NTPC submitted as under:

"No such complaints were received from any stakeholders."

7.9 NTPC in written reply to point 54 of List of Points stated *inter- alia* that at present fly ash is being issued at 14 nos of stations 'on price' and is issued 'free of cost' at the rest of 10 stations. In response to a query as to why the Fly ash is being issued free of cost at 10 stations, NTPC in a written stated as follows :

> "Fly ash is being sold "free of cost" at 10 no of stations. Tendering for the sale of ash was done earlier but tender failed due to inadequate response. It is to be mentioned that ash is available in surplus in the vicinity of these stations with limited avenues for ash utilization."

7.10 Furnishing reply to queries on (i) amounts of 'Rejects' and 'Ashes' NTPC produce in a month, (ii) amount of rejects/ ash sold through the process of e-auctioning and put to other productive usagesand (iii) methods followed by NTPC to dispose ashes, the company in a written reply submittedinter- alia as follows :

> "Presently, NTPC is operating 33 coal-based thermal power stations (24 own + 9 under JVs). In the year 2019-20, a total of 67.24 Million Metric Tonne (MMT) Ash was produced by these operating stations, out of which 51.11 MMT (which is about 76.01%) Ash was gainfully utilized in various uses such as issue to cement and bricks/blocks/tiles manufacturing industries, road embankment construction, reclamation of mine voids, low lying area development, etc. The unutilized ash of about 16.13 MMT was disposed off and stored in an environment friendly manner in Ash ponds. Considering the above, NTPCs coal-based plants are producing about 5.60 MMT ash in a month.
>
> Ash Utilization/ ash disposal at NTPC stations depends on its location, ash utilization potential available in nearby area and number of power plants of other utilities & their ash production etc. Power plants which are located near urban/ demand centers such as Dadri, Unchahar, Tanda, Solapur, Kudgi etc. supplied fly ash on price which is derived through the transparent e-auction process. NTPC's

pithead power plants are located in remote locations and cement industries are located at comparatively larger distances from these plants. In these plants fly ash is being issued to all users free of cost basis. Currently, fly ash is being issued at price from 14 NTPC's thermal power plants.

In line with the Ministry of Environment, Forests & Climate Changes (MoEF &CC) directives, NTPC stations are bearing the transportation cost of ash being supplied for road embankment constructions of NHAI/ state government road projects within 300 km of power plants. Further, fly ash is being issued free of cost basis to all fly ash based building products manufacturing units located in the vicinity of thermal power plants. Fly ash is also being utilized for reclamation of mine voids where ever coal mining companies have allocated abandoned mines.

7.11 With regard todifferent systems followed by NTPC Plants for handling of ashes, their comparative advantages and disadvantages, the company in a written reply submitted as follows:

"The ash handling system in NTPC is planned as per the predetermined volume of ash to be handled, considering the utilization aspects and requirements of regulatory authorities for environmental concerns etc. Following systems are being adopted at NTPC for the handling of ashes:

i. **Dry Fly Ash Collections and Storage system along with rail loading facility:**

In order to make fly ash available to cement & concrete industries and fly ash based building products manufacturing units such as bricks/ blocks/ tiles manufacturers, a system for collection and storage of dry fly ash has been installed at all NTPC power plants. Further, for the bulk supply of fly ash through the Railway to cement industries, a rail loading facility has been developed at many thermal plants. Through this system, fly ash is being issued into closed bulkers as well as railway wagons. NTPC has also installed fly ash bagging plants at many power stations. Presently, bagged fly ash is being supplied through Railway to cement plants located in the North East States.

ii. **Wet Disposal in the slurry form :**

To handle unutilized fly ash and bottom ash (collected in the bottom of the boiler furnace) and wet ash disposal system had been installed at all old thermal power plants commissioned before the year 2014 to store fly ash in environment-friendly manner in ash ponds. In this system, fly ash and bottom ash are mixed with water and the ash slurry is conveyed through pipelines into the ash pond area. In the ash pond area, water gets decanted and ash is deposited, which can be issued to road embankment construction, reclamation of low lying areas, abandon mine voids etc. The decanted water is recirculated through the recirculation system to plant for its reuse.

This system was comparatively economical and environment-friendly system for handling ash. However, it requires a large quantity of water for making ash slurry and large areas for its storage.

iii. **Dry Ash Disposal**

NTPC has adopted the Dry Ash Disposal System at Dadri. In this system unutilized moist fly ash and bottom ash are conveyed through the conveyor belt to ash mound area then it is spread and compacted through the earth moving equipment in the shape of a mound. The grass and tree plantation have been done on the surface of the mound to convert it into green land. The advantages of ash mound construction are conservation of land, conservation of water, ecological rehabilitation, and self-sustaining eco-system and thereby it is environment friendly. Such a system can be adopted in low rainfall areas and it is available at NTPC Dadri only.

iv. **High Concentrated Slurry Disposal (HCSD)**

In this system, unutilized fly ash is conveyed to the ash dyke area in high concentration slurry form (concentration of 60% to 75% of ash by weight). This system has low water consumption and compact disposal at the site with non-dusting surfaces and has reduced land requirement. This is an eco-friendly system of ash-slurry discharge. This system has been provided at those NTPCs power plants which had been/are being commissioned after 2014."

7.12 With regard to the steps being considered by NTPC to form linkages with the industries, especially construction industries, for the productive usage of 'Rejects' and 'Ashes' generated by the plants?, NTPC submitted as under :

> "NTPC Limited a socially conscious utility considers utilization of ash as a thrust area of its activities. Following efforts are being made by NTPC to form linkages with the industries, especially construction industries, for the productive usage of ash produced at its coal-based TPPs:
>
> 1. For the supply of ash to NHAI and other Government road projects, stations are regularly interacting with officials of NHAI/ Government road construction agencies. Presently, NTPC stations have signed 47 MoU with project implementation unit (PIU) of NHAI/ State government road construction agencies for various highway projects and supplying ash from its 13 (Rihand, Vindhyachal, Singaruli, Korba, Sipat, Talcher-Kaniha, Lara, Tanda, Mouda, Unchahar, Farakka, Kahalgaon, and Simhadri) thermal power plants. In 2020-21, about 16 MMT ash is expected to be utilized in this sector.
> 2. In order to facilitate the bulk supply of fly ash to cement industries, NTPC has signed an agreement with Indian Railway under SFTO (Special Freight Train Operator) Scheme and procured two BTAP (Bogie Tank for Alumina Power- allowed for fly ash also) wagons rakes. The third such rake is undersupply. Fly ash in bulk quantity will be transported from Pithead power plants to demand centers like Dadri for supply to cement industries. A successful trial has already been done for transporting fly ash in BTAP rakes from Rihand to NTPC Dadri and issued to the cement plant.
> 3. NTPC has started supply of fly ash in BOXN wagons in an environment-friendly manner from its stations to cement industries located far off from power plants. Further, the supply of fly ash in jumbo bags through Railway has also been started from large capacity pithead power plants like Vindhyachal.
> 4. Expression of Interest (EOI) has been invited for supply of fly ash to bulk consumers through Railway Wagons from Mauda, Rihand, Simhadri and Korba where rail loading facility is available. Efforts are being made to supply fly ash to interested cement agencies.
> 5. NTPC has successfully developed fly ash-based Geopolymer road construction technology and now plant, township and roads under CSR will be constructed through this method to large-scale promotion and confidence building.

6. In order to promote the use of ash along with overburden material in the backfilling of operational coal mine as per provisions of MoEF &CC notification, a trial is being undertaken in NTPC Dulanga mine.
7. Research and development (R&D) of fly ash based aggregates for concrete in association with SVNIT, Surat.
8. R&D for use of fly ash in Gypsum Vermiculate Plaster (GVP) for internal plastering work.
9. To promote the use of fly ash in Agriculture, MoU between NTPC and the Indian Institute of Soil Science (IISS), Bhopal has been signed for the Project "Use of Fly Ash in Agriculture for Sustainable Crop Production and Environment Protection.
10. Plan to set up fly ash classifier unit at Talcher Kaniha to facilitate fly ash export.
11. Appointment of internationally renowned Strategic Consultant for maximizing Ash Utilization at 07 Pithead Station (Award expected by 25.01.2021).
12. Seminar/ conference/ workshop on utilization of fly ash involving regulatory authorities, construction industry, NHAI, cement industry etc are being organized on regular basis."

FLU GAS DESULPHURISATION(FGD)

7.13 With regard to the present status of FGD installation and CPCB norms for SO2 installations, NTPC submitted as follows:

"NTPC FGD implementation status as on date is as below:-

FGD	
Status	**Capacity (MW)**
FGD Implemented (5 units)	1340
FGD under execution (125 units)	58940
Sub Total (130 units)	**60280**
Under Tendering (24 units)	4324
To be tendered (1 unit)*	250
Total (155 units)	**64854**

*FGD award cancelled for one unit of Rourkela of 250 MW

CPCB norms for SO2 emissions are given below:

Unit Installation date		Installed before 31.12.2003		Installed after 01.01.2004 & up to 31.12.2016		To be installed from 01.01.2017
Unit Size		< 500 MW	> 500 MW	< 500 MW	> 500 MW	All
SO2	**mg/ Nm³**	600	200	600	200	100

NTPC will meet the CPCB norms w.r.t SO2 emission after implementation of FGD system in all NTPC plants."

7.14 In response toa query as to the role in relation to installation and surveillance of FGD system do the Ministry perform, particularly with regard to NTPC thermal power plants, MoP submitted as follows :

> "Central Electricity Authority (CEA), a technical arm of MoP is taking FGD status reports for all NTPC units regularly and also visiting plants to see the FGD implementation status as and when required. CEA in turn submit report to MoP. Ministry takes regular reviews at the level of Hon'ble minister/ Secretary to monitor the progress of FGD installation in addition to Quarterly Performance Reviews (QPRs) of NTPC.

Environmental Pollution Control Measures

7.15 With regard to the concrete measures taken by the Company to minimize pollution and enhance the health standards of the people and employees living around mines, NTPC submitted as follows :

> "NTPC undertakes a comprehensive environment management plan right from the conception of the project, selection of site, resource selection (Land, Coal & Water source) and technology for power generation and pollution control. There are systems in place for control of all types of probable pollution. Stations are in compliance with all conditions applicable to them. Hence, there is no possibility of any adverse impact on the areas around stations of NTPC Ltd.
>
> The details of measures taken by NTPC Ltd are as follows:
>
> **Control of Air Emissions:** High-efficiency Electro-static Precipitators (ESPs) with an efficiency of the order of 99.97% to maintain Particulate Matter (PM) emissions well below the applicable permissible limits are installed in each plant. Performance enhancement of ESPs operating over the years is being enhanced to achieve the desired emission levels by R&M of ESPs. NTPC has completed ESP

R&M in 64 units of the total capacity of 17.1 GW and ESP R&M is in progress in 14 units of 5.26 GW. All operating units of NTPC Ltd are in compliance to new emission norms (Notified by MoEF&CC in December 2015) for particulate emission.

For control of SOx, the first wet FGD has been commissioned and operational at Vindhyachal Station (Unit-13 of Stage-V). Dry sorbent injection-based FGD was commissioned in Dadri Stage-I and erection of wet FGD at Dadri Stage-II is in advance stage. Dry sorbent injection-based FGD erection work is in an advance stage in two units of Tanda (St-I) to meet the emission norms for SOx. NTPC Ltd has awarded FGD packages for more than 59GW capacity and additional packages of more than 5 GW are under tendering.

NOx control in coal-fired plants is presently achieved by controlling its production by adopting best combustion practices (primarily through excess air and combustion temperature optimization). To lower down the NOx emission to the extent possible levels & meet the applicable limits of 450mg/Nm^3, combustion modification has been awarded for more than 20 GW capacity, which is either executed or is planned during next overhaul of the respective unit.

Change of secondary fuel from Heavy Fuel Oil (HFO) to alternative fuel (Light Diesel Oil (LDO) or Low Sulpher Heavy Stock (LSHS) having low sulfur content) scheme is implemented in all stations in NCR and state of UP and Haryana to minimize the SOx emission during the startup of coal based units.

Control of water pollution and adoption of Zero Liquid Discharge (ZLD) approach: NTPC always took proactive steps towards water stewardship in the power generation sector. It has a dedicated Water Policy-2017 followed by Rain Water harvesting Policy-2018 to set its own benchmark in water consumption in power generation. Water bodies' rehabilitation, rejuvenation & restoration, water withdrawal optimization depending on the sustainable water withdrawal capacity and rejection of water bodies as a probable water source, which are recognized as environmentally sensitive due to their relative size and habitat for ecologically sensitive species.

All stations of NTPC are equipped with advanced wastewater treatment facilities for plant and domestic effluents 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.

NTPC has taken a proactive approach of making all its power stations to operate with ZLD (Zero liquid discharge) approach. Presently 10 stations of NTPC Ltd are in ZLD compliance, an additional 10 are expected by March'21 and the rest by December'21 irrespective of statutory condition applicable or not.

Real-Time Environment Monitoring System: All power stations are equipped with continuous ambient air quality monitoring stations (CAAQMS). Real-time Emission Monitoring Systems (CEMS) are installed in all units to monitor particulate emissions and gaseous emissions (SO_2 and NOx). Effluent Quality monitoring system (EQMS) are installed for real-time monitoring of effluent quality at all stations. Online data from CAAQMS, CEMS and EQMS is being transmitted to central and state regulators on a real-time online basis through a cloud server.

Waste Management: NTPC is committed to the protection of the environment through the implementation of effective waste management guidelines that meet all legislative and regulatory requirements placed on it. All the wastes generated either from the plant or township are being used for Energy or resource recovery purposes and No landfilling is done in the plant premises. The waste storage facility, collection, transportation and disposal are being done as per applicable guidelines. No waste from NTPC operational station is being disposed of in nearby areas. All stations of NTPC are in compliance to all applicable rules for the respective type of waste generated from company facilities.

Due to above mentioned proactive measures taken by NTPC Stations for environment protection and management, there is no possibility of any adverse impact on nearby areas environment and public health."

7.16 With regard to a query as to how would NTPC contribute to reduced emission of Greenhouse gases and environment sustainability, NTPC submitted as follows :

"NTPC has actively taken various initiatives to reduce the emission of Green House Gases and to improve environmental sustainability. Major initiatives are given below:

- NTPC has changed its focus and is pursuing renewable capacity addition aggressively.
- NTPC is targeting to achieve 30% capacity through non-fossil sources by 2032.
- Blue sky initiatives- Biomass Co-firing and Waste to Energy

- NTPC has planted around 35 million trees and still continuing with around 10 lakhs tree plantation per year.
- Adoption of Ultra supercritical technology for thermal power plants
- Installation of environment control equipment such as Flue Gas Desulphurisation (FGD), Zero Liquid Discharge, retrofitting of ESP to curb particulate emissions at all stations.
- Continuous Emission Monitoring System (CEMS) of all stacks and Ambient air quality monitoring through an online Ambient Air Quality Monitoring System (AAQMS)

Water consumption

7.17The data on water withdrawal per year as given in the annual reports of NTPC is as follows:

Year	Type of water	
	Total water withdrawal	Per unit withdrawal Litre / kwh
2014-15		
2015-16		
2016-17	553.31*	3.22
2017-18	561.01*	3.06
2018-19	593.24*	3.04
2019-20	559.5*	3.15

***water calculated on closed-loop systems (**P.162 AR 2019-20)

Reduction in water consumption

7.18 It is stated that Center for Power Efficiency and Environmental Protection. (CenPEEP) set up by NTPC is working towards water consumption and auxiliary power consumption in coal and gas stations. The data on total water withdrawal and per unit withdrawal of power generating stations operated by NTPC from 2015-16 to 2019-20 is as follows:

	Station	**Water Consumption (Million Cubic Meter)**					**Water consumption /unit (L/KWH)**				
	---	**15-16**	**16-17**	**17-18**	**18-19**	**19-20**	**15-16**	**16-17**	**17-18**	**18-19**	**19-20**
1	**Dadri (C+G)**	36.1	30.5	31.4	33.5	21.9	2.77	2.77	2.72	2.75	2.61
2	**Korba**	62.9	61.6	60	55.9	55.7	3.08	3.02	2.93	2.77	2.81
3	**Sipat**	70.68	69.3	71.7	69.2	65.1	3.17	2.91	3.12	2.89	2.89

	Station	Water Consumption (Million Cubic Meter)					Water consumption /unit (L/KWH)				
	---	15-16	16-17	17-18	18-19	19-20	15-16	16-17	17-18	18-19	19-20
4	**Tanda**	20.8	15.9	13.5	10.1	18.1	6.65	4.91	4.12	4.26	4.48
5	**Vindhyachal**	109.7	124.9	126.3	132.6	112	3.50	3.88	3.37	3.53	3.14
6	**Kahalgaon**	58.8	59.8	58.4	58.17	53.2	3.85	3.75	3.58	3.53	3.22
7	**Talcher-Th**	14.2	13	12.8	11.4	11.5	3.77	3.46	3.39	3.16	3.40
8	**Talcher-K**	75.4	74.7	79.6	73.33	64.99	3.15	3.27	3.46	3.45	3.37
9	**Mouda**	8.2	16.1	23.8	28.4	30.6	4.37	3.90	2.98	2.39	2.94
10	**Ramagundam**	80.9	67.2	67.1	61.4	60.3	4.00	3.43	3.56	3.31	3.52
11	**Barh**	14.8	20.6	21.2	24.5	23.1	3.09	2.70	2.29	2.49	2.81
12	**Kayamkulam**	0.44	Reserve Shut Down				3.08	Reserve Shut Down			
13	**Gandhar**	2.6	4.8	5.9	3	1.33	2.70	2.03	1.90	1.91	3.03
14	**Kawas**	2.5	3.3	4.2	4.3	2.2	2.06	1.92	1.75	1.72	1.59
15	**Auraiya**	3.1	1.2	0.9	1.1	1.4	2.05	2.24	2.39	2.02	3.15
16	**Faridabad**	2	1.6	2.1	1.1	0.9	1.82	1.55	2.51	1.84	1.62
17	**Bongaigaon**	*	5.5	5.4	8.9	12.1	*	3.27	3.12	3.12	3.08
18	**Kudgi**	*	*	7.9	23	19.28	*	*	5.28	3.04	4.18
19	**Solapur**	*	*	18.72	11.03	6.71	*	*	13.57	6.18	8.21
20	**Jhajjar**	18.00	18.59	24.40	21.97	14.44	3.10	3.40	3.16	2.97	3.76
21	**Kanti**	*	3.16	6.8	11.0	10.02	*	3.97	3.90	3.62	3.45

***Unit under construction/ commissioning**

Other stations are open cycle (Rihand, Singrauli, Farakka, Unchahar, Anta, and Simhadri (sea-based). Further rest of NTPC /JV stations (Darlipalli, Khargone, Gadarwara, Lara, Meja, Barauni, NPGCL, BRBCL) are under the stabilization period."

7.19 In written reply to a query as to whether the CenPEEP efforts have resulted in reduction in water consumption by the generating stations of NTPC, NTPV furnished the following :

"The water footprint of NTPC stations has optimized over the years for each unit of energy being generated &CenPEEP is driving different initiatives across stations to further reduce water footprint like:

a) **Metering**: The first step towards water optimization is the accurate metering of water consumption at different consumption nodes as per the water balance diagram. In the last three years, more than 500 water meters have been installed across all these stations. Further at new stations installation of water meters is in progress.

b) **24*7 Monitoring**: 24*7 Monitoring is another important activity. Now to have 24*7 monitoring all meters installed will be hooked to DCS for remote monitoring.

c) **Water Audit**: Water Audits are carried out periodically & recommendations of water audits are implemented.

d) **Monthly MIS**: Generation of Monthly MIS for higher management.

Further different Systems like Liquid Waste Treatment Plant, Sewage Treatment Plant, Ash Water Recirculation System, Drain Separation & Rain Water Harvesting systems are either in service or under different stages of completion across all stations. Improvement in Ash water ratio & COC through chemical intervention has further resulted in water reduction across NTPC Stations."

7.20 Annual report of NTPC for the year 2019-20 mentions that Air cooled condensers are proposed to be installed in future power stations which has the potential to save 75% of water.

7.21 In response to a query as to whether such air cooled condensers can be installed in the existing power stations also, NTPC in a written reply stated as follows:

"Retrofitting of Air-cooled condensers (ACC) in existing power stations is site-specific and need a detailed study for individual stations/units. The feasibility of retrofitting depends on many factors including Availability of space near the turbine hall, study regarding site-specific Climatological data to assess the design ambient condition, and in turn space required for installation of ACC.

