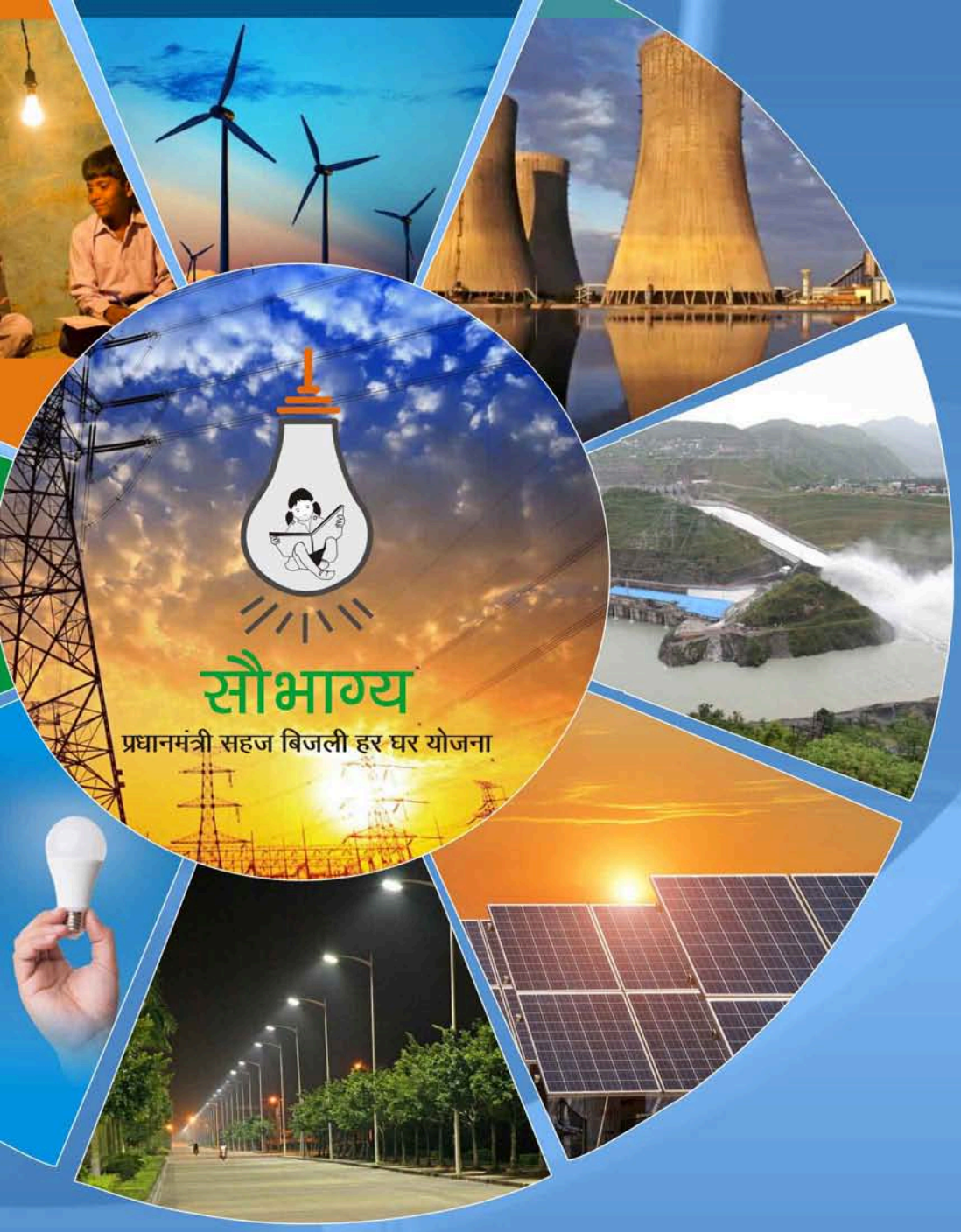
ANNUAL REPORT 2018-19



Powering Lives. Empowering Nation

सत्यमेव जयते

Ministry of Power
Government of India
www.powermin.nic.in

MAP OF INDIA

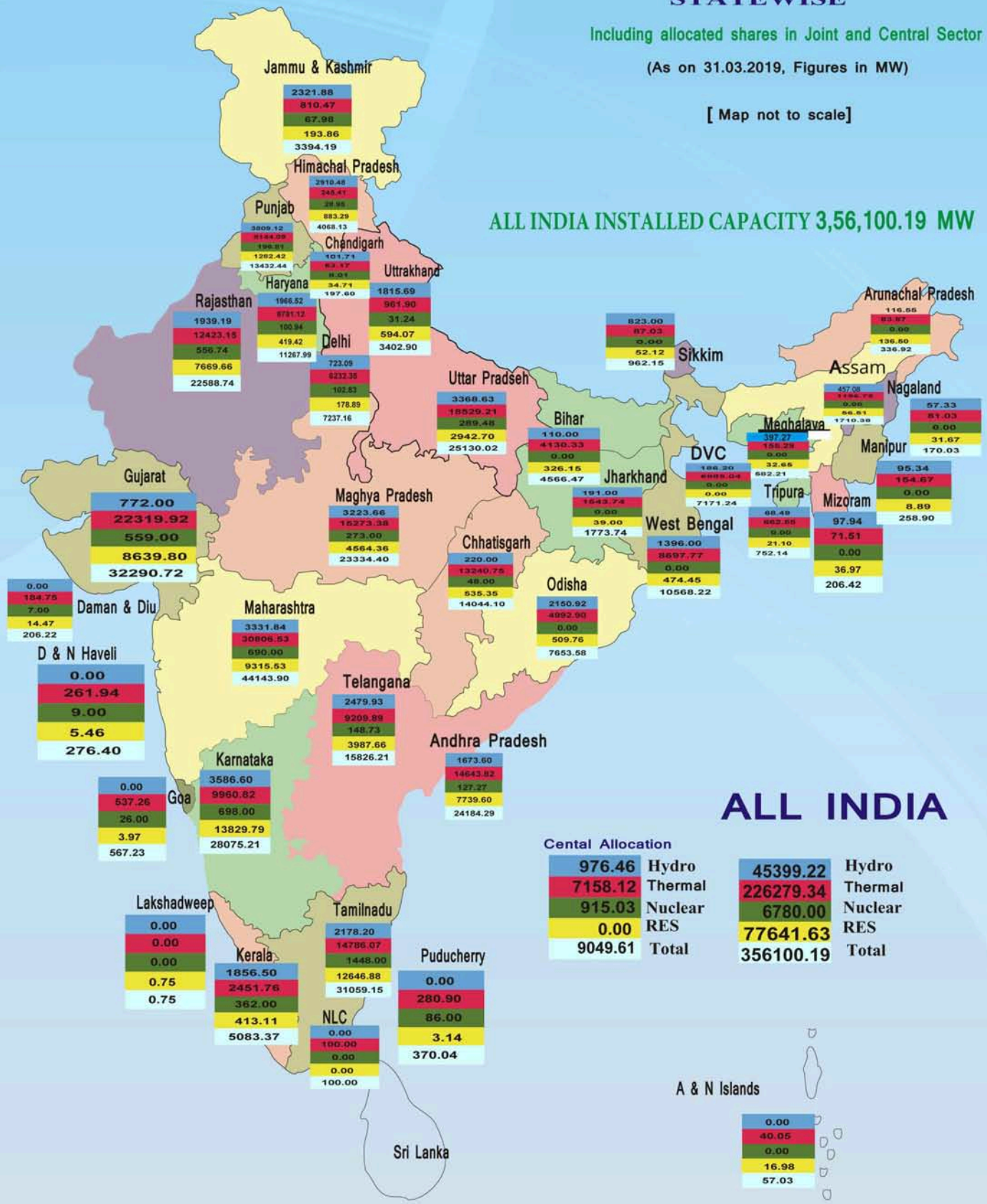
SHOWING
INSTALLED GENERATING CAPACITY
STATEWISE

Including allocated shares in Joint and Central Sector

(As on 31.03.2019, Figures in MW)

[Map not to scale]

ALL INDIA INSTALLED CAPACITY 3,56,100.19 MW



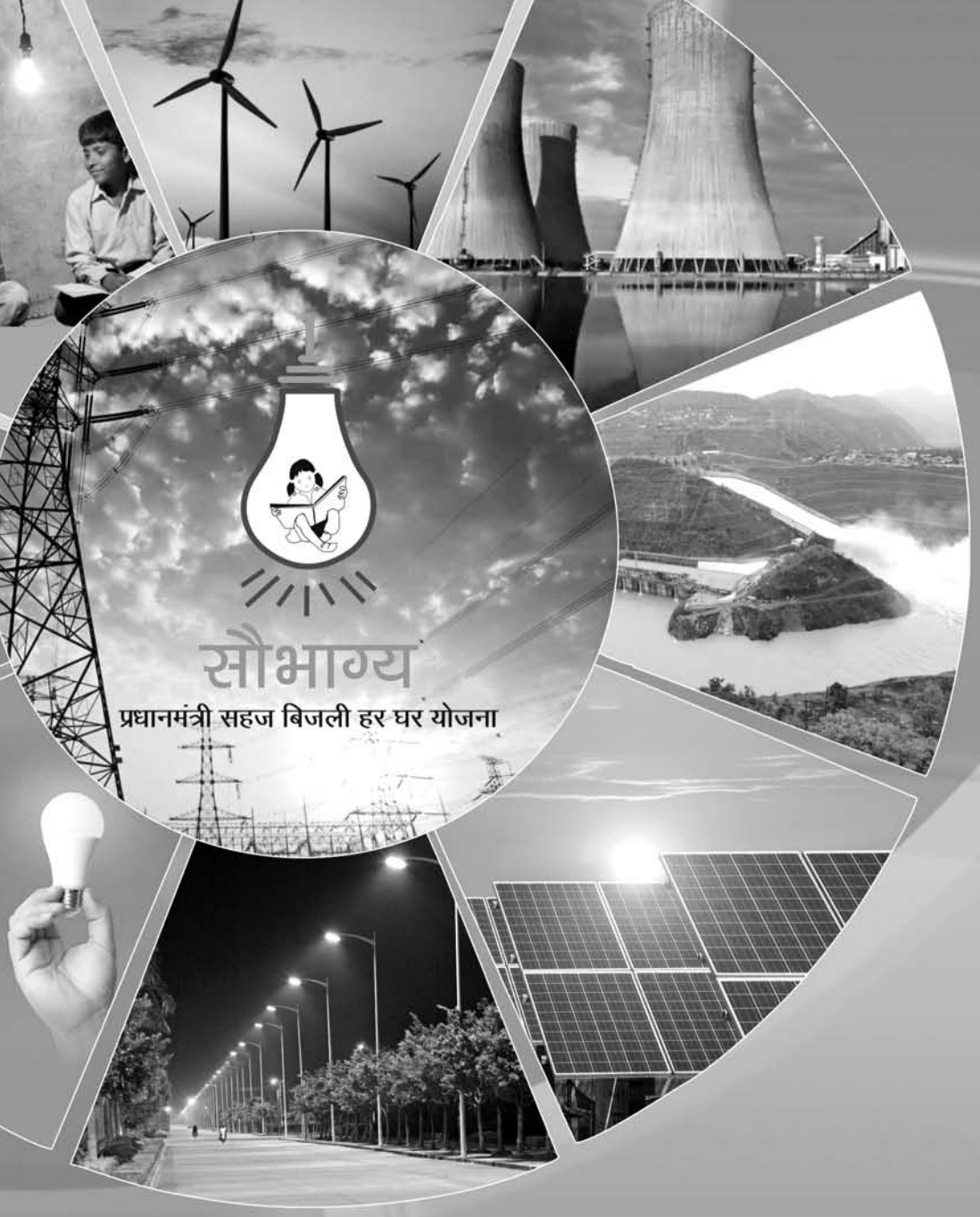
ALL INDIA

Cental Allocation

976.46	Hydro
7158.12	Thermal
915.03	Nuclear
0.00	RES
9049.61	Total

45399.22	Hydro
226279.34	Thermal
6780.00	Nuclear
77641.63	RES
356100.19	Total

ANNUAL REPORT 2018-19



Powering Lives. Empowering Nation

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Shri Narendra Modi, Hon'ble Prime Minister of India launching "Saubhagya" Yojana

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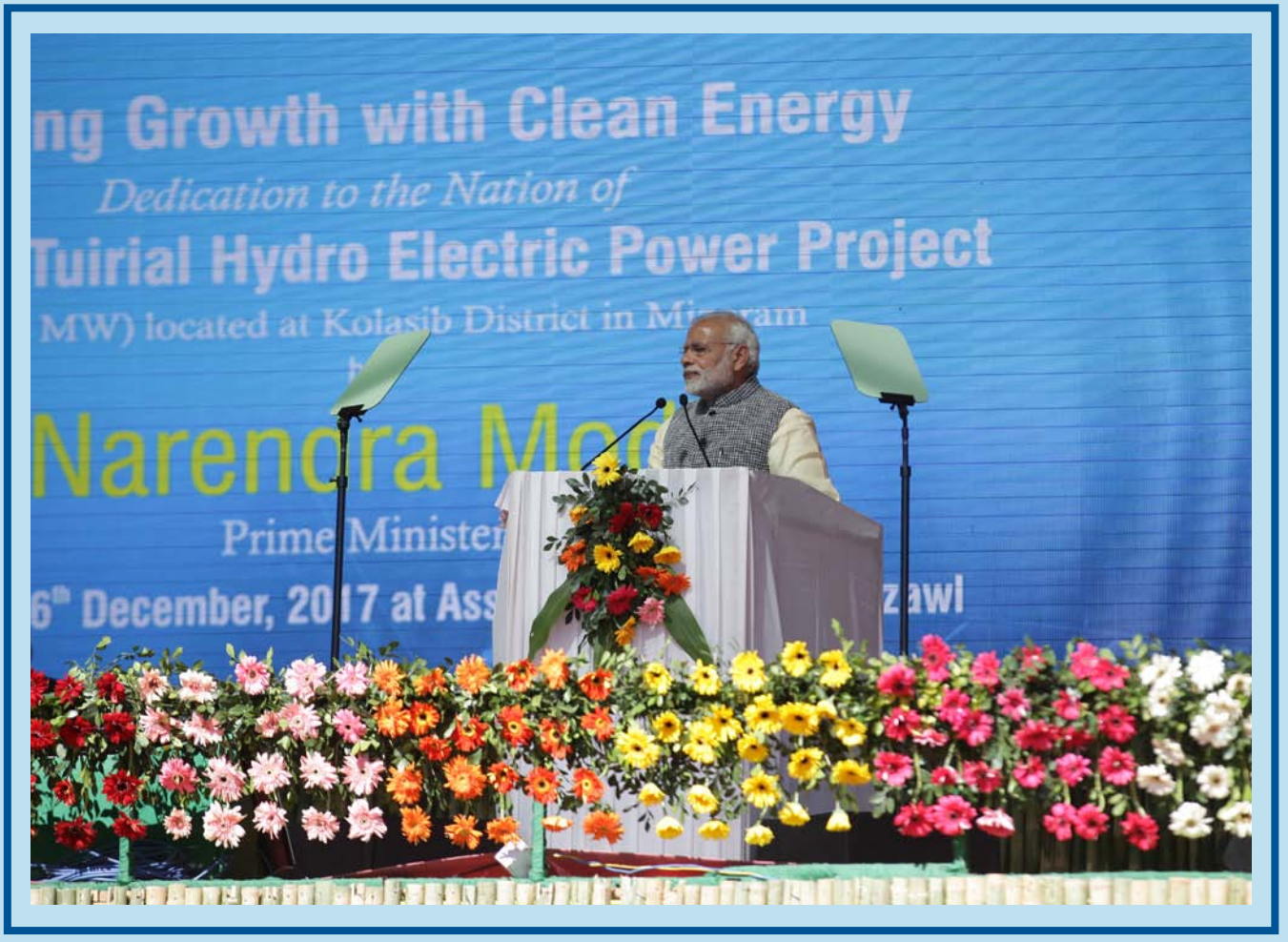


Tuirial Hydro Electric Power Project, dedicated to Nation, by Hon'ble Prime Minister

CHAPTER 01

PERFORMANCE HIGHLIGHTS

1. Power Supply Position:

The growth in availability of electricity during the current year 2018-19 was 5.2% as compared to last year. During the year 2018-19, peak shortage was 0.8% and the energy shortage was 0.6% as compared to 2.0% and 0.7% respectively last year.

2. Generation Performance

The total electricity generation including generation from renewable sources in the country during the year 2018-19 was 1376.096 BU as against the generation of 1308.146 BU during the last year, showing a growth of 5.2%.

The target of electricity generation from conventional sources for the year 2018-19 was fixed as 1265 Billion Unit (BU). The actual generation during the year 2018-19 was 1249.337 BU as compared to generation target of 1265 BU for the period and actual generation of 1206.306 BU during the year 2017-18, representing an achievement of98.76% and a growth of about 3.57%.

3. Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

Components of Scheme:

(i) Separation of agriculture and non-agriculture feeders facilitating judicious rostering of supply to agricultural & non- agricultural consumers in the rural areas;

(ii) Strengthening and augmentation of sub-transmission & distribution infrastructure in rural area;

(iii) Metering of distribution transformers/feeders/ consumers;

(iv) Ongoing rural electrification works of erstwhile scheme subsumed in DDUGJY as Rural Electrification (RE) component.

Scheme Outlay:

For Components (i) to (iii) above-Outlay: Rs.43,033 crore, GOI Grant : Rs.33,453 crore

RE Component (iv) above-Outlay: Rs.32,860 crore, GOI Grant: Rs.29,574 crore

Total-Outlay: Rs.75,893 crore, GOI Grant: Rs.63,027 crore

Salient Features -

- Complete flexibility to State for selecting scope of works as per their priority.
- All Villages/hamlets eligible without any minimum population criterion.
- Gram Panchayat covered under Sansad Aadarsh Gram Yojana (SAGY) to be necessarily covered under DPRs.
- Mandatory E-tendering and Standard Bidding Document.
- 100% subsidy for development of Project Management Agency to ensure effective project management and timely completion.
- All Discoms including Private Discoms, RE Cooperative Societies are eligible.
- District Development Co-ordination & Monitoring Committee namely DISHA (administrated by Ministry of Rural Development) headed by senior most Member of Parliament (Lok Sabha) to review and monitor implementation of scheme.

Funding Pattern:

- Grant from GOI : 60% of project cost (25% for Special category States)
- Discoms : 10% of project cost (5% for Special category States)
- Loan from FIs : 30%of project cost (10% for Special category States)
- Additional grant (50% of loan component i.e. 5% for special category states and 15% for other States) under the scheme will be released subject to achievement of following milestones:

(i) Timely completion of the scheme as per laid down milestone;

(ii) Reduction in AT&C losses as per trajectory finalized by MoP in consultation with the State Governments (Discom-wise); and

(iii) Upfront release of admissible revenue subsidy by State Government based on metered consumption.

4. SAUBHAGYA-Pradhan Mantri Sahaj Bijli Har Ghar Yojana

Ministry of Power launched the scheme Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya) to achieve universal household electrification by providing last mile connectivity and electricity connections to all remaining un-electrified households in rural and urban areas.

Scheme Outlay:

Rural-Outlay: Rs.14,025 Crore, GOI Grant : Rs. 10,587.50 Crore

Urban-Outlay: Rs. 2,295 Crore, GOI Grant : Rs. 1,732.50 Crore

Total-Outlay: Rs.16,320 Crore, GOI Grant : Rs. 12,320 Crore

Funding Pattern:

- Grant from GOI: 60% of project cost (85% for Special category States)
- Discoms : 10% of project cost (5% for Special category States)
- Loan from FIs : 30%of project cost (10% for Special category States)
- Additional grant (50% of loan component i.e. 5% for special category states and 15% for other States) on completion of 100% household electrification by December, 2018.