Retrofitting of ACC may require a long shut down of existing units and also replacement of components on case to case basis. Installation of ACC will affect the unit efficiency levels and may also result in a reduction in unit power output. Hence, plant-specific Techno-economic analysis shall be required to study these effects on account of the installation of ACC. Scarcity in water availability for the plant may be a trigger point for such a study.

Hence feasibility of installation of ACC in the existing power plant can be checked only after conducting specific studies based on the above.

Further to above, it is also submitted that domestic manufacturing capacity for ACC is not available."

7.22 The data on total water withdrawal and per Unit withdrawal for the years 2014-15 and 2015-16 as given by NTPC is as follows:

Water Consumption Data (2014-15)

	Station	Capacity (MW)	Gen (MU)	Water Consumption	Specific Water Consumption
	---	---	2014-15	Lakh KL	l/kWh
1	Tanda	440	3161.4	298	9.42
2	Mouda	1000	2310.9	114	4.93
3	Vindhyachal	4760	29573.7	805	2.72
4	Ramagundam	2600	20443.1	930	4.55
5	Kahalgaon	2340	15619.4	611	3.91
6	Talcher- Thermal	460	3783.9	147	3.89
7	Talcher Kaniha	3000	23698.6	808	3.41
8	Kayamkulam	359.6	819.1	14	1.65
9	Korba	2600	20060.8	646	3.22
10	Dadri	2649.8	12284.7	449	3.66
11	Gandhar	657.4	1608.5	51	3.18
12	Sipat	2980	21773.1	556	2.55
13	Kawas	656.2	1741.2	32	1.82
14	Auraiya	663.4	1664.1	36	2.18
15	Faridabad	431.6	1571.4	26	1.64

Water Consumption Data (2015-16)

	Station	Capacity (MW)	Gen (MU)	Water Consumption	Specific Water Consumption
	---	---	2015-16	Lakh KL	l/kWh
1	Tanda	440	3129.8	180.3	5.76
2	Mouda	1000	1875.8	82.2	4.38
3	Vindhyachal	4760	31321.4	1096.2	3.50
4	Ramagundam	2600	20250.1	810.0	4.00
5	Kahalgaon	2340	15275.0	588.3	3.85

	Station	Capacity (MW)	Gen (MU)	Water Consumption	Specific Water Consumption
6	Talcher-Th	460	3763.8	142.7	3.79
7	Talcher-K	3000	23966.5	754.3	3.15
8	Barh	1320	4785.2	148.1	3.09
9	Kayamkulam	359.6	142.8	4.41	3.09
10	Korba	2600	20429.1	628.9	3.08
11	Dadri	2649.8	13047.1	360.5	2.76
12	Gandhar	657.4	961.5	25.5	2.66
13	Sipat	2980	22284.8	576.7	2.59
14	Kawas	656.2	1212.4	24.8	2.04
15	Auraiya	663.4	1511.3	30.8	2.04
16	Faridabad	431.6	1100.7	15.9	1.44

7.23 The data on water consumption furnished by NTPC in reply to point 56 of the List of Points shows that water consumption per unit (L/kwh) has gone up from (i) 2.70 to 3.03 at Gandhar, (ii) 2.05 to 3.15 at Auriya; and, (iii) 3.10 to 3.76 at Jhajjar stations from 2015-16 to 2019-20 where as in the rest 18 closed thermal and gas stations per capita water consumption has come down over the same period. Furnishing the reasons for increase in per capita water consumption in the above mentioned three stations during the said period and the steps taken to reverse the trend, NTPC stated as follows :

> "Gandhar and Auraiya had more generations in 2015-16 viz-a-viz in 2019-20. Station water consumption has a fixed component that is not dependent on generation. Hence Specific Water Consumption(SWC) has increased due to a reduction in the generation (PLF).
>
> During 2015-16, Jhajjar was having one unit in operation, second got commissioned in 2015-16. Hence SWC of 2015-16 is not comparable with that of 2019-20. Also, Jhajjar PLF has decreased from 44.8% to 29.2%, resulting in higher SWC.

	2015-16	2019-20

	Gen MUs	PLF %	SWC L/Kwh	Gen MUs	PLF %	SWC L/Kwh
Gandhar	962	16.7	2.70	437	7.6	3.03
Auraiya	1511	25.9	2.05	445	7.6	3.15
Jhajjar	2466	44.8	3.10	3843	29.2	3.76

Use of treated Sewage water from Municipal Sewage Treatment Plants (STPS)

7.24 NTPC has taken initiative to use treated sewage water from municipal STPS nearby for bulk water requirements of its TPPs replacing precious fresh water from rivers/ lakes reservoirs/ dams, etc. Furnishing the data as to the number of TPPs which have drawn water from Municipal STPs and the concrete plans formulated to use the sewage water from STPs nearby, NTPC submitted as follows :

> "The use of STP water has been taken up with various Municipalities for power plants within a 50 km radius. Use of treated sewage water is under consideration in Meja TPP, Telangana STPP, Korba STPP, Sipat STPP, Dadri STPP, Mouda STPP, Solapur STPP, and Patratu STPP. Draft agreements have been sent to the concerned Municipalities. Discussions are in progress. Agreements will be signed with the Municipalities based on the availability of quantity and quality of treated sewage water. After the finalization of the Agreement, the implementation of the transportation system of treated sewage water from the Sewage treatment plant (STP) to the power plant and further treatment/modification, if required will be carried out by NTPC."

Zero Liquid Discharge (ZLD) from TPPs

7.25 NTPC is stated to have taken initiatives to become ZLD Company in respect of all closed cycle operating stations by identifying and implementing water management initiatives adopting innovation in water use in TPP. Explaining in brief about the closed cycle operating stations, NTPC submitted as under:

"Closed cycle operating stations are those stations where condenser cooling water is recirculated in a closed loop using cooling towers. In such plants, water losses in the cooling water system occur due to evaporation loss & drift losses in cooling towers. In addition to the losses, blowdown water is drawn from the cooling water system to maintain Cycles of concentration (COC) for the closed system. The blowdown is generally reused for other purposes elsewhere in the plant. Makeup water is added to the cooling water system to take care of the above losses.

7.26 On the number of closed cycle operating stations, NTPC submitted that :

"All NTPC stations are operated in a closed cycle except (SSTP Shaktinagar, RhSTPPRihandnagar Stage#1, and FSTPS Farakka Stage#1&2)."

7.27 With regard to the data on number of stations that have become e become ZLD compliant so far, NTPC submitted as under:

"There are 37 stations where ZLD is to be done. As on date, 15 stations are ZLD compliant.

7.28 With respect to the plans to make all closed cycle operating stations ZLD compliant, NTPC submitted as follows:

"14 stations are expected to be ZLD compliant in a current financial year i.e. by March'21. Balance 08 stations are expected to be ZLD compliant by December'21.

To conserve water, to enhance rainwater harvesting capabilities, and to reduce specific water consumption, stations of NTPC Ltd keep on improving the efficiency of the existing systems by augmentation of these existing systems and by the adoption of the latest state of the art technology-based systems."

Waste to Energy (WtE) initiatives.

7.29 NTPC is stated to have commissioned 24 Tonnes Per Day (TPD) thermal gasification based demonstration scale WtE plant at Varanasi to support tech development in India .with regard to the initiatives taken to convert Waste into Energy, NTPC submitted as follows :

“Power plants are the biggest consumers of coal. Typically a 1000 MW plant consumes about 5 million tonnes of coal annually. India's total coal-based power generation capacity is about 2 lakh MW, which theoretically can consume approximately 1000 million tonnes of coal annually. Even 10% of that, if replaced with Agro biomass pellets, will amount to 100 million tonnes of this fuel. Production of 100 million tonnes of biomass pellets may require about 110 to 120 MMT raw agro residue, sufficient to wipe out the most unused agro residue in the country and thus eliminating the farm fires and produce approx. 20,000 MW of round the clock renewable power.

The idea has vast potential to increase rural income, provide local employment, cleaning the air by eliminating farm fires, and also to generate enormous renewable energy with existing coal power infrastructure. It can also contribute in reducing SOx and NOx emissions from coal power plants.

Various initiatives taken by NTPC for utilizing the agro residue in power plants is elaborated below.

a) Test firing in NTPC Dadri Power station in 2017

NTPC fired 100 tonnes of agro residue based pellets at Dadri in 2017 for test firing .The test-firing was carried out in four phases, gradually increasing the percentage of firing from 2.5%, 5%, 7.5%, and 10% with coal, as the base fuel.

Further, NTPC invited expression of interest for production and supply of paddy straw and agro residue based pellets /torrefied pellets to power plants located across the country and received over 100 responses from vendors who are interested to supply biomass-based pellets for co-firing, to enable the development of an ecosystem of infrastructure and establishment of pellet business .

b) Sectorial support through training program and conferences

To amplify the scale of biomass co-firing in India, NTPC conducted a training program for Gencos on 29th January 2018 with the intention that the knowledge and expertise acquired by NTPC could be disseminated in the sector and help them initiate the biomass co-firing in their own plants .NTPC also arranged a conference on biomass co-firing on 8th and 9th May 2018 to exchange views & experience on emerging technologies, policy issues, innovative financing solutions by the eminent experts and world technology leaders to build up the required knowledge base for finding the most optimum solution that can benefit the

power sector in terms of technology, sustainability, cost, efficiency & environmental care.

c) Biomass Procurement to create Demand

NTPC has issued 8 purchase orders for procurement of 160 TPD of agro residue pellets on 15 October 2019 and has fired more than 7000 tonnes of agro residue pellets till date. NTPC Dadri has become the first plant in the country to commence commercial-scale biomass co-firing .Co-firing is more economical and efficient than a dedicated biomass plant and also avoids the risk of loss of generation due to alternate fuel availability. It also creates rural employment in the supply chain.

Based on the above experience and intent, NTPC has identified 17 operating Power stations situated across India, with an aggregate annual requirement of 5 MMTPA of biomass pellets for four years. Notice inviting tender has been issued on 18 September 2020. 15% purchase preference has been allocated to the vendors using agro residue from Punjab Haryana and NCR in these tenders.

Additionally, another purchase order for the supply of 1 lakh tons of biomass pellets at NTPC Dadri have already been issued in April 2020 and the supply may begin within 9 months against these purchase orders.50% of the total quantity, i.e. about 50,000 MT was reserved for suppliers from Punjab and Haryana. Further, short term tenders. Having a supply duration of 9 months, for about 1.8 MMTPA have been initiated for immediate supply in this season to be used in 19 plants. The purchase orders for short term tenders are expected to be issued shortly.

Initiatives to convert Municipal Solid Waste to Energy:

Integrated Waste to Energy Plant at East Delhi by (JV) NTPC EDMC Waste Solutions Pvt Ltd (JV of NTPC & EDMC)

7.30 A Memorandum of Understanding (MOU) has been signed between EDMC and NTPC to set up integrated waste processing facilities for a capacity of 2000 TPD of MSW and to produce 12 MW of electricity. The Integrated Waste to Energy Project (IWTEP) shall consist of all sections required for complete processing of raw municipal solid waste (MSW) into two products:

1. WtE Plant (12 MW) based on Incineration technology, utilizing dry waste (600 TPD)

2. Bio-Methanation (Anaerobic Digestion Technology) of Organic Waste (1200 TPD) for production of Bio-CNG and Manure

WtE Plant shall be of global standard, employing a grate firing system and flue gas cleaning system. The WtE plant shall be completely indoor, odorless, and emission norm compliant. The plant shall be designed to incinerate up to 2,19,000 metric tons annually of RDF/ combustible fraction having GCV of 2500 kcal/kg to convert it efficiently into Power.

The Proposed Site for Integrated Waste to Energy Plant is situated at Ghonda – Gujran Village of Seelampur Tehsil of North East Delhi District. Tenders have been invited and bids are yet to be received.

7.31 Varanasi 24 TPD waste to energy plant

In addition, NTPC has commissioned a 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 producer gas, which is then used to generate approximately 200 kW of electric power. Further, to promote the Make in India concept, this project was awarded to an MSME player."

The status of WTE projects as submitted by NTPC are given below:

Varanasi (Through NTPC's subsidiary company NVVN)	• Feasibility Report (FR) has been approved • Site studies under progress on identified land • Consultant appointment: Proposal initiated
Indore (Through NVVN)	• FR Approved. • Advance expenditure note under approval for site studies
Surat (Through NVVN)	• FR approved • Tenders have been invited • Technical bids evaluated

7.32 Furnishing the experience gained in running the above said WtE plant and the commerciality of such projects to take care of the huge problem of Solid Municipal Waste (SMW), NTPC submitted as under:

"The plant is based on the production of syngas using Municipal Solid Waste (MSW) as feedstock. The plant was established on a pilot basis to understand the suitability of the gasification process using MSW. The plant is suitable for dry segregated waste. The performance test of the plant is still pending and it is premature to declare the commercial suitability of the plant for large-scale implementation to solve the huge problem of MSW."

Setting up of Charging infrastructure

7.33 Annual Report 2018-19 (p. 40) states that award has been placed for setting up of 400 Nos. of charging stations in various locations across cities and highways. Annual Report 2019-20 mentions that 282 Nos of charging stations will be set up in various cities under FAME (Faster Adoption and Manufacturing of Electric vehicles (FAME-II). In response to a query as to how many charging stations have actually been set up and are made operations during 2018-19 and 2019-20, NTPC submitted as follows:

"The award has been placed for setting up 400 Nos. of chargers in various locations across cities and about 129 chargers (0 chargers in FY 2018-19, 93 chargers in FY 2019-20 and 36 chargers in FY 2020-21) have been installed till date. NTPC will set up 205 charging stations in various cities under FAME (Faster Adoption and Manufacturing of Electric vehicles (FAME-II). The tendering process is likely to be completed shortly."

Use of Bio Fuels

7.34 It is stated that NTPC is increasing use of bio fuels to proportionately offset coal requirement. (P.183 19-20). Furnishing a brief note on the subject, incorporating inter alia the extent of such usage, sources of such fuel, economics of fuels,etc., NTPC submitted as follows :

"Extent of usage of biomass:
NTPC has already consumed 9300 tonnes of agro-based pellets at NTPC Dadri. Purchase orders at Unchahar, Solapur, Mouda, Simhadri, Kudgi,Vindhyachal, Farakka, and Barh have been issued for procurement of pellets aggregating to 1.67 lakh tons.

Sources of such fuel:

The source of such fuel is primarily the agro residue which is not fed to animals and is surplus, like rice straw, cane trash, mustard straw etc.

Economics of fuel:

With 100% pellet-firing the variable charge of energy would be about Rs. 5 per kWh. With 10% pellet co-firing, the impact on variable charge would be about Rs. 0.15-0.20 per kWh.”

Chapter VIII

RESEARCH AND DEVELOPMENT

Expenditure on R&D

8.1 The data on expenditure (revenue and capital separately) for the last five years (year-wise) as furnished by NTPC is as follows:

	R&D Expenditure in (Rs. Crores)				
	2015-16	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Capital	21.68	81.88	107.31	87.17	48.97
Revenue	108.00	80.40	77.67	51.42	134.36
Total	129.68	162.28	184.98	138.59	183.33

8.2 In written reply to a query as to (i) whether any R&D efforts are being made to indigenize the advanced processes and products which are currently imported such as the ones mentioned such as Air cooled condenser for super critical units, ultra critical power plants with steam parameters 270Kg /cm2steam pressure etc, Cooling tower of FRP construction Waste to Energy Plants, etc (at p.135 of Annual report 2019-20) ,NTPC submitted as under:

> "NTPC is already specifying collaboration and technology transfer provisions in its technical specification to develop Indian vendors and indigenize the technology. Indian vendors under this route can collaborate with OEMs/Technology providers and through the technology transfer route can absorb the technology for subsequent indigenization of the processes and products. Further, most of the above processes and products are already indigenized by Indian vendors."

Granted Patents

8.3 In response to a specific query as to whether any product and process patents have been granted through R&D activities of NTPC and if so the details there of for the last 10 years, NTPC submitted as under :

"Total number of IPR (Patents and Copyrights granted to NTPC–NETRA is 30.
(Number of Granted Patents: 21, Number of Granted Copyrights: 09)

GRANTED PATENTS

Sr. No	Date of Grant	Title of Invention
1	11/06/2012	A fly ash based detergents
2	13/02/2015	A novel methodology/process to determine colloidal silica in raw & DM water
3	16/12/2015	An additive for use in ordinary portland cement
4	31/03/2016	Method for online cleaning of fouled PVC fills of cooling tower exposed to air/water borne dust/bio-fouling
5	12/08/2016	Barium and Potassium exchanged Zeolite-X adsorbent for CO2 removal from a gas or gas mixture and preparation thereof
6	23/09/2016	Pentasil type Zeolite for the selective adsorption of carbon dioxide from flue gases
7	28/04/2017	A method of determining qualitative composition of constituents of wear particles
8	25/04/2017	A locking system fitted with air release of pressurized braking system of coal wagons
9	22/06/2017	A unit for production of bio-diesel using bio fruits
10	30/10/2017	An integrated process for pollution control for coal combustion power plant
11	30/01/2018	An improved vacuum swing adsorption (VSA) process to recover high purity carbon dioxide from co2 containing effluent streams
12	29/06/2018	A defectoscope for sensing defects of the magnetic boiler tube
13	27/02/2019	A system for determination of steam water ratio in water wall tubes of large coal based steam generating units using capacitive probe
14	16/12/2014 11/09/2014	Method and apparatus for implementing a thermodynamic cycle with efficient heat integration

Sr. No	Date of Grant	Title of Invention
15	11/07/2019	System and method for sea water desalination by waste heat recovery from flue gas
16	29/11/2019	A method for assessment of the health of hv transformers
17	13/02/2020	Magnetic crawler carrying defectoscope
18	21/02/2020	Air conditioning system using enthalpy of solar energy for its operation
19	18/02/2020	Energy efficient high performance industrial gear oil and composition thereof
20	07/07/2020	Robotic device for tube surface inspection in a coil and a method thereof
21	25/11/2020	Nitrogen modified Graphene and method for preparation there

COPYRIGHT GRANTED

Sr. No.	Date of Registration	Title of Work
1.	06.06.2014	Transformer Insulation Analysis Software TRINA—XS
2.	26.11.2014	Artificial Intelligence Based Signal Fault Detection System (Smart Signal Analyzer)
3.	16.12.2016	Real Time GCV
4.	04.01.2016	Power Plant Performance Evaluator (P3E)
5.	23/01/2018	Chemanalyzer
6.	04/01/2018	Energy Intensification And Diagnostic Model (EIDM)
7.	02/04/2018	Paints And Coatings: A Comprehensive Guide For Power Industry
8	03/03/2020	Microstructure Atlas of P22 Steel
9	05/03/2020	Microstructure Atlas of P91 Steel

IT & Digitization

8.4 There is huge jump in allocation at Rs. 200 crore for IT and digitization for the year 2019-20 *vis-a-vis* expenditure of Rs. 68 lakh incurred in 2018-19. In response to a queries as to (i) why the need for far higher allocation for the purpose in 2019-20 ; (ii) the amount spent out of Rs.200 crore meant for 2019-20; and , (iii) the budget allocation and

expenditure on IT and digitization during the last 5 years since 2015-16 (year wise), NTPC submitted as follows :

"Allocation of IT Capital Budget of Rs. 224.9 Cr. is in line with the budget allocation for the previous 5 years.

The higher allocation for IT is on account of implementation of Paper less Office and Enterprise Content Management implementation, upgradation of IT Security set up and implementation of Active Directory Phase-III for new projects.

The actual expenditure in 2019-20 was Rs 37.8 crores. The expenditure was less because the life of some of the IT infrastructureswere extended and some of the IT initiatives are under implementation.

The budget allocation and expenditure on IT and digitization during the last 5 years since 2015-16 (year wise) are given below:

(Rs. In Crore)

Financial Year	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Allocated Capita IT Budget	200.5	176.6	239.1	251.9	224.9
Amount Utilised	65.5	81.7	46.2	97.4	37.8
Utilised Percentage(%)	32.7	46.3	19.3	38.7	16.8

Chapter IX

CORPORATE SOCIAL RESPONSIBILITY (CSR)

CSR Activities

9.1 Furnishing a detailed note on CSR activities by NTPC submitted as follows :

"NTPC, as a responsible corporate citizen, is engaged in various CSR activities for Community Development and Environment Sustainability since its inception. The objective of NTPC's CSR is the inclusive growth of the neighborhood areas of its power plants.

NTPC brought out its CSR Policy in 2004. The policy has been modified from time to time as per changes in the business environment and regulatory framework.

The CSR policy specifies the focus areas of NTPC's CSR activities, which are Education, Health, Sanitation, and Drinking Water.