5. Integrated Power Development Scheme (IPDS)

To facilitate state utilities to ensure quality and reliable 24x7 power supply in the urban areas, Government approved the "Integrated Power Development Scheme" (IPDS) on 20.11.2014 with a total outlay of Rs. 32,612 Crore which includes a budgetary support of Rs. 25,354 Crore from Government of India. The main components of the scheme are:

(i) Strengthening of sub-transmission and distribution networks in the urban areas;

(ii) Metering of distribution transformers / feeders / consumers in the urban areas;

(iii) IT enablement of distribution sector and strengthening of distribution network under R-APDRP for 12th and 13th Plans by carrying forward the approved outlay for R-APDRP to IPDS.

(iv) Schemes for Enterprise Resource Planning (ERP) and IT enablement of balance urban towns are also included under IPDS. Scope of IT enablement has been extended to all 4041 towns as per Census 2011.

(v) Smart metering solution for performing UDAY States and Solar panels on Govt. buildings with net-metering are also permissible under the scheme.

(vi) Gas Insulated Sub-stations(GIS) at locations where space constraint exists are also permissible.

(vii) Real Time-Data Acquisition System (RT-DAS) projects for accurate measurement of power interruption parameters like SAIDI/SAIFI at 11 KV feeder level are also covered under the scheme

6. Ujwal DISCOM Assurance Yojana (UDAY)

Ujwal DISCOM Assurance Yojana (UDAY) was launched by the Ministry of Power, Government of India on 20th November, 2015 for a sustainable solution to the operational and financial inefficiencies of Power Distribution Companies(DISCOMs). The scheme is aimed at financial and operational turnaround of DISCOMs through targeted interventions to lower the interest costs, reduction of cost of power, increased revenues and improved operational efficiencies.

UDAY is a voluntary scheme for participation by States. Ministry of Power has signed Tripartite MoUs (with state Governments and DISCOMs) and Bipartite MoUs (with Power Department). Total 27 States and 05 Union Territories (UTs) have joined the scheme. Out of this 16 States have joined the scheme for both operational and financial efficiency improvements, while 16 States/ UTs have joined the scheme for operational efficiency improvements.

The scheme is being monitored by an inter-ministerial committee and a state level committee. Monthly meetings are conducted to review the progress of the scheme. Thirteen Monitoring Committee meetings have already been conducted. Apart from monthly meetings, one-to-one 'Focused Reviews Meetings' are regularly conducted to assess and review the performance of states where targets are not being met. An online UDAY portal and App, available both on Android and iOS platforms, provide basic analytics and progress of performance of various States/ DISCOMs in the public domain as a measure of transparency.

7. Capacity Addition programme and Achievement during 2018-19

Capacity Addition target from conventional sources including large hydro projects of 8,106.15 MW was fixed for the year 2018-19. Against this target, a capacity of 5,921.755 MW has been achieved.

8. Power Sector Reforms

The Union Cabinet had approved the proposal for amendment in Electricity Act, 2003 on 10th December, 2014 as contained in the Electricity (Amendment) Bill 2014. The Electricity (Amendment) Bill 2014 was introduced in the Lok Sabha on 19.12.2014. The Bill was subsequently referred to the Standing Committee on Energy for examination and report. The Committee had submitted its report on 7.5.2015. Based on the observations/recommendations of the Standing Committee on Energy and further consultation/ deliberations with State Governments and various other stakeholders, further changes have been proposed in the Electricity (Amendment) Bill, 2014. Draft amendments to Electricity Act were circulated for stakeholder comments on 7.9.2018. The comments received from various stakeholders are being examined by the Drafting Committee constituted under the Chairmen of Chief Engineer (Legal), Central Electricity Authority.

The proposed amendments entail competition in retail (i.e. choice to consumers to select retail suppliers), strict enforcement of Renewable Purchase Obligations (RPO), zero tolerance on Grid Safety and Security, rationalization of Tariff determination process, obligation of 24x7 power supply by Distribution Licensee, subsidy through DBT mechanism, strengthening/performance review of Regulatory Commissions, facilitating Open Access and Development of Power Market and Cross Border exchange of electricity etc.

9. Coal Supply for Thermal Power Projects:

(i) After the cancellation of 204 coal blocks, Govt. of India formulated a comprehensive policy for reallocation of cancelled coal mines in a fair and transparent method. Government ensured re-allocation of 51 blocks of supporting capacity of about 62,000 MW through auction/allotment till date.

(ii) Based on the request of Ministry of Power, the Ministry of Coal vide letter dated 13.04.2016 has started separate e-auction window for power sector under which CIL is making arrangements for conduct of forward e-auction of coal exclusively for power sector on a sustained basis, offering adequate quantities at regular intervals so that coal is made available to such power plants on regular basis.

(iii) Based on the MoP inputs, MoC vide letter dated 08.02.2016 has notified policy guidelines for grant of Bridge Linkage to specified end use plants of Central and State Public Sector Undertakings (both in Power as well as Non-Power sector) which have been allotted coal mines or blocks. So far, Bridge Linkage has been accorded to 29 nos. of Thermal Projects in Govt. Sector, totalling to 34,620 MW capacity.

(iv) Linkages granted under SHAKTI:

(a) **To Central and State Gencos** at notified price on MoP's recommendations. Under clause B(i) of the SHAKTI Policy, linkages have been granted to State/ Central Gencos of 8870 MW for 10 projects

(b) **Linkage on Auction basis for Independent Power Producers (IPPs)** with PPA based on domestic coal. Under clause B(ii) of the SHAKTI Policy, the IPPs participating in auction will bid for discount on existing tariff. So far, under B(ii), linkages have been granted to 11549 MW capacity (10 projects). Process has started for second round of auction of Coal Linkages to IPPs having already concluded long term PPAs (SHAKTI B(ii)).

10. Amendments in SHAKTI Policy:

Cabinet Committee on Economic Affairs (CCEA) on 07.03.2019 approved the following amendments in the SHAKTI (Scheme for Harnessing and Allocating Koyala (Coal) Transparently in India) Policy issued by Ministry of Coal vide letter no. 23011/15/2016-CPD/CLD dated 22.05.2017:

I. Following is added at the end of first para of B (ii) of SHAKTI Policy, after the words "with PPAs".

i. The power plants which were having valid already concluded Long Term PPA, based on domestic coal on or before 17.05.2017 and who could not participate in the linkage auctions under SHAKTI B(ii) due to any reason, may be allowed to participate in the B(ii) auctions of SHAKTI scheme.

ii. Bidders who have already participated in SHAKTI B(ii) auctions and could not secure linkage for the full ACQ, may obtain the linkage for the balance quantity also by participating in future auctions at a

later stage under B(ii) after benchmarking discount.

II. At the end of para B (iii) of SHAKTI Policy, after the words 'auction process', following words are added: "Such auctions/bids shall be held at regular intervals".

III. The following clause is added after clause B (vii) of SHAKTI Policy:

B (viii): Notwithstanding anything in the foregoing paras, it is further provided as follows:

a. All such power plants including private generators which do not have PPAs, shall be allowed Coal linkage under B(iii) and B(iv) of Shakti Policy for a period of minimum 3 months upto a maximum of 1 year, provided further that the power generated through that linkage is sold in Day Ahead Market (DAM) through power exchanges or in short term through a transparent bidding process through Discovery of Efficient Energy Price (DEEP) portal. A methodology in this regard shall be formulated by Ministry of Power in consultation with Ministry of Coal.

b. A generator which terminates PPA in case of default in payment by the DISCOM, may be allowed to use existing linkage coal for sale of power through short-term PPAs using DEEP portal or power exchange for a period of maximum 2 years or until they find another buyer of power under long/medium term PPA whichever is earlier. Adequate safeguards to be put in place.

c. The provision of para B(v) of Shakti Policy above shall also be applicable in cases where the nodal agency designated by Ministry of Power aggregates/ procures the power requirement for a group of states even without requisition from such states.

d. Central and State generating companies can act as an aggregator of power of such stressed power assets and procure it through transparent bidding process and offer that power to the DISCOM against their existing PPAs to such DISCOMS, till such time their own plants get commissioned. Central and State generating companies may be allowed to use the existing unutilized Bridge Linkages for such stressed power assets provided they meet other parameters of tolling guidelines including competitive bidding.

e. In all cases where provisions of B(viii)(a)(b)(c)and (d) above are utilized, net surplus after meeting operating expenses generated in this manner shall be entirely used for servicing debt in the first place. MoP will work out in consultation with DFS – a mechanism to ensure this.

11. Further, with the approval of the CCEA on 07.03.3019, the Government has decided that Ministry of Coal may earmark more coal for power sector under special forward e-auction by reducing the equivalent quantity from the spot e-auction. The Coal India Limited may earmark at least 50% of the total coal meant for e-auction (including spot auction and special forward e-auction) for power. The increase insupply of coal for forward e-auction will be in addition to regular requirement of linkage coal for the power sector and the requirements of other sectors.

12. Coal Stock Position:

Coal stock position for thermal power plants (127 Nos.) is monitored in Central Electricity Authority on daily basis for regular/smooth supply of coal. With regular monitoring and follow up with coal companies and Railways, the coal stock position has become comfortable. As on 31.03.2019, total coal stock position reported by power utilities was 30.95 Million Tonnes (MT).

Import of coal was resorted to bridge the gap between requirement of coal and its availability from domestic sources. An overview of coal receipt in thermal power station of power utilities during 2018-19 is given below:

Source	Coal Receipt (in Million Tonnes)
Coal India Ltd. (CIL)	457.4
Singareni Collieries Co. Ltd. (SCCL)	55.9
Captive Mines	40.1
E-auction	28.7
Import (Blending purposes)	21.4
Import (Import coal based)	40.3
Total Receipt	643.8

13. Steps taken for Improvement in efficiency of thermal power generation:

a. Third Party Sampling:

i. The impact of Credit Notes from Third Party Sampling, as reported by NTPC, is 3.80 paisa/unit on Energy Charge Rate (ECR) and Rs. 992* Crores (*Provisional) have been passed on to the beneficiaries on account of Credit Notes for the period April to March 2019.

ii. As per the data provided by NTPC, Coal Controller's Organization (CCO) has regraded 32 coal mines for year 2018-19 consequent upon the results of Third Party Sampling. NTPC has reported a financial gain of Rs. 623.0 Crores on account of re-grading of coal mines, which translates to reduction in ECR by 2.54 paisa/unit.

Total effect of Third Party Sampling thus works out to be 6.36 Paisa/Unit (Approx.) for FY 2018-19.

b. Specific Coal Consumption:

Due to efforts made by MoP including promotion of Supercritical technology and start of Third Party Sampling, the Specific Coal Consumption of NTPC stations (quantity of coal consumed per unit generation) has gradually improved from 0.699 Kg/Kwh in 2015-16 to 0.683 Kg/Kwh in 2016-17, 0.672 Kg/Kwh in 2017-18 and 0.657* Kg/Kwh (* Provisional) in 2018-19.

14. Energy Efficiency :

Unnat Jyoti by Affordable LEDs for ALL (UJALA): Till 31st March 2019, EESL has distributed 34.74 crore LED bulbs across India. This has resulted in estimated energy savings of 45.12 billion kWh per year with avoided peak demand of 9,035 MW and estimated GHG emission reduction of 36.55 million t CO_2 per year Additionally, EESL has distributed over 69.41 lakh LED tube lights and 22.09 lakh energy efficient fans under UJALA

Street Lighting National Programme (SLNP): Till 31st March 2019, EESL has installed 84.90 lakh LED street lights across India. This has resulted in estimated energy savings of 5.70 billion kWh per year with avoided peak demand of 950 MW and estimated GHG emission reduction of 3.92 million t CO_2 per year.

Building Energy Efficiency Programme (BEEP): Till 31st March 2019, EESL has completed building energy efficiency projects in 10,171 buildings including railway stations. The energy audits shows energy saving potential to the tune of up to 30-50% in these buildings. The major interventions in these buildings are in area of lighting and air-conditioning systems.

Agriculture Demand Side Management (AgDSM): EESL is implementing AgDSM for replacement of old pumps with BEE 5 Star rated pumps. Till 31st March 2019 EESL has installed 63,100 no. of pumps in the States of Andhra Pradesh and Uttar Pradesh.

National E-Mobility Programme: EESL has completed procurement of 10,000 e-cars. The price discovered by EESL for e-cars through tendering is 25 % less than the current retail price of similar cars in the market. Till 31st March 2019, 1,408 e-cars have been deployed/under registration. For charging e-cars, 286 AC Chargers and 142 DC Chargers have been commissioned. In addition, EESL has installed 30 Public Charging Stations (PCS) complying with DC-001 (15kW) in the NDMC area till 31st March 2019.

Smart Meter National Programme (SMNP): EESL has initiated to provide smart meters to utilities on rental basis for replacing conventional meters Till 31st March 2019, 1.79 lakh smart meters have been installed in the state of Uttar Pradesh, Andhra Pradesh, Haryana, Bihar and NDMC area NDMC becomes the first utility to have all their consumers with smart meters without any upfront investment from NDMC.

Small Solar Power Plant Programme: Till 31st March 2019, decentralized solar power plant of 20.86 MWp cumulative capacity (in range of 0.5 MW to 2 MW) has been commissioned in vacant/unutilized/spare lands of Maharashtra State Electricity Distribution Company Limited (MSEDCL)

15. Project monitoring Group

Any Ministry/Department or any private entrepreneur can submit/upload their stalled investment projects involving investment of Rs. 1000 Crore or more or a project that is considered to be critical, on PMG portal of Prime Minister's Office (PMO). Ministry of Power is taking up critical power projects, having substantial investment but stalled due to several reasons, for further monitoring by PMG in PMO. During Financial Year 2018-19, projects having investment of Rs. 53,638 (Fifty Three Thousand Six Hundred Thirty Eight) Crores have been cleared by the PMG where issues affecting timely commissioning of projects have been resolved.

16. State power Minister's Conference:

Two Conferences of Power & NRE Ministers' of States and UTs were held during 2018-19. First Conference was held on 3rd July, 2018 at Shimla, Himachal. Following conclusions/recommendation/decisions were taken during the deliberations:

"100% Household electrification by 31.12.2018 under

SAUBHAGYA, Completion of all projects under IPDS by March 2019, expedite award of smart meters, closure of R-APDRP schemes, AT&C Loss reduction to 15% by March 2019, "24x7, POWER FOR ALL", promotion of digital payments, use of e- vehicles, setting up of charging infrastructure for e-vehicles, adoption of ECBC code, promotion of solar, wind power and solar pumps to replace diesel pumps, encourage development of new technology in the Renewable Energy Sector, R&D Mission to be formulated".

The second Conference was held on 26-27th February, 2019 at Gurugram, Haryana in which the following agenda points were discussed:

"Distribution: "24x7, Power for all", analysis of present status of DISCOMs (losses and borrowings), reasons for the poor financial position, reforms - UDAY-II: Use of Technology for reducing theft, metering/billing/ collection/solar irrigation.

Thermal: Present Situation Analysis - State Wise, Outstanding payments, Remedies, Demand analysis, Coal situation, New Environmental norms, International Practices in sale/purchase of power ; Transmission: Intra-State Transmission Status, International practice; Energy Efficiency: Less Carbon intensive economy; Renewables: Less Carbon intensive economy"

During this Conference, ATRs received from various States/UTs on Conclusions/Recommendation/Decisions taken during Shimla Conference, were also discussed.

Shri R. K. Singh, MoS (Independent Charge) for Power and NRE

As on 04 June 2019

ORGANISATION STRUCTURE OF THE MINISTRY OF POWER

SHRI RAJ KUMAR SINGH,
MINISTER OF STATE (IC) FOR POWER

SHRI AJAY KUMAR BHALLA
SECRETARY(POWER

- CEA
- Chairperson (P.S. Mhaske)
- Member (Hydro) (Dinesh Chandra)
- Member(Planning) (S K Sharma)
- Member (Power System) (P.S. Mhaske) (Addl. Charge)
- Member(Grid Operation & Distribution) (S R Bhat)
- Member (Eco.& Commercial) (Somit Dasgupta)

Shri Anurag Aggarwal, Addl. Secretary & FA

- **Shri Aniruddha Kumar, Jt. Secretary & CVO**
  - . Hydro Power including NHPC, SJVNL, NEEPCO, THDC;
  - . BBMB
  - . Environment Management for Hydro Projects.
  - . Hydro projects in SAARC countries
  - . V&S
- **Vacant, Jt. Secretary (Addl. Charge given to Sh. Raj Pal, Economic Adviser)**
  - Administration Including Parliamebt, Official Language, Cadre anagement Of Central Power Engg. Service
- **Internal Finance & Budgetary Control**

Shri Sanjiv Nandan Sahai, Additional Secretary

- **Shri Vivek Kumar Dewangan, Jt. Secretary**
  - . Thermal Power NTPC
  - . DVC
  - . Ultra Mega Power Project
  - . IPC
  - . Fuel Supply
  - . International - Cooperation *
- **Dr. Arun Kumar Verma, Jt. Secretary**
  - . Integrated Power Development Scheme/APDRP
  - . PFC
  - . REC
  - . DDUGJY/RE National Electricity Fund
  - . Financial Restructuring Plan/UDAY
  - . Smart Grid/ National Smart Grid Mission
  - . Information-Technology
- **Shri Ghanshyam Prasad, Chief Engineer (CEA)****
  - • Reforms and Restructuring
  - • Electricity Act, 003
  - • Tariff Policy
  - • CERC
  - • JERC
  - • APTEL
  - • Std. Bidding Documents for Procurement of Power
  - • Operation & Monitoring
  - • POSOCO
  - . Transmission
  - . PGCIL
  - . Grid Integration of Renewable Energy

Shri S K G Rahate, Additional Secretary

- **Shri Raj Pal, Economic Adviser**
  - . Policy & Planning
  - . Training & Research including CPRI & NPTI
  - . Energy Conservation including BEE
  - . Power Projects Monitoring Panel
  - . Coordination
  - . All Tax related Matters
  - . e-Samiksha
  - . PRAGATI portal

* JS(Thermal), in respect of IC, puts up files directly to Secretary.

** Working on Loan Basis from CEA.

CHAPTER 02

ORGANISATIONAL SET-UP

Shri Raj Kumar Singh assumed charge as the Minister of State (Independent charge) for Power with effect from the 5th September, 2017.

Shri Ajay Kumar Bhalla assumed charge as Secretary in the Ministry of Power with effect from the 30th June, 2017 (A/N). The Ministry has sanctioned strength of two Additional Secretaries, one Financial Adviser,four Joint Secretaries and one Economic Adviser. However, presently only two post of Additional Secretary, one post of Additional Secretary and Financial Adviser, three posts of Joint Secretaries and one economic adviser are filled up.

Shri Sanjiv Nandan Sahai, Additional Secretary, oversees the work relating to Integrated Power Development Scheme (erstwhile Accelerated Power Development and Reforms Programme); Power Finance Corporation; Rural Electrification Corporation; Rural Electrification/DDUGJY; National Electricity Fund; Financial Restructuring Plan/UDAY; Smart Grid/National Smart Grid Mission; Information Technology; Thermal Power; National Thermal Power Corporation; Damodar Valley Corporation; Ultra Mega Power Projects, Independent Power Producers (IPP)/IPC; Fuel Supply.All issues pertaining to supply of coal to Thermal Power Plants- including grant of linkage and allocation of captive mines to Thermal Power Plants and the policies thereof; Fuel Supply Agreements; Reforms & Restructuring (including administration of National Electricity Policy, Tariff Policy, CERC, JERC, APTEL, POSOCO and Std. Bidding Documents for Procurement of Power); Electricity Act, 2003; Operation & Monitoring.

Shri S.K.G. Rahate, Additional Secretary, oversees the Policy & Planning; Training and Research including CPRI and NPTI; Energy Conservation; Bureau Energy Efficiency; Power Project Monitoring; Coordination; All Tax Related Matters; e-Samiksha and VIP Letter Monitoring System Portal; PRAGATI Portal; Transmission (PGCIL & Grid Integration of Renewable Energy) Matters pertaining to ACQ; Monitoring the supplies of coal to Thermal Power Plants and co-ordinationg with the ministries of Coal and Railways for the purpose; working with them to increase the supplies of coal to Thermal Power Plants; Arrangements for ensuring the quality/calorific value of coal including third party sampling and testing.

Shri Anurag Aggarwal, Additional Secretary and Financial Adviser, oversees the Internal Finance and Budgetary Control of this Ministry.

The allocation of work amongst the Joint Secretaries and Economic Adviser (EA) in the Ministry of Power is as under:

i) Integrated Power Development Scheme (erstwhile Accelerated Power Development and Reforms Programme); Power Finance Corporation; Rural Electrification Corporation; Rural Electrification / DDUGJY; National Electricity Fund; Financial Restructuring Plan / UDAY; Smart Grid / National Smart Grid Mission; Information Technology

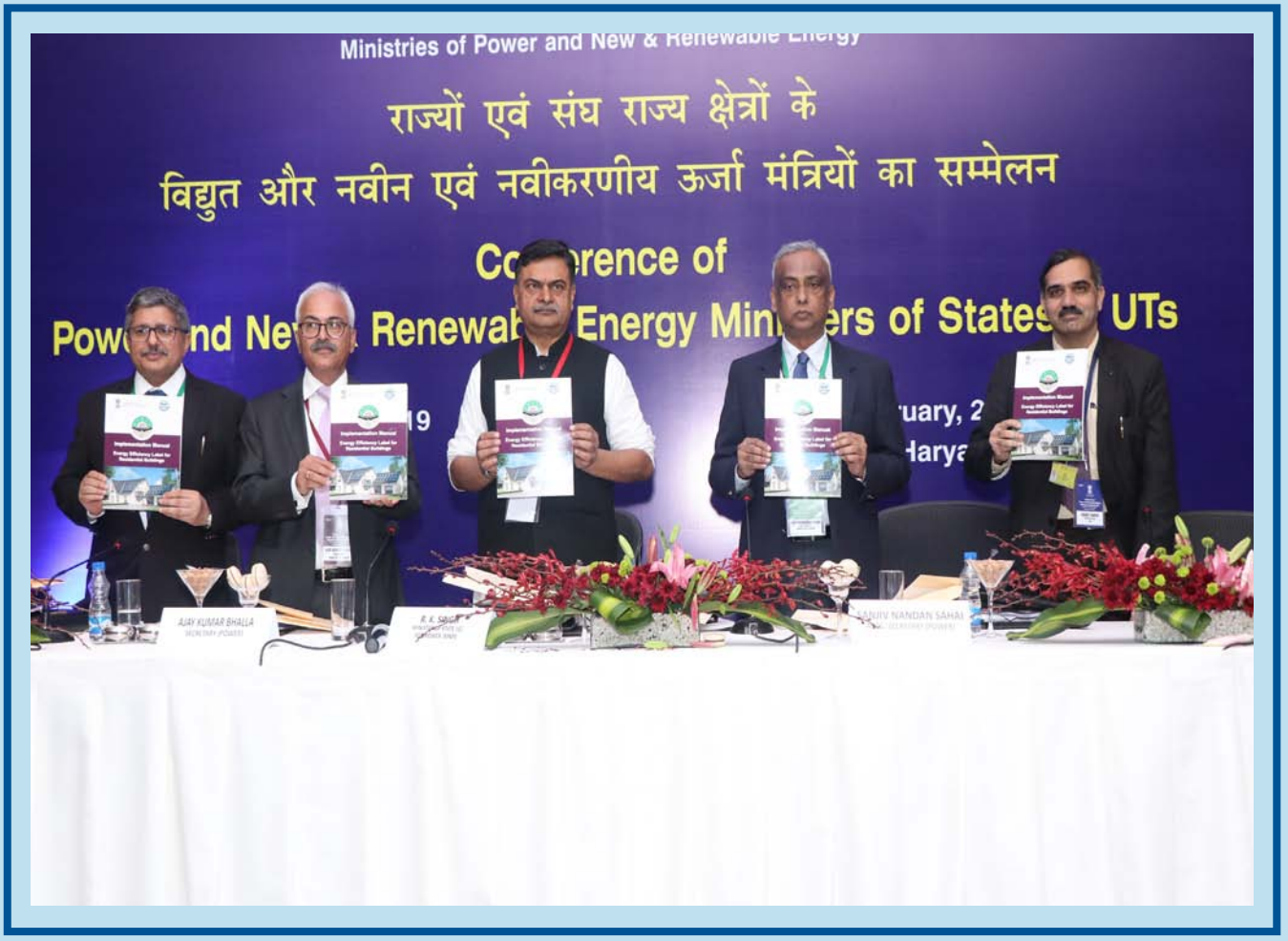
ii) Hydro matters including CPSUs namely NHPC, SJVNL, NEEPCO, THDC, BBMB; Hydro Projects in SAARC countries; Environment Management for Hydro Projects; Vigilance & Security.

iii) Thermal Power; National Thermal Power Corporation; Damodar Valley Corporation; Ultra Mega Power Projects, Independent Power Producers (IPP)/IPC; Fuel Supply; International Cooperation.

iv) Policy & Planning; Training and Research including CPRI and NPTI; Energy Conservation; Climate Change & Bureau Energy Efficiency; Power Projects Monitoring; Coordination; All Tax Related Matters; e-Samiksha and VIP Letter Monitoring System Portal; PRAGATI Portal. Administration & General Administration (including Parliament, Official Language, Cadre Management of CPES, Public Grievances, RTI).

A Chief Engineer level officer is handling work relating Reforms & Restructuring (including administration of National Electricity Policy, Tariff Policy, CERC, JERC, APTEL, POSOCO and Std. Bidding Documents for Procurement of Power); Electricity Act, 2003; Operation & Monitoring; All issues pertaining to supply of coal to Thermal Power Plants-including grant of linkage and allocation of captive mines to Thermal Power Plants and the policies thereof; Fuel Supply Agreements; Matters pertaining to ACQ; Monitoring the supplies of coal to Thermal Power Plants and co-ordinating with the Ministries of Coal and Railways for the purpose; working with them to increase the supplies of coal to Thermal Power Plants; Arrangements for ensuring the quality/ calorific value of coal including third party sampling and testing; Transmission (PGCIL & Grid Integration of Renewable Energy).

Further, there is a Principal Accounts Office headed by the Chief Controller of Accounts who in turn reports to the Financial Adviser in the Ministry of Power. Matters relating to reservations for SC/ST, Physically disabled and Ex-Servicemen in the Ministry including PSUs under its administrative control are dealt with by the Deputy Secretary (Admm.) who is also the Liaison Officer for SC/ST and Deputy Secretary (T&R and EC) is the Liaison officer for OBCs.



Conference of Power and New & Renewable Energy Ministers of States & UTs

CHAPTER 03

CAPACITY ADDITION PROGRAMME

1. The National Electricity Policy (NEP) entailed provision of adequate reliable power, at affordable cost with access to all citizens. Electricity is in the Concurrent List in the Constitution and the primary responsibility of structuring its availability and distribution is that of the States. However, both the Centre and the States have to play a decisive and positive role.

2. The installed power generation capacity in the country at the end of 11th Plan was about 2,00,000 MW. The capacity addition programme during the 12th Plan period was targeted at 88,537 MW comprising 72,340 MW in the Thermal Sector, 10, 897 MW in the Hydro Sector and 5,300 MW in the Nuclear Sector.

3. Year wise capacity addition (during XII Plan)

During the five years of 12th Plan period, the following new capacities have been added:

(in MW)

Year	Central	State	Private	Total
2012-13	5397.3	3977	11257.5	20631.8
2013-14	2574.01	3367	11884	17825.01
2014-15	4395.2	4886.1	13285	22566.3
2015-16	3775.6	7070	13131	23976.6
2016-17	4310.5	5177.3	4722	14209.8

A capacity addition target of 88,537 MW excluding 30,000 MW of RES, was fixed for 12th Plan period. The Twelfth Plan cumulative capacity addition of 99,209 MW was achieved. This is first time in the History of Five year plan that the Capacity Addition target has been overachieved. The details are as under:

(in MW)

Sector	Thermal		Hydro		Nuclear		Total	
	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
Central	14878	15,868.60	6004	2584.02	5300	2000	26182	20,452.62
State	13922	22,201.35	1608	2276	-	-	15530	24,477.35
Private	43540	53,660.50	3285	619	-	-	46825	54,279.50
All India	72340	91,730.45	10897	5479.02	5300	2000	88537	99,209.47

Capacity Addition Programme - Beyond XII plan:

4. For the year 2017-18 a capacity addition target of 13,171.15 MW including 500 MW of nuclear power was fixed. A capacity of 9,505 MW was achieved. The Sector-wise Fuel-wise break up is as under:

(in MW)

Sector	Thermal		Hydro		Nuclear		Total	
	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
Central	4880	3170	800	390	500	0	6180	3560
State	3546.15	1760	300	200	-	-	3846.15	1960
Private	2940	3780	205	205	-	-	3145	3985
Total	11366.15	8710	1305	795	500	0	13171.15	9505

List of projects commissioned during 2017-18 is given in Annexure 1.

5. For the year 2018-19 a capacity addition target of 8106.15 MW has been finalized against which a capacity of 5921.755 MW has been achieved till 31.03.2019. The Sector-wise and Fuel-wise break up is as under:

(in MW)

Sector	Thermal		Hydro		Nuclear		Total	
	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
Central	2760	1960	710	110	-	-	3470	2070
State	4506.15	2849.755	130	30	-	-	4636.15	2879.755
Private	-	972	-	-	-	-	-	972
Total	7266.15	5781.755	840	140	-	-	8106.15	5921.755

List of projects commissioned during 2018-19 is given in Annexure II.

Monitoring Mechanism

6. The Ministry of Power has adopted a robust monitoring system for the capacity addition programme so as to see that the projects are executed in time. The monitoring mechanism comprises two broad levels at which monitoring of power projects is carried out by the Ministry viz. by the Central Electricity Authority and by the Ministry of Power.

7. Monitoring by the Central Electricity Authority

The Central Electricity Authority (CEA) has a nodal officer associated with each ongoing project who continuously monitors the progress at site through frequent visits and continuous interaction. The respective nodal officer is responsible for submitting a report on the progress of each of the ongoing power project on monthly basis highlighting the critical areas where corrective actions are required. The Chairperson, CEA reviews progress of the ongoing projects with the nodal officers. The CEA also holds quarterly review meeting with the developers and other stakeholders.

8. Monitoring by the Ministry of Power

- Intensive reviews are held by the Ministry of Power to review the critical milestones associated with each ongoing project. Meetings with the leading equipment manufacturers, especially, QPRs are also organized separately for each CPSU to review the status of the Central Sector projects. The Capacity Addition Programme is intensively monitored by the PM0 and the Cabinet Secretariat as well.
- The delayed power projects costing Rs. 1000 crore and more and between Rs. 150 to Rs. 1000 crore highlighted by MoSPI are reviewed by Secretary (Power) monthly and once in two months respectively.
- Issues are also raised on PRAGATI, for proactive governance and timely implementation, as and when required.
- The bottlenecks in projects both in the public and private sector for all large projects on a fast-track basis are being removed by the Project Monitoring Group (PMG), Prime Minister's Office. This Cell pro-actively pursues stalled projects involving the investment of Rs. 1000 crore or more so that the projects are commissioned on time.
- The project Implementation parameters/milestones are incorporated in the annual Memorandum of Understanding (MoU) signed between respective power CPSU's and MOP and the same are monitored during the quarterly performance review meeting of CPSU's and other meetings held in MOP/CEA.
- Matters are taken up with State Government/District Administration and they are extending help to the project implementing agencies in resolving Right of Way (ROW) issues.

Annexure I

PROJECTS COMMISSIONED DURING THE YEAR 2017-18

Project Name	Region	Sector	State	Developer	Type	Capacity (In MW)
THERMAL PROJECTS						
Nabi Nagar TPP U-2	ER	Central	BIHAR	JV OF NTPC & RAILWAYS	Thermal	250
Solapur STPP U-1	WR	Central	MAHARASHTRA	NTPC	Thermal	660

Chhabra STPP U-5	WR	State	RAJASTHAN	RRVUNL	Thermal	660
Binjkote TPP U-1	WR	Private	CHHATTISGARH	SKS POWER GENERATION (CHHATTISGARH) LTD	Thermal	300
Nawapara TPP U-2	WR	Private	CHHATTISGARH	TRN ENERGY	Thermal	300
Nasik TPP Ph-I U-3	WR	Private	MAHARASHTRA	RATTAN INDIA NASIK POWER LTD	Thermal	270
Nasik TPP Ph-I U-4	WR	Private	MAHARASHTRA	RATTAN INDIA NASIK POWER LTD	Thermal	270
Nasik TPP Ph-I U-5	WR	Private	MAHARASHTRA	RATTAN INDIA NASIK POWER LTD	Thermal	270
Bara TPP U-3	NR	Private	UTTAR PRADESH	PRAYAGRAJ POWER GEN-ERATION CO.LTD.	Thermal	660
India Power TPP (Haldia) U-1	ER	Private	WEST BENGAL	INDIAN ENERGY LTD (HALDIA)	Thermal	150
Uchpinda TPP U-3	WR	Private	CHHATTISGARH	RKM POWER GEN PVT. LTD.	Thermal	360
Shirpur TPP U-1	WR	Private	MAHARASHTRA	SHIRPUR POWER PVT. LTD.	Thermal	150
Haldia, IPCL Unit-2	ER	Private	WEST BENGAL	INDIAN ENERGY LTD (HALDIA)	Thermal	150
BTPS Extn Unit-8	ER	State	BIHAR	BSEB	Thermal	250
Akaltara (Nariyara)	WR	Private	CHATISHGARH	K.S.K MAHANADI POWER COMPANY LIMITED	Thermal	600
Kudgi STPP Ph-I, Unit-3	SR	Central	KARNATAKA	NTPC	Thermal	800
Rayal Seema TPP Unit-6	SR	State	AP	APGENCO	Thermal	600
Barauni Ext. TPP Unit-9	ER	State	BIHAR	BSPGCL	Thermal	250
Meja STPP Unit-1	NR	Central	UTTAR PRADESH	JV OF NTPC & UPRVUNL	Thermal	660
Lara TPP Unit-1	WR	Central	CHHATTISGARH	NTPC	Thermal	800
Binjkote TPP Unit-2	WR	Private	CHHATTISGARH	SKS POWER GENERATION LTD	Thermal	300
	TOTAL (THERMAL)					**8710**
HYDRO PROJECTS						
New Umtru U-1	NER	State	MEGHALAYA	MEPGCL	Hydro	20
Dikchu U-1	ER	Private	SIKKIM	SIKKIM/SNEHA KINETIC POWER PROJECTS PVT. LTD.	Hydro	48
Dikchu U-2	ER	Private	SIKKIM	SIKKIM/SNEHA KINETIC POWER PROJECTS PVT. LTD.	Hydro	48
Chanju-I U-3	NR	Private	HIMACHAL PRADESH	IA ENERGY	Hydro	12
Tuirial HEP U-1	NER	Central	MIZORAM	NEEPCO	Hydro	30
Sainj HEP U-1	NR	State	HIMACHAL RADESH	HPPCL	Hydra	50
Sainj HEP U-2	NR	State	HIMACHAL PRADESH	HPPCL	Hydro	50
Pulichintala U-2	SR	State	TELANGANA	TSGENCO	Hydro	30

Pulichintala U-3	SR	State	TELANGANA	TSGENCO	Hydro	30
Tashiding U-1	ER	Private	SIKKIM	SNEHA KINETIC POWER PROJECTS PVT. LTD,	Hydro	48.5
Tashiding U-2	ER	Private	SIKKIM	SNEHA KINETIC POWER PROJECTS PVT. LTD.	Hydro	48.5
Tuirial HEP U-2	NER	Central	MIZORAM	NEEPCO	Hydro	30
New Umtru U-2	NER	State	MEGHALAYA	MEPGCL	Hydro	20
Kishan Ganga HEP Unit-1	NR	Central	J&K	NHPC	Hydro	110
Kishan Ganga HEP Unit-2	NR	Central	J&K	NHPC	Hydro	110
Kishan Ganga HEP Unit-3	NR	Central	J&K	NHPC	Hydra	110
	TOTAL (HYDRO)					**795**
	TOTAL (NUCLEAR)					**0**
	TOTAL (THERMAL+HYDRO+NUCLEAR)					**9505**

Annexure II

LIST OF POWER PLANTS COMMISSIONED DURING 2018-19

PROJECT NAME	SECTOR	STATE	DEVELOPER	CAPACITY (MW)
THERMAL PROJECTS				
Bongaigon TPP, Unit-3	Central	Assam	NTPC	250
Nabinagar TPP, Unit-3	Central	Bihar	JV of NTPC & Rly.	250
Gadarwara TPP, Unit-1	Central	Madhya Pradesh	NTPC	800
Solapur STPP, Unit-2	Central	Maharashtra	NTPC	660
Shri Singhaji TPP St-II, Unit-3	State	Madhya Pradesh	MPGENCO	660
Shri Singhaji TPP St-II, Unit-4	State	Madhya Pradesh	MPGENCO	660
Chhabra TPP Extn, Unit-6	State	Rajasthan	RRVUNL	660
Kothagudem TPS St-VII, Unit-1	State	Telangana	TSGENCO	800
Lakwa Replacement Power Project	State	Assam	APGCL/Wartsila India Pvt Ltd	69.755
Mahan TPP, Unit-2	Private	Madhya Pradesh	Essar Power M.P Ltd.	600
Uchpinda TPP, Unit-4	Private	Chhattisgarh	R.K.M Powergen Pvt. Ltd	360
Dishergarh TPS	Private	West Bengal	M/s IPCL	12
			A. Total (Thermal)	**5781.755**
HYDRO PROJECTS				
PARE, UNIT-1	Central	ARUNACHAL PRADESH	NEEPCO	55
PARE, UNIT-2	Central		NEEPCO	55
PULICHINTALA, UNIT-4	State	TELANGANA	TSGENCO	30
			B. TOTAL (HYDRO)	**140**
			C. Total (Nuclear)	**0**
			Total Commissioned	**5921.755**

CHAPTER 04

GENERATION & POWER SUPPLY POSITION

GENERATION:

The total electricity generation including generation from renewable sources in the country during year 2018-19 was 1376.096 BU as against the generation of 1308.146 BU during the last year, showing a growth of 5.2%.