CSR activities taken up are mainly in the areas of education, health, sanitation, and drinking water. NTPC also takes up activities in other areas such as rural infrastructure, skill development, support to physically challenged, and environmental sustainability, augmenting Government efforts, and schemes for inclusive growth.

NTPC is also supporting the transformation of Aspirational Districts, a flagship initiative of the Government of India through its CSR initiatives by the stations located in/ near the aspirational districts of Baran, Godda, Hazaribagh, Korba, Maldah, Murshidabad, Sahebganj, Singrauli, Sonebhadra, and Vishakapatnam and as part of project development in projects located in/ near the aspirational districts of Aurangabad, Muzzafarpur, Hazaribagh and Chatra.

NTPC is focusing on the theme of education and health.

- By spending ₹ 304.92 crores or 2.41% of the average net profit of the previous 3 financial years during FY 2019-20, NTPC has surpassed the prescribed 2% amount of ₹ 252.68 crores. NTPC has exceeded the expenditure target of 2% for the 5th consecutive year.

- In line with the requirements of Section 135 of the Companies Act, 2013, and DPE guidelines on sustainability, NTPC has a separate board-level Corporate Social Responsibility (CSR) and Sustainability Committee to guide, approve & review CSR activities.

- NTPC's Board-approved Corporate Social Responsibility Policy sets out the process and mechanism to be adopted for the implementation of CSR activities. The policy is available for viewing at the web link: https://www.ntpc.co.in/en/corporate-citizenship/corporate-social-responsibility.

- NTPC takes up CSR activities in line with CSR provisions of Companies Act, 2013, and its rules. Activities are in line with Schedule VII of the Companies Act 2013.

- NTPC has a pan-India presence with most of its projects and stations located in backward regions of the country, in remote rural areas. In order to ensure inclusive growth, NTPC takes up most of the CSR activities primarily in the neighboring villages of its stations, with special emphasis on marginalized and downtrodden sections of the society.

- NTPC CSR has a three-tier structure – Corporate, Region, and Station. Corporate CSR is headed by Executive Director (CSR) reporting to Director (HR). Regions and Stations have CSR nodal officers reporting to Heads of HR of respective region/ station who in turn report to respective Business Unit Heads (in stations) and Regional Executive Directors (in Regions).

- NTPC is reporting its CSR activities to external stakeholders through the Annual Report as per the format given in Companies (CSR) Rules, 2014. The CSR activities are also shared with external and internal stakeholders through NTPC NTPC's Corporate Web Site, press releases, television shows on CSR on popular TV channels, videos on YouTube, compendiums/ coffee table books (both internal and external), E-magazines, brochure compendium of success stories, intranet, etc.
- NTPC's CSR activities are taken up based on comprehensive Need Assessment Surveys and are prioritized in consultation with key stakeholders including village representatives, local administration, and public representatives. NTPC takes up various feedbacks/ inputs from the panchayat, district administration, and neighborhood community, various stakeholders including public representatives, Village Development Advisory Committee (VDAC), and other participatory forums.
- Further NTPC conducts Social Impact Evaluation (SIE) from time to time through credible external agencies for gauging the impact of CSR initiatives and getting direct feedback from the beneficiaries. Findings of SIE form the basis for initiating corrective actions and formulating future schemes/ plans.

9.2 With regard to theplans do NTPC have for the overall development of the population and the communities living in the districts where the projects are located and beyond through more innovative utilization of its CSR funds, NTPC submitted as under :

- "NTPC has taken the following steps for the overall development of the population through innovative utilization of CSR funds through Sustainable Development. Further, other initiatives of CSR are addressed at answer no. 64 (c).

<table>
<tr><th>Sl. No.</th><th></th><th>Activities</th><th>Stations where activities have already been taken</th></tr>
<tr><td rowspan="2">1.</td><td rowspan="2">Recharging of Ground Water</td><td>Rain water harvesting</td><td>Faridabad, Auraiya, Anta, Simhadri, Korba</td></tr>
<tr><td>Rehabilitation/ Dredging of water pond</td><td>Solapur, Unchhahar, Korba, Simhadri, Sipat</td></tr>
<tr><td rowspan="3">2.</td><td rowspan="3">Solid Waste Management</td><td>Bio-methanation</td><td>Dadri, Kahalgaon,
Sipat, Talcher-Thermal</td></tr>
<tr><td>Bio-Digestor</td><td>Solapur, Sipat, Mouda</td></tr>
<tr><td>Vermicomposting</td><td>Rihand, Barh, Faridabad, Mouda, Badarpur</td></tr>
<tr><td rowspan="2">3.</td><td rowspan="2">Generation of Clean and Green power</td><td>Installation of Roof Top Solar PV system</td><td>
<table>
<tr><td>NTPC station</td><td>Capacity (In KW)</td></tr>
<tr><td>Kayamkulam</td><td>144</td></tr>
<tr><td>Unchhahar</td><td>60</td></tr>
<tr><td>Tanda</td><td>150</td></tr>
<tr><td>Kawas</td><td>52.5</td></tr>
<tr><td>Kudgi</td><td>25</td></tr>
<tr><td>Dadri</td><td>81</td></tr>
<tr><td>Auraiya</td><td>40</td></tr>
<tr><td>Barh</td><td>100</td></tr>
<tr><td>Talcher_K</td><td>360</td></tr>
<tr><td>Anta</td><td>30</td></tr>
<tr><td>Jhanor Gandhar</td><td>25</td></tr>
<tr><td>Faridabad</td><td>30</td></tr>
<tr><td>Vindhyachal</td><td>20</td></tr>
</table>
</td></tr>
<tr><td>Solar grid for village</td><td>Solar grid for the village near NTPC Rihand electrifying 800 number households</td></tr>
</table>

4.	Biodiversity conservation	Study on Gangetic Dolphins and Live Reedley sea turtles	Kahalgaon, Simhadri
5.	Reduction in Carbon Footprint	Development of green cover	Development of green cover and Distribution of Fruit Bearing Trees in & around NTPC stations
		Replacement of conventional light into LEDs	Singrauli, Tanda, Kayamkulam, Vindhyachal,Korba ,Farakka, Sipat, Simhadri, Rihand, Kahalgaon andTalcher Thermal
		Replacement of conventional light into Solar light	Vindhyachal, Solapur, Kudgi, Simhadri, Kawas, Korba , Sipat , Kayamkulam ,Tapovan Vishnugad
		Installation of Solar irrigation pump	Simhadri, Solapur and Mouda
6.	Environmental Studies	Human Health Risk Assessment	All NTPC stations
		Pollutant Source apportionment study	All NTPC stations
		Impact of pollution on crops and vegetation	Dadri, Auraiya, Anta, Kawas, Gandhar, Faridabad
		Mass balance study for pollutants	Dadri, Badarpur, Korba

CSR Expenditure:

Year	Expenditure Target for CSR (₹ Cr)	Amount Spent under CSR (₹ Cr)	Unspent Amount carries over	% of the average net profits of the last 3 years
2014-15	283.48	205.18	78.30	1.45
2015-16	271.35	491.80	NIL	3.62
2016-17	227.85	277.81	NIL	2.44
2017-18	220.75	241.54	NIL	2.19
2018-19	237.01	285.46	NIL	2.41

2019-20	252.68	304.92	NIL	2.41
2020-21	278.58	278.57 (un-audited expenditure up to 30.09.2020)	---	---

Note: All CSR expenditures include Sustainable Development activities as reported in NTPC's Annual Report.

- NTPC has been consistently exceeding the target CSR spend as per the Companies Act (except for the first year i.e. 2014-15 due to allocation of funds for the construction of toilets under Swachh Bharat which was made up during 2015-16).
- NTPC's CSR activities benefit about 500 villages and touch the lives of about 10 lakh people every year.
- During the year 2019-20, NTPC's CSR initiatives have touched, in one way or the other, the lives of around 18 lakh people residing in the vicinity of NTPC's projects. Further, approximately 500 villages and more than 450 schools have benefited from the CSR initiatives of NTPC.

Focus Areas on NTPC's CSR Activities

The following are the focus areas of NTPC's CSR activities :

I Education

- Girl Empowerment Mission (GEM) – A four-week residential workshop for girl children in the age group of 10 to 12 years. The workshop held during the summer vacation of 2019 at 23 NTPC projects/ stations, provided holistic education to more than 1800 girl beneficiaries. About 10% of these girls are also taken into NTPC's township schools and the entire cost of their education is being borne by NTPC.
- Utkarsh Scholarship Scheme for students:

- who have passed X^{th} and XII^{th} Standard from Govt./ Govt. aided Schools in target villages of NTPC Projects/ Stations including schools in NTPC townships,
- Pursuing full-time studies in Govt. ITIs in the district(s) where NTPC Project/ Station is located and ITIs adopted/ set up by NTPC.
- Pursuing full time BE/ B. Tech in IITs, NITs, and Govt. Engineering Colleges.
- Pursuing full-time MBBS in Govt. Medical colleges.

- NTPC has established Tab Labs in Government Schools in the vicinity of 03 Government Schools located in the aspirational districts of Sonebhadra and Singrauli. These Tabs have animated video lessons for building concepts, practice, and tests for mastering each topic and provides student wise reports.

- NTPC operated Mobile Science Labs providing hands-on science education to about 12500 students from 60 schools in the vicinity of Darlipalli and PakriBarwadih coal mining Project &Kahalgaon power stations.
- NTPC Sipat has so far sponsored education to more than 300 Baiga Tribal students for getting admission into engineering and medical colleges through Commissioner, Tribal Welfare, Chhattisgarh.

- TPC Korba (aspirational district) is supporting the holistic education to 30 Special Backward Tribe PahadiKorwa students every year from class VI to XII Chhattisgarh by NTPC Korba.

- TPC is supporting the construction of facilities for tribal schools in Chapaki, Distt. Sonebhadra (UP).

- NTPC is supporting the repair & renovation of classrooms for setting up temporary New KendriyaVidyalaya in the campus of Amar Shahid Inter College and Nehru Yuva Kendra at Village Aayar, Varanasi UP.
- NTPC is supporting the development of school infrastructure in the existing school at Govindnagar, PaliyaPipariya, Block Bankhedi, Hoshangabad, MP.
- Despite achieving near 100% enrolment, various studies have shown that learning is not happening in schools. To address this, NTPC is implementing various projects for the improvement of learning levels in about 130 government schools.
- NTPC has committed support for:

➢ Infrastructure augmentation by providing school furniture (Desk/ Bench) to various Govt. Schools of Supaul, Bihar.

➢ Class Room desks in Govt / Aided schools in Dharwad Parliamentary area, Dharwad Karnataka

➢ Development, Renovation, and Advancement project of GHSS Munderi, District Kannur, Kerala.

➢ Construction of an English Medium School and creation of assets through Shree Ramakrishna Ashram, M. Rampur, Kalahandi.

➢ Setting up Library (Pustakalaya Project) in selected Primary Schools of Arunachal Pradesh.

- Supporting education in rural areas by augmenting and strengthening school infrastructure including additional classrooms, science labs, libraries, kitchen sheds, providing assets like furniture, computers, separate toilets for girls and boys, water coolers, filters, etc.

- NTPC also ensures the right to education of children from the underprivileged sections of society by providing them with scholarships, study material & uniforms, etc.
- 34 Schools in NTPC Townships provide subsidized education primarily to rural community children benefitting about 20,000 students of neighborhood areas.

II Health

A. Promotive, Preventive & Curative Healthcare:

- NTPC hospitals provide quality primary, secondary, and referral care and diagnostic services to more than 3,00,000 patients from the community every year.
- NTPC has contributed ₹ 250 Crore to PM Cares Fund for FY 2020-21 to support the Government of India in its efforts to fight COVID-19.
- Proactive preventive measures like regular sanitization of villages, distribution of PPE kits to health professionals, face masks to villagers, and supply of groceries to the community.
- NTPC promotes good health through healthy lifestyles and yoga and takes up prevention of disease through fogging, spraying, and distribution of mosquito nets.
- NTPC makes primary care accessible, affordable, and inclusive through health camps – both general and specialized (Eye, Respiratory Diseases/ Cancer detection, etc.), outreach services through mobile health clinics, and by augmenting and strengthening rural health infrastructure. About 3000 surgeries are performed every year in these camps.
- With an outlay of over ₹ 100 Crore, NTPC is supporting the availability of adequate tertiary care in the country:
  - Support for Development of King George Hospital, Visakhapatnam.
  - Taking up construction of Eye Hospital at Dadri, GautamBudhha Nagar, UP.
  - Support to Capital Hospital, Bhubaneshwar, Odisha for Medical Equipment for Eye department.
  - Support for construction and equipment for 3rd Floor and diagnostic labs at National Cancer Institute Nagpur, Maharashtra
  - Support for Electro Chemotherapy Device & Electrodes for use at All India Institute of Medical Sciences, New Delhi.
  - Support to L V Prasad Institute for construction of operating room complex at MTC Campus Bhubaneshwar.

- Setting up of Special burn unit at KGMU Lucknow, AIIMS Bhubaneshwar, and AIIMS Patna.

- Support committed for:

➢ Establishing Integrated Muscular Dystrophy Rehabilitation Centre "Manav Mandir" at Solan Himachal Pradesh

➢ Setting up of open gymnasium at various locations in Basti Parliamentary Constituency of Uttar Pradesh.

➢ Ultraviolet based sanitization technology for PPE Kits being developed by IIT Delhi &Chakr Innovation.

➢ Setting up Tele-Recording Room at AIIMS, New Delhi

- NTPC is operating Directly Observed Treatment cum Designated Microscopy Centre (DOTs cum DMC) at 11 NTPC locations. The program supports the Government of India's National Tuberculosis Elimination Program (NTEP) to prevent, control, and eventually eliminate tuberculosis

B. <u>Sanitation and Hygiene</u>

- NTPC supported the Government of India's Swachh Bharat Abhiyan or Swachh Bharat Mission, a nation-wide cleanliness campaign by the Government of India, by making available more than 29,000 toilets in about 16000 schools covering 650 blocks in 83 districts spread over 17 states.
- NTPC organized NukkadNatak, debates, slogan competitions, essay competitions, painting competitions, walkathons, etc. to spread awareness about sanitation and cleanliness amongst employees, their family members, and other stakeholders.
- During the awareness campaign, active involvement of schools situated in NTPC project/ station townships was also ensured for inculcating the values of cleanliness in our children.
- Construction of more than 500 individual household toilets and 300 community toilets in recent past towards creating an open defecation free society.
- NTPC has revived the defunct Municipal Solid Waste Processing Plant at Karsada, Varanasi. NTPC is also operating and maintaining the plant since July 2017 onwards. The total expenditure incurred so far is about ₹ 30 Crore.
- NTPC has also contributed ₹ 10 Crore for Pilot Project for Mechanized Cleaning of 14 wards in Varanasi.
- With an outlay of ₹ 8.19 Crore, NTPC is supporting the developmental & beautification works of Charminar, Hyderabad, under the 'Swachh Iconic Places

Project' of Govt. of India. The goal of the Initiative is to improve the cleanliness conditions of places that are "iconic" due to their heritage, religious, and/or cultural significance.

- NTPC has encouraged the formation of women's self-help groups to produce and distribute low-cost sanitary napkins in the villages surrounding its power plants.
- NTPC has installed more than 90 Sanitary Vending Machines and Incinerators in schools to enable girls to obtain sanitary pads at a nominal cost.
- NTPC has committed to support the setting up an electric crematorium in Noida.

C. Water

- NTPC is supporting the installation of about 10,000 Energy Efficient Pump System in the fields of farmers residing near NTPC stations located in 05 districts of UP.
- NTPC augments water resources through (1) Watershed management, (2) Check Dams, (3) Deepening and rejuvenating water bodies, etc.
- NTPC ensures access to water through (1) hand pumps and (2) piped drinking water etc.
- To ensure that people have access to safe drinking water, NTPC has set up RO water plants/ Water ATMs in public locations near NTPC operations.
- NTPC distributes of water filters/ coolers in various villages/ schools near NTPC operations.
- During extreme summers, NTPC ensures the availability of water through Water Booths and Water Tankers.

NTPC's CSR activities in other areas

I. Skill Development and Income Generation

- NTPC stepped in to adopt 18 nos. ITIs and set up 8 new ITIs. New trades have also been introduced resulting in more than 10,000 campus placements.
- NTPC makes youth entrepreneurial, enterprising, and employable by providing them with training in Electrical Repairing, Mobile Repairing, Motor Rewinding, Welding, Car Driving including obtaining LMV driving license, Computer Training, etc.
- NTPC is supporting the "Skill India Mission" of GoI through MoU with NSDC for various employment linked skill development programs for 30000 rural youth including 8,000 youth of J&K.

- NTPC is supporting the setting up of Skill development and Pachkarma treatment center in New Delhi.
- In order to enhance rural Incomes NTPC:

− Is improving farm productivity by capacity building of farmers through training, demonstration, exposure visits, hand-holding and use drip irrigation to produce more crop per drop.

− Is improving milk yield by improving the breed through artificial insemination, timely breeding to decrease inter-calving period, prophylactic vaccination to reduce calf mortality, timely door-step veterinary services, provide training on growing nutrient-rich and rapidly growing fodder crops.

II. Women Empowerment

- In order to promote menstrual hygiene among girls, sanitary napkin manufacturing units have been set up at NTPC Sipat, Ramagundam, and Tanda. The product is distributed free of cost to the adolescent girls of government schools.
- With an outlay of ₹ 1.47 Crore, NTPC is supporting the establishment of 50 Sanitary Napkin Mini Manufacturing Units (MMU) in the state of Odisha under "StreeSwabhiman", an initiative for providing affordable and accessible sanitary products close to the homes of adolescent women and girls in rural areas.
- NTPC is supporting Udyan Care at Jaipur, Rajasthan for the higher education and rehabilitation of 3 orphan and abandoned girls.
- Training on embroidery, dress designing, cutting, stitching, tailoring (including providing sewing machines), beautician, food preservation & processing, nursing, etc. to women.

III. Support for Physically Challenged Persons

- Information and Communication Technology (ICT) centers established at Delhi University, Guwahati University, and Devi AhilyaVishwavidyalaya, Indore equipped with the latest adaptive and assistive technologies so that persons with disabilities can perform equally well in the classroom and workplace.
- In collaboration with National Institute For Locomotor Disabilities, NTPC has set up Disability Rehabilitation Centres (DRCs) at set up at Bongaigaon, Dadri, Korba, Tanda, and Rihand for mainstreaming of physically challenged persons (Divyangjan) by providing them with aids and appliances and restorative surgery.

- NTPC has entered into an MoU with Artificial Limbs Manufacturing Corporation of India (ALIMCO) for providing aids and assistive devices to about 5000 persons with disabilities in the neighborhood areas of power stations.

IV. Sports

- NTPC has adopted Archery as a sport with the objective of scouting for talent in remote parts of India and nurture them through coaching camps so as to enhance India's presence in the sports internationally. The 3-year agreement with Archery Association of India (AAI) includes the title rights across all National Archery Championships (NACs), National Ranking Archery Tournaments (NRATs), and exclusive right to provide kits/ apparels to the Indian Archery team for international participation.

- Training and support for State/ District level Football and Hockey tournaments in the neighborhood of Stations.

V. Rural Infrastructure Development

- NTPC supports the development of basic infrastructures like roads, bridges, culverts, bus shelters, community centers, schools, and health centers enabling the local community to fulfill their basic needs and to enhance the quality of their lives.

- NTPC ensures adequate area lighting by installing high mast lights and Street Lights.

- NTPC supported the development of Brahma Jahari Forest in Chaumuha in Mathura Dist., UP

VI. Preservation of Heritage

- NTPC had signed an MoU with Archeological Survey of India (ASI) and National Culture Fund (NCF) for support for the preservation and conservation of 3 monuments (Group of Monuments, Mandu (MP), Excavated site at Vikramshila (Bihar), and Archaeological site, Lalitgiri/ Dhauli (Odisha).

- Support to Society for Development of Rural Literature under NTPC CSR for Purvasha Folk and Tribal Art Museum, near Chilika Lake, Odisha for protection and promotion of the heritage of dying art forms of Odisha.

VII. Relief during Natural Calamity

- With an outlay of ₹ 25 Crore, NTPC is supporting the Redevelopment of Kedarnath town, Uttrakhand, and its surrounding areas devastated during the natural calamity of 2013.

- NTPC has supported the relief efforts due to natural calamities including for recent cyclone "AMPHAN" in West Bengal and 'FANI' in Odisha.