The electricity generation from conventional sources in the country increased from 420.6 Billion Unit (BU) during 1997-98 to 1249.337 BU during the year 2018-19. The overall electricity generation in power utilities in the country including import from Bhutan since the beginning of 9th Plan was as under :

Year	Generation from Conventional Sources (Billion Unit)	Generation from Renewable Sources (Billion Unit)	Total Generation (Cony. + RE) (Billion Unit)
1997-98	420.6		
1998-99	448.4		
1999-00	480.7		
2000-01	499.5		
2001-02	515.2		
2002-03	531.6		
2003-04	558.3	3.4	561.7
2004-05	587.4	4.5	591.9
2005-06	617.5	6.6	624.2
2006-07	662.4	9.9	672.4
2007-08	704.5	25.2	729.7
2008-09	723.8	27.9	751.7
2009-10	771.6	36.9	805.4
2010-11	811.1	39.2	850.4
2011-12	876.9	51.2	928.1
2012-13	912.0	57.4	969.5
2013-14	967.2	53.1	1020.2
2014-15	1048.7	61.7	1110.4
2015-16	1107.8	65.8	1173.6
2016-17	1160.1	81.5	1241.7
2017-18	1206.3	101.8	1308.1
2018-19	1249.3	126.8	1376.1

PLANT LOAD FACTOR (PLF):

The Plant Load Factor (PLF) of Thermal Power Stations (TPSs) is an index of utilization of the installed capacity, The average PLF of TPSs of Power Utilities during the year 2018-19 was 61.07%. The sector-wise and overall PLF since beginning of 9th Plan was as under:

Year	Central	State	Private	Overall
1997-98	64.7	70.4	60.9	71.2
1998-99	64.6	64.6	60.7	68.0
1999-00	67.3	67.3	63.7	68.9
2000-01	74.3	65.6	73.1	69.0
2001-02	74.3	67.0	74.7	69.9
2002-03	77.1	68.7	78.9	72.1
2003-04	78.7	68.4	80.5	72.7
2004-05	81.7	69.6	85.1	74.8
2005-06	82.1	67.1	85.4	73.6
2006-07	84.8	70.6	86.3	76.8
2007-08	86.7	71.9	90.8	78.6
2008-09	84.3	71.2	91.0	77.2
2009-10	85.5	70.9	82.4	77.5
2010-11	85.1	66.7	76.7	75.1
2011-12	82.1	68.0	76.2	73.3
2012-13	79.2	65.6	64.1	69.9
2013-14	76.1	59.1	62.1	65.6
2014-15	74.0	59.8	60.6	64.5
2015-16	72.5	55.4	60.5	62.3
2016-17	72.0	54.3	55.7	59.9
2017-18	71.4	55.1	55.2	59.8
2018-19	72.6	57.8	55.2	61.1

Power Supply Position:

The growth in availability of electricity during the current year has surpassed the growth in requirement of electricity. During the year 2018-19, peak shortage has been 0.8% and the energy shortage has been 0.6%.

The power supply position since beginning of 9th Plan was as under:

Year	Energy Requirement	Energy Availability	Energy Shortage	Energy Shortage
	(MU)	(MU)	(MU)	(%)
1997-98	424505	390330	34175	8.1
1998-99	446584	420235	26349	5.9
1999-00	480430	450594	29836	6.2
2000-01	507216	467400	39816	7.8
2001-02	522537	483350	39187	7.5
2002-03	545983	497890	48093	8.8
2003-04	559264	519398	39866	7.1
2004-05	591373	548115	43258	7.3
2005-06	631554	578819	52735	8.4
2006-07	690587	624495	66092	9.6
2007-08	737052	664660	72392	9.8
2008-09	777039	691038	86001	11.1
2009-10	830594	746644	83950	10.1
2010-11	861591	788355	73236	8.5
2011-12	937199	857886	79313	8.5
2012-13	995557	908652	86905	8.7
2013-14	1002257	959829	42428	4.2
2014-15	1068923	1030785	38138	3.6
2015-16	1114408	1090850	23558	2.1
2016-17	1142929	1135334	7595	0.7
2017-18	1213326	1204697	8629	0.7
2018-19	1274595	1267526	7070	0.6

Year	Peak Demand	Peak Met	Peak Shortage	Peak Shortage
	(MU)	(MU)	(MU)	(%)
1997-98	65435	58042	7393	11.3
1998-99	67905	58445	9460	13.9
1999-00	72669	63691	8978	12.4

2000-01	78037	67880	10157	13.0
2001-02	78441	69189	9252	11.8
2002-03	81492	71547	9945	12.2
2003-04	84574	75066	9508	11.2
2004-05	87906	77652	10254	11.7
2005-06	93255	81792	11463	12.3
2006-07	100715	86818	13897	13.8
2007-08	108866	90793	18073	16.6
2008-09	109809	96785	13024	11.9
2009-10	119166	104009	15157	12.7
2010-11	122287	110256	12031	9.8
2011-12	130006	116191	13815	10.6
2012-13	135453	123294	12159	9.0
2013-14	135918	129815	6103	4.5
2014-15	148166	141160	7006	4.7
2015-16	153366	148463	4903	3.2
2016-17	159542	156934	2608	1.6
2017-18	164,066	160,752	-3,314	2.0
2018-19	177,022	175,528	-1,494	0.8

NTPC's Thermal Plant, Darlipali

CHAPTER 05

ULTRA MEGA POWER PROJECTS (UMPPs)

Government of India through Ministry of Power launched the initiative of Ultra Mega Power Projects (UMPPs) i.e. 4,000 MW SUPER THERMAL POWER PROJECTS (both pit head and imported coal based) in November 2005 with the objective to develop large capacity power projects in India. Power Finance Corporation Ltd (PFC) has been appointed as the Nodal Agency to facilitate the development of these projects. Various inputs for the UMPPs are tied up by the Special Purpose Vehicle (SPV) with assistance of Ministry of Power & Central Electricity Authority (CEA). CEA is involved in selection of sites for these UMPPs.

Initially following nine (9) numbers Ultra Mega Power Projects (UMPPs) were proposed to be set up in different states:

i. Sasan UMPP in M.P- coal pithead

ii. Mundra UMPP in Gujarat- coastal

iii. Krishnapatnam UMPP in A.P.- coastal

iv. Tilaiya UMPP in Jharkhand- coal pithead

v. UMPP in Chhattisgarh- coal pithead

vi. Bedabahal UMPP in Odisha - coal pithead

vii. Cheyyur UMPP in Tamil Nadu ... coal pithead

viii. UMPP in Maharashtra- coastal

ix. UMPP in Karnataka - coastal

In addition to nine UMPPs originally identified, request has come from some of the state governments for installation of additional UMPPs in their states. These are given below:

i) Two Additional UMPPs in Odisha:

ii) Second UMPP in Gujarat

iii) Second UMPP in Jharkhand – Deoghar UMPP

iv) Second UMPP in Tamil Nadu

v) UMPP in Bihar – Banka UMPP

vi) UMPP in Uttar Pradesh.

Status of UMPPs

Four UMPPs namely Sasan in Madhya Pradesh, Mundra in Gujarat, Krishnapattnam in Andhra Pradesh and Tilaiya in Jharkhand have already been transferred to the developers. Out of the four awarded UMPPs, two UMPPs namely Mundra UMPP and Sasan UMPP are in operation. A brief detail of awarded UMPPs is as below:

Mundra UMPP in Gujarat: The project was handed over to the Successful Bidder i.e. Tata Power Company Ltd., on 23.04.2007 at the evaluated levelised tariff of Rs. 2.26367/kWh. Mundra UMPP is fully commissioned.

Sasan UMPP in Madhya Pradesh: The project was handed over to the Successful Bidder i.e. M/s Reliance Power Ltd., on 07.08.2007 at the evaluated levelised tariff of Rs. 1.19616/kWh. Sasan UMPP is fully commissioned.

Krishnapatnam UMPP in Andhra Pradesh: The project was handed over to Reliance Power Ltd. on 29.01.2008 at the levelised tariff of Rs. 2.33/kWh. The developer has stopped work at site, citing new regulation of coal pricing in Indonesia. Lead Procurer has issued termination notice to the developer. Delhi High Court has issued judgment in the case on 15.01.2019 and has dismissed the appeal by Coastal Andhra Power Limited (CAPL) finding no merit in the appeal.

Tilaiya UMPP in Jharkhand: The project was handed over to M/s Reliance Power Ltd. (RPL) on 07.08.2009 at an evaluated levelised tariff of Rs. 1.770 per kWh. The developer, Jharkhand Integrated Power Ltd (JIPL), a subsidiary of RPL), has issued notice of termination of Power Purchase Agreement (PPA) on 28.04.2015 citing non transfer of land to the developer by Jharkhand Government. Jharkhand Urja Vikas Nigam Ltd. vide letter dated 19.06.2018 informed that JIPL has been taken over by the procurers from RPL.

The power generation capacity of each of the existing and proposed UMPP is 4000MW approximately. The fund for UMPP is arranged by the developer of the project which is selected through International Competitive Bidding Route as per the Standard Bidding Document issued by Ministry of Power.

12 more UMPPs are under different stages of development. Environmental clearance is obtained after firm allocation of coal blocks. The status of these 12 UMPPs is as follows:-

- **Cheyuur UMPP in Tamil Nadu:** The site at Cheyyur in Kanchipuram district in Tamil Nadu has been identified along with captive port at Panaiyur village. Cheyyur UMPP was originally envisaged to be setup on imported coal. However, Ministry of Power is examining the possibility of setting up Cheyyur UMPP on domestic coal instead of imported coal. Ministry of Coal has been requested to allocate suitable explored coal block.

- **Bedabahal UMPP in Odisha:** The site for this UMPP is in village Bedabahal in Sundergarh district. RfQ and RfP issued in 2013 were withdrawn. Bidding documents for UMPP are being reviewed by Expert Committee constituted under the Chairmanship of Shri Pratyush Sinha, former CVC, to recommend the revised Standard Bidding Documents (SBDs) applicable to UMPPs/Case-2. The SBDs are under finalization. Fresh bid would be issued after finalization of SBDs and allocation of coal blocks to the Infra Special Purpose Vehicle (SPV).
- **Banka UMPP in Bihar:** A site at Kakwara in Banka Distt has been identified for setting up of UMPP in Bihar. Infrastructure Special Purpose Vehicle (SPV) namely Bihar Infrapower Limited has been incorporated on 30.06.2015. Operating SPV namely Bihar Mega Power Limited (BMPL) has been incorporated on 09.07.2015.
- **Deoghar UMPP in Jharkhand:** A site at Husainabad, Deoghar Distt has been identified for setting up of 2nd UMPP in Jharkhand. Operating SPV namely Deoghar Mega Power Ltd and Infrastructure SPV namely Deoghar Infra Limited have been incorporated on 26.4.2012 and 30.06.2015 respectively.
- **2nd UMPP in Odisha:** Site at Bijoypatna in Chandbali Tehsil of Bhadrak district has been identified.
- **3rd UMPP in Odisha:** Site at Narla & Kasinga sub division of Kalahandi district has been identified.
- **UMPP in UP:** A UMPP in Uttar Pradesh is also in consideration. Land has been tentatively identified at Etah district.
- **Karnataka UMPP:** State Govt. has identified a suitable site in Niddodi village of Mangalore taluka Dakshina Kannada District. Site visit report sent by CEA to Govt. of Karnataka for Niddodi village of Mangalore taluka Dakshina Kannada District highlighting issues with respect to the site and requested for quick resolution of the issues.
- **2nd UMPP in Gujarat:** Govt. of Gujarat has been requested to identify additional land separately and also to intimate regarding possibility of continuation of the project.
- **2nd UMPP in Tamil Nadu:** Site near Nagapattinam was identified by Govt of Tamil Nadu which was found unsuitable by TANGEDCO Ltd. CEA has requested TANGENDCO to identify an alternative site for setting up 2nd UMPP in Tamil Nadu. Site is not yet finalized.
- **UMPP in Chhattisgarh:** RfQ issued on March 2010 was withdrawn due to coal blocks falling in inviolate area. Government of Chhattisgarh has now intimated that they are not keen on setting up of 4000 MW Chhattisgarh UMPP. Accordingly, Chhattisgarh UMPP has been closed.
- **UMPP in Maharashtra:** Project has been closed as of now due to resistance by local people. Govt of Maharashtra has formally requested for closure of UMPP.

CHAPTER 06

TRANSMISSION

Transmission system plays an important role in the power delivery system by establishing the vital link between the generating stations and the distribution system, which is connected to ultimate consumer. The transmission network has expanded over the years for evacuation of power from Intra-state & Inter-State generating stations to load centers through Intra-State and Inter-State Transmission System (ISTS) and strengthening of existing network to cater to the projected peak demand. Total 22,437Ckms of transmission line and 72,705 MVA of transformation capacity in substations (at 220kV and above voltage levels) have been added during the financial year 2018-19. The Alusteng-Baltal-Drass-Kargil-Khalsti-Leh 220kV link has been completed. It has established grid connectivity with National Grid for reliable power supply to the strategically important Leh-Ladakh area of J&K.

DEVELOPMENT OF NATIONAL GRID

Recognizing the need for development of National Grid, thrust was given to enhance the capacity of inter-regional links in a phased manner. Working in this direction, all the five regional grids are connected synchronously. As on Mar 31, 2019 inter-regional power transfer capacity of the National Grid is about 99,050 MW, which was about 75,050 MW at the end of the XII Plan. It is expected that by 2021-22 the inter-regional power transfer capacity of the National Grid shall become 1,18,050 MW

The details of ISTS (transmission lines and substations commissioned including the augmentation of transformation capacity in the existing substations) during the financial year 2018-19 are as under:

Sl. No.	Name of Transmission Element	ckm
1	Parli– Solapur 765 kV D/C line	236
2	Parli (New) - Parli (PG) (Q)400 kV D/C line	36
3	LILO of Wardha - Parli at Warora PS 400 kV D/C line	196
4	Gadarwara - Warora PS 765kV D/C line	627
5	Warora PS - Parli765kV D/C line	694
6	LILO of Exiting Neyveli TS-II - Pondycherry at NNTPS Gen. Yard 400 kV D/C line	7
7	LILO of Farakka - Jeerat line at Sagah-dighi400kV D/C line	38
8	Farakka - Baharampur (Twin HTLS) 400kV D/C line	164
9	LILO-In of Cuddapah - Hindupur at N.P. Kunta400kV D/C line	18
10	Srikakulam - Garividi (QM) 400kV D/C line	288
11	Tumkur (Pavagada) Pool - Hiriyur line 400kV D/C line	218
12	Drass – Kargil220 kV S/C line	60
13	LILO of Kurnool - Thiruvalam line at Cud-dapah765 kV D/C line	190
14	LILO-Out of Cuddapah - Hindupur line (Q) (bothCkts) at NP Kunta Sub Station 400kV D/C line	19
15	Cuddapah - Hindupur line (Q) 400kV D/C line	338
16	LILO of both Ckt of Bamnauli-Samaypur line at Tughlakabad 400kV M/C line	114
17	Salem Pooling Station - Madhugiri Pooling Station line (initially charged at 400KV) 765 kV S/C line	243
18	Jharsuguda - Dharamjaygarh line(Ckt-I) 765 kV D/C line	148
19	Angul - Jharsuguda765 kV D/C line	590
20	Silchar - Melriat (New) 400kV D/C line	287
21	Jharsuguda - Dharamjaygarh line(Ckt-II) 765 kV D/C line	148
22	Mahan – Sipat400kV D/C line	673
23	Raigarh (Kotra) - Champa (Pool) (Quad) 765 kV S/C line	97
24	Sipat STPS - Bilaspur (Quad) 765 kV S/C line	24
25	Samba - Amargarh line 400kV D/C line	547
26	Champa (Pool) - Dharamiaygarh (Quad) 765 kV S/C line	51
27	Suratgarh TPS- Bikaner 400kV D/C line	279
28	Gwalior-Morena (Quad) 400kV D/C line	96
29	Sasan UMPP - Vindhyachal PS (Q) 765 kV S/C line	6
30	Jharsuguda (Sundargarh) - Raipur 765 kV D/C line	610
31	Alusteng – Drass 220 kV S/C line	115
32	Biharshariff (Ckt III and IV) - Kahalgaon (NTPC) 400 kV D/c line	26
33	Salem - Madhugiri line (TBCB) 765 kV S/C line	219
34	Banaskanta - Chittorgarh line 765 kV D/C line	604

35	Bhuj Pool - Banaskanta line 765 kV D/C line	578
36	Banaskanta - Sankhari line 400 kV D/C line	43
37	Cuddapah - Madhugiri (QM) (PSITL - TBCB) 400 kV D/C line	486
38	LILO of Farakka - Jeerat line at Baharampur 400 kV D/C line	3
39	LILO of Subhashgram - Jeerat at Rajarhat 400 kV D/C line	8
40	NLC - Karaikal line 220 kV D/C line	190
41	LILO of Agra-Bharatpur at Agra 200 kV D/C line	111
42	LILO of Kota – Badod line at Ranpur GSS 220 kV D/C line	5
43	LILO of KTPS – Modak line 220 kV D/C	5
44	Mundra UMPP - Bhuj Pool line 400 kV D/C line	196
45	Kota-Jaipur 400 kV D/C line	360
46	Dharampuri-Somanahalli 400 kV D/C line	243
47	Rajnandgaon - Warora (hexa) line 765 kV D/C line	532
48	Raipur Pool–Rajnandgaon 220 kV D/C line	80
49	Bilaspur - Rajnandgaon (hexa) (STL-TBCB) 220 kV D/C line	324
50	Kishanganj(PG) - Darbhanga (DMTCL) line 400 kV D/C line	418
51	Vindhyachal PS - Jabalpur PS D/c line	749
	Total	**12,337**

II	**New Sub-Stations with transformation capacity**	**MVA**
1	Parli (New) S/s 765/400 kV	3000
2	Warora PS 765/400 kV	3000
3	Tirunelveli Pooling station 400/220 kV	1000
4	Srikakulam S/S765/400 kV	3000
5	Cuddapah s/s 765/400 kV	3000
6	Tughlakabad GIS 400/220 kV	1500
7	Amargarh (GIS) S/S400/220 kV	630
8	Imphal S/S 400/132 kV	315
9	Banaskanta S/S 765/400 kV	3000
10	Rajarhat (GIS) S/S400/220 kV	500
11	Rewa ICT IIIS/S400/220 kV	500
12	GSS Ranpur, Kota S/S 220/132/33 kV	210
13	Bhuj Pooling Station 765/400 kV	3000
14	Hamirpur ICT400/220 kV	315
15	Lucknow ICT 765/400 kV	500
	Total	**23,470**

III	**Augmentation of transformation capacity at Existing Sub-Stations**	**MVA**
1	Orai (ICT-II) 765/400 kV	1000
2	Narendra (ICT-II Repl.) (500-315) 400/220 kV	185
3	Khandwa (Extn.) 400/220 kV	500
4	Boisar (Extn.) 400/220 kV	500
5	Gooty (Extn) 400/220 kV	500
6	Degham (Extn) 400/220 kV	500
7	Khammam (Extn) 400/220 kV	500
8	Warangal (Extn) 400/220 kV	500
9	Pondicherry (Extn) 400/230 kV	500
10	Silcher ICT-III) 400/132 kV	315
11	Tumkur (Pavagada) PS ICT-III 400/220 kV	500
12	Parli Switching Station (Extn.) 400/220 kV	1000
13	Extn at Indore s/s 400/220 kV	1000
14	Extn at NP Kunta s/s 400/220 kV	500
15	Extn at Cuddapah s/s 400/220 kV	500
16	Kala s/s Ext (3rd ICT) 400/220 kV	500
17	Tughlakabad GIS (4th ICT) 400/220 kV	500
18	Daltonganj s/s (2nd ICT) 400/220 kV	315
19	Extn. at Gaya S/S 765/400 kV	1500
20	Extn. at Gaya S/S 400/220 kV	500
21	Cuddapah (Extn.) 400/220 kV	500
22	Patna (Replacement of ICT-II) (500-315) 400/220 kV	185
23	Misa (Aug.) S/S (Replacement 4x105 MVA by 2x500 MVA) 400/220 kV	500
	Total	**13,000**

INTER-REGIONAL TRANSMISSION CAPACITY:

Recognizing the need for development of National Grid, emphasis was laid to increase the transmission capacity of inter-regional links in a phased manner for smooth flow of power from surplus regions to deficit regions. Working in this direction, all the five regional grids are now interconnected through synchronous links forming one Nation-one Grid-one frequency-one market. The inter-regional power transmission capacity of the National Grid has increased to 99,050 MW (as on March 2019), which was 75,050 MW at the end of the XII

Plan. List of existing Inter-Regional links and addition during the financial year 2018-19 is as follows:

Region / Tr. Lines	Up to Mar'18	Addition during 2018-19	Expected Capacity by the end of March'2022
EAST-NORTH (ER-NR)			
Dehri-Sahupuri 220 kV S/c	130		130
Muzaffarpur-Gorakhpur 400 kV D/c (with Series Cap+TCSC)	2,000		2,000
Patna – Balia 400kV D/c (Quad) (1stckt)	1,600		1,600
Biharshariff – Balia 400kV D/c(Quad)	1,600		1,600
Barh-Patna– Balia 400kV D/c (Quad)(2ndckt)	1,600		1,600
Gaya - Balia 765kV S/c	2,100		2,100
Sasaram-Allahabad/ Varanasi 400kV D/C line (Sasaram HVDC back to back has been by-passed)	1,000		1,000
Sasaram - Fatehpur 765kV S/c	2,100		2,100
Barh-II-Gorakhpur 400kV D/c (Quad) line	1,600		1,600
Gaya-Varanasi 765kV 2xS/c line	4,200		4,200
LILO of Biswanath Chariali-Agra +/- 800 kV, 3000 MW HVDC Bi-pole at new pooling station in Alipurduar and addition of second 3000 MW module	3,000		3,000
Biharsharif-Varanasi 400kV D/c line (Quad)	1,600		1,600
Sub-total	**22,530**		**22,530**
EAST-WEST (ER-WR)			
Budhipadar-Korba 220 kV 3 ckts.	390		390
Rourkela-Raipur 400 kV D/	1,400		1,400
Ranchi –Sipat 400 kV D/c with series comp.	1,200		1,200
Rourkela-Raipur 400 kV D/c (2nd)	1,400		1,400
Ranchi - Dharamjayagarh - WR Pooiling Station 765kV S/c line	2,100		2,100
Ranchi - Dharamjaygarh 765kV 2nd S/c	2,100		2,100
Jharsuguda-Dharam-jaygarh 765kV D/c line	4,200		4,200
Jharsuguda-Dharam-jaygarh 765kV 2nd D/c line		4,200	4,200
Jharsuguda- Raipur 765kV D/c line		4,200	4,200
Sub-total	**12,790**	**8,400**	**21,190**
WEST- NORTH (WR-NR)			
Auriya-Malanpur 220 KV D/c	260		260
Kota - Ujjain 220 KV D/c	260		260
Vindhyachal HVDC back-to-back	500		500
Gwalior-Agra 765 kV 2 x S/c	4,200		4,200
Zerda-Kankroli 400kV D/c	1,000		1,000
Champa Pool- Kuruk-shetra HVDC Bipole	3,000		3,000
Gwalior-Jaipur 765kV 2xS/c lines	4,200		4,200
RAPP-Sujalpur 400kV D/c	1,000		1,000
Adani(Mundra) - Ma-hendranagar HVDC bipole	2,500		2,500
Upgradation of Champa Pool- Kurukshetra HVDC Bipole			3,000
Jabalpur - Orai 765kV D/c line	4,200		4,200
LILO of Satna - Gwalior 765kV S/c line at Orai	4,200		4,200
Banaskantha-Chittor-garh 765kV D/c line		4,200	4,200
Vindhyachal-Varanasi 765kV D/c line			4,200
Sub-total	**25,320**	**4,200**	**36,720**
EAST- SOUTH (ER-SR)			
Balimela-Upper Sileru 220kV S/c	130		130
Gazuwaka HVDC back-to-back	1,000		1,000

Talcher-Kolar HVDC bipole	2,000		2,000
Upgradation of Talcher-Kolar HVDC Bipole	500		500
Angul - Srikakulum 765 KV D/C line	4,200		4,200
Sub-total	**7,830**	**0**	**7,830**
WEST- SOUTH (WR-SR)			
Chandrapur HVDC back-to-back	1,000		1,000
Kolhapur-Belgaum 220kV D/c	260		260
Ponda – Nagajhari 220kV D/c	260		260
Raichur - Sholapur 765kV S/c line (PG)	2,100		2,100
Raichur - Sholapur 765kV S/c line (Pvt. Sector)	2,100		2,100
Narendra - Kolhapur 765kV D/c (ch at 400kV)	2,200		2,200
Wardha - Nizamabad 765kV D/c line (Part of Wardha – Hyderabad line)	4,200		4,200
Warora Pool - Warangal (New) 765kV D/c line			4,200
Raigarh-Pugulur HVDC line			6,000
LILO of Narendra-Narendra(New) 400kV (quad) line at Xeldam (Goa)			1,600
Sub-total	**12,120**	**0**	**23,920**
EAST- NORTH EAST			
Birpara-Salakati 220kV D/c	260		260
Malda - Bongaigaon 400 kV D/c LILOed at Siliguri &Purnea	1,000		1,000
Siliguri - Bongaigaon 400 kV D/c (Quad) line LILOed at Alipurduar	1,600		1,600
Sub-total	**2,860**		**2,860**
North East-North			
Biswanath Chariali - Alipurduar +/- 800 kV, 3000 MW HVDC Bi-pole	3,000		3,000
Sub-total	**3,000**	**0**	**3,000**
TOTAL	**86,450**	**12,600**	**1,18,050**

NOTE: 132/110 kV Inter-Regional links with total transmission capacity of about 600MW, which are operating in radial mode, are not included.

INTER-CONNECTION WITH NEIGHBOURING COUNTRIES

India, being centrally placed in South Asian region and sharing political boundaries with SAARC countries, namely, Nepal, Bhutan, Bangladesh, Sri Lanka & Pakistan, is playing a major role in facilitating planning of interconnections with some of these countries for effective utilization of regional resources. India has developed expertise in implementation of HVDC and UHVAC projects and it will be beneficial to connect the neighboring countries electrically through HVDC/UHVAC transmission lines. This shall give rise to mutual cooperation amongst neighboring nations and lead to peace and prosperity in the region. This will also ensure Energy Security of the region. India is already having interconnections with SAARC countries as is enlisted below:

India – Nepal

Nepal is already radially interconnected with India at various places through 11kV, 33kV and 132kV lines. For transfer of bulk power, further interconnection between India and Nepal through 400 kV Dhalkebar (in Nepal) - Muzaffarpur (in India) D/C transmission line (presently charged at 220kV voltage level) is under operation. The Muzaffarpur (India) - Dhalkebar (Nepal) 400kV D/c line is expected to be operated at its rated voltage by Dec 2019 which would further enhance the power transfer capability to Nepal by about 300-400MW (total about 1000MW). Further, 2nd High Capacity 400kV Gorakhpur – New Butwal D/c (Quad) line is under discussion for reliable transfer of power between the two countries.

India – Bhutan

India and Bhutan already have existing arrangements mainly for import of about 1350MW power from Tala HEP(1020 MW), Chukha HEP (270 MW) & Kurichu HEP(60MW) in Bhutan to India through 400kV, 220kV and 132kV lines, respectively. For evacuation of power from various upcoming Hydro Electric Power plants (HEPs) in Bhutan like Punatsangchu-I (1200 MW), Punatsangchu-II (990MW) & Mangdechu(720 MW) HEPs, Punatsangchu HEP - Alipurduar 400kV D/c (Quad Moose) and Jigmeling (Bhutan) - Alipurduar 400kV D/c lines are under implementation.

Power from these HEPs in Bhutan and NER projects would be transferred to other part of India through high capacity +800kV, 6000MW Biswanath Chariali – Alipurduar – Agra HVDC bipole line.

India – Bangladesh

A high capacity interconnection between India & Bangladesh exist through Baharampur (India) – Bheramara (Bangladesh) 400 kV D/c line and 2x500 MW HVDC back-to-back terminal at Bheramara which facilitates transfer of power of the order of 1000 MW to Bangladesh. Additional radial interconnections from Suryamaninagar in Tripura in India to Comilla in Bangladesh 400 kV line operating at 132 kV have been implemented. 400 kV operation of Surajmani Nagar – Comilla D/c line alongwith 500 MW Back to Back HVDC terminal at Comilla is under implementation.

Baharampur (India) – Bheramara (Bangladesh) 400 kV D/c 2nd line is under implementation Further, Katihar (India) – Parbotipur (Bangladesh) – Bornagar (India) 765 kV D/c line is under discussion.

India – Sri Lanka

The study has been carried out for 2x500 MW HVDC bipole line between Madurai (India) and New Anuradhapura (Sri Lanka) including submarine cable for sea portion. During the 3rd JWG meeting held on 07-07-2018, India – Sri Lanka Grid interconnection was discussed in detail. In view of high estimated project cost, it was decided to explore the possibility of additional option considering entire interconnection line as overhead line without any cable (or the alternative of an AC interconnection) to further reduce the cost.

India - Myanmar

A small radial interconnection (11kV) exists between India and Myanmar.

CENTRAL SECTOR TRANSMISSION

POWERGRID, the "Central Transmission Utility" of the country, is responsible for coordination and supervision for development of inter-State transmission system (ISTS) in the central sector matching with generation capacity addition to facilitate inter-State/ inter-regional exchange of power. POWERGRID's major transmission lines and sub-stations (MVA addition) completed during the year 2018-19 (up to Mar 31, 2019) are shown in the following table:

S No	Voltage Level	Transmission Line	CKT	CKM
1	765	Angul - Jharsauguda line	D/C	590
2	765	Banaskanta - Chittorgarh line	D/C	604
3	765	Bhuj Pool - Banaskanta line	D/C	578
4	765	Gadarwara - Warora PS	D/C	627
5	765	Jharsuguda - Dharam-jaygarh line	D/C	296
6	765	LILO of Kurnool - Thir-vualam line at Cuddapah	D/C	190
7	765	Vindhyachal PS - Jabalpur PS	D/C	749
8	765	Warora PS - Parli	D/C	694
9	400	Banaskantha - Sankhari line	D/C	43
10	400	Bihartariff (Ckt III and IV) - Kahalgaon (NTPC)	D/C	26
11	400	Cuddapah - Hindupur (Q)	D/C	338
12	400	Cuddapah - Madhugiri (QM)	D/C	486
13	400	Farakka - Baharampur (Twin HTLS)	D/C	164
14	400	LILO of Both Ckt of Bamnau-li - Samaypur at Tughlak-abad	M/C	114
15	400	LILO of Farakka - Jeerat line at Baharampur	S/C	3
16	400	LILO of Farakka - Jeerat line at Sagahdighi	S/C	38
17	400	LILO of Subhashgram - Jeerat at Rajarhat	S/C	8
18	400	Mundra UMPP - Bhuj Pool line	D/C	190
19	400	Srikakulam - Garividi (QM)	D/C	288
20	400	Tumkur (Pavagada) Pool - Hiriyur	D/C	218
21	220	NLC - Karaikal line	D/C	190
22	220	Drass - Kargil (Part of Alusteng-Drass-Kargil-Khal-sti-Leh) (J&K)	S/C	60
23	220	Alusteng-Drass (Part of Alusteng - Drass -Kargil - Khalsti-Leh) (J&K)	S/C	115
24	765	Parli - Solapur	D/C	236
25	400	Parli - Parli line (Q)	D/C	36
26	400	LILO OF 2x D/C Wardha - Parli line at Warora Pooling Stn. (Q)	D/C	196
27	400	LILO of existing Neyveli TS-II - Pondycherry 400KV S/C at NNTPS Gen. Yd.	D/C	7
28	400	LILO-In of 400KV D/C Cud-dapah - Hindupur line (Q) at N. P. Kunta	D/C	18

29	220	Kargil - Khalsti Line	S/C	97
30	400	LILO-Out of 400KV D/C Cuddapah – Hindupur line (Q) at N. P. Kunta	D/C	19
31	765	Salem - Madhugiri (Dharampuri -Tumkur)	S/C	243
32	400	400 KV D/C Silchar - Melriat (New) (charged at 132KV)	D/C	287
33	765	Salem - Madhugiri	S/C	219
34	220	LILO of Agra - Bharatpur at Agra	S/C	111
35	400	Kota - Jaipur	D/C	360
36	400	Dharampuri - Somanahalli	D/C	243
		Total		**8681**

S No	Name of Sub station	Voltage Level	MVA
1	Banaskanta S/S	765/400	3000
2	Bhuj Pooling Station	765/400	3000
3	Cuddapah S/s	765/400	3000
4	Parli (New) S/s	765/400	3000
5	Srikakulam S/S	765/400	3000
6	Orai ICT-II	765/400	1000
7	Warora Pooling Stn. (TBCB)	765/400	3000
8	Extn. at Gaya S/S (1x1500 MVA)	765/400	1500
9	Lucknow ICT	765/400	500
10	Cuddapah (Extn.)	400/220	500
11	Gooty (Extn.)	400/220	500
12	Misa S/S (Replacement 4x105 MVA by 2x500 MVA)	400/220	500
13	Patna (Replacement of ICT-II) (500-315)	400/220	185
14	Rajarhat (GIS) S/S	400/220	500
15	Silchar (New) S/s	400/220	315
16	Imphal S/S (upgradation)	400/132	630
17	Tumkur (Pavagada) PS ICT-III	400/220	500
18	Tughlakabad S/S (GIS)	400/220	2000
19	Narendra (ICT-II Repl.)(500-315)	400/220	185
20	Extn. at Khandwa S/stn.	400/220	500
21	Extn. at Boisar S/stn.	400/220	500
22	Extn. at Pondichary S/stn.	400/220	500
23	Extn. at Dehgam S/stn.	400/220	500
24	Extn. at Khammam S/stn.	400/220	500
25	Extn. at Warangal S/stn.	400/220	500
26	Extn. at Tirunelveli S/stn.	400/220	1000
27	Extn. at Parli Switching stn.	400/220	1000
28	Extn. at Indore S/S	400/220	1000
29	Extn. at N P Kunta S/S	400/220	500
30	Extn. at Kala S/stn. (3rd ICT)	400/220	500
31	Daltonganj S/S (2x315) ICT-II	400/220	315
32	Extn. at Gaya S/S	400/220	500
33	Rewa Pooling Stn.	400/220	500
34	Hamirpur ICT	400/220	315
35	Bongaigaon ICT	400/220	315
36	Drass S/S (4x16.67)	220/66	50
37	Kargil S/S (4x16.67)	220/66	50
		Total	**35,860**

CHAPTER 07

STATUS OF POWER SECTOR REFORMS

Amendments in Electricity Act, 2003

The Union Cabinet had approved the proposal for amendment in Electricity Act, 2003 on 10th December, 2014 as contained in the Electricity (Amendment) Bill 2014. The Electricity (Amendment) Bill 2014 was introduced in the Lok Sabha on 19.12.2014. The Bill was subsequently referred to the Standing Committee on Energy for examination and report. The Committee had submitted its report on 7.5.2015. Based on the observations/recommendations of the Standing Committee on Energy and further consultation/deliberations with State Governments and various other stakeholders, further changes have been proposed in the Electricity (Amendment) Bill, 2014. Draft amendments to Electricity Act were circulated for stakeholder comments on 7.9.2018. The comments received from various stakeholders are being examined by the Drafting Committee constituted under the chairmanship of Chief Engineer (Legal) Central Electricity Authority.

These proposed amendments entail competition in retail (i.e. choice to consumers to select retail suppliers), strict enforcement of Renewable Purchase Obligations (RPO), zero tolerance on Grid Safety and Security, Rationalization of Tariff determination process, Obligation of 24x7 power supply by Distribution Licensee, Subsidy through DBT mechanism, Strengthening/Performance review of Regulatory Commissions, Facilitating Open Access and Development of Power Market and Cross Border exchange of electricity etc.

Amendments to Tariff Policy 2016

The Tariff Policy was notified by the Central Government under Section 3 of the Electricity Act, 2003 on 6th January, 2006. As an evolving reform process, the provisions of Tariff Policy have been amended from time to time. The revised Tariff Policy was notified on 28th January, 2016 under the provisions of Electricity Act, 2003. The amendments in the Tariff Policy are made to ensure availability of electricity to consumers at reasonable and competitive rates, ensure financial viability of the sector and attract investments, promote transparency, consistency and predictability in regulatory approaches across jurisdictions. The amendments inter alia includes promotion of renewable energy (Renewable Generation Obligation, Long term growth trajectory of RPOs and increase in Solar RPO), compulsory procurement by Discoms from Waste to Energy plants, mandatory use of sewage treated water by thermal plants, continuation of exemption to hydro projects from tariff based competitive bidding upto 15th August, 2022, Smart Meters, recovery of Regulatory Assets, revision of formula for calculation of Cross Subsidy etc.

In view of the dynamic changes in the Electricity Sector and to carry forward Power Sector reforms, it is felt to further amend the provisions of Tariff Policy. Accordingly, certain changes have been proposed in the Tariff Policy 2016. The proposed amendment focuses on efficiency improvement, consumer protection, RE Promotion, Environment protection and sustainability of the power sector. The draft Amendments to Tariff Policy were circulated for Stakeholder comments on 30.5.2018. The revised Tariff Policy is under finalization.

Waiver of inter-state transmission charges and losses on transmission of the electricity generated from solar and wind sources of energy

In compliance to the provisions in para 6.4(6) of Tariff Policy, Central Government had issued ISTS waiver Orders. First Order was issued on 30.09.2016 in which ISTS transmission charges and losses waiver was made available to transmission of electricity from Solar Projects commissioned till 30.06.2017 and Wind Projects commission till 31.03.2019. Further date for waiver of ISTS transmission charges and losses was extended for Solar Projects upto 31.12.2019 vide MOP Order dated 14.06.2017. Thereafter based on the request from MNRE, Ministry of Power has issued an Order dated 13.2.2018 extending the waiver of Inter-State Transmission System (ISTS) charges and losses on transmission of the electricity generated from solar and wind sources based generation projects commissioned till 31st March, 2022. Such waiver will be available for a period of 25 years from the date of commissioning of such solar and wind projects. The ISTS waiver will be available for solar and wind projects entering into PPAs with all entities, including Distribution Companies, for sale of power from solar and wind power projects for compliance of their renewable purchase obligation. As a condition the above waiver will be allowed only to those solar and wind projects that are awarded through competitive bidding process in accordance with the guidelines issued by the Central Government.

Long Term RPO Growth Trajectory of Renewable Purchase Obligations (RPOs) for Non-Solar as well as Solar Energy under Tariff Policy 2016

Under the provisions of Tariff Policy and in order to achieve the target of 1,75,000 MW of renewable capacity by March, 2022, the Ministry of Power in consultation with MNRE had issued the Order on 22nd July, 2016 specifying 'Long term growth trajectory of RPOs for Non-solar as well as solar, uniformly for all States/UTs, initially for three years from 2016-17 to 2018-19'. Further, Ministry of Power has on 14th June, 2018 issued Long Term RPO growth trajectory for Solar and Non-solar for the years 2019-20 to 2021-22.

Guidelines and Standard Bidding Documents (SBDs) for Procurement of Electricity by Distribution Licensees through Tariff based bidding process

In compliance with section 63 of the Electricity Act, 2003, the Central Government has notified guidelines for procurement of power by Distribution Licensees through competitive bidding.

Competitive procurement of Power requirement by the Distribution Licensees reduces the overall cost of procurement of power and in turn leads to significant benefits for consumers.

I) Long Term procurement of power:

Central Government had initially issued the Standard Bidding Documents (SBDs) containing Request for Qualification (RfQ), Request for Proposal (RfP) and Power Purchase Agreement (PPA) for long term procurement of power from Case-2 projects (having specified site and location) through tariff based competitive bidding in 2006 and amended it from time to time. The Standard Bidding Documents for long term procurement of power from Case-1 projects (where the location, technology or fuel is not specified) were issued in the year 2009 and amended it in 2010.