The outcome of CSR interventions:

I. Education

- Increase in better overall quality of life, societal respect, and personal pride.
- Helps individuals to develop skills, improve their social status, and gain access to networks leading to enhanced social outcomes.
- Enables individuals to perform better in all sphere of life.
- Higher education broadens a person's job opportunities and makes him more valuable to potential employers.
- Greater job opportunities lead to higher income potential, better health, and improved relationships.
- Increases awareness about the importance of health and healthcare.
- Increased engagement in civic activities, trust in others, and faith in the functioning of public institutions.

II. Health care and sanitation

- Vast outreach particularly for low-income and marginalized populations in under-serviced areas.
- Increased utilization of institutional health care services.
- Increased access/awareness of maternal health, immunization, and institutional deliveries.
- Increased awareness to causes and symptoms of diseases.
- Increased adoption of hygiene and sanitation practices, the importance of medical fitness, and preventive care.
- Increased awareness to sanitation and hygiene.

III. Infrastructure Development

- Provide places and opportunities for interaction, participation, and engagement thereby increasing social interaction, cultural appreciation, and community cohesion/identity.
- Improves access to facilities, services, and programs.
- Assists economic development - Increases capacity to attract further investment, entrepreneurship, employment.

IV. Providing safe drinking water

- Increased availability and consequently, increased water usage by rural households.
- Increased functional water sources / reduced breakdowns.
- Reduction in water-borne diseases and improvement in overall health status
- Women and children, primarily responsible for fetching water for household needs, sometimes over long distances, are relieved of the burden.
- Utilization of Time Saved in more productive activities.

V. Skill Development

- Capacities of youth are realized and channelized in productive endeavors, thereby contributing to the country's economy.
- Inclusive growth.
- Enhanced skill leading to productivity improvement.
- Addresses problems of increasing poverty, unemployment, and illiteracy by empowering youth with requisite skills.
- Youth exposed to the latest technology in various fields.
- Preservation of traditional arts and crafts.

--X—

CHAPTER-X

C&AG AUDIT PARA

10.1 Based on the audits conducted by Comptroller and Auditor General (C&AG), Audit Reports are issued from time to time (referred to as Action Taken Notes – ATNs). As on date, following 7 (Seven) ATNs are outstanding:

C&AG Report	Para in brief	Status
(1) C&AG Report No 35 of 2016 – Fuel Management of Coal Based Power Stations of NTPC Limited	Procurement of Domestic Coal – Inadequate fuel linkage, Delay in signing Fuel Supply Agreement, Performance Incentive, deviation in supplies, non-recovery of compensation for short supplies, rationalization of quantities, MoU/E-auction procurement. Policy Framework for Import of Coal, source verification, adoption of index Assessment of quality & quantity of coal – sample collection, method of measurement, heat value, weighment, transit loss. Coal supply management – generation loss, storage capacity. Consumption of coal – Blending, use of washed coal.	Reply submitted to Ministry of Power (MoP) which is under consideration in Ministry of Power.
(2) Para No. 11.5 (C&AG Report No. 15 of 2016) – Renovation and Modernization of NTPC Power Plants	Delay in completing activities relating to R&M schemes of stations. Delay in execution of contract packages, Reduced tariff recovery, Refund of tariff with interest, Avoidable or extra expenditure, generation loss due to defective system, excess coal consumption due to poor thermal efficiency, non-adherence of environment norms.	Reply submitted to Ministry of Power (MoP) and the same has been forwarded to C&AG by MoP.
(3) C&AG Report No 6 of 2017 for the year ended 31 March 2016 - General Purpose Financial Reports of Central Public Sector Enterprises (Compliance Audit)	Financial Performance of CPSEs - Dividend Payout by CPSE Oversight Role of CAG - Significant Comments of the CAG issued as supplement to the statutory auditors reports on Government Companies Corporate Governance – Non-executive directors on the Board; Independent Directors; Meeting of Independent Directors; Meetings of Audit Committee	The para related to Benchmarking with national and international peers (5.7.2.1) has been sent to C&AG while the rest of the paras have been settled.

C&AG Report	Para in brief	Status
	Corporate Social Responsibility. Analysis of Memorandum of Understanding between administrative ministries and CPSEs	
(4) C&AG Report No 18 of 2018 for the year ended 31 March 2017 - General Purpose Financial Reports of Central Public Sector Enterprises (Compliance Audit)	Disinvestment, Dividend payout Corporate Governance - Non-executive directors on the Board; Independent Directors; Meeting of Independent Directors; Review of performance of Independent Directors; Filing up the post of directors; Meetings of Board, sub committees Corporate Social Responsibility – Shortfall in fund allocation; salaries included in administration overhead Joint Ventures Operations of CPSEs – JVs outside India, Method of selection of JV partner, performance etc. Compliances of Provisions of Public Procurement Policy, 2012 for Micro and Small Enterprises – Mandatory procurement, Outstanding payables to MSE units Impact of IND-AS	Replies to audit observations have been sent to Ministry of Power. MoP has forwarded it to C&AG.
(5) C&AG Report No 11 of 2018 for the year ended 31 March 2017 – Union Government (Commercial) (Compliance Audit Observations)	Para No. 10.1 - Loss due to disallowance of capital expenditure – pertaining to Unchahar	Replies to audit observations have been sent to Ministry of Power. MoP has forwarded it to C&AG.
(6) ATN Report No.13 of 2019 - 7.5 Excess payment of half-pay leave encashment	While calculating HPL encashment, NTPC allowed DA at the admissible rate on full basic pay instead of half basic pay. Adoption of incorrect method for computation of HPL encashment	Reply sent to Ministry of Power which is under consideration in Ministry of Power.

C&AG Report	Para in brief	Status
(7) ATN Report No.18 of 2019	General Purpose Financial Reports of Central Public Sector Enterprises contains various paras such as dividend payout, performance of listed CPSE with private companies, No of Independent Directors, meeting of board of directors, R&D expenditure as a % of PAT, in house R&D projects, collaboration with universities, registration of patents, publication of research papers, realization from disinvestments through OFS. etc.	Reply sent to Ministry of Power which is under consideration in Ministry of Power.

Part-II

RECOMMENDATIONS/OBSERVATIONS

NTPC - AN OVERVIEW

The Committee note that NTPC Limited, a Maharatna Company of the Government of India, is the largest power generator in India. It is functioning under the overall administrative control of the Ministry of Power, Government of India. It was incorporated on 7th November 1975 as a fully Government owned Company with the objective of building large size Thermal Power Stations alongwith associated transmission system to accelerate the integrated development of powersector in the country. NTPC came out with an Initial Public Offer (IPO) in 2004 and a Follow –on Public Offer (FPO) in 2010. Government of India has reduced its stake through various tranches of Offers for Sale, employee Offers for Sale, Bharat 22 Exchange Traded Fund (ETF) and CPSE ETF from time to time. Currently Government of India hold 51.02% stake in the Company, the rest being held by Institutional Investors and public. Over the years, NTPC has attained a global stature. In the Platts Top 250 Global Energy Companies for 2019, NTPC has been ranked as No.2 'Independent Power Producer and Energy Traders' in the world. Further, NTPC has been ranked 497th largest company in the world among 'Global 2000' list of companies compiled by Forbes for 2020. The present Commissioned capacity of NTPC (including JVs and subsidiaries) is 62,910 MW out of which NTPC directly owns 51,155 MW (45,410 MW coal based stations at 24 locations, 4,017 MW gas/liquid fuel based stations at 07 locations, 800 MW hydro project at 01 location, 870 MW Solar PV plants at 11 locations, 50 MW wind project at 01 location and 8 MW small hydro at 01 location). The total capacity includes 11,755 W under joint ventures/subsidiaries comprising 6,494 MW from 09 coal based, 2,494 MW from gas power plant at 4 locations, 5 MW Solar PV plants at 1 location, 2,625 MW from hydro power plants at 8 locations, 24 MW of small hydro at 1 location and 113 MW wind at 2 locations. Capacity of 20,533 MW (including 1320 MW in Bangladesh) is under construction at 35 locations.

The Committee note that NTPC aims to add 32 GW of renewable power both through organic route and inorganic route by 2032.To achieve its renewable targets, NTPC has planned to go beyond conventional large-scale solar and wind parks such as rooftop solar plants, floating solar plants at reservoirs of Projects, etc.The Committee considers the target of adding renewable power of 32 GW by 2032 too ambitious;considering the fact that many projects of NTPC have been delayed for many years for various reasons and the Companyhas merely added586 MW of gas based power during the last 10 years, and just 2325 MW of Hydro power generation during the last 6 years and only about 928 MW of renewable power through solar, wind and Bio-gas during the last 7 years.The Committee understand the Government and Global concerns on environment, depleting fossil resources thusencouraging the power industry to shift from fossil fuel base to renewables and NTPC now choosing to grow through inorganic route in as per its policy change on the directions of the Government.In light of the new policy shift and concerns, the Committee in their report have attempted to address many issues like appointment of independent professionals/ experts on the Board of NTPC having expertise in non-fossil fuels & renewables, emphasising the Government to bring in a policy within a definite time-frame to encourage domestic manufacturing of solar equipment and parts to reduce the country's dependency on imports of solar products which has presently touched 75 percent. Besides, the Committee have also emphasised NTPC to increase their expenditure on safety and to have a separate budget dedicated for purchase of 'safety equipment' and 'training in safety'and highlighting the use of standing operating procedures to be followed during accidents/disasters like the recent disaster at Tapovan project in Chamoli District. The Committee in their report have also touched upon Environmental issues stressing the maximum effective use of fly ash, installation of Flue Gas Desulfurization (FGD) in all NTPC plants in a definite time frame, maximising water conservation, more utilisation of agro residue in NTPC power plants, conversion of municipal solid waste into energy, etc.The Committee has no doubt that NTPC is the

best performing Public Sector Company in the power sector and since its inception, it has contributed more than Rs. 1 lakh crore to the central exchequer through its dividends and taxes.Their performance is also demonstrated by the fact that the Company through its R&D efforts during the last 10 years has earned 21 patents and 9 copyrights in various fields. Today, globally, NTPC ranks 13 in total Installed Capacity, 7th in total power generation, 3rd in coal based capacity and machine availability. It has won many International awards in excellence and HR productivity. The Committee expect that the observations and suggestions of the Committee will be implemented in right spirit and hope NTPC will continue to achieve greater heights and will remain a great place to work with.

Delay in appointment of Independent Directors

2. The Committee note that as per the sanctioned strength of 08 Independent Directors, presently there are only 02 Independent Directors on the Board of NTPC.In the past also, the vacancies of Independent Director have not been filled up for months together despite clear stipulations in this regard under SEBI Listing Obligations and Disclosure Requirements (LODR), Companies Act, 2013 and DPE Guidelines on Corporate Governance. The Auditors Certificate on compliance of conditions of Corporate Governance as contained in the Annual report of NTPC 2019-20 also pointed out the non-compliance shortcomings with regard to appointment of Independent Directors such as failure of the company to comply with the Listing regulations, with regard to the appointment of minimum number of independent directors from 1 July ,2019 to 11 July, 2019 when the number of independent directors were less than 50 % of total number of Directors. As the actual strength of independent Directors has come down to 02 as on 2nd September, 2020, the Committee enquired about the specific reasons for not filling up of the vacancies of the independent Directors. The series of letters dated 14th August, 4th September, 6th October and 9th December, 2020 written by NTPC to the administrative Ministry *i.e.* Ministry of Power (MoP) in this regard have notyielded

any results. The Committee further note that the Secretary, Ministry of Power *vide*letters dated19.03.2020 and 04.08.2020 requested the Secretary, Department of Public Enterprises for expediting the recommendations of search Committee.The Secretary, DoPT was also requested vide DO letter dated 05.10.2020for intervention in the matter. Despite all these efforts the top level requests for filling up the vacancies of the Independent Directors, 6 (six) out of 8 (eight) independent Directors are still left unfilled as on 31.01.2021.

Taking into account the lack of seriousness on the part of Department of Public Enterprises (DPE) in filling up of the vacant positions of Independent Directors in NTPC , the Committee are of the view that the issue should have been escalated to the level of Cabinet Secretary in such a situation as non-responsiveness of DPE for such a long time resulted in imposition of penalties on NTPC for violating Listing Obligations and Disclosure Requirements (LODR) of SEBI. The Committee, therefore, recommend that:

(i) The DPE should undertake an introspection of their working particularly about the filling up of the vacancies of Directors in CPSUs with a view to identify the factors responsible for abnormal delay in this case;

(ii) The DPE should take immediate corrective measures to develop a well defined mechanism for time bound processing of all matters relating to filling up of the vacancies of Directors in CPSUs;

(iii) The DPE should now complete the process and fill up all the vacant positions of Directors in NTPC at the earliest and in any case not later than six months from now;

(iv) With a view to rationalize the number of Independent Directors to be appointed in the Board of CPSU and also to ensure that such Independent Directors possess domain expertise, the DPE should immediately initiate an exercise in consultation with the Ministry of Finance and the Ministry of Corporate Affairs and revise the existing norms suitably; and

(v) The DPE should immediately develop a system of digital dashboard to maintain database of the positions of Independent Directors in all CPSUs with a view to suo-moto initiate the process of new appointments atleast 06 months before occurrence of the vacancies.

Need for Independent Directors with Domain Expertise

3. The Committee note that the composition of Board of Directors (BoD) as given in the Annual Report 2019-20, shows that that out of seven Independent Directors – four are retired civil servants with academic qualification such as physics, mathematics, geology and Botany and only one of the Independent directors has domain expertise of thermal power and none of the independent directors seems to have any expertise in the subject 'environment'. Absence of independent director with domain expertise in Environment goes against the Board's decision taken at their 288th Meeting held on 26th June, 2006 where in it was decided that the Independent Directors, to be nominated by the Government of India on the Board of NTPC should have expertise in the areas *viz.*(i) Economics (ii) Human Resource Management ,(iii) Regulatory framework, (iv) Eminent industrialist from manufacturing concern,(v) management consultant, (vi) Environment , (vii) Finance &Banking, (viii) Energy & Power, (ix) Academics (x) Research and Development. The latest composition of Board of Directors as contained in the Annual Report 2018-19 and 2019-20 clearly reflect that it is heavily loaded with retired civil servants who apparently do not have any domain expertise/ core competence in the required fields. Thus, filling up of the independent Directors posts with the retired civil servants who do not have core competence/domain expertise against the Board's resolution adopted at their 288th Meeting held on 26th June, 2006, andalso against the professional and commercial growth of the company. Taking into account the fact that there is no dearth of availability of professionals in the market, the Committee recommend that for filling up of the positions of Independent Directors from the persons having the requisite professional expertise as decided in NTPC Board's meeting itself.

Absence of Woman Director on the Board of Directors

4. As per the provisions of the Companies Act, 2013, all listed companies need to have at least one womanDirector on their board. The DPE guidelines on Corporate Governance also stipulate that at least one woman Director should be on the Boards of the listed Companies. The Listing Obligations and Disclosure Requirements (LIDOR) of SEBI prescribes similar requirement for having atleast one women Director on the Board of listed Companies. The current composition of the Board of NTPC, however, shows that there is no Woman Director in the Board. The Committee's analysis of the information submitted to them reveal that there was no women Director from 28.02.2015 to 17.11.2015 and the position again became vacant since 16.11.2019 onwards.Despite being requested by NTPC, the Committee finds that even after a lapse of almost one and a half year, the Ministry is yet to appoint a woman independent director on the Board of NTPC. The Ministry of Power has stated that they have been taking up the matter continuously with DPE yet to receive decision in this regard. The Committee while taking a serious note of the inordinate delay in filling the woman independent Director, recommend that -

(i) DPE should seriously look into the issue of abnormal delay in appointment of women Director in NTPC, apprise the Committee of the specific reasons for taking unduly long period on this issue and identify the factors responsible with a view to take corrective measures to avoid reoccurrence of such inordinate delay in future;

(ii) The Ministry of Power should escalate the matter to the Cabinet Secretary level informing about the inordinate delay by the DPE in appointment of women Director in the Board of NTPC.

Memorandum of Understanding - Achievement of targets.

5. The Committee note that MoU targets are fixed based on the MoU guidelines issued by Department of Public Enterprises (DPE). As per the guidelines, the MoU targets are fixed taking into consideration the trends for the last 5 years, the estimated achievements of the preceding year, Annual plan and Budget and the factors like prevailing scenario in the Power sector and the economy as a whole. The

MoU targets are finalized by DPE in consultation with Ministry of Power and NTPC.

The Committee are glad to note that NTPC exceeded the targets fixed in terms of capex, power generation in Billion Units (BUs)and coal production during the year 2019-20. With regard to the revenue from operations, the targets achieved was slightly below the target fixed. With regard to the progress on MoU parameters for the year 2020-21,coal production has been adversely affected due to disruption on account of stoppage of mining operations by villagers at its PakriBarwadih captive coal mine on the issue of compensation and Resettlement and Rehabilitation benefits and also due to lower coal production at Dulanga mines due to Covid -19. However, as informed to the Committee, all efforts are being made by the NTPC to achieve the target of Coal production and thus,other MoU targets i.e. Revenue, CAPEX and Power Generation are likely to be achieved by March'2021. The Committee are hopeful that NTPC will beable to achieve the targets set under MoU for the year 2020-21 also as successfully achieved by them in the previous years.The Committee would however like to be apprised of the actual achievement of targets for the financial year 2020- 21.

<u>Power Generation Capacity of NTPC</u>

6. The Committee note that NTPC, a power giant, owns 70 power stations (including those of JVs and subsidiaries) of coal, gas /liquid, hydro and renewables, with a combined capacity of approx. 63 GW. Out of this 63 GW, NTPC's own capacity at 50.3 GW accounts for approx. 80%. The NTPC , on its own added a total power generation capacity of 21.51 GW through various fuels – coal, gas/ liquid , Hydro, renewable and Hydro during the period from 2009-10 to 2019-20. The Joint Ventures(JVs) and Subsidiaries of NTPC added another 8.89 GW capacity during the same period. The Committee note that during the period 2020-21, 2021-22 and 2022-23, the Company plans to add 5250 MW, 6462 MW, and 5782 MW respectively. By the end of the year 2023-24, the Company intends to complete the construction of ongoing power plants adding 20,000 MW (approx). The Committee hope that with the structured planning and strategy, the NTPC will be able to add the targeted

capacity and complete the construction of all ongoing power plants within the scheduled time and will also be able to further enhance its installed as well as commissioner capacity of power generation in near future.

Coal based power generation

7. The Committee note that the company's owncoal based power generation, the which stood at 24,885 MW as on 31 March , 2010 has gone up to 44,610 MW as on 31.03.2020, thus adding 19,725 MW during the period of 10 years. The Joint Ventures and Subsidiaries owned by NTPC has added another 5,570 MW of coal power during the same period. The total coal based power, therefore, added by NTPC and its JVs and subsidiaries amounted to 25,295 MW during the said period. In percentage terms, addition to coal power by NTPC increased by 79 % as against 702 % (more than seven times) by NTPC group companies (JVs and subsidiaries). The Committee were apprised that NTPC has taken policy decision to grow through inorganic route (through acquisitions) as per directions of the Government. Of the 7 Coal-based Power generating companies, in the case of BRBCL, Nabinagar Power Generating Company Ltd (NPGCL), and MejaUrja Nigam Pvt Ltd (MUNPL), the units have been declared Commercial in recent years and some Unit (s) are still under construction.

Gas based power generation

8. The Committee note that the gas based power generationby NTPC and its JVs and Subsidiaries has increased by 62 MW and 524 MW respectively, thus adding only 586 MW energy capacity during a period of 10 years from 2010-11 to 2019-20. The Committee note that the reasons for this more or less stagnant growth in gas based power generation by NTPC are stated to be the lack of domestic gas supplies due to which NTPC could not undertake any add gas based power generation projects in its portfolio since the year 2012. The Committee would therefore like to be apprised of the specific reasons other than the domestic gas supply issue, which

were responsible for such slow growth in this sector. The investments made in gas based power projects and the year-wise returns thereon during the last one decade may also be submitted to the Committee.

Hydro Power Generation

9. The Committee note that NTPC has forayed into hydro power generation in 2015 by commissioning its first hydro power project on 31.03.2015. Since then, the addition to Hydro power by NTPC has been only 400 MW. The NTPC group as a whole, however has added 2,325 MW of Hydro power in the last six years, taking total commercial capacity to 3,125 MW at the end of March , 2020.The Committee note that the major reasons for the low addition of Hydropower during the last decade are stated to be the closure of 4 projects out of 7 due to Environmental issues, Flash floods of 2012 and 2013, the financial crunch of Agencies, Geological Surprises, and frequent local law and order problems, etc. The Committee's analysis reveals that out of 07 projects of NTPC, two are closed due to tech and financial non viability & non receipt of forest clearances, two are under construction *viz*. TapovanVishnugad (Uttarakahand) and Rammam III (West Bengal) with expected commissioning in 2021 and 2024 respectively, one project atLoharinag Pala is discontinued due to declaration of the area as eco sensitive zone and one is under suspension by the orders of Hon'ble Supreme Court.Thus, at present, infact only one hydro power project is under operation.