In pursuance of the decision of the EGoM on Ultra Mega Power Projects (UMPPs) having specified site and location, the SBDs for Case-2 have been further reviewed and the Model Bidding Documents (MBDs) comprising the Model RFQ, Model RFP and the Model PPA for construction and operation of power generation projects/ UMPPs on Design, Build, Finance, Operate and Transfer (DBFOT) basis have been issued on 20th Sept, 2013. The Guidelines for procurement of electricity from Thermal Power Stations set up on DBFOT basis for Case-2/UMPPs have been published in the Gazette of India on 21st September, 2013. Model Bidding Documents (MBDs) for Thermal Power Stations set up on Design, Build, Finance, Own and Operate (DBFOO) basis for Case-1 issued on 8.11.2013. Further, amendments have been issued in the Documents on 5.5.2015.

In order to facilitate use of linkage coal in the long term procurement of power by Distribution Licensees as per the provisions of Para B(I), B(III) & B(IV) of SHAKTI Policy, SBDs and Guidelines for long term Procurement of Electricity from Thermal Power Stations set up on Design, Build, Finance, Own and Operate (DFFOO) basis have been revised and issued in March, 2019.

An Expert Committee was constituted by the Ministry of Power to review the Model Bidding Documents for Case-2/UMPPs. Based on the recommendations of the Committee and consultation with stakeholders, the Guidelines/SBDs based on Allocated Domestic Coal Blocks, Imported Coal as well as for Linkage coal are under finalization.

II) Medium Term procurement of power:

Model Bidding Documents (MBDs) for procurement of electricity for medium term from power generating stations set up and/or operated on Finance, Own and Operate (FOO) basis issued on 29.1.2014. Further, amendments have been issued in the Documents on 20.8.2015. Model Bidding Documents (MBDs) for procurement of peaking power for medium term issued on 20.2.2014. In order to introduction of e-bidding process along with reverse auction, revised Guidelines and Model Bidding Documents for medium-term procurement of power by Distribution Licensees through tariff based competitive bidding process was notified on 17th January, 2017. Introduction e-bidding process along with reverse auction will result in greater transparency and fairness in the procurement process for ultimate benefit of the consumers. Further, for enabling the use of linkage coal as per the new coal linkage policy (SHAKTI Policy) of Ministry of Coal, Revised MBDs and revised Guidelines for Procurement of Electricity for Medium Term were issued on 29-01-2019 and 30-01-2019 respectively.

III) Short Term procurement of power:

The Central Government has issued Guidelines for short-term procurement of electricity i.e. for a period of less than or equal to one year under section 63 of the Electricity Act, 2003 on 16 May, 2012. For introduction of e reverse auction, the revised guidelines for short-term procurement of electricity were also issued on 30th March, 2016.

Pilot Scheme for procurement of 2500 MW for three years under medium Term

- In an attempt to revive the stressed power projects, a Pilot Scheme was introduced by Ministry of Power in April 2018. In this regard, Model Bidding Documents and Guidelines for implementation of Pilot Scheme i.e. Procurement of 2500 MW power for medium term i.e. 3 (Three) years from coal based power plant on 6th April, 2018 and 10th April, 2018 respectively.
- Based on the experience gained from the Pilot Scheme, MOP issued the Bidding Documents and Guidelines for Pilot Scheme-II to facilitate procurement of aggregated Power of 2500 MW for the period of 3 (three) years (covered under Medium Term) on 30-01-2019 and 01-02-2019 respectively.

Competitive Bidding Guidelines for procurement of power from Solar and Wind Power projects:

To promote competitive procurement of electricity from solar PV power plants and Wind Power plants, by distribution licensees and to protect consumer interests, Bidding Guidelines have been issued for long term procurement of electricity by the distribution licensees. Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects was issued vide Resolution dated 3rd August, 2017. Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Power Projects was issued vide Resolution dated 8th December, 2017. Necessary Amendments to these guidelines were made considering the views of the Stakeholders, encouraging investment and timely commissioning of such projects.

Mechanism to provide Flexibility in Generation and scheduling to reduce emissions of Thermal Power Stations:

In order to reduce emissions and also encouraging RE capacity addition, Central Government has on 05.04.2018 issued the mechanism for providing flexibility in generation & scheduling of Thermal Power Stations. TPPs can supply power from RE sources under existing contractual agreements.

Mechanism to provide Flexibility in Generation and scheduling of thermal power stations to reduce cost of power to consumers:

Ministry of Power has issued a scheme for "Flexibility in Generation and scheduling of Thermal Power Stations to reduce the cost of power to the consumer" on 30.08.2018, wherein the Generating company has been provided flexibility to supply the total scheduled power from its least cost power stations, thus reducing the cost of power to consumers.

Clarification on Charging Infrastructure for Electric Vehicles:

A clarification on the issue of applicability of any license for the Charging Stations for Electric Vehicles has been issued on 13.4.2018

Launch of Mobile Applications and Web-Portal to ensure accountability and transparency in power sector.

i) Mob App 'Vidyut PRAVAH'

A Mob App 'Vidyut PRAVAH' on Electricity Pricing and Availability Highlights was launched on 31st March, 2016. The application provides highlights of the power availability in the country on real time basis. This app will empower common people to demand 24X7 power from the states and will take transparency to the next level by making State governments more accountable.

(ii) DEEP (Discovery of Efficient Electricity Price) e-Bidding & e-Reverse Auction portal.

In order to bring uniformity and transparency in power procurement by the DISCOMs and also to promote competition in electricity sector, "DEEP (Discovery of Efficient Electricity Price) e-Bidding Portal" was launched on 12th April, 2016. This Portal is being used for Short Term and Medium Term procurement of Power by Discoms. The e-Reverse Auction method has also been introduced in the short term and medium term power procurement. During Financial Year 2018-19 Bidding for total 176629 MW of power for short term requirement of power was conducted using DEEP Portal.

(iii) MERIT (Merit Order Despatch of Electricity for Rejuvenation of Income and Transparency) web portal

A Web Portal 'MERIT' i.e. Merit Order Despatch of Electricity for Rejuvenation of Income and Transparency was launched on 23rd June 2017 .This Mobile App and Web Portal displays the actual data of dispatched generation by the states transparently and provides opportunity to states for improving their power purchase portfolio

(iv) Launch of e-Bidding portal for utilization of domestic coal in IPP Power Stations for reducing the cost of power generation

An e-bidding portal was launched on 5th July 2017 for providing e-Bidding solution to States to select Independent Power Producers (IPPs) for procurement of power by transferring their domestic coal under the scheme of flexibility in utilization of domestic coal. The e-Bidding portal has been designed to facilitate States in inviting bids for procurement of power from the prospective IPPs in transparent and fair manner. The successful bidder shall be selected through e-Reverse Bidding process. The flexibility in utilization of domestic coal scheme envisages transferring coal to more efficient IPPs generating stations, leading to lower generation costs and ultimately lesser cost of electricity for the consumers. During Financial Year 2018-19 Bidding for total 2000 MW of power under flexibility in utilization of domestic coal scheme in IPP Stations was conducted using Portal.

Press Conference, MoS (IC) for Power & NRE with Ministers of States & UTs

CHAPTER 08

RURAL ELECTRIFICATION INITIATIVES OF MINISTRY

Access to quality and reliable power supply has direct positive impact on quality of life of people in all aspects of daily household chores, human development and effective delivery of essential services like education, health, communication etc. Availability of electricity supply is also the key to accelerate socio-economic growth and generation of employment. Government of India, through its policies and programmes, is committed to provide access to electricity to all and also to ensure quality and reliable power supply at reasonable price.

RURAL ELECTRIFICATION PROGRAMME:

In order to provide access to electricity to remaining villages/ habitations and facilitate availability of adequate, quality & reliable power supply in rural areas, Ministry of Power in December, 2014 launched Deen **Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)**. Ministry of Power launched another scheme **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya)** in September 2017 to achieve universal household electrification by providing last mile connectivity and electricity connections to all remaining un-electrified households in rural and urban areas. The details of schemes are as under:

Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

Components of Scheme:

(i) Separation of agriculture and non-agriculture feeders facilitating judicious rostering of supply to agricultural & non- agricultural consumers in the rural areas

(ii) Strengthening and augmentation of sub-transmission & distribution infrastructure in rural area

(iii) Metering of distribution transformers/feeders/ consumers

(iv) Ongoing rural electrification works of erstwhile scheme subsumed in DDUGJY as RuralElectrification (RE) component.

Scheme Outlay:

For Components (i) to (iii) above	-Outlay: Rs. 43,033 crore, GOI Grant : Rs. 33,453 crore
RE Component (iv) above	-Outlay: Rs. 32,860 crore, GOI Grant: Rs. 29,574 crore
Total	**-Outlay: Rs. 75,893 crore, GOI Grant: Rs. 63,027 crore**

Salient Features

- Complete flexibility to State for selecting scope of works as per their priority
- All Villages/hamlets eligible without any minimum population criterion.
- Gram Panchayat covered under Sansad Aadarsh Gram Yojana (SAGY) to be necessarily covered under DPRs.
- Mandatory E-tendering and Standard Bidding Document.
- 100% subsidy for development of Project Management Agency to ensure effective project management and timely completion.
- All Discoms including Private Discoms, RE Cooperative Societies now eligible.
- District Development Co-ordination & Monitoring Committee name DISHA (administrated by Ministry of Rural Development) headed by senior most Member of Parliament (Lok Sabha) to review and monitor implementation of scheme.

Funding Pattern:

- Grant from GOI : 60% of project cost (85% for Special category States)
- Discoms : 10% of project cost (5% for Special category States)
- Loan from FIs : 30% of project cost (10% for Special category States)
- Additional grant (50% of loan component i.e. 5% for special category states and 15% for other States) under the scheme will be released subject to achievement of following milestones.
  - (i) Timely completion of the scheme as per laid down milestone.
  - (ii) Reduction in AT&C losses as per trajectory finalized by MoP in consultation with the State Governments (Discom-wise).
  - (iii) Upfront release of admissible revenue subsidy by State Government based on metered consumption.

Expected Outcomes

- Connectivity to all villages and households
- Viable and reliable electricity services in rural areas

- Increased productivity in agriculture
- Improvement in delivery of health & education services
- Improvement in access to communications (radio, telephone, television, mobile)
- Improvement in public safety through lighting

Sanction of Projects

New Projects with total cost of Rs. 42,676.67 crore have been sanctioned for 32 States/UTs with following components:

- Feeder Separation - Rs. 15191 Crore
- System Strengthening - Rs. 9997 Crore
- Access to Rural Households - Rs. 10246 Crore
- Metering - Rs. 3859 Crore
- Electrification of UE villages (Grid) - Rs. 1512 Crore
- Electrification of UE villages (Off-Grid) - Rs. 1268 Crore
- SAGY - Rs. 398 Crore
- Provision for PMA - Rs. 206 Crore

Rs 14,270 Crore (GOI Grant component of Rs 11,237.79 Crore) has been sanctioned to States for creation of additional infrastructure under DDUGJY for household electrification in Saubhagya.

Release of funds

GOI grant of Rs. 41,317.06 crore has been released since 2014-15 up to 31.03.2019. The year-wise details are as under:

Year	GOI Fund Release (Rs. in Crore)
2014-15	3374.41
2015-16	4500.00
2016-17	7965.87
2017-18	9049.96
2018-19	16426.80
Total	**41317.06**

The capital expenditure for rural electricity distribution system in last 5 years has been more than 2.5 times as compared to preceding five-year block. Government of India have released an amount of Rs. 41,317.06crore during last five years (FY 2014-15 to FY 2018-19) as compared to Rs. 15,873.77 crore (FY2009-10 to FY 2013-2014) in the preceding five year block. This capital investment has facilitated the Government in achieving the important milestones of 100% villages electrification and led to improvement in quality and reliability of power supply in rural areas with augmentation of network capacity in a big way by creation of new power sub-stations, capacity enhancement of existing power sub-stations, distribution transformers, HT/LT lines etc. Feeder separation works to provide assured and adequate power supply to farmers for agriculture through dedicated feeders are also under execution.

Village Electrification

As reported by the States, there were 18,452 un-electrified villages in the country as on 01.04.2015. Hon'ble Prime Minister in his address to the nation from the ramparts of Red Fort on the occasion of Independence Day on 15th August 2015 announced that the remaining 18,500 odd un-electrified villages in the country would be electrified within the next 1,000 days.The task of electrification of all remaining un-electrified villages was taken up under the scheme of DDUGJY in a mission mode. The pace of village electrification was relatively slow in the 3 years prior to 2015-16 (2012-13: 2587, 2013-14: 1197, 2014-15: 1405) which implied that business as usual approach would have taken another 10 years for completion of village electrification. Therefore, detailed consultations were held with all stakeholders to understand current scenario, availability of resources, possible remedial measures to accelerate the progress, monitoring mechanism etc. and this gave rise to new ideas, strategy and approach detailed below :

(i) Proper identification of villages with Census 2011 Code: All States were requested to identify remaining un-electrified villages with census code of 2011 to exactly find out the name, geographical location, demography etc. for robust planning. Prior to this program, generally the progress used to be monitored in terms of number of villages.

(ii) Solar PV based off-grid solutions for remote / inaccessible villages: It was observed that many of these remaining un-electrified villages are located in remote areas, areas with difficult terrain in snow bound hills or in deep forest and in Left Wing Extremism affected areas etc. Reaching these villages, transportation of material and erection of necessary electricity infrastructure was a real challenge. Therefore, it was decided that in case grid extension to some of the villages is either not feasible or cost effective, such villages would be electrified through off-grid mode using Solar Photovoltaic based solutions.

(iii) Innovative Financing: As the pace of work increased there was a need to ensure availability of funds to the States under the scheme. In addition to the budgetary support, Ministry of Finance also allowed Ministry of Power to raise funds from market as Extra Budgetary Resource (EBR).

(iv) Flexibility to States for execution of works: Considering the diverse geographical, demographic and other conditions, it was felt that a straight jacket approach or one size fits all may not work and therefore States were given adequate flexibility to execute projects on turnkey / partial turnkey / departmental mode as per the suitability.

(v) Handholding States/Discoms: Necessary help was provided to the States/Discoms wherever required. Nodal agency opened its office in almost all the States, deputed its senior officers to interact with State officials on daily basis and provide help in organising and getting things done. In order to strengthen & augment capacities of the State DISCOMs / Power Deptt., REC appointed Gram Vidyut Abhiyantas at block/district level to assist them in monitoring and expeditious implementation of the program. These GVAs are graduate engineers from local areas who assisted DISCOMs in extensive field monitoring.

(vi) Milestone based monitoring: The entire process of village electrification was divided in 12 steps / milestones with stipulated timelines for monitoring and capturing progress. These milestones included the entire process right from award of work, survey, material procurement, material delivery at site, erection & commissioning and energisation etc. Rigorous use of project management tools was undertaken to ensure completion of project and energization of villages.

(vii) Transparency and accountability: To ensure transparency and dissemination of information to public at large with regard to process and progress on electrification of these villages, mobile App "Garv" was launched. Dissemination of information in public domain also created an environment of enhanced accountability in the system.

(viii) Regular review and monitoring: A system for regular review and monitoring at the Central Govt. level as well as at the State and DISCOM level was established for review and monitoring. Regional review meetings were also held to enable better coordination and project management. The issues impeding progress in the field were highlighted in such reviews and resolved at the earliest.

States commenced implementation with the above strategy and dividends of a well thought cooperative planning and strategy were visible in the implementation. Subsequently 1,227 additional villages were identified by the States for electrification in addition to 18,452 un-electrified villages reported by States as on 01.04.2015. Out of these 19,679 Villages (18,452+1,227), electrification in 18,374 villages has been completed and remaining 1,305 villages found to be inhabited/Grazing reserve.

The country achieved the important milestone of 100% village electrification on 28th April 2018 well before the deadline of 1000 days fixed by the Hon'ble Prime Minister of India.

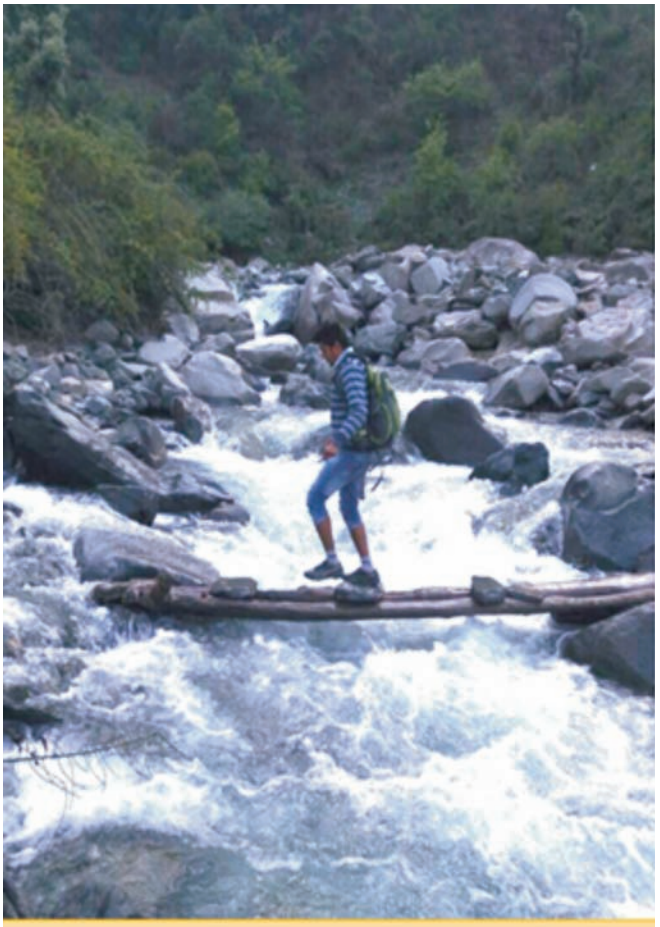
It is worthwhile to mention that most of these remaining villages were located in remote and inaccessible areas with difficult hilly terrain, deep forest areas, Left Wing Extremism affected areas. Thus, the most important aspect of this village electrification program was to overcome all such challenges which stood as major barrier in extending electricity to the poor people of this country for so many years after the independence. The difficulty level further kept on increasing as the work progressed further. The major challenges involved were as under:

a. Inaccessibility and non-feasibility of conventional Grid system
b. Difficult hilly terrain
c. Head loading of materials over 1-10 days
d. Material transportation by choppers
e. Areas affected with Left Wing Extremism(LWE) activities
f. Forest clearance
g. Railway Clearance

Village: During Pungchi, Dima Hasao, Assam

Village: Tunjge Pungo, Dima Hasao, Assam

Tawang, Arunachal Pradesh



Village: Kimdar, Uttarkashi, Uttarakhand

Material mobilization in Jammu & Kashmir

Route to villages in Jatinga Valley, Dima Hasao, Assam

Manipur: Rain hampering visits

Route to village: Chhanika, Uttarakhand

Progress on capacity enhancement in rural electricity network under new projects:

SI. No.	Parameter	Unit	Achievement as on 31.03.2019
1	33/11 kV Substation - New	Nos.	1,128
2	33/11 kV Substation-Augmentation	Nos.	1,186
3	Distribution Transformers (DTRs)	Nos.	2,26,884
4	Feeder Segregation	CKm	70,350
5	LT Line	CKm	1,53,653
6	11 kV Line	CKm	85,783
7	33 & 66 kV Line	CKm	12,734
8	Consumer Meters	Nos.	96,98,749
9	DTR Meters	Nos.	1,61,843
10	11 kV Feeder Meters	Nos.	9,322

Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya)

Ministry of Power launched the scheme **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya)** to achieve universal household electrification by providing last mile connectivity and electricity connections to all remaining un-electrified households in rural and urban areas.