The Committee note that suspensions, discontinuation, closure of the hydro projects have happened despite obtaining techno economic clearances, other mandatory approvals from Central Electricity Authority (CEA), clearances from Central Water Commission (CWC), Ministry of Environment, Forest & Climate Change (MoEF&CC), Ministry of Defence (MoD) and having performance reviews at regular intervals .

The Committee are constraint to observe that despite all these preliminary studies, approvals, clearances and precautions, the hydel projects had to suffer for

one or the other reason resulting in infructuous expenditure incurred at the initial stage. The Committee therefore recommend that the past natural and mechanical happenings, local issues, terrain specific characteristics, economic viability etc. need to be studied thoroughly before taking up any hydro-electric project by the NTPC in future so that the substantial amount invested in the preliminary phase does not go waste. The Committee would also like to know the updated position of all the hydro-electric projects in operation at present or under construction with the cost of the proect and the probable date of its Commercial Operation

Renewable Power Generation

10. The Committee note that NTPC has forayed into renewable energy (solar, wind and biomass) based power generation in the year 2013-14 with 10 MW capacity. The renewable energy capacity has gone up to 928 MW by the end of financial year 2019-20. Combined with 118 MW of JVs/ Subsidiaries, the total NTPC group's Renewable Energy capacity stood at 1046 MW at the end of March, 2020. Thus, the renewable capacity of NTPC has gone up by more than 90 times during the last seven years.The Committee are glad to note that to ensure long term competitiveness, mitigation of fuel risks, promotion of sustainable power generation in tune with the changing trends in power generation through non fossil fuels throughout the world to fight climate change, NTPC aims to add 32 GW of renewable power, both by organic and inorganic route, by 2032. This target amount to 30% of the total proposed installed capacity of 130 GW with a well-diversified fuel mix comprising coal, gas, nuclear, hydro, and solar along with other renewable energy sources. To achieve its ambitious renewable targets, NTPC is planning to go beyond conventional large-scale solar and wind parks such as rooftop solar plants, floating solar plants at reservoirs of Projects which is a step towards saving of land and water conservation by reducing water surface evaporation.

Formation of Separate company and JV with ONGC for renewable

11. The Committee are glad to note that to take up the opportunities arising out of the RE targets set by the Government, NTPC has incorporated a new Company 'NTPC Renewable Energy Limited (NREL) on 07.10.2020 under the Companies Act , 2013. Further, NTPC has entered into Joint venture with ONGC namely ONGC &NTPC RE Ltd to take up RE projects in Indian and abroad including off shore wind projects. The Committee would like to be apprised of the business plan made by JV and the actual progress made so far in implementation of the business plan.

Need for appointment of experts with domain knowledge of Renewable Energy

12. The Committee are of the view that as NTPC is shifting its gears to increase its RE power to 39 GW , representing 30 % of its total generating capacity by 2032 , Independent Directors one or two - having domain knowledge and practical experience in power generation through non fossil fuels i.e renewables may be appointed on the Board of Directors of NTPC and also its subsidiaries.

Need for Domestic Manufacturing base for SolarEnergy

13. The Committee note that major developers of the solar power projects in the private sector are importing 75 % of solar modules from south east Asian countries and China where as the public sector solar power developers such as NTPC are relying on domestic solar equipment manufacturers for their solar power projects. The NTPC has domestically sourced the solar cells, modules, structures, inverters, balance of Systems (BoS) such as cables, transformers, etc., for its major solar projects at Anathapauram, Bhadla and Mandsaur, with a combined capacity of 610 MW. Similarly, these equipment for all solar projects being developed under CPSU scheme, are also being sourced from domestic manufacturers. The Committee believe thatexcessive dependence on import on one side pose a potential risk of supply disturbance and on the other side discourage domestic manufacturing. The

Committee therefore recommend that under 'Atmanirbhar Bharat', sufficient domestic capacity for manufacturing of critical equipment such as Cells, solar modules, structures, inverters, batteries and other equipments need to be created simultaneously to give a boost for growth in solar power in the country. Taking into account the fact that there is clear business visibility for the next two decades and shift to renewable energy is irreversible creating huge opportunities for the manufacturers, the Committee also recommend that suitable policy framework be put in place to encourage the domestic manufacturing of the solar equipments in India with in definite timeframe to seize the opportunity created by the renewable targets set by the Government.

Bottlenecks in attainment of the Renewable EnergyTargets

14. The Committee, in view of the Ministry of Power's own admission, apprehend that possible bottlenecks such as (i) delay in land acquisition, (ii) Absence of specific policy or regulations for floating solar projects, (iii) Upfront development of Transmission system in view of gestation period of 36 months against 18 months timeline for solar projects, (iv) delay in signing of PPA /PSA and tariff adoption, etc. might impact adversely the addition of the targeted renewable power. The Committee, therefore, would like the Ministry of Power to take specific actions to address these possible bottlenecks ina time bound manner especially the setting up of transmission systems to evacuate RE power , signing up of PPAs, etc.

NTPC and its International Peers

15. The Committee note that as per the benchmark study carried out in the year 2016, the NTPC ranks 13th in total installed capacity, 7th in total generation of power, 3rd in coal based capacity and machine availability in the world. With regard to the Human Resource contribution, the NTPC ranks 5th in General per Employee and 4th in training hours at world level. The Committee are glad to know that the NTPCreceived various National and International Awards for excellence in their HR

Productivity and Learnings. Some of these awards are Association for Talent Development(ATD) Best Award4 times in succession in the years 2017, 2018, 2019 and 2020, Brandon Hall Gold Excellence in Learning 2020 Award (for RLI, SIPAT), ISTD National Award for Innovative Training practices 3 times in succession for the years 2016-17, 2017-18, and 2018-19 and Silver Medal in the best use of Blended Learningcategory 2019. The Committee also learn that the NTPC is taking several initiatives for business growth and cost optimization to sustain its leadership position in the sector. These initiatives include diversification, backward and forward integration, digitization etc. and NTPC also benchmarks its performance parameters with global peers. The Committee appreciate the management of NTPC for setting high standards of their performance resulting in achieving of National and International Awards and accolades and are hopeful that the Company will continue the best uses of its learning and achieving excellence on all parameters and metrics to establish itself as a global leader in power generation and its associate businesses.

<u>Financial performance</u>

16. The Committee observe that the Installed Capacity of NTPC Plants which was 30,830 MW in the year 2010-11has gone up to 50,355 MW in the year 2019-20 thus registering capacity addition of 19,525 MW over a period of 10 years which amounts to more than 63 % growth during this period. The revenue earned by the company during the same period has increased from Rs. 57,407 crore to Rs.1,00,478 crore, representing an increase of more than 95%. The Committee, however, note that theCompany's Profit Before Tax (PBT) and Profit After Tax (PBT) which was Rs.12049 crore and Rs.9102 crore respectively in the year 2010-11 have increased to Rs. 14,465 and Rs. 10,112 respectively in the year 2019-20 thus registering growth of 20% and 11% during the period. The Committee thus observe that the growth in PBT and PAT of the company has not been in the same ration as the growth registered in capacity addition and revenue generation.On this issue, the Committee was

informed that apart from the capacity additions, the profits of the Company was also dependent on various other factors like the type of costs incurred, tariff allowed by the Electricity regulator, demand for the electricity and other general economic conditions. The Committee do take note of all these factors affecting the profit of the company but at the same time recommend the NTPC to explore the ways and means for cost reductions at various fronts, optimize the output of the company with the latest technology intervention and observance of strict financial prudence to register higher level of profit in the future.

Impact of regulatory norms on financial performance

17. The Committee observe that one of the reasons cited for inconsistency in the growth of Revenue and Profits of the company is the Tariff Regulations. It has been stated that NTPC is in the regulated industry and revenues are allowed on a cost-plus basis, which are applicable for (i)generating companies owned and operated by central Govt, (ii) Generating stations that have a composite scheme for generation and sale of electricity to more than one State and (iii) Inter-state transmission of electricity generating companies owned and controlled by Central Government. The tariff for supply of electricity from a thermal generating station consist of two parts viz. (i) capacity charge (for recovery of annual fixed cost consisting of the components as specified in Regulation 21 of these regulations) and (ii) energy charge (for recovery of primary and secondary fuel cost and limestone cost where applicable). The Committee note that in the last two decades of the regulatory regime, CERC has tightened various financial and operational norms in its successive Tariff Regulations such as (i) Plant Availability Factor(PAF) for recovery of Annual Fixed Charges increased from 80% to 85%. (ii) linking generation incentive to Plant Load Factor (PLF) as opposed to Plant Availability Factor (PAF) in 2009-14 period ,thus the payment of incentive is now linked to actual generation instead of capacity made available. The Committee further note that CERC Tariff Regulations which are applicable for the period 2019-24, further tightens the norms adversely

impacting the bottom line of the company. The Committee's analysis of the information submitted to them reveals that the factors responsible for adversely impacting he financial performance of the company could be (i) reducing equity component from 50 % to 30 % of project cost for tariff computation in case of generating stations which have completed 25 yearsas on 01.04.2019, impacting Return on Equity (RoE) per annum adversely of such NTPC plants (Installed Capacity around 15,000 MW) in tariff period 2019-24 to the extent of about Rs.657 Crores, (ii) Making more stringent the operational norms like station heat rate, Auxiliary Power Consumption, Specific oil consumption, (iii) increase in Renewable Energy generation leading to reduction in the PLF of thermal plants. The Committee observe that power generating stations of NTPC plants are getting older and the existing margins have got squeezed. Further, some of the units are unable to achieve the specified norms and thus losing the race.

Taking into account the fact that a sizeable number of power stations of NTPC plants are older than 25 years and gradual shift to renewable energy resulting in decreasing the PLF of the power plants, the Committee would recommend that the Ministry of Power should analyse all the factors responsible for the negative impact on the financial performance of NTPC and take up the matter with CERC for review of the tariff regulations giving due credence to ground realities so as to ensure that the power generators like NTPC do not financially suffer simply on account of some technical specifications and parameters.

<u>Revenue from Renewables</u>

18. The Committee note that revenue from renewable energy which stood at a mere Rs. 96.96 crore in 2015-16 forming a mere 0.13% of total revenue of NTPC has gone up manifold reaching Rs.3,798.63 crore in 2019-20, representing 3.80 % of the total revenue of the NTPC. It reflectsthe importance attached to the renewablesby the company. The Committee hope that this trend is likely to continue in the

coming years as many renewable projects which are under execution will come on stream adding to the bottom line. As the time involved in concept to commissioning in respect of renewable is less than the conventional TPPs, the Committee hope that NTPC executes the RE projects quickly to improve its bottom line.

Variation in data

19. The Committee note that for the year 2015-16, PBT as per Select Financial Information (SFI) at Rs. 10,583.68 crore is different from the PBT of Rs.10,059 crore shown 'at a glance' in the same Annual Report (A.R.) of FY 2015-16. Similarly, PBT as per SFI for FY 2016-17 is Rs. 12,052.16 but shown as Rs.12, 388 crore in 'at a glance for FY 2016-17'. The Committee further note that PBT of FY 2017-18 as per A.R. of NTPC at Rs. 12,339.46 crore is different from PBT of Rs. 12, 892.46 crore as shown in Public Enterprises Survey (PES). Similarly, PBT of Rs. 12,672.52 as per A.R of 2018-19 is different from PBT of Rs.8,831 crore. NTPC , in its reply submitted that as per format for PES, there is no separate item for movement in regulatory deferral account, and the only item mentioned after PBT was the tax and other comprehensive expenses/ income, hence movement in regulatory deferral account was shown before PBT under other expenses, so PBT is different as per AR and PES whereas PAT is same. Further, this issue has already been raised to DPE along with DPE data submitted for correction in formats. Similar differences were noticed in the data on RoCE as shown as at 9.3%and 5.97% for the year 2017-18 & 2018-19 as per Public Enterprises Survey (PES) differs by wide margin as the same has been shown as 11.52% and 12.51% for 2017-18 and 2018-19 in some other document. The Committee, therefore request the DPE and MoP to apprise the Committee of (a) specific reasons for the said data variation; and, (ii) the formula used for arriving ROCE by them and justification for difference by a wide margin. Further, the Committee, therefore, suggest MoP and Department of Public Enterprises (DPE) which brings out Public Enterprises Survey (PES) the PBT reporting format should accordingly be modified to be in sync with the data as contained in Annual reports

of NTPC . The caution taken by both the Ministries – DPE and MoP may be informed to the Committee at the earliest.

Interest Service Coverage Ratio (ISCR)

20. The Committee note that a high interest service coverage ratio is considered good as it measures the time a company could cover its current interest payment with its available earnings. It could be seen that ISCR at 11.42 % in 2010-11 has continuous decline (except in 2012-13) and reached down to the level of 4.45 % in 2019-20. The Committee observe that total borrowings have gone up from Rs. 43,188 crore in 2010-11 to Rs. 1,52,693 Crore in 2019-20 and accordingly, finance cost has also gone up manifold from Rs.1,420 crore to Rs. 6,781 crore in 2019-20. These loans have been taken to increase capacity of NTPC by almost 20,000 MW. The Committee, however, note that the returns on the investments made has not translated into the financial gains as profits remained in the range of Rs. 9100 to Rs. 12,600 crore despite the revenue growth of 95% during the period. The Committee are hopeful that NTPC, with its various initiatives will be able to successfully improve its performance on this front.

Payment Guarantee Mechanism

21. The Committee note that Ministry of Power (MoP) has signed Tri Partite Agreement (TPA) with various State/ UT Governments and RBI under which, default in payment by State Discoms can be recovered directly from the account of the respective State/UT Government. NTPC has informed that 29 out of 31 States/ UTs have signed TPAs and the signing of TPAs with Maharashtra and Punjab is being taken up. The Committee, in view of the fact that the discussions are on with these two states to bring them onboard on TPA mechanism for more than two years, would like to recommend that these two States need to be effectively persuaded to sign TPAs and for thisthe Ministry of Power (MoP) should take initiative to ensure their participation in TPA regime at the earliest.

Need for clearing of Dues by the States

22. The Committee observes that due to TPA, the payment Guarantee, the Committee are glad to note that NTPC realized 100% billed amount from discoms from 2001 to 2019. The unprecedented Covid 2019 has impacted adversely the revenue realization from discoms in 2019-20. As of 30 June, 2020, the Committee were informed, outstanding dues of discoms stood at Rs.18,000 crore.These dues were mainly from five states viz. Uttar Pradesh, J&K, Madhya Pradesh, Telangana and Karnataka. NTPC appears to be hopeful that once second tranche of Power Finance Corporation and Rural Electrification Corporation(REC) and the bill discounting done with the States, it will be able to liquidate these dues by 31 March,2021.The Committee are of the view that huge amount of outstanding dues need to be paid to NTPC by Discoms concerned without any further delay as the public sector power generator incurs certain costs for such delays which can't be passed on to the consumers and has to absorb itself resulting in adverse impact on its financial performance. The Committee, therefore, strongly recommend that Ministry of Power should initiate structured discussion with the States concerned and ensure that the dues are cleared at the earliest.

Non applicability of Payment Guarantee Mechanism for NTPC group companies

23. The Committee observe that that NTPC group companies such as NTPC Tamil Nadu Energy Company Ltd (NTECL) and Kanti Bijlee Utpadan Nigam Ltd (KBUNL) have huge debtors and despite regular persuasion with DISCOMS.These companies are unable to recover their dues in time. TPA is not applicable to NTPC group companies. The Committee note that NTPC has invested more than Rs. 3,000 crore in the aforementioned two group companies. Taking into account the fact that there is a huge outstanding amount to be paid by Discoms to JV companies and TPA is also not applicable to NTPC JV companies, the Committee recommend that-

(i) The Ministry should take up the issue seriously withDiscoms and concernedState Governments and pursue them to clear he outstanding due to JVs of NTPC;

(ii) The possibility of extending TPAs to ensure payment guarantee mechanism to the plants operated by NTPC group companies be explored.

Surrender of three captive coal Mines

24. The Committee note that NTPC spent Rs. 62.60 crore, Rs. 59.31 crore and Rs. 87.14 on development of (a) Banai, (b) bhalumuda and (c) Mandikini- B captive coal mines respectively till 30.09.2020. The Committee however find that considering the delay in coal block development activities since the last two years due to villagers' resistance for their unreasonable demands for land compensation, employment, etc. in Mandakini-B coal block and due to geo-mining constraints and likely less percentage of coal extraction in Banai&Bhalumuda coal blocks, NTPC has decided to surrender all these three blocks and accordingly, NTPC approached Ministry of Coal on 26.12.2020 for surrendering these three captive Coal Mines. The Committee take a serious note of the fact that after four years of allotment and after spending Rs. 209 crore , NTPC approached the Ministry of Coal to surrender the coal blocks. The Committee would like to know the details of the techno economic analysis/ geological studies carried out by NTPC before accepting allotment of Coal Blocks and also the names of the agencies which conducted such study. The Committee would also like to know the mechanism through which NTPC plan to recover the cost incurred so far in development of the coal mines which are proposed to be surrendered now.

Cost Over Runs in Delayed Projects

25. The Committee note that about 13 majorunder construction coal based thermal and hydro projects of NTPC have been delayed. One of the coal based project viz. Barh-I was scheduled for commissioning in 2011-12 is now anticipated to be

completed by 2022-23. Another project viz. BRBCL Nabinagar JV project that was expected to be commissioned in 2012-13 is now expected to be commissioned in 2021-22. Similarlyone Hydro project viz. TapovanVishnugad HEPP that was scheduled to be commissioned in 2012-13 was subsequently expected to be commissioned in 2022-23 but the unfortunate incident happened on 7th February, 2021 has made the future of the project uncertain. The delay in commissioning of the projects occurred despite the projects being monitored by the Ministry through various reports/reviews such as PRAGATI, e-samiksha, Project Monitoring Group (PMG), CEA reviews and reviews even of the Secretary and the Minister level. On the apprehension that the cost over runs accrued due to delay of the projects would be recovered from the consumers, NTPC stated that they file tariff petition for upcoming stations before CERC for admittance of its capital cost and determination of tariff. Increase in capital cost due to cost over run and time over run is considered by the Commission while considering determination of tariff. If the delay was on account of reasons which are beyond the control of the generator, the same is allowed in tariff after prudence check by the Commission. Delays on account of uncontrollable factors like delay on account of grant of clearances, land acquisition issues,law and order issues, natural calamities, force majeure, etc. are generally allowed by the Commission subject to prudence as per the Tariff Regulations. However, increase in project cost on account of generating company is not allowed by the Commission. The Committee note that some of the projects have been delayed for more than 8 years and in such a situation, it is imperative on the part of the Ministry and NTPC to sort out the local issues expeditiously and gear up their machinery to get these delayed projects completed and commissioned at the earliest which will on one side start giving returns on the capital invested and on the other side will enhance the availability of power to meet the growing demand of electricity.

<u>Life span of Thermal Power plants</u>

26. The Committee observe that 79units of NTPC thermal power plants have outlived their normal life of 25 years as per the prescribed guidelines of CERC. Out of these 79 TPP units, 52 units are more than 30 years old and 4 units are more than 50 years old. The Committee was informed that the 'actual or physical life' is much longer than the 'useful life' and the concept of 'useful life' is for reckoning a financial life which is used for servicing of the depreciation. This is in tune with the average age of power plants in US and other western countries where it is more than 40 years and in some cases even beyond 50 years.

The Committee note that many of the NTPC's thermal units, in operation for more than 25 years, have undergone major Renovation and Modernization (R&M) for increasing their life. The Committee are informed that NTPC has a robust O&M practice developed over years of experience and thus has minimum degradation of performance even after the designated life of the plant is over. Further, intermitted Renovation & Modernization (R&M) activities adopting modern technology are carried out on the aged equipments which partially regain the performance level of the plant. Safety aspects are in built into NTPC design as well as O&M practices. In case of any probability of safety hazard, immediate action is taken to replace such component/equipment during O&M and R&M phases.The oldest unit of NTPC fleet, 38 year oldSingrauli Unit 1 of NTPC which was commissioned in 1982, has recorded, in the first 9 months of the current financial year, a PLF of 100.24% which is the highest in the county.The Committee note that NTPC is carrying out Renovation and Modernisation of TPPs through Special allowance under expenditure mode without any defined life extension. The Company can recover the investments made in R&M as per the CERC regulations either by capitalization or by through special allowance @Rs.9.5 lakh per MW per year for the tariff period 2014-19. The Committee were informed that where the units are very old and O&M/R&M can't improve the performance/life of the equipment, NTPC is retiring those plants. The fete that operating the aforementioned power plant at more than 100% PLF speaks a lot about the technical competence of the team NTPC and its robust O&M practices. The

Committee are hopeful that NTPC can replicate such success stories in other ageing plants also which will facilitate power generation relatively at lower cost by which the ultimate beneficiaries will be the general public.

Plant Load Factor and Plant Availability Factor

27. The Committee observe that Plant Load Factor (PLF) is a measure of the average capacity utilization of the Thermal Power Plants. The PLF of NTPC coal fired Plants has seen continuous declining trend during the last decade from 88.29% in 2010-11 to 68.20% in 2019-20. The PLF of coal stations on All India basis has also seen similar reduction from 75.08% in 2010-11 to 55.99% in 2019-20. The decline in PLF of NTPC coal fired stations is more pronounced from 2014-15 to 2019-20 during which PLF has declined steeply by 12 % from 80.2% to 68.2% in comparison to 8.5 % decline witnessed by All India level during the same period.The reasons attributed for such decline are increase in RE power at all India level (All India RE Capacity addition from 2014-15 to 2019-20 was 48,068 MW) and an increase in installed generating capacity of the country, thereby reducing dispatch from thermal power plants due to less scheduling by beneficiaries. The Committee observe that thepriority has been given to Renewable Energy power which has increased from 51 Billion Units (BUs) in 2011-12 to 138 BUs in 2019-20 and the same will continue to increase further in future also which may have impact of the PLF of Thermal Power stations resulting in financialstress on the company unless there is corresponding increase in the overall demand for electricity in the country. It seems that the feeding of Renewable Energy power into the grid is not in addition to the thermal power but in place of thermal power resulting in steep fall in PLFs of Thermal Power Stations of NTPC.

The Committee however observe that despite the less scheduling, the NTPC maintaineda positive difference of over 12% as compared to the National PLF during the last decade, took necessary steps for flexible operation of generating plants as NTPC feels it is going to increase in future and also tookdecision not to acquire any

further land for thermal projects in near future and bringing in the entire focus on carbon-free sources. The Committee appreciate these steps and are hopeful that these measure will be able to facilitate the running of Thermal Power Stations of NTPC at a reasonable PLF level. The Committee also desire the NTPC to continuetheir sustained efforts for innovating better ways and means for operation of the plants so as to keep the PLF level in a higher position.

28. The Committee note that Regulation 20(1) of Chapter 5 of CERC Tariff Regulation 2014 stipulates that the tariff for supply of electricity from a thermal power generating station shall comprise two parts - namely, capacity charge (for recovery of annual fixed cost consisting of the components as specified in Regulation 21 of these regulations) and energy charge (for recovery of primary and secondary fuel cost and limestone cost where applicable). Capacity Charge (e.g., Depreciation, Interest and Operation & Maintenance expenses, Return on Equity, Interest on Loan and Interest on Working capital, etc.) are fixed at a normative level of generation, irrespective of the PLF. However, it is important to submit that PLF is primarily dependent on the power scheduled/demand given by the DISCOMs. As such, a decrease in PLF (i.e. the number of units scheduled by the beneficiary) would result in a decrease in total energy charges billed to discoms, leading to a decline in overall revenue from operations. Cost per unit of power would be determined based on the total capacity charges, energy charges, and energy scheduled as detailed above.The Committee note that NTPC sets up TPPs only after assessing the long-term commitment of power procurement by Discoms by signing long-term Power Purchase Agreements (PPAs) for the entire capacity. The Committee observe that(i) the actual demand growth in the country has been lower than the projected demand growth in the last few years; (ii) lower scheduling of conventional power due to focus on renewable energy capacity addition, which is "must-run"; and, (iii) thermal generators are required to ramp up and ramp down their generation for absorbing the infirm and intermittent RE generation , are impacting adversely the finances and also the plant life of thermal generators

especially NTPC.The Committee, therefore, recommend that suitable measures need to be taken immediately in consultation with all the stakeholders including Government, CERC etc. so that Thermal Power Generation remain financially viable and the valuable assets are not allowed to turn into NPA in long run.

Increase in PLF of acquired TPPs by NTPC

29. The Committee appreciate the fact that the performance of plants taken over by NTPC was improved through R&M. The PLF of TPPs at the time of takeover in 1995 was 18.7% but it is around 84% now with an availability of around 87%. Similarly, Unchahar Stage-I PLF at the time of takeover in 1992 was 18%, but it is around 60% now with an availability of around 90%. Also, the PLF of Tanda Stage-I at the time of takeover in 2000 was 14.9%, but it is around 53% now with the availability of around 72%. The Committee believe such an increase in the life, productivity , utilization might have been contributed immensely to the bottom line of the plants to the financial performance of the company. The Committee are hopeful that NTPC will replicate these measures in other thermal power plants also.

Fuel Supply to TPPs- Need for Review of the Formula

30. The Committee note that Fuel supply to TPPs operated by NTPC is being met through long term Coal Supply Agreements (CSAs) with coal producers such as Coal India Ltd (CIL) & its subsidiaries and Singareni Colliery Company Ltd (SCCL), which are valid for 20 years with a provision for review after every five years. The Committee's analsysis of the information submitted to them revealed the following facts -

(i) **The materialization of ACQ ranged from 91.0 % in 2015-16 when it received 145.18 Million Metric Tonnes (MMT) of coal against ACQ 159.20 MMT and 105% in 2012-13 when it received 142.40 MMT of coal as against ACQ of 135.89**

(ii) **Total domestic receipt of coal through sources mentioned at (i) (a) to (f) above by NTPC has improved continuously from 126.72 MMT in 2010-11 to 172 MMT in**

2019-20 resulting in lesser imports which has witnessed decline from 10.50 MMT in 2010-11 to 2.84 MMT in 2019-20.

(iii) **Generation loss due to coal shortage (after taking into consideration both domestic supplies and imports) ranged from 12,966 Million Units (MUs) in 2012-13 to 189 MUs in 2015-16. The generation loss due to coal shortage in 2018-19 and 2019-20 has stood at 8,180 and 6,656 MUs respectively.**

(iv) **Captive coal production from NTPC's own Mines has increased from 0.09 MMT in 2016-17 to 9.92 MMT in 2019-20.**

The Committee note that clause 3.6.1 of CSAs provides for penalties for non-materialization or short supplies vis-à-vis ACQs. The formula used shows that Quantity of Coal that could not be supplied by the Seller during the Year owing to the Railways not allotting wagons or not placing wagons for loading, in spite of specific valid indent/offer submitted by the Seller to the Railways against valid program(s) submitted by the Purchaser for the purpose, is not reckoned as reason for imposing penalties for short supplies of coal. In other words compensation for short delivery is applicable only after taking into account all the factors. The Committee are of the view that this is un reasonable as short supplies due to not allotting the wagons nor placing the wagons for loading is leading to generation loss and financial loss also. The Committee therefore recommend for review of the formula used in calculating the level of delivery to rationalize the same taking into account all factors so that undue financial and operational hardship is avoidedto any party.

<u>Creation of NTPC Mining Ltd. (NML)</u>

31. The Committee note that the NTPC has incorporated a separate company in the name of"NTPC Mining Ltd (NML)" on 29 August, 2019 and requested the Ministry of Coal to transfer to this new company, the coal mines which had been allocated to NTPC.The specific reasons furnished for floating a new company include de-linking

business risks, better financing for NTPC in future, focused management for taking faster decisions, efficient handling of contracts, and utilization of resources /captive mines to ensure reliable fuel supply to NTPC.The Committee note that after a series of communications from NTPC on 17th January 2020, 12th March 2020 and 26th May 2020 and also from Ministry of Power(MoP) on 4th August 2020 to Ministry of Coal (MoC) for early transfer of the mines, the MoC has issued "No objection" on 16.12.2020 for transfer of Pakri-Barwadih mine from NTPC to NTPC Mining Ltd. However, the vesting order of mining area land is stated to be still awaited. For the remaining mines, it has been informed that the matter is under examination at Ministry of Coal and Ministry of Law & Justice which is taking opinion from ASGI.The committee observe that these coal mines were allocated in 2016-17 to NTPC under Coal Mines (Special Provision) Act and Mines and Minerals(Development &Regulation) Act (MMDR Act) and he NTPC created a new company in August, 2019 and the matter of transfer of mines to this new company is waiting legal opinion and as a result thereof, the development of allocated coal blocks /mines have been held up. The Committee observe that the reasons advanced for creation of a separate company does not appear to be convincing. The Committee are rather of the view that separation of the business of the development of coal blocks/mining from that of the main Company will eventually end up with decrease in the valuation of the Company. Tha Committee, therefore, recommend that taking into account the above factore particulary the delay which seemingly occurred due to creation of the new company, the NTPC should explore the possibility of developing these coal blocks/mines on their own and if considered necessary, a separate Department/Vertical within the NTPC organization may be created to exclusively deal with the development of these coal blocks/mines.

<u>Improvement in HR performance metrics</u>

32. The Committee observe that total manpower strength in technical and non-technical posts in NTPC as on 31.01.2021 has been 18,333 against the sanctioned strength of 18,945. Out of the manpower strength in position, 15,901 are on

technical posts and 2432 are on non-technical posts. The manpower strength includes 2783-SC, 1259-ST, 3865-OBC and 1237-Women employees in the organization. The Committee observe that human rsourcesproducitivity such as value added per employee, Man Megawatt Ratio(MMR) i.e. no of employees per MW, generation per employee has seen continuous improvement since 2010-11 despite reduction in number of employees and increase in Installed Capacity which has almost doubled. The Committee are glad to note that NTPC could achieve this fete due to optimum utilization of the resources, rationalization of manpower based on changing business needs, outsourcing, inculcation of shared services for standardized jobs, etc. The Committee also compliment the management of NTPC Fortis stellar performance in terms of generating 74 % more power with 27 % of less manpower during 2009-10 to 2019-20 resulting in huge cost efficiencies/ savings , that too without compromising the quality of operations of the power plants. The Committee hope that the NTPC will continue to achieve such level of performance in future also.

<u>Representation of woman in workforce</u>

33. The Committee observe that the number of women employees in NTPC's workforce has come down in absolute numbers from 1392 in 2010-11 to 1153 in 2019-20 which is almost in tune with the overall decline in the total manpower during this period. However, if seen in terms of percentages, the strength of women employees has gone up from 5.87% in 2010-11 to 6.61% in 2019-20 which is an increase of 0.74% as against overall reduction in manpower by 27 % during the period. This implies that more women are recruited by NTPC. The Committee was also informed that presently there are around 1278 women employees in NTPC which makes around 7% of the total manpower of the organization. Currently, NTPC has 07 senior women executives handling regional heads of HR/Head of HR positions and 11 women at Chief General Manager/General Manage level positions while 105 women are posted in JVs/subsidiaries. The Committee observe from the information submitted to them that in order to increase the number of women in the

organization and to provide them a safe and positive environment to grow and achieve new heights, a number of initiatives are being taken by the NTPC. Some of these initiatives are (i) Waiver of Application fee for girls while applying for NTPC posts, (ii) Compulsory participation & representation of Women in all decision-making forums to incorporate their point of view on various issues/agenda w.r.t. company policies, system improvements, new initiatives, developmental actions etc., (iii) On-line counseling facility for women employees to provide them psychological and emotional support and a patient hearing by professional experts to handle stress, anxiety and other work-life balance., (iv) Constitution of Internal Complaints Committee (ICC) at all NTPC Sites for handling and redressing sexual harassment cases, (v) Creating a safer work place for women by the installation of security web cams, biometrics in office premises, display of site ICC committee details on prominent locations/intranet etc. to enable them to work with freedom and security. (vi) Certification of women employees in Women Leadership & empowerment related modules/ training by renowned/ reputed organizations to provide them an opportunity to gain experience, knowledge and to get on a platform to discuss and deliberate on various issues. (vii) Providing Flexi-timings 8 times in a month to all women employees in attending Office, (viii) Online Discussion forum for women employees in the name of 'SHAKTI'. This platform provides an opportunity to all NTPC women workforce to share their thoughts on various topics, discuss the existing practices, new initiatives, new topics etc. The Committee appreciate the various women friendly initiatives taken by NTPC to provide safe and encouraging working environment to their women employees and hope that in the coming future, the strength of women employees will grow further at different level of the organizational hierarchy.

<u>Awards and Accolades for best HR practices</u>

34. The Committee observe that noteworthy Human resource performance metrics mentioned and various women friendly initiatives taken by the Company has led to its winning many HR awards and accolades. Going by the number of HR awards it

won in various segments like great places to work, employee productivity , HR capacity building measures, employee relations, etc., the NTPC has not only competing with its public sector counterparts but also with the private sector companies. The Committees further note that NTPC has regularly been participating in India's Best Companies to Work for List taken out by the Great Place To Work Institute and The Economic Times and has been achieving appreciable ranking. The Committee further note that NTPC had been ahead even from the established private sector companies in winning various HR awards including the best companies to work for year after year, due to "Competence Building, Commitment Building, Culture Building and System Building are the four blocks on which NTPC's HR systems are based. These people practices include areas like Hiring, Welcoming, Inspiring, Speaking, Listening, Collaborating, Grievance Redressal, Thanking, Developing, Balancing, Supporting, Including, Celebrating, Rewarding and Contributing. The Committee would like to place on record their appreciation for the Company's continuous and sustained efforts to improve its human resources metrics resulted in the Company's winning various awards and recognitions not only from the national institutes but also from the reputed international HR institutions.Since NTPC's HR practices have been refined and improved due to its participation in various benchmarking and assessment exercises through which NTPC has learned from other companies, the Committee would suggest that the possibility of replication of these refined HR practices in otherMahartana and Navratna companies may be explored.

SAFETY ISSUES

35. The Committee observe that an internal safety audit of NTPC is conducted every year and an external audit is conducted atleast once in two years through national agencies like the National Safety Council, Mumbai: Disaster Management Institute, Bhopal: QCFI, Hyderabad, etc. and now NTPC intends to conduct its Internal Safety Audit twice in a year and the External Safety Audit once in a year.

Further, the Company has appointed an international consultant DuPont to assess safety aspects and suggest measures. NTPC has also created a Safety Institute at Tanda project to impart training to the contract workers as well as to impart training to its own personnel. The Committee are however perturbed to note that there is no separate budget to meet expenditure under safety and safety equipment and the same is being met through reappropriation from NTPC's O&M Budget. A close analysis of the information furnished shows that although the expenditure on training has been encouraging, not much priority seems to have been given for procuring safety equipment and appliances. During the last 10 years between 2010-11 to 2019-20, NTPC spent about Rs. 303.84 crore on Training etc. while the expenditure on safety and appliances was only Rs. 31.15 crore during the same period. At an average, the Company has spent a little over Rs. 3 crores per year on purchase of safety equipment and appliances during the last ten years. The Committee was however informed by NTPC that there is no separate budget for safety in NTPC plants and the cost on purchase of safety equipment for NTPC employees is included in the O&M budget of the Plant. It was also mentioned that O&M Budget is around Rs. 40,000 crore and for equipment there is a miscellaneous vote out budget of around Rs.500 crore. The Committee however observe that the trend of expenditure on safety equipment and appliances incurred during that last 10 years is an indicator that not much is being spent on this area despite having huge budget in O&M segment. The Committee's analysis reveal that during 2019-20, 14 fatal accidents in O&M works and 07 fatal accidents in C&E Works were reported in NTPC Plants. In addition, many people including NTPC employees lost their lives in the natural disaster that struckTapovan project in Chamoli District on 7th February 2021. Rescue teams and equipment had to be rushed from other agencies at the site. The Committee feel that precious lives of its employees can be saved if high priority is given on imparting training of staff on safety aspects including use of safety equipments and standing operating procedures to be followed during accidents/disaster and while carrying out rescue operations. Further, NTPC needs to

enhance its expenditure on purchase of safety equipment & appliances including its costs on training. The Committee therefore recommend that NTPC should earmark a separate and exclusive budget for "safety"matters so that effective preventive equipments on safety and security of the plants, machinery and precious manpower could be ensured and saved.

OCCUPATIONAL HEALTH CERTIFICATIONS

36. The Committee have been informed that all NTPC stations are certified with Occupational Health and Safety Assessment Series (OHSAS) 18001/IS 18001 and about 28 stations of NTPC have upgraded to ISO 45001 certification. Further, six of NTPC stations have been chosen by NTPC's Management for obtaining international level National Occupational Safety Association (NOSA) accreditation. The six NTPC stations were selected as pilot projects based on geographical locations and type of projects for cross-sectional representation and the performance of the six stations would be monitored post accreditation and if found satisfactory would be implemented in remaining plants of NTPC. The Committee are further informed that NTPC stations still under construction stage have to go for OHSAS 18001/IS 18001 certification and then go for 14001 certification after the project completion. Further, many solar plants are part of the main station and get a logical extrapolation and NTPC plans to bring these under purview. The Committee while taking note of the steps taken by NTPC in obtaining various certifications for their some of the plants would recommend that the NTPC should obtain similar certifications for all their plants including those under construction in atime bound manner so that occupational health and safety assessment is ensured at every power plant.

Environmental matters- Disposal of Fly ash

37. The Committee note that the NTPC has a fly ash utilization policy to deal with fly ash in a integrated way from generation to end product and aims at maximizing utilization of ash for productive purposes in addition to fulfilling social and

environmental obligations. The NTPC policy envisages the sale of fly ash through bidding process to user industries like Cement, RMC etc and at present, fly ash is being issued at 14 NTPC stations on price and is being issued free of cost at 10 NTPC stations. Pond ash is issued free of charge at all NTPC stations. NTPC policy envisages bearing of cost of transportation of ash by NTPC to fly ash brick manufacturing units and road projects of NHAI and State Governments. The NTPC policy further envisages supply of at least 20% of fly ash to brick manufacturing on priority @ Rs. 1/MT in line with NITI Aayog recommendation. The Committee's analysis of the data reveals that the fly ash production which was at 588.28 Lakh Metric Tonnes (LMT) in 2015-16 has gone up to 604.76 LMT in 2019-20 thus registering an increase of only 2.7 % in five years. However, the thermal power generation capacity which was 35,085 MW at the end of March, 2016 has increased to 44,610 MW at the end of March , 2020 i.e. by 27 % during the same period. It is not clear as to how the ash production has gone up by a mere 2.7% when the thermal generation capacity has increased by 27 % during the same period. The Committee would therefore like to be apprised of the reasons for disconnect between the increase in power generation capacity and the fly ash generation during the same period. Further, the Committee would like to suggest the NTPC to explore the possibility of higher revenue realization in disposal of fly ash generated at different units of their thermal power plants and for this purpose the Company in coordination with the local authorities and also elected public representatives of the area, may consider setting up of plants for manufacturing of bricks, tiles, blocks etc. by using the fly ash from the nearest thermal power stations.

<u>Storage Requirements for Unutilized Fly Ash</u>

38. The Committee was informed that NTPC is operating 33 coal based power stations (24 own and 9 JVs) and a total of 67.24 Million Metric Tonne (MMT) Ash was produced by these operating stations in the year 2019-20. Out of this, 51.11 MMT which is about 76.01%, was gainfully utilized in various usage such as issue to

cement and bricks/blocks/tiles manufacturing industries, road embankment construction, reclamation of mine voids. Low lying area development etc. The unutilized ash of about 16.13 MMT was stored in an environment friendly manner in Ash ponds. On an average, the NTPC coal based plants are producing about 5.60 MMT ash in a month. The Committee observe that the utilization of ash was 41.35 % in 2015-16, 63.71 % 2018-19 and 76.01% in 2019-20. This implies that substantial quantity of fly ash generated by coal based power stations of NTPC remained unutilized in each year which obviously needed huge ash ponds occupying large area for its environment friendly storage. The Committee would therefore recommend that a well defined mechanism is needed to be established by NTPC which could ensure disposal of entire quantity of fly ash generated by the power plants on year to year basis which would not only save the precious land space of the company but will also provide neat and clean, risk free, healthy and environment friendly atmosphere in the surroundings of the power stations.

<u>Station wise generation and utilization of Fly ash</u>

39. The Committee's analysis of the data on the station wise ash generation and its utilizationin in the year 2018-19 reveals that lowest utilization of ash was 30.77% at Bongaigon and the highest utilization was 286.58 % at Tanda. The lowest and highest ash utilization at 0.27 % and 168.55 % (including ash utilized and produced during the previous years) was witnessed at Lara and Simhadri Power plants respectively during 2019-20. The data further reveals that seven TPPs each could utilize ash (i) 100 % or more; (ii) between 50-99 % ; and, (iii) less than 50 % , produced in 2018-19 including ash produced during previous years. Out of 23 TPPs in respect of which data is available for the year 2019-20 , (i) 09 (nine) TPPs only could use 100% or more, (ii) four TPPs only could use 50 -99% and (iii) 10 (ten) TPPs could utilizes less than 50 % of the ash generated. The Committee would like to be apprised of the specific reasons for very low utilization of ash produced at Bongaigon TPP, the steps taken to improve its utilization, station wise efforts

made/proposed to be made to increase the fly ash utilization and the results thereon.