Scheme Outlay:

Rural - Outlay: Rs. 14,025 Crore,
GOI Grant : Rs. 10,587.50 Crore

Urban - Outlay: Rs. 2,295 Crore,
GOI Grant: Rs. 1,732.50 Crore

Total - Outlay: Rs. 16,320 Crore,
GOI Grant : Rs. 12,320 Crore

Funding Pattern:

- Grant from GoI : 60% of project cost (85% for Special category States)
- Discoms : 10% of project cost (5% for Special category States)
- Loan from FIs : 30%of project cost (10% for Special category States)
- Additional grant (50% of loan component i.e. 5% for special category states and 15% for other States) on completion of 100% household electrification by December 2018.

Fund status:

- Rs. 14,017 Crore (GOI Grant component of Rs. 10,890 Crore) has been sanctioned.
- GOI grant of Rs. 5,720.24 Crore (For Rural HHs Rs. 5413.95 crore, Urban HHs Rs. 306.29 Crore) has been released since launch of the scheme up to 31.03.2019.

Household Electrification:

At the time of launch of scheme about 4 crore households were estimated to be un-electrified based on the details reported by the States. Electrification of such large number of households, spread across lakhs of villages in different parts of the country, in a time bound manner was a huge task and necessitated concerted efforts by all the stakeholders with innovative approach and determination. The major challenges was creation of infrastructure from village to village and providing connectivity from household to household which include (i) mobilization of requisite material/equipment – poles, conductor, cable, distribution transformers, associated accessories & hardware, energy meter etc. (ii) mobilization of adequate skilled / semi-skilled manpower (iii) identification of beneficiaries, motivating them to avail electricity connection and (iv) monitoring at the grass root level. These challenges got multiplied when such a task is to be performed all across the country simultaneously in a time bound manner. While mitigation of most of these anticipated challenges was taken care of in scheme design itself, implementation in reality on ground was not that simple and easy. As the name of the new scheme itself suggests, the scheme has inherent features of 'Sahaj' i.e. Simple / Easy / Effortless and 'Har Ghar' i.e. universal coverage. The other key elements of the scheme are as under:

(i) No upfront fee for availing electricity connection: Absolutely free for economically poor households and for other households, Rs. 500 to be charged after release of connection in 10 instalments to be adjusted in monthly electricity bills

(ii) Organisation of camps in villages / cluster of villages for on spot registration and release of connections

(iii) Use of Mobile App for identification of beneficiaries and electronic registration including requisite documentation

(iv) SPV based standalone systems for households located in remote and inaccessible areas

(v) Web based near real time monitoring and updating of progress

(vi) Communication plan for creating awareness about the scheme and its benefits to the targeted population to motivate them to avail electricity connection

(vii) Flexibility to States in mode of implementation (Departmental / Turnkey / Semi-turnkey) During implementation, it was observed that there are villages where basic infrastructure already exists and only service connections are to be released to remaining households and the same time many villages do not have requisite basic infrastructure and required to be created before providing connectivity to households. Some of the villages required only little incremental infrastructure in order to extend electricity connections to remaining households. Accordingly, different modes of implementation were allowed for different category of villages as per the requirement of the States.

For mobilisation of requisite material / equipment, the Ministry coordinated with Indian Electrical & Electronics Manufacturers' Association (IEEMA) - the apex industry association of manufacturers of electrical, industrial

electronics and allied equipment in India, to ensure speedy supply for completion of task within stipulated timeframe.

Similarly, in order to facilitate availability of adequate skilled manpower with requisite skill sets for execution of electrification works under Saubhagya, Ministry of Power collaborated with Ministry of Skill Development and Entrepreneurship (MSDE) for skilling the workforce involved in implementation of the scheme. Power Sector Skill Council (PSSC) organized the delivery of training and certification programs in the States.

In addition to the above, rigorous review and monitoring mechanism has been instituted at all levels by the Ministry for monitoring the progress and timely resolution of issues impeding progress to ensure timely completion of works. A comprehensive Web portal 'saubhagya.gov.in' was developed to capture granular details up to village level for the entire country. All the stakeholders have been provided secured access for regular updating of progress on the portal. This platform was extensively used by all the stakeholders for day-to-day monitoring.

For creating an environment of healthy completion amongst various power distribution utilities of the States, an award scheme was instituted by the Ministry. The scheme envisages to felicitate the DISCOMs / Power Department of the States and their employees for achieving 100% household electrification in their area of operations. For the purpose of award, DISCOMs / Power Departments were divided into three categories and there were two quantum of award in each of the three categories. Under first quantum of award, the 1st DISCOM / Power, Department to achieve 100% household electrification by 30th November 2018 was provided cash award of Rs. 50 Lakh to be distributed amongst the employees. The second quantum of award includes cash award of Rs. 100 Crore as grant to the concerned DISCOM/Power Department to be spent in distribution infrastructure development in their area of operation. Other DISCOM/Power Department of the States to achieve 100% household electrification by 31st December, 2018 were also be provided certificate of appreciation.

Early achievers in Discoms and their employees have been awarded by Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy for early achievement of universal household electrification on or before 31st December, 2018 in the Power Minister Conference held during 26–27th February 2019. Details of successful awardees are as under:

(Rs. In Crore)

Sl No	Name of DISCOM	Award Amount for DISCOM	Award Amount for employees of DISCOMs
I	Jammu & Kashmir Power Development Department (JKPDD)	100.00	0.50
II	Madhya Pradesh Paschim kshetra Vidyut Vitaran Company Limited (MPPsKVVCL, Indore)	100.00	0.50
III	Madhya Pradesh Madhya kshetra Vidyut Vitaran Company Limited (MPMKVVCL, Bhopal)	100.00	0.50
	Total	**300.00**	**1.50**
		Grand Total:	**Rs. 301.50 Crore**

During implementation States reported sizeable reduction in number of un-electrified households as compared to earlier estimates reported by the States. States were regularly updating the data on Saubhagya portal as per ground conditions. The number of un-electrified households as on 10.10.2017 (base date of Saubhagya) reduced down to about 248.47 lakh. Out of these 248.19 lakh un-electrified households were electrified, by 31st January 2019. All the States have achieved saturation under Saubhagya Scheme by providing electricity connections to all willing Households except Chhattisgarh wherein 18,734 Households are located in highly inaccessible areas due to LWE issues.

Further, in order to ensure that no willing households left out without electricity connection, all States were requested to launch a special campaign in all parts of the State to identify any left out un-electrified households and to provide electricity connections to such households. A dedicated toll-free helpline 1800-121-5555 was also launched for the purpose of reporting any left out households. This is in addition to already existing helpline of 1912. Further Saubhagya Rath campaign and special campaigns by States have been conducted to provide the connections to any left-out households.During this campaign, electricity connections to additional 14.65 lakh households identified by the States have been provided since 1st February 2019. Thus, electricity connections to total 262.84 lakh households have been provided since launch of scheme up to 31.03.2019 and now only Chhattisgarh is left with 18,734 Households to be electrified.

Shri R. K. Singh, MoS (IC) for Power & NRE speaking on the occasion of dedication of 60 MW Tuirial HEP in Mizoram

CHAPTER 09

INTEGRATED POWER DEVELOPMENT SCHEME (IPDS), UJJWAL DISCOM ASSURANCE YOJANA (UDAY) AND NATIONAL ELECTRICTY FUND (NEF)

INTEGRATED POWER DEVELOPMENT SCHEME (IPDS),

To facilitate state utilities to ensure quality and reliable 24x7 power supply in the urban areas, Government approved the "Integrated Power Development Scheme" (IPDS) on 20.11.2014 with a total outlay of Rs. 32,612 Crore which includes a budgetary support of Rs. 25,354 Crore from Government of India. The main components of the scheme are:

(i) Strengthening of sub-transmission and distribution networks in the urban areas;

(ii) Metering of distribution transformers / feeders / consumers in the urban areas;

(iii) IT enablement of distribution sector and strengthening of distribution network under R-APDRP for 12th and 13th Plans by carrying forward the approved outlay for R-APDRP to IPDS.

(iv) Schemes for Enterprise Resource Planning (ERP) and IT enablement of balance urban towns are also included under IPDS. Scope of IT enablement has been extended to all 4041 towns as per Census 2011.

(v) Smart metering solution for performing UDAY States and Solar panels on Govt. buildings with net-metering are also permissible under the scheme.

(vi) Gas Insulated Sub-stations (GIS) at locations where space constraint exists are also permissible.

(vii) Real Time-Data Acquisition System (RT-DAS) projects for accurate measurement of power interruption parameters like SAIDI/SAIFI at 11KV feeder level are also covered under the scheme

Erstwhile R-APDRP has been subsumed in IPDS and CCEA-approved R-APDRP outlay of Rs. 44,011 crore including a budgetary support of Rs.22,727 crore for 12th & 13th Plan carried forward to the new scheme of IPDS.

The adoption of IT and technical intervention by way of network strengthening envisaged in the scheme will not only ensure 24x7 power supply in urban area but will also help in reduction in Aggregate Technical and Commercial (AT&C) losses.

Government support for the scheme is up-to the tune of 60% (85% for special category states) of the project cost. Provision of additional grant of 15% (5% for special category states) of project cost is kept for incentivizing the state utilities on achieving the timely completion of the project, reduction in AT&C loss as per trajectory and upfront release of subsidy. To support the state utilities in preparation of DPRs and project execution, provision of financial assistance to the tune of 0.5% of the project cost for hiring Project Monitoring Agencies (PMA) by state utilities is also envisaged in the scheme. Power Finance Corporation has been designated as Nodal Agency for operationalization of the scheme.

As on date, Projects worth Rs. 32,059 Crore have been sanctioned under IPDS as detailed below:

(i) Distribution system strengthening projects worth Rs. 28,260 Crore for 546 circles covering 3634 towns across the country.

(ii) IT implementation projects under phase –II worth Rs. 985 Crore for 1931 towns.

(iii) ERP projects worth Rs. 792 Crore have been sanctioned for 39 utilities.

(iv) Smart metering projects worth Rs. 834 crores have been sanctioned for 41 lakh nodes in 21 Utilities.

(v) Real Time -Data Acquisition System (RT-DAS) projects worth Rs. 209 Crore are also sanctioned under IPDS in FY 2018-19.

(vi) Installation of 120 Gas Insulated Switchgear (GIS) Substation worth Rs. 978 Crore have been sanctioned in FY 2018-19.

Physical progress of IPDS as on 31.03.2019:

- An overall progress of 64% has been achieved in the Distribution System strengthening works under implementation. The salient achievements are as under.
  - o 696 New 33/11KV substations have been commissioned including indoor Substations.
  - o Augmentation of as many as 841 No.s existing 33/11 KV substations have been completed by providing additional power transformers or capacity enhancement.
  - o More than 63,000 Distribution transformers have been installed.

- Aerial Bunched cables of more than 34,000 ckm and UG cables of more than 10,000 ckm laid
- More than 14,000 km HT lines and 8000 km LT lines completed.
- Solar rooftops of more than 29,000 KWp installed.

- 365 towns under IT phase- II have been IT enabled and 11 KV feeder data of these towns is available on National Power Portal.
- ERP works have already been awarded for 21 Utilities, and are under implementation.
- States/Utilities are in advance stage of finalisation of

(Indoor Power Substation commissioned under IPDS in Andhra Pradesh)

Smart metering works sanctioned under IPDS either through EESL or by tendering on their own

Positive impact of the above work in terms of reliable and better quality power can be seen for around 3 crore urban consumers in the 2,000-odd towns where the work has been completed.

Financial progress of IPDS, as on 31.03.2019:

- An amount of Rs. 7,852 Crore as Grant has been released by MoP /PFC to States under IPDS as per scheme guidelines. Further, Rs. 166 Crore have also been released for enabling activities for implementation of IPDS.

R-APDRP Component of IPDS:

Projects under the scheme are taken up in two parts. Part-A aims to establish IT enabled system with Data Centre, Customer Care Centre etc for energy accounting/ auditing and SCADA for bigger towns (population:4 lacs and Annual Energy Input:350 MU) whereas Part-B is for up-gradation & strengthening of electrical networks in these towns. The projects under RAPDRP under the sanctioned as GoI loans and convertible to grants based on timely completion and achievements of AT&C loss targets.

Projects worth Rs. 35,327 crore (Part-A: Rs.6407 crore covering 1405 towns and 59 SCADA projects; Part-B: Rs.28,920 crore covering 1227 towns) are under implementation.

As on 31.03.2019, 20 out of 21 Data Centre have been commissioned and 1378 towns have been declared "Go-Live" under Part-A of the programme. Part-B Projects have been completed in 1195 towns.

Go-Live towns, are towns where IT work is completed and town energy data has start flowing to Data Centre for energy accounting and auditing. Utilities have started using this data for energy accounting/auditing and to take administrative measures for controlling AT&C losses. Reduction in AT&C loss is reported in 1129 towns in Feb'19.

Rs. 12,017 Crore has been released as loan to state utilities under R-APDRP against Part-A and Part-B projects. Another Rs.471 Crore has been released under Part-C for enabling activities.

(Review of IPDS during RPM meeting of Ministry of Power with States in Nov 2018)

Scheme	Town covered (Nos.)	No. of Towns Com-pleted	Approved Project Cost (in Rs. crore)	GoI fund released (in Rs. crore)
Part-A (IT)	1405	1378	5,156	4,040
Part-A (SCADA)	59	52	1,251	639
Part-B	1227	1195	28,920	7,338
		TOTAL	**35,327**	**12,017**

URJA App

URJA APP is a step towards Digital India initiative in the Urban Power Distribution Sector. The App focuses on enhancing consumer connect by way of "Ranking" of towns, Discoms and States on various parameters related to consumers in a transparent manner. Following parameters of Go- Live towns are being monitored through URJA App on a monthly basis.

- Consumer complaints pending: Ranking is done based on the number of consumer complaint pending for redressal, as per the IT System.
- Release of new connection: Status of new connections applied and connection pending for release through IT system is displayed on the App.
- Average duration and number of power cuts: Ranking is done based on average number of power interruptions (nos./ month) as well as duration of interruptions (HRs/ month) at 11kV Feeder level recorded in the IT system. The average values are calculated on per consumer basis for the Town, Discom and State level ranking.
- E-payments: Ranking of towns is done based on number of consumers making online bill payments.
- Percentage loss of power/theft: Towns are ranked based on AT&C losses of the town as per energy audit carried out using IT systems created under the scheme.

The above information/reports are generated from the IT systems at Discom end and the same are uploaded on IPDS website/ URJA App, without any manual intervention in data collation/generation.

Online Feeder Monitoring on NPP

Online monitoring of 11kV Feeders of the IT enabled urban towns has been developed as an integral part of National Power Portal (NPP) being implemented by CEA. As on 31.03.2019, transaction data of 31,696 feeders have been uploaded by Discoms on NPP and master data of 36,673 feeders has been taken on board. Feeder wise data on Energy flow, Voltage profile, AT&C loss and power interruptions are recorded on monthly basis on the NPP. Further, the data of consumer related parameters like compliant redressal, release of new connections and e-payments are also captured on NPP. The said reports are generated from the IT systems of the Discoms and are transferred to NPP without any manual intervention in data generation. Discom-wise summary report is being sent regularly to MDs of respective Discoms to enable them to initiate administrative actions for improvement. This Data can be used by feeder managers as a management tool for administrative actions, reduction of AT&C loss.

Feeder Manager Recognition & Award Scheme under IPDS

In order to recognize efforts of Discoms/Feeder managers working towards reduction in AT&C losses, Ministry of Power has approved Feeder Manager Recognition scheme, 02 awards each under following categories:

(Hon'ble Minister of Power handing over the Feeder Manager Award to a Feeder Manager from Bihar)

- Energy Savings in Feeders
- Amount saved due to reduction in AT&C loss
- Reduction in AT&C loss
- Best effort in Data Correction/sanitization

The feeder managers are selected based on the data provided by the Discoms on the National Power Portal. So far, total 54 Feeder Managers from across Utilities have been awarded in the above categories on monthly basis for period September 2017 to October 2018.

Third Party Concurrent Evaluation Agency (TPCEA)

The IPDS envisages concurrent and post implementation evaluation of scheme by way of monitoring quality of works on sample basis by separate agency called Third Party Concurrent Evaluation Agency (TPCEA) for effective implementation in terms of Quality and Project Outcomes.

TPCEA is required to verify compliances by Utility:

- Manufacturing Quality Plan (MQP) – for quality materials
- Field Quality Plan (FQP) – for quality works (erection and process)
- Safety standards and relevant statutory clearances like – safety, fire etc.
- Compliance of gaps/shortcomings/defects reported in previous inspections
- Project timelines and IPDS guidelines

TPCEA has been appointed in 15 groups for 33 states/UTS across India. Stage –I inspection is already completed in 490 circles and Stage-II inspection is underway in most of these circles.

Impact Assessment of RAPDRP (subsumed under IPDS)

In order to assess the impact of R-APDRP, Ministry of Power advised the Nodal agency to carry out detailed assessment on how the scheme has eased the life of consumers and also benefited the Discoms. Four independent agencies have been appointed by PFC to take-up the impact assessment work on regional basis with one region assigned to each. The agencies have submitted their reports based on the data collected from R-APDRP IT system in Utilities, sample consumer survey, interactions with Utility officials and field visits in 249 sample towns for verification of electrical assets on sample basis.

The key highlights of the Region-wise study conducted by the four regional consultants are:

a) Most of the sample towns have shown a reduction in AT&C losses in FY18 as compared to Baselines values

   - ➢ 43 out of 46 Utilities (on the basis of sample towns) have reduced AT&C losses with various interventions under R-APDRP.
   - ➢ At Town level, 220 out of 249 sample towns (~88%) have shown reduction in AT&C losses w.r.t. Baseline values. Further, 109 sample towns (~44%) reached a level of 15% AT&C loss in FY18.
   - ➢ Feeders, Distribution transformers were metered and monitored through automated data logging system. Feeder losses have reduced significantly and the feeder analysis showed that 54%, 67%, 38% and 30% sample feeders in NR, SR, WR and ER/NER states reached 15% AT&C loss level and losses in other feeders also reduced.
   - ➢ The above reduction in AT&C losses resulted in saving of ~12000 MU of electricity, which amounts to ~Rs. 3052 Cr in power procurement cost in FY18.

a) IT initiatives under R-APDRP have led to automation in several key operational aspects. More nos. of new connections is given within SERC timeline and consumer complaints handling and dispute resolution time frames have also reduced. This has led to significant consumer satisfaction across the region.

b) 100% GIS Indexing and mapping of all consumers & assets completed in all sample towns. All the new connections are processed through IT systems. Positive impacts of automating the billing and payment were observed across all states. This has led to AT&C loss reduction through improved billing & collection efficiency.

c) Owing to digitalization of most of the Utility functions, it is easier for consumers to apply for new connection, or pay bill, or lodge a complaint. It also facilitates the utility to track consumers in an effective way.

d) More consumers are opting for digital bill payments as it reduces efforts & brings in transparency. The bill is shared with consumer in email/apps and the payment has been made possible through net banking, debit/ credit cards. BHIM/UPI app, other pocket wallets like PayTM etc. Bill payments through digital mode have increased across all sample towns.

e) Centralized Customer Care Centres established and functional in all the sample towns, with common toll free electricity complain number 1912. This has simplified the processes and enhanced the service delivery to consumers. A few outcome of consumer survey is highlighted below:

   - ➢ More than 97% of consumers get error-free billing, whereas 98% Bills are based on actual meter reading (only 2% average billing done)

- More than 90% of the consumers surveyed have observed better power quality, resulting into no voltage surges after R-APDRP initiatives.
- More than 70% consumers see improvement in Power Reliability over past 2-3 years
- More than 90% consumers feel that the process of lodging Complaint became easier
- More than 48% consumers get billing information through SMS, except SR region
- Consumers have seen positive socio-economic impact through improved educational opportunities due to better power availability
- Consumers opined that the process of getting a new connection is now simplified and services like change in load, name or category requests are completed within timelines.

f) The initiatives under Part-B have resulted in strengthening and augmentation of distribution infrastructure in the sample towns. Power outage has reduced in all the utilities. Based on sample towns, it is observed that the overall HT to LT ratio has increased.

g) Better power supply reliability and utility quicker response to complaints have led to increase in industrial and commercial activity, which is evident from increase in commercial & industrial electricity sales.

h) SCADA implementation in larger towns lead to reduction in downtime in case of outages

Further, to check the quality of works of completed RAPDRP projects, Quality Council of India has also been appointed by MoP.

(Capacity Building session for employees of PGVCL, Gujarat)

Capacity Building of Discoms under IPDS:

Capacity building of Discom manpower has been a focused area under IPDS /RAPDRP. In FY 2108-19, over 5000 man-days of training was imparted to Discom executives, entirely through in-house resources, without deployment any external training institute/ agency.

The training programmes were standardize to suit the requirement of Discoms and focused on IPDS related topics so as to increase awareness among the concerned filed staff about the key features of the scheme. The programmes were conducted at Discoms HQ by sending the teams from PFC, thus higher level of participation from field level was ensured.

Further, a large scale Peer learning workshop was also held at New Delhi wherein best practice were shared by the experts from various Discoms. As many as 250 participants from 45 Discoms took part in this day long workshop. The presentations given by various Utilities are available on best practices section of IPDS portal.

NATIONAL ELECTRICITY FUND (NEF)

Government of India has approved setting up of National Electricity Fund (Interest Subsidy Scheme) in 2012 to provide interest subsidy on loans disbursed to the State Power Utilities, Distribution Companies (DISCOMS) – both in public and private sector for the loans taken from Private & Public Financial Institutions, to improve the infrastructure in distribution sector.

2. Rural Electrification Corporation (REC) is the Nodal Agency for operationalization of the scheme.

3. Under NEF scheme, interest subsidy would be provided on loans taken by private and public power utilities in distribution sector for non- Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY) and non- Restructured Accelerated Power Development and Reforms Programme (R-APDRP) projects.

4. The pre-conditions for eligibility are linked to reform measures taken by the States and the amount of interest subsidy is linked to the progress achieved in reforms linked parameters. The preconditions of eligibility are operationalization of State Electricity Regulatory Commission (SERC), formulation of business plan for turnaround of utilities, re-organisation of State Electricity Boards (SEB), release of subsidy by State Government to DISCOMs, submission of audited annual accounts and timely filing of tariff petition.

5. There are two categories of States for working out the interest subsidy– Special category and focused states, and States other than special category and focused states. Each power utility eligible for subsidy on interest would be assigned marks based on reforms measures i.e. reduction in AT&C losses; reduction in revenue gap (Average Cost of Supply (ACS) - Average Revenue Realized on subsidy received basis); return on equity and multiyear tariff (MYT). Based on the consolidated score achieved on these parameters, the utilities would be categorized and will be eligible for subsidy in interest rates from 3% to 5% in States other than Special category and focused states and 5% to 7% in Special Category and focused states.

6. National Electricity Fund would provide interest subsidy aggregating Rs.8466 crore spread over 14 years for loan disbursement amounting to Rs.25,000 crore for distribution schemes sanctioned during the 2 years viz., 2012-13 and 2013-14.

7. NEF Steering Committee during the Financial Year 2012-13 & 2013-14 has approved 1009 projects of 25 Discoms from 15 States with loan component of Rs.26,406 crore for coverage under NEF. But after delisting of certain non-starter projects, the revised coverage now stands at 920 projects with loan component of Rs.23,973 crore for 24 Discoms in 14 States.

8. Interest Subsidy proposal amounting to Rs.175.07 crore has been released so far by Ministry of Power till March, 2019.

UJWAL DISCOM ASSURANCE YOJANA (UDAY)

Ujwal DISCOM Assurance Yojana (UDAY) was launched by the Ministry of Power, Government of India on 20th November, 2015 for a sustainable solution to the operational and financial inefficiencies of Power Distribution Companies(DISCOMs). The scheme is aimed at financial and operational turnaround of DISCOMs through targeted interventions to lower the interest costs, reduction of cost of power, increased revenues and improved operational efficiencies.

- States' Participation in UDAY: UDAY is a voluntary scheme for participation by States. Ministry of Power has signed Tripartite MoUs (with state Governments and DISCOMs) and Bipartite MoUs (with Power Department). Total 27 States and 05 Union Territories (UTs) have joined the scheme. Out of this 16 States have joined the scheme for both operational and financial efficiency improvements, while 16 States/UTs have joined the scheme for operational efficiency improvements.

Comprehensive (16) : Jharkhand, Chhattisgarh, Rajasthan, Uttar Pradesh, Punjab, Bihar, Haryana, Jammu and Kashmir, Andhra Pradesh, Madhya Pradesh, Maharashtra, Himachal Pradesh, Telangana, Assam, Tamil Nadu & Meghalaya

Operational (16): Gujarat, Uttarakhand, Goa, Kerala, Karnataka, Puducherry, Manipur, Sikkim, Arunachal Pradesh, Tripura, Mizoram, Nagaland, Daman & Diu, Dadra and Nagar Haveli, Andaman & Nicobar Islands and Lakshadweep

I. Issuance of Bonds and Debt Conversion:

Under, UDAY, a total liability of Rs.2.69 lakh Cr is to be restructured through issuance of Bonds. So far, Bonds worth Rs.2.32 lac crores have been issued (87% of UDAY states debt to be addressed) consisting of States Bonds of Rs.2.09 lac crores and DISCOMs Bonds of Rs.0.23 lac crores. DISCOM Bonds worth Rs.0.37 lac crores are yet to be issued.

Out of DISCOM debt of Rs.1.84 lakh Cr (which is to be converted into Grant/Equity by the end of FY19), Rs.1.24 lakh Cr have been converted into Grant/Equity till 27-Feb-2019.

- **Review and Monitoring of UDAY:** The scheme is being monitored by an inter-ministerial committee and a state level committee. Monthly meetings are conducted to review the progress of the scheme. Thirteen Monitoring Committee meetings have already been conducted. Apart from monthly meetings, one-to-one 'Focused Reviews Meetings' are regularly conducted to assess and review the performance of states where targets are not being met. An online UDAY portal and App, available both on Android and iOS platforms, provide basic analytics and progress of performance of various States/ DISCOMs in the public domain as a measure of transparency.

- **Key Performance Highlights of UDAY:** UDAY is a 3 year long programme where performance of the States is contingent to the time spent under UDAY, as different states have joined UDAY at different points in time. Early results under UDAY are encouraging, with some distinct benefits on operations. Some of the major achievements under UDAY upto 9MFY19 are given:

- **Financial losses of UDAY states have reduced from Rs.32,150 Cr in 9MFY17 to Rs. 25,305 Cr in 9MFY19.**
- **ACS- ARR Gap of UDAY states has reduced from Rs. 0.50/unit in 9MFY17 to Rs. 0.35/unit in 9MFY19.**

-States of Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Maharashtra, Jharkhand, Karnataka, Kerala, Punjab, Telangana, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Tripura and Rajasthan have reduced their ACS-ARR Gap in 9MFY19 in comparison with 9MFY17.

- **AT&C loss of UDAY states has reduced from 22.11% in 9MFY17 to 20.14% in 9MFY19.**
- **Overall Billing efficiency has increased from 82.95% in 9MFY17 to 84.06% in 9MFY19.**

  - States of Andhra Pradesh, Assam, Bihar, Daman & Diu, Haryana, J&K, Karnataka, Kerala, Maharashtra, Punjab, Rajasthan, Telangana, Uttar Pradesh, Uttarakhand, Manipur and Tripura have reduced their AT&C losses in 9MFY19 in comparison with 9MFY17.

- **A total of twenty (20) States have increased their tariff in FY18.**
- **Total energy billed by DISCOMs increased by 7% in FY18 over FY17, indicating a considerable growth in consumption, which in the past years had grown around 5-6%.**
- **Under Key Operational Parameters:**

  -Targets under Feeder metering, Rural Feeder Audit and LED distribution (UJALA) have mostly been achieved

  -Under DT metering (urban),Bihar, Jharkhand, Assam, Gujarat, Himachal Pradesh, Meghalaya, Telangana and Daman & Diu have achieved 100% of their overall targets till FY18.

  -Under Feeder Segregation, Gujarat, Haryana, Andhra Pradesh, Manipur and Meghalaya have achieved 100% of their overall targets till FY18.

*As per data provided by States in the Portal

- **Key Initiatives taken by States under UDAY:** Several States have adopted innovative measures and initiatives, even beyond the designed interventions, for achieving UDAY targets, and for improving their overall performance.
- **Haryana: 'Mhara Gaon, Jagmag Gaon'** scheme to address line losses in rural domestic areas.
- **Rajasthan: 'Mukhyamantri Vidyut Sudhar Yojna'** scheme to improve quality of services & reduce losses. Consumer awareness programs like – **Bijli Chaupal, Panchayat camps**. Also, Rajasthan has formed a new company (RUVNL) for optimization of power purchase cost.
- **Maharashtra (MSEDCL):** Initiated **Mobile application** for consumers to avail services fingertips.
- **Manipur:** Installation of **Pre-paid metering to reduce the outstanding consumer debts,** energy theft and improve the billing efficiency
- **Bihar: Customized billing software, Spot billing** through web-based Mobile app. Also, the state has launched an anti-theft drive through dedicated WhatsApp no. for general consumers indulging in theft for immediate inspection & FIR.
- Uttar Pradesh has **launched web portals / mobile app** such as RAID and SAARTHI to track disconnection drives and feeder level performance respectively.
- Jharkhand has increased different modes of payment such as Pragya Kendra, POS machine, e-Wallet, ATP machines, Online payments etc. along with centralized HT billing and spot billing systems.
- To address the issue of high pending dues, Telangana has implemented **pre-paid meters for Government services.**
- Karnataka has carried out replacement of overhead cables with UG cables, GPS tracking and spot billing, prepaid metering, quality power supply to rural areas (Niranthara Jyoti Project) and 24x7 customer helpline.
- **Capacity Building and Knowledge sharing:** Two Workshops on AT&C loss reduction, one Workshop on Power Purchase Cost Optimization and another workshop on power sale and purchase decision support tool have been organized, where DISCOM officials across levels were invited for participation and knowledge/ experience sharing.

Note: Data compiled for 9 months period of the relevant year.

Srinagar-Leh-Kargil - Drass Transmission System

CHAPTER 10

NATIONAL SMART GRID MISSION

National Smart Grid Mission
Ministry of Power
Government of India

National Smart Grid Mission (NSGM) has been established by the Government of India in 2015 to plan and monitor implementation of policies and programmes related to Smart Grid activities in India. NSGM envisages the implementation of AMI, medium sized micro grids, distributed generation, outage management, power quality improvement, peak load management and EV charging infrastructure etc. to support the proliferation of EVs. Under sanctioned NSGM projects, 30% of the project cost is provided from the NSGM budget whereas balance project cost is to be funded by the Utilities through innovative financing models.

The initial phase of NSGM was till March 2017. Noting the efforts for Smart Grid development activities, NSGM has been extended till March 2020 for accelerating the Smart Grid activities in India. During this period, the implementation of Smart Grid projects is being expedited to showcase the demonstrated benefits on ground. NSGM has since been focussing on sustainable deployment of Smart Grids.

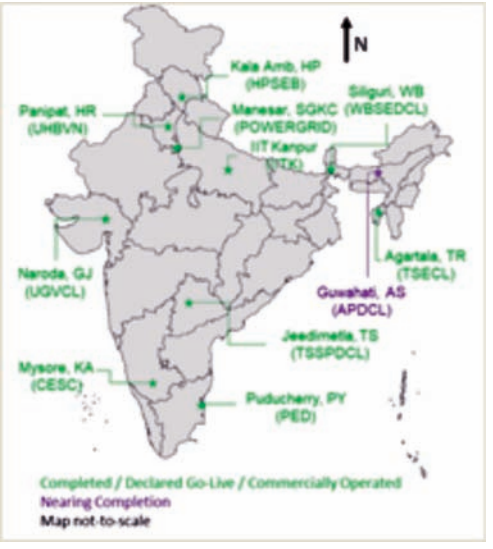
Smart Grid Projects under NSGM

Under NSGM, five Smart Grid projects have been sanctioned/ under implementation viz. two in Chandigarh (Sub Division No. 5 and entire city), one each at Kochi, Rourkela and Ranchi towns for about 7.50 lakh consumers.

The SG project at Sub Division 5 of Chandigarh was awarded in September and November 2018 for AMI and SCADA packages respectively. NIT for Ranchi SG project has been issued in December 2018.

Smart Grid Pilot Projects

Special efforts for the development and deployment of Smart Grids in India started in this decade under the aegis of Ministry of Power, Govt. of India. Eleven (11) Smart Grid Pilots including a Smart City pilot and Smart Grid Knowledge Centre, sanctioned by MoP at different geographical locations in the country to test the functionalities like Advanced Metering Infrastructure (AMI), Power Quality Management (PQM), Peak Load Management (PLM), Distributed Generation (DG), Microgrids and Outage Management System (OMS) are under advanced stage of implemntation. These pilot projects cover about 1.67 lakh consumers for a total sanctioned cost of Rs.254.29 Cr. The GoI funding for these pilot projects is 50% i.e. up to Rs.130.06 Crores.



The SG pilots at CESC (Mysore), IIT Kanpur and UHBVN (Haryana), SGKC (Manesar), PED (Puducherry), UGVCL (Gujarat), WEBSEDCL (West Bengal), TSSPDCL (Telangana) and HPSEB (Himachal Pradesh) have been successfully completed / inaugurated / declared go-live and TSECL (Tripura) pilot put under commercial operation. Remaining pilot at APDCL (Assam) is likely to be completed by August 2019. The Smart Grid Knowledge Centre has been inaugurated by Honourable Minister of State for Power, New and Renewable Energy (I/C) Sh. R. K. Singh in September 2018.

Inauguration of SGKC, Manesar. 19.09.2018

Showcasing SG Functionalities at SGKC, Manesar. 19.09.2018

Domestic Collaboration, Training and Capacity Building

NSGM has been actively engaging multiple stakeholders for bringing out best practices and solutions for deployment of Smart Grids. Multiple workshops, seminars, training programs were organized and also represented in various panel discussions and conferences to promote and create awareness on Smart Grid deployments. The following Smart Grid Standard / Reference documents have also been released by Honourable MoSP (I/C) in January 2019.

Release of NSGM Framework, Model DPR and Model RfP Documents, Delhi. 16.01.2019

Smart Grid training programs for utility professionals and power sector veterans are also being organized to equip them with relevant skills for tackling Smart Grid and Smart Meter deployments.

In 2018-19, three training programs were organized at Smart Grid Knowledge Center (SGKC). It is being utilized for training and capacity building programs for training the utility personnel

One day exclusive R&D Conclave in association with DST organized in July 2018 on Mission Innovation Challenge #1 Smart Grids proposals received for R&D funding.

An interactive session on Smart Grids for Smart Cities was organized on 30.10.2018 in association with IEEMA to bring relevant stakeholders on same platform to discuss the issues and possible solutions.

1st SLPMU meeting-cum-workshop organized in February 2019. The workshop has seen a participation of about 45 members from 15 SLPMUs/utilities.

Workshop on Smart Grid Regulations for Distribution was also organized in March 2019 with participation from utilities and regulators of various states.

Smart Grids for Smart Cities, Delhi. 30.10.2018

Smart Grid Regulations for Distribution, Delhi. 11.03.2019

International Collaboration

Alongside the engagements with the domestic stakeholders, international deliberation is also being carried out by NSGM via seminars, webinars, study tours, action networks etc.

India has been an active member in ISGAN (International Smart Grid Action Network) since its inception. Director NPMU had participated as part of Presidium in 16th ExCo meeting followed by KTP workshops held at Vienna, Austria in October 2018. NPMU and Ministry of Power officials toured Stockholm, Sweden August 2018 to interact with Swedish Smart Grid Forum and identify possible cooperation for collaboration with India.

CHAPTER 11

ENERGY CONSERVATION

The primary energy demand in India has grown from about 450 million tons of oil equivalent (toe) in 2000 to about 840 million toe in 2017. This is expected to increase to somewhere between 1250 (estimated by International Energy Agency) and 1500 (estimated in the Integrated Energy Policy Report) million toe by 2030. This increase is driven by a number of factors, the most important of which are increasing incomes and economic growth which lead to greater demand for energy services such as lighting, cooking, space cooling, mobility, industrial production, office automation etc. This growth is also reflective of the current low level of energy supply in India. There is a large latent demand for energy services that needs to be fulfilled in order for people to have reasonable incomes and a decent quality of life.

Government of India has undertaken a two pronged approach to cater to the energy demand of its citizens while ensuring minimum growth in CO2 emissions, so that the global emissions do not lead to irreversible damage to the ecosystem. In the generation side, the Government is promoting greater use of renewable in the energy mix mainly through solar and wind and at the same time shifting towards supercritical technologies for coal based power plants. Efforts are also being made to efficiently use energy in the demand side through various innovative policy measures under the overall ambit of Energy Conservation Act 2001 (EC Act). Also, as per India's Intended Nationally Determined Contribution (INDC) it is aimed to reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level.

EC Act was enacted in 2001 with the goal of reducing energy intensity of Indian economy. Bureau of Energy Efficiency (BEE) was set up as a statutory body on 1st March 2002 at the central level to facilitate the implementation of the EC Act. The Act provides regulatory mandate for: standards & labeling of equipment and appliances; energy conservation building codes for commercial buildings; and energy consumption norms for energy intensive industries.

PROMOTING ENERGY EFFICIENCY IN BUILDINGS

Revised version of Energy Conservation Building Code (ECBC) 2017 was launched in 2017 by the then Hon'ble Minister of State (IC) for Coal, Mines, NRE& Power. The scope of ECBC 2017 includes norms and standards for building design, including the envelope, lighting, heating, air-conditioning, and electrical systems. It sets minimum energy standards for new commercial buildings having a connected load of 100 kW & above or contract demand of 120 kVA & above. The ECBC 2017 will set the minimum efficiency standard for buildings aiming at near zero energy buildings in the future. While the ECBC has been developed by BEE, its enforcement lies with the State Governments with 13 States and 1 UT having already notified ECBC. In order to address energy efficiency in Residential Sector, Eco NiwasSamhita 2018 (Part 1: Building Envelope) is developed and launched in December 2018 which is an Energy Conservation Building Code for Residential Sector. It sets minimum building envelope performance standards to limit heat gains (for cooling dominated climates) and to limit heat loss (for heating dominated climate) as well as for ensuring adequate natural ventilation and day lighting.

Energy efficiency in existing buildings is also a key thrust area of the Government of India, and the voluntary scheme for star rating of commercial buildings was developed with an aim to create a market pull for energy efficient buildings. Currently the scheme is applicable to 4 categories of buildings i.e. Day use Office buildings, Shopping Malls, BPOs and Hospitals.

Achievements

- The Energy Conservation Building Code has so far been mandated in the following thirteen States and one Union Territory: Assam, Rajasthan, Odisha, Punjab, Andhra Pradesh, Telangana, Karnataka, Kerala, Uttarakhand, Haryana, West Bengal& Uttar Pradesh,Himachal Pradesh and UT of Puducherry.
- 17 ECBC Cells have been set up covering 24 States/UTs under the institutional framework for capacity building on ECBC implementation in States/UTs.
- A Memorandum of Understanding (MoU) is signed between Bureau of Energy Efficiency (BEE) and Central Public Works Department (CPWD) for "Energy Efficiency in CPWD managed Buildings".
- Eco-NiwasSamhita 2018 (Part 1: Building Envelope) is developed and launched by Hon'bleLokSabha Speaker and Hon'ble Minister of Power on National Energy Conservation