Storage of fly ash - Strategic consultant for maximizing ash utilization

40. The Committee note and appreciate NTPC for installing a system for collection and storage of dry fly ash to make it available to cement and concrete industries and fly ash based building products manufacturing units such as bricks/ blocks/ tiles manufacturers. Similarly, NTPC has installed wet ash disposal system to handle unutilized fly ash and bottom ash (collected in the bottom of the boiler furnace) at all old thermal power plants commissioned before the year 2014 to store flyash in environment friendly manner in ash ponds. The Committee also note that a process has been initiated to appoint Strategic Consultant for maximizing Ash Utilization at 07 Pithead Stations and would like to be apprised of the outcome of these efforts.

Environment Pollution Control Measures

41. The Committee observe that during examination of the subject, it was informed that the NTPC undertakes a comprehensive environment management plan right from the conception of the project, selection of site, resource selection (Land, Coal & Water source) and technology for power generation and pollution control. There are systems in place for control of all types of probable pollution. NTPC Ltd. The measures taken by NTPC in this regard include Control of Air Emissions, Control of water pollution and adoption of Zero Liquid Discharge (ZLD) approach, Real-Time Environment Monitoring System, Waste Management etc. As informed to the Committee, the High-efficiency Electro-static Precipitators (ESPs) with an efficiency of the order of 99.97% to maintain Particulate Matter (PM) emissions well below the applicable permissible limits are installed in each Plant. NTPC has completed ESP R&M in 64 units of the total capacity of 17.1 GW and ESP R&M is in progress in 14 units of 5.26 GW. All operating units of NTPC Ltd are in

compliance to new emission norms. It has a dedicated Water Policy-2017 followed by Rain Water harvesting Policy-2018 to set its own benchmark in water consumption in power generation. All stations of NTPC are equipped with advanced wastewater treatment facilities for plant and domestic effluents 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. NTPC has taken a proactive approach of making all its power stations to operate with ZLD (Zero liquid discharge) approach. Presently 10 stations of NTPC Ltd are in ZLD compliance, an additional 10 are expected by March 2021 and the rest by December 2021.All power stations are equipped with continuous ambient air quality monitoring stations (CAAQMS) and Real-time Emission Monitoring Systems (CEMS) are installed in all units to monitor particulate emissions and gaseous emissions (SO_2 and NOx). The Effluent Quality monitoring system (EQMS) are installed for real-time monitoring of effluent quality at all stations. The Committee was informed that the NTPC is committed to the protection of the environment through the implementation of effective waste management guidelines that meet all legislative and regulatory requirements placed on it. The Committee appreciate the pro-active measures taken by the NTPC for sustainable environment and express their hope that environment of the areas nearby the Plants and health of public residing in the surroundings will be effectively protected.

<u>Environment Sustainability - Reduction of emission of Greenhouse Gases</u>

42. The Committee observe that NTPC has actively taken various initiatives to reduce the emission of Green House Gases and to improve environmental sustainability. As informed to the Committee, the major initiatives taken in this regard are (i) NTPC has changed its focus and is pursuing renewable capacity addition aggressively (ii) NTPC is targeting to achieve 30% capacity through non-fossil sources by 2032 (iii) Blue sky initiatives- Biomass Co-firing and Waste to

Energy (iv) NTPC has planted around 35 million trees and still continuing with around 10 lakhs tree plantation per year (v) Adoption of Ultra supercritical technology for thermal power plants (vi) Installation of environment control equipment such as Flue Gas Desulphurisation (FGD), Zero Liquid Discharge, retrofitting of ESP to curb particulate emissions at all stations; and (vii) Continuous Emission Monitoring System (CEMS) of all stacks and Ambient air quality monitoring through an online Ambient Air Quality Monitoring System (AAQMS). The Committee hope that the measures taken by the NTPC will definitely yield the positive results in environment protection and maintain the surroundings of the plants pollution free.

Flu Gas Desulphurisation (FGD) Installation

43. The Committee note that with a view to reduce pollution, the NTPC has commenced the installation of Flue Gas Desulpharisation (FGD) in all the coal fired plants. It has already installed FGD in 5 units with a capacity of 1340 MW and the same is under execution in other 125 units with a capacity of 58,940 MW. The FGD process is under tendering in another 24 units with a capacity of 4324 MW. The Committee while appreciating the efforts of the NTPC for carrying out FGD installation would desire the NTPC to apprise them of the specific timelines fixed for completion of the FGD installation in all its TPPs and also the expenditure estimated to be incurred . The Committee would also emphasize the timely installation of FGD system in all the thermal power plants of NTPC as this system will substantially reduce the adverse effect of the thermal power plants on environment.

Water consumption by Power Plants

44. The Committee note that the water consumption by the thermal power plants has gone up from 553.31 MKL in 2016-17 to 593.24 MKL in 2018-19 but came down to 559.5 MKL in 2019-20 whereas the generation capacity went up from 38,095 MW

in 2016-17 to 41,580 in 2018-19 and further to 44,610 MW in 2019-20. On being asked about the efforts made for reduction in water consumption despite the increase in power generation capacity, the Committee was informed that the water footprint of NTPC stations has optimized over the years for each unit of energy being generated and CenPEEP is driving different initiatives across stations to further reduce water footprint. It was informed that the first step towards water optimization is the accurate metering of water consumption at different consumption nodes as per the water balance diagram and therefore more than 500 water meters have been installed across all these stations in last three years installation of water meters is in progress at new stations. Frther, 24*7 monitoring being another important activity and therefore to have 24*7 monitoring, all meters installed will be hooked to DCS for remote monitoring. Water Audits are carried out periodically and recommendations of water audits are implemented. Further different Systems like Liquid Waste Treatment Plant, Sewage Treatment Plant, Ash Water Recirculation System, Drain Separation & Rain Water Harvesting systems are either in service or under different stages of completion across all stations. Improvement in Ash water ratio & COC through chemical intervention has further resulted in water reduction across NTPC Stations. Air cooled condensers are proposed to be installed in future power stations which has the potential to save 75% of water. The Committee desire that these measures need to continuesd more vigorously and scientifically in future also so that the overall quantity of water consumption by the Power Plants are substantially reduced. The Committee would also like to be apprised of the impact of these measures on the overall consumption of water and also on specific water consumption/per unit water consumption by indiviual Power Plants of NTPC.

<u>Plant-wise Water Consumption</u>

45. The analysis of the data on water consumption/unit (L/Kwh) shows that different plants have different amounts of per unit water consumption. For instance, Sipatplant's per unit water consumption is in the range of 3.17 to 2.89 (L/kwh) since

2015-16. However, the plant at Tanda has per unit water consumption in the range of 6.65 to 4.48 (L/kwh) since 2015-16. The Committee observe that of all the completed and operating plants, Solapur plant's per unit water consumption which is in the range of 13.57 to 8.21 L/kwh, is the highest. Measures taken to optimize water consumption. The analysis of the data further reveals that water consumption per unit (L/kwh) has gone up from (i) 2.70 to 3.03 at Gandhar, (ii) 2.05 to 3.15 at Auriya; and, (iii) 3.10 to 3.76 at Jhajjar stations from 2015-16 to 2019-20 where as in the 18 thermal and gas stations, per capita water consumption has come down over the same period. The Committee note that NTPC attributed such increase in water consumption at Gandhar and Auriya to more generation in 2015-16 vis- *a- vis* 2019-20; and also mentioned that Station Water Consumption(SWC) has a fixed component that is not dependent on generation. The Committee from the reply *infer* that water consumption depends on the amount of power generation (PLF) but at the same time it has also been seen that in some cases, the water consumption has come down despite increase in power generation. The Committee while therefore desiring the NTPC to clarify the position, would recommend that rationalization of water consumtion is needed at all Power Plants by uniformally applying the standard norms and monitoring mechanism of water conservation.

<u>Air cooled condensers</u>

46. The Committee note that Air Cooled Condensers(ACC) are proposed to be installed in future power stations which has the potential to save 75% of water. As informed to the Committee, retrofitting of such air cooled condensers in the existing power stations requires a detailed study and such retrofitting depends upon on many factors including availability of space near the turbine hall, study regarding site-specific Climatological data to assess the design ambient condition, and the space required for installation of the Condensers. The Committee was further informed that such retrofitting of ACC may require a long shut down of existing units and also replacement of components on case to case basis. The installation of ACC will thus affect the unit efficiency levels and may also result in a

reduction in unit power output and accordingly plant-specific Techno-economic analysis shall be required to study these effects on account of the installation of ACC. It has also been stated that domestic manufacturing capacity for ACC is not available. The Committee observe that Air Cooled Condensers(ACC) if installed in power stations has the potential of saving save 75% of water consumption and taking into account the benerit likely to be achieved in the area of water conservation, it is desirable to undertake at the earliest the plant specific techno economic analysis in respect of all the power plants of NTPC for exploring the feasibility of retrofitting of ACCs in the existing Plants within fixed time frame and installation of ACCs should invariably be considered, based on the proposed study, in all nunder construction Power Plants. With regard to the issue of non-availability of Domestic manufacturer of ACCs, The Committee would recommend that the management of NTPC should take up the matter with the Ministry of Power for taking iniatives and suitable steps for encouranging the setting of manufacturing base for ACCs. The Committee would like to be apprised of the specific taken by the Mnistry and the NTPC in this regard.

<u>Use of treated Sewage water from Municipal Sewage Treatment Plants (STPS)</u>

47. The Committee note that NTPC has taken initiative to use treated sewage water from municipal STPS nearby for bulk water requirements of its TPPs replacing precious fresh water from rivers/lakes reservoirs/dams, etc. They further note that the use of STP water has been taken up with various Municipalities for power plants within a 50 km radius and is under consideration in Meja TPP, Telangana STPP, Korba STPP, Sipat STPP, Dadri STPP, Mouda STPP, Solapur STPP, and Patratu STPP. Draft agreements have been sent to the concerned Municipalities. Discussions are in progress. The Committee while appreciating NTPC for initiating this much needed move to save fresh water, the Committee -

(i) recommend the Ministry to explore the possibility of making it mandatory to all Power Plants owned by Central/State Governments, Private Power Generators for

replacing fresh water usage with Municipal STPS water so that the precious and scarce fresh water could be saved for human consumption.

(ii) would like to be apprised of the latest status in this regard including the plant wise data on amount of fresh water replaced with STPS water.

Zero Liquid Discharge (ZLD) from TPPs.

48. The Committee observe that NTPC has taken initiatives to become ZLD Company in respect of all closed cycle operating stations by identifying and implementing water management initiatives adopting innovation in water use in TPP. The NTPC submitted that '"Closed cycle operating stations are those stations where condenser cooling water is recirculated in a closed loop using cooling towers. In such plants, water losses in the cooling water system occur due to evaporation loss & drift losses in cooling towers. In addition to the losses, blowdown water is drawn from the cooling water system to maintain Cycles of concentration (COC) for the closed system. The blow down is generally reused for other purposes elsewhere in the plant. Makeup water is added to the cooling water system to take care of the above losses. The Committee note that all NTPC stations are operated in a closed cycle except (SSTP Shaktinagar, Rihandnagar Stage#1, and FSTPS Farakka Stage#1&2). They further note that "There are 37 stations where ZLD is to be done and 15 stations are ZLD compliant as on date. With respect to plans to make all closed cycle operating stations ZLD compliant, NTPC submitted that 14 stations are expected to be ZLD compliant in a current financial year i.e. by March2021. The remaining 08 stations are expected to be ZLD compliant by December 2021. While appreciating the initiatives of NTPC to make all closed cycle operating stations ZLD compliant with ina definite timeframe i.e. by December, 2021, the Committee would like to be apprised of the actual progress made so far in this regard.

Waste to Energy (WTE) Initiatives – Utilization of agro residue in power plants

49. The Committee note that typically a 1000 MW plant consumes about 5 million tonnes of coal annually. India's total coal-based power generation capacity is about 2 lakh MW which theoretically can consume approximately 1000 million tonnes of coal annually. Even 10% of that, if replaced with Agro biomass pellets, will amount to 100 million tonnes of this fuel. Production of 100 million tonnes of biomass pellets may require about 110 to 120 MMT raw agro residue which is sufficient to wipe out the most unused agro residue in the country and thus eliminating the farm fires and produce approx. 20,000 MW of round the clock renewable. The Committee further note that with 100% pellet-firing the variable charge of energy would be about Rs. 5 per kWh. With 10% pellet co-firing, the impact on variable charge would be about Rs. 0.15-0.20 per kWh. As part of its efforts to co fire biomass pellets in coal fired power plants, the Committee are glad to note that NTPC has taken the appreciable initiatives such as (i) firing of 100 tonnes of agro residue such as rice straw, cane trash, mustard straw, etc. based pellets at Dadri in 2017 for test firinggradually increasing the percentage of firing from 2.5%, 5%, 7.5%, and 10% with coal, as the base fuel and further going up to 9300 tonnes; (ii) invitation of expression of interest for production and supply of paddy straw and agro residue based pellets / torrefied pellets to power plants located across the country to enable the development of an ecosystem of infrastructure and establishment of pellet business;(iii) to exchange views& experience on emerging technologies, policy issues,etc., and (iv) procurement of agro residue pellets, etc. The Committee were informed that based on the above experience and intent, NTPC has identified 17 operating Power stations situated across India, with an aggregate annual requirement of 5 MMTPA of biomass pellets for four years. Notice inviting tender has been issued on 18 September 2020. 15% purchase preference has been allocated to the vendors using agro residue from Punjab Haryana and NCR in these tenders. The Committee note that such an initiatives have vast potential to increase rural income, provide local employment, cleaning the air by eliminating farm fires, and also to generate enormous renewable energy with existing coal power infrastructure. It can

also contribute in reducing SOx and NOx emissions from coal power plants. The Committee would like to be informed of the progresss achieved in this regard especially the commercial feasibility of the biomass firing on sustainable basis on mass scale, the procurement of the biomass pellets, the response to the tenders floated for bio mass pellets , the usage of the biomass pellets in the identified 17 stations with the results achieved thereon.

Initiatives to convert Municipal Solid Waste (MSW) to energy

50. The Committee note that NTPC has taken various initiatives to convert Municipal solid waste to energy. The Company as a part of its green initiatives has formed JV withEast Delhi Municipal Corporation (EDMC)viz. NTPC EDMC Waste Solutions Pvt Ltd, to set up Integrated Waste to Energy Plant which is completely indoor, odorless, and emission norm compliant, with a processing capacity of 2000 Tonnes Per Day (TPD) of MSW and to produce 12MW of electricity based on Incineration technology. The other initiatives taken in this regard include commissioning of a 24 TPD thermal gasification based demonstration-scale Waste to Energy (WtE) plant at Varanasi to support technology development in India. The performance test of the plant is still pending and it is premature to declare the commercial suitability of the plant for large-scale implementation to solve the huge problem of MSW. The Committee while appreciate the NTPC for taking such initiatives, would recommend that based on the experience gained and taking into account the commercial viability, such projects may be taken up by NTPC throughout the country in phased manner beginning from the Metropolitan/big cities.

Creation of Charging Infrastructure

51. The Committee note that NTPC has (i) placed orders for setting up of 400 Nos. of charging stations in various locations across cities and highways during 2018-19; and (ii) decided to set up 282 Nos of charging stations in various cities

under FAME (Faster Adoption and Manufacturing of Electric vehicles (FAME-II) during 2019-20. The Committee, however find that the award has been placed for setting up 400 Nos. of chargers in various locations across cities and out of that , about 129 chargers (0 chargers in FY 2018-19, 93 chargers in FY 2019-20 and 36 chargers in FY 2020-21) have been installed till date. The Committee note that as against the target of setting up of 282 nos of charging stations as mentioned in the Company's Annual Report for FY 2019-20, the reply states that NTPC will set up 205 charging stations in various cities under FAME II and the process is under tendering . The Committee are of the view that the process of setting up of charging stations appears to be slow *vis-a-vis* targets set by the company itself. The Committe, therefore, recommend that necessary steps be taken to address the issues affecting the achieving the set targets in this regard.

Research and Development Works

52. The Committee are glad to note that the R&D expenditure of NTPC has seen continuous increase from Rs. 130 crore in 2015-16 to Rs. 183 crore except small dip witnessed in the year 2018-19. With regard to the Company's R&D efforts resulting in indigenization of advanced processes and products which are currently imported such as Air cooled condenser for super critical units, ultra critical power plants with steam parameters 270Kg /cm2steam pressure etc, the Committee observe that NTPC is already specifying collaboration and technology transfer provisions in its technical specification to develop Indian vendors and indigenize the technology. Indian vendors under this route can collaborate with OEMs/Technology providers and through the technology transfer route can absorb the technology for subsequent indigenization of the processes and products.In this connection the Committee would like to be specifically apprised of whether the above mentioned imported items air cooled condensers cooling towers ,etc have been indigenized and such indigenized products are competitive and qualitatively meeting the

required standards. The Committee would further desire the NTPC to inform them the plants where these indigenized products are used instead of imported ones.

R&D - Patents and Copy rights

53. The Committee appreciate the NTPC for obtaining patents and copy rights for various products and process through their own R& D efforts. They note that during the last 10 years, NTPC was granted 21 patents and 09 copy rights. The products for which patents granted as mentioned include fly ash based detergents, additive for use in Portland cement, locking system fitted with air release of pressurized braking system of coal wagons, production of bio-diesel using bio fruits, a defecto scope for sensing defects of the magnetic boiler tube, a method for assessment of the health of HV transformers , etc. Similarly , the nature of the work for which copy rights granted to NTPC include Transformer Insulation Analysis Software TRINA—XS, Artificial Intelligence Based Signal Fault Detection System (Smart Signal Analyzer), Real Time GCV, Power Plant Performance Evaluator (P3E), Chemanalyzer, etc. The Committee while complimenting NTPC for getting patents and copy rights for various products and processes developed through their own R&D, they would like to be apprised of the of the year wise revenue earned through such patents and copy rights for the last 10 years and also the money saved by using such patents and copy rights for various processes in NTPC.

IT and Digitization- Low Utilization of Budget

54. The Committee note that against budgetary allocation of Rs.200.5 crore, Rs. 176.6 crore, Rs.239.1 crore, Rs.251.9 crore and Rs.224.9 crore, expenditure incurred stood at 65.5 crore , Rs.81.7 crore, 46.2 crore, 97.4 crore and Rs. 37.8 crore during 2015-16, 206-17, 2017-18, 2018-19 and 2019-20 respectively. In percentage terms the expenditure incurred was only 32.7%, 46.3%, 19.3%, 38.7% and 16.8% of the budgetary allocations during the said years. As there was huge jump in

allocation at Rs. 200 crore for IT and digitization for the year 2019-20 *vis-a-vis* expenditure of Rs. 68 lakh incurred in 2018-19, the Committee, on being asked, was informed that the allocation of IT Capital Budget of Rs. 224.9 Cr. was in line with the budget allocation for the previous 5 years and the higher allocation for IT was on account of implementation of Paper less Office and Enterprise Content Management implementation, upgradation of IT Security set up and implementation of Active Directory Phase-III for new projects. The expenditure was less because the life of some of the IT infrastructures was extended and some of the IT initiatives are under implementation. The Committee however observe that the pattern of allocation and expenditure for IT and digitization for the last five years shows that despite less spending year after year, higher allocations had been made only to leave huge unspent balance at the end of the year. The Committee observe that extensive use of the Information Technolgy nowadays is on high priority in any business concern and therefore under-utilisation of the budgetary allocations continuously for many years in the past on this important segment speaks volume about the priority accorded to this sector by NTPC. The Committee therefore of the firm opinion that not only the estimation of projected expenditure on IT for a particular financial year needs accuracy and rationalization but the sector specific IT activities also need to be very well identified and defined in advance so that these are speedily executed with optimum utilization of allocated funds before the close of the Financial Year. The latest available global technology and refined methods which are in use of the most advanced power projects in the world need also to be considered for induction in the power plants of NTPC for more efficient and economical power generation in the country. The Committee recommend accordingly and would like to know the specific steps taken in this tragard by the NTPC

CSR INITIATIVES

55. The Committee are happy to note that NTPC is engaged in various CSR activities for Community Development and Environment Sustainability since its inception with the objective of providing inclusive growth of the neighbourhood

areas of its power plants. The CSR activities undertaken by NTPC are mainly in the areas of education, health, sanitation and drinking water. Besides, NTPC is also undertaking CSR activities in other areas such as rural infrastructure skill development, support to physically challenged, and environmental sustainability, augmenting Government efforts and schemes for inclusive growth. The CSR policy of NTPC is also widely publicised through its Corporate website, press releases, television shows on CSR on popular TV channels, videos on YouTube, compendiums/coffee table books (both internal and external), E-magazines, brochure compendium of success stories, intranet, etc. NTPC's CSR activities are undertaken based on comprehensive Need Assessment Surveys and are prioritized in consultation with key stake holders including village representatives, local administration and public representatives. The Committee are further happy to note that NTPC has exceeded the mandatory target of 2% for the 5th consecutive year on CSR spending as is evident that NTPC spent Rs. 1601.53 crore against the mandatory expenditure of Rs. 1209.64 crore during the last 5 years between 2015-16 to 2019-20 which is really commendable. The Committee hope that NTPC would continue its CSR activities with focus on providing the basic amenities and facilities to the poorest of the poor people and those from the marginalised sections of the society particularly those residing in and around the power plants of NTPC at different locations in the country.

PENDING C&AG PARA

56. The Committee observe that as per information submitted to them, Seven C&AG Audit Paragraps are yet to be finally settled. These Audit Paragraphs are (i) C&AG Report No 35 of 2016 – Fuel Management of Coal Based Power Stations of NTPC Limited (ii) Para No. 11.5 (C&AG Report No. 15 of 2016) – Renovation and Modernization of NTPC Power Plants (iii) C&AG Report No 6 of 2017 for the year ended 31 March 2016 - General Purpose Financial Reports of Central Public Sector Enterprises (Compliance Audit) (iv) C&AG Report No 18 of 2018 for the year ended 31 March 2017-General Purpose Financial Reports of Central Public Sector

Enterprises (Compliance Audit) (v) C&AG Report No 11 of 2018 for the year ended 31 March 2017 – Union Government (Commercial) (vi) C&AG Report No 11 of 2018 for the year ended 31 March 2017-Union Government (Commercial) (Compliance Audit Observations) and (vii) ATN Report No.18 of 2019. It is observed that (i) reply in respect of 3 audit para has been sent to C&AG through Ministry of Power (ii) reply sent by NTPC in respect of another 3 Audit para are still under consideration of the Ministry of Power; and (iii) one audit para is partly settled. The Committee observe that two Audit para relates to the C&AG Report of year 2016, three Audit para relates to the C&AG Report of year 2017 and the remaining two Audit para relates to the C&AG Report of year 2019. The Committee observe that unduly long time has been taken in settlemrnt of these Audit paragraphs particularly those relared to the year 2016 and 2017. The Committee would therefore recommend that these Audit para need to be settled at the earliest and a mechanism also need to be developed so that settlement of audit para does not get unduly delayed in future.

New Delhi;
23 March, 2021
02 Chaitra, 1942 (S)

MEENAKASHI LEKHI
Chairperson
Committee on Public Undertakings

APPENDIX-I

COMMITTEE ON PUBLIC UNDERTAKINGS

(2020-2021)

MINUTES OF THE FOUTH SITTING OF THE COMMITTEE

The Committee sat on Thursday, the 27th August, 2020 from 1515 hrs to 1735 hrs in Committee Room 'D', Ground Floor, Parliament House Annexe, New Delhi.

PRESENT

Smt. Meenakashi Lekhi - Chairperson

MEMBERS

Lok Sabha

2. Dr. Heena Vijaykumar Gavit
3. Shri Chandra Prakash Joshi
4. Shri Raghu Ramakrishna Raju Kanumuru
5. Smt. Poonamben Hematbhai Maadam
6. Shri Arjunlal Meena
7. Shri Janardan Mishra
8. Dr. Arvind Kumar Sharma
9. Shri Sushil Kumar Singh
10. Shri Uday Pratap Singh
11. Shri Ramdas Chandrabhanji Tadas

Rajya Sabha

12. Shri Joginipally Santosh Kumar

SECRETARIAT

1. Shri R.C. Tiwari - Joint Secretary
2. Smt. Srinivasulu Gunda - Director
3. Shri Khakhai Zou - Additional Director
4. Shri G.C. Prasad -Additional Director

REPRESENTATIVES OF THE NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC)

1. Shri Gurdeep Singh - CMD
2. Shri Anil Kumar Gautam - Director (Finance)
3. Shri Ramesh Babu V - Director(Operations)
4. Shri Dilip Kumar Patel - Director (HR)

2. At the outset, the Hon'ble Chairperson welcomed the members and representatives of the National Thermal Power Corporation Limited (NTPC) to the sitting convened to have a briefing on the comprehensive examination of 'National Thermal Power Corporation Limited (NTPC)' and drew their attention to Direction 55(1) of the 'Directions by the Speaker' regarding confidentiality of evidence tendered before the Parliamentary Committees.

3. The CMD, National Thermal Power Corporation Limited (NTPC) and other senior officers first introduced themselves to the Committee and then gave a power point presentation on the subject highlighting the background of the Corporation, its vision, mission and core values, major milestones achieved by the company, physical and financial performances, commissioned/installed capacities, share of the Corporation in all-India power generation, power allocation form NTPC and JV stations, captive coal mining, CSR activities, renewable energy approach etc.

4. The Chairperson, highlighting the strategic role played by the power sector in the country, sought clarifications on various aspects of functioning of NTPC such as stagnant profit in recent years despite an increase in its installed capacitates, causes for growing liabilities, plans for optimum utilization of power plants, present status of under construction plants, power stations of NTPC affected by environmental concerns, progress in renewable energy, high number of disputed statutory tax dues, manpower and its capacity building, adherence to SC/ST norms in regular and contractual appointments, CSR activities undertaken by the company etc.

5. Members, thereafter, raised several queries on different functional areas of NTPC such as the need for creation of SPVs for coal mining, usage of ashes in cement plants, obstacles in transportation of ashes, delay in tendering process, environment issues, theft of ashes, delay in disbursement of compensation etc.

6. The representatives of the National Thermal Power Corporation Ltd. (NTPC) clarified the issues on which information was readily available with them such as role of NTPC in power

generation,process and rationale of disinvestment in NTPC since 2004,role of its JVs and subsidiaries, captive mining,role of CEA, CERC and CIL in power sector, PLF benchmarking, measures taken to meet environment compliances, to shift towards renewable energy, goals framed by NTPC towards electric and hydrogen-based mobility, management of ashes in power plants etc. In respect of points for which information was not readily available, the Chairperson directed that written replies may be furnished to the Committee.

The Committee then adjourned.

(A verbatim record of the proceedings has been kept separately).

/----------/

APPENDIX-II
COMMITTEE ON PUBLIC UNDERTAKINGS

(2020-2021)

MINUTES OF THE SIXTH SITTING OF THE COMMITTEE

The Committee sat on Thursday, the 7th January, 2021 from 1210 Hrs. to 1310 Hrs. in Committee Room '3', Ground Floor, Block A, Parliament House Annexe Extension (New Building), New Delhi.

PRESENT

Smt. Meenakashi Lekhi - Chairperson

MEMBERS

Lok Sabha

2. Shri Arjunlal Meena
3. Shri Janardan Mishra
4. Prof. Saugata Roy
5. Dr. Arvind Kumar Sharma
6. Shri Sushil Kumar Singh
7. Shri Uday Pratap Singh
8. Shri Ramdas Chandrabhanji Tadas

Rajya Sabha

9. Shri Prasanna Acharya
10. Shri Birendra Prasad Baishya
11. Shri Surendra Singh Nagar

SECRETARIAT

1.	Shri R.C.Tiwari	Joint Secretary
2.	Shri Srinivasulu Gunda	Director
3.	Shri G.C. Prasad	Additional Director

REPRESENTATIVES OF THE NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC)

1. Shri Gurdeep Singh - CMD
2. Shri Anil Kumar Gautam - Director (Finance)
3. Shri Ramesh Babu V - Director (Operations)
4. Shri Dilip Kr. Patel - Director (HR)
5. Shri Chandan Kr. Mondol -Director (O)
6. Shri Ujjwal K. Bhattacharya -Director (Projects)

2. At the outset, the Hon'ble Chairperson welcomed the Members of the Committee and apprised them about the agenda for the sitting. As a first agenda item, the Chairperson proposed for consideration and adoption of the draft reports on the following subjects:-

(i) Airports Authority of India (AAI)

(ii) Central Coalfields Limited (CCL)

(iii) Food Corporation of India (FCI)

(iv) Hindustan Antibiotics Limited (HAL)

(v) NBCC (India) Limited

(vi) Action taken by the Government on the Observations/Recommendations contained in the Twenty-second Report (16th LS) of the Committee on Public Undertakings on "Financing of Renewable Energy Projects by Indian Renewable Energy Development Agency Limited (based on Performance Audit Report No.12 of 2015)".

(vii) Action taken by the Government on the Observations/Recommendations contained in the Twenty-fourth Report (16th LS) of the Committee on Public Undertakings on "Review of Loss Making CPSUs".

3. The Committee then considered the aforesaid draft reports and adopted it without any changes/modifications. The Committee thereafter authorized the Chairperson to finalize the report on the basis of factual verification by the concerned Ministry/Department and consider for presenting the reports to Hon'ble Speaker since Parliament is not in session.

(The representatives of NTPC were then called in)

4. The Hon'ble Chairperson welcomed the representatives of the 'National Thermal Power Corporation Limited (NTPC)' to the sitting convened to take evidence of the representatives of 'National Thermal Power Corporation Limited (NTPC)' and drew their attention to Direction 55(1) of the 'Directions by the Speaker' regarding confidentiality of evidence tendered before the Parliamentary Committees.

5. The CMD, 'National Thermal Power Corporation Limited (NTPC)'and other senior officers first introduced themselves to the Committee. The Chairperson, while highlighting the strategic role played by the NTPC in the country, sought clarifications on various aspects on the functioning of NTPC viz. life span of Thermal Power Plants (TPPs) Units, Renovation & Modernisation (R&M) of TPPs, maintaining of safety standards of equipment and systems, security of TPPs, impact of new CEA/CERC regulations 2019 on the profit of the Company, shift to Renewable Energy (RE), use of indigenous machinery and equipment in the new plants being set up in RE sector, addressing the issue of loan taken by the Company to acquire THDC and NEEPCO, reasons for taking domestic loans when the weighted average rate of interest offered in international borrowing is comparatively lower, measures taken to tackle fly ash, etc.

6. Members also sought clarifications on important issues like impact of Renovation & Modernization on the performance of Thermal Power Plants, role of CEA/CERC regulators in fixing the life span of Thermal Power Plants, audit of DISCOMS by C&AG, measures taken to tackle pollution, reasons for closure of Badarpur Power Plant, measures taken for reducing dependency on Chinese manufactured parts and equipments, etc.

7. Thereafter, the representatives of NTPC responded to the queries/clarifications sought by Members. Information on issues that was not readily available, the Chairperson directed NTPC to furnish written replies within 10 days. The Committee decided to call the representatives of NTPC again on a future date for further deliberations.

The Committee then adjourned.

(A verbatim record of the proceedings has been kept separately).

/----------/

APPENDIX-III

COMMITTEE ON PUBLIC UNDERTAKINGS

(2020-2021)

MINUTES OF THE TWELFTH SITTING OF THE COMMITTEE

The Committee sat on Thursday, 25th February 2021 from 1430Hrs. to 1600 Hrs. in Committee Room 'B', Ground Floor, Parliament House Annexe, New Delhi.

PRESENT

Smt. Meenakashi Lekhi - Chairperson

MEMBERS

Lok Sabha

2. Dr. Heena Vijaykumar Gavit
3. Shri Chandra Prakash Joshi
4. Shri Janardan Mishra
5. Dr. Arvind Kumar Sharma
6. Shri Ravneet Singh
7. Shri Sushil Kumar Singh
8. Shri Uday Pratap Singh
9. Shri Ramdas Chandrabhanji Tadas

Rajya Sabha

10. Shri Prasanna Acharya
11. Shri Anil Desai
12. Shri Surendra Singh Nagar

SECRETARIAT

1. Shri R.C. Tiwari - Joint Secretary
2. Shri Srinivasulu Gunda - Director
3. Shri Khakhai Zou - Additional Director
4. Shri G.C. Prasad - Additional Director

REPRESENTATIVES OF THE NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC)

1.	Shri Anil Kumar Gautam	-	Director (Finance)
2.	Shri Ramesh Babu V	-	Director (Operations)
3.	Shri Dilip Kumar Patel	-	Director (HR)
4.	Shri Chandan Kumar Mondol	-	Director (Commercial)
5.	Shri Ujjwal K. Bhattacharya-	-	Director (Projects)

2. At the outset, the Hon'ble Chairperson welcomed the Members of the Committee and representatives of the 'National Thermal Power Corporation Limited (NTPC)' to the sitting convened to take further evidence by the representatives of NTPC in connection with the comprehensive examination of 'National Thermal Power Corporation Limited (NTPC)'. The attention of the representatives were also drawn to Direction 55(1) of the 'Directions by the Speaker' regarding maintaining confidentiality of evidence tendered before the Parliamentary Committees. The Committee also expressed their grief over the natural disaster that struck Tapovan project in Chamoli District on 7th February, 2021 and desired to know the details of rescue operations.

3. The CMD, NTPC, had sought permission from absence from the sitting on health grounds which was acceded to by the Chairperson. Shri Anil Kumar Gautam, Director (Finance) was allowed to appear on behalf of NTPC. Director (Finance) and other senior officers first introduced themselves to the Committee. Thereafter, the Chairperson sought clarifications on the number of issues such as safety budget of NTPC, pending cases before various courts, recovery of dues from defaulting DISCOMS and efficacy of Tri-partite agreement, under-construction projects, R&D on safety, intent of NTPC in venturing into mining business, justification for formation of a separate company for coal mining, NTPC Mining Ltd. (NML) etc.

4. Representatives of NTPC then elaborated on the rescue operations being carried out at the sites of disaster, the assistance being received from different government organizations and departments and also about the compensation for the bereaved families

5. The representatives of NTPC, thereafter, clarified on points like O&M budget for safety, common settlement reached with the land oustees in Kerala, dues from DISCOMS, dues from

States, timeline forcompletion of under-construction projects, legal issues around NML, transfer of coal mines to Ministry of Coal, CSR and social audits, Board-level sub-committee for CSR, MoU between NTPC and National Skill Development Council, NTPC foundation, diversification of renewable sector etc.

6. The Members sought information and clarification on various points. The representatives of NTPC clarified most of the issues. In respect of points for which information was not readily available, the Chairperson desired that written replies may be furnished to the Committee Secretariat at the earliest.

The Committee then adjourned.

(A verbatim record of the proceedings has been kept separately).

/----------/

APPENDIX-IV

COMMITTEE ON PUBLIC UNDERTAKINGS

(2020-2021)

MINUTES OF THE THIRTEENTH SITTING OF THE COMMITTEE

The Committee sat on Thursday, 25th February 2021 from 1605 Hrs. to 1705 Hrs. in Committee Room 'B', Ground Floor, Parliament House Annexe, New Delhi.

PRESENT

Smt. Meenakashi Lekhi - Chairperson

MEMBERS

Lok Sabha

2. Dr. Heena Vijaykumar Gavit
3. Shri Chandra Prakash Joshi
4. Shri Janardan Mishra
5. Dr. Arvind Kumar Sharma
6. Shri Ravneet Singh
7. Shri Sushil Kumar Singh
8. Shri Uday Pratap Singh
9. Shri Ramdas Chandrabhanji Tadas

Rajya Sabha

10. Shri Prasanna Acharya
11. Shri Anil Desai
12. Shri Surendra Singh Nagar

SECRETARIAT

1. Shri R.C. Tiwari - Joint Secretary
2. Shri Srinivasulu Gunda - Director
3. Shri Khakhai Zou - Additional Director
4. Shri G.C. Prasad - Additional Director

REPRESENTATIVES OF THE MINISTRY OF POWER

1. Shri Alok Kumar - Secretary
2. Shri V.K.Dewangan - Additional Secretary
3. Shri Ashis Upadhyay - Additional Secretary & FA
4. Shri Ghanshyam Prasad - Joint Secretary (R&R)

REPRESENTATIVES OF NATIONAL THERMAL POWER COPORATION LIMITED (NTPC)

5. Shri Anil Kumar Gautam - Director (Finance)
6. Shri Chandan Kumar Mondal - Director (Commercial)

REPRESENTATIVES OF CENTRAL ELECTRICITY AUTHORITY (CEA)

7. Shri Prakash S. Mhaske - Chairperson
8. Shri M.P.Singh - Chief Engineer

2. At the outset, the Hon'ble Chairperson welcomed the Members of the Committee and representatives of the Ministry of Power to sitting convened to take evidence of the representatives of Ministry of Power in connection with the comprehensive examination of 'National Thermal Power Corporation Limited (NTPC)'. Then attention of the officers was drawn to Direction 55(1) of the 'Directions by Speaker' regarding maintaining confidentiality of evidence tendered before the Parliamentary Committees. The Committee also expressed their grief over the natural disaster that struck Tapovan Project in Chamoli District on 7th February, 2021.

3. Thereafter, Secretary, Ministry of Power and other senior officers first introduced themselves to the Committee and then gave a power point presentation highlighting various issues involved with the subject. Thereafter, the Chairperson, inter-alia, sought clarifications on number of issues such as concrete road-map and special plans, if any, for compensating CPSUs and private power companies built in difficult terrains, role played by agencies like CEA and CERC in power sector, slow pace related to installation of FGD system in Thermal Power Plants, transfer of captive coal mines from NTPC to NTPC Mining Ltd. (NML), urgency to change existing rules regarding life-span of TPPs, need for involving IITs, through partnerships, in FGD implementation, roles played by technical regulator and economic regulator vis-a-vis power generators, stagnation of profit of NTPC

despite augmentation of its installed capacity, need for expediting the Tri-partite agreements to recover the existing dues from defaulting states, investment to be made in manufacturing of solar equipments and reduction of dependence on China.

4. Representatives of the Ministry of Power and NTPC thereafter responded to most of the queries made by the Committee and clarified on points such as level playing field for both public and private sector power generators, need for balancing act in policy making, borrowings of NTPC, autonomy given by Ministry of Power to Board of NTPC, international co-operation for setting-up of power plants in countries like Bangladesh and Sri Lanka, strategic role played by power sector in India, surrender of captive mines etc. In respect of points for which information was not readily available, the Chairperson desired that written replies may by furnished to the Committee Secretariat without any delay.

The Committee then adjourned.

(A verbatim record of the proceedings has been kept separately).

/----------/

APPENDIX-V

COMMITTEE ON PUBLIC UNDERTAKINGS

(2020-2021)

MINUTES OF THE SEVENTEETH SITTING OF THE COMMITTEE

The Committee sat on Tuesday, the 23rd March, 2021 from 1500 Hrs. to 1530 Hrs. in Room No. 147 (Room of Hon'ble Chairperson CoPU), 3rd Floor, Parliament House, New Delhi.

PRESENT

Smt. Meenakashi Lekhi - Chairperson

MEMBERS

Lok Sabha

2. Shri Heena Vijaykumar Gavit
3. Shri Chandra Prakash Joshi
4. Shri Raghu Ramakrishna Raju Kanumuru
5. Poonamben Hematbhai Maadam
6. Janardan Mishra
7. Ravneet Singh
8. Shri Uday Pratap Singh
9. Shri Sushil Kumar Singh
10. Shri Ramdas Chandrabhanji Tadas

Rajya Sabha

11. Shri Prasanna Acharya
12. Shri Joginipally Santosh Kumar

SECRETARIAT

1. Shri R.C.Tiwari - Joint Secretary
2. Shri Srinivasulu Gunda - Director
3. Shri G.C. Prasad - Additional Director

2. At the outset, the Hon'ble Chairperson welcomed the Members of the Committee at the sitting convened for consideration and adoption of the following reports;

(i) National Thermal Power Corporation (NTPC);

(ii) Para no. 3.2 of Report No. 13 of 2019 (Compliance Audit) regarding 'Loss due to Imprudent Underwriting and lack of proper risk assessment' related to New India Assurance Company Limited (NIACL).

3. The Committee then considered the aforesaid draft reports and adopted it without any changes/modifications. The Committee thereafter authorized the Chairperson to finalize the report on the basis of factual verification by the concerned Ministry/Department/C&AG and consider for presenting the reports to Parliament during the current Session of Parliament.

The Committee then adjourned.

/----------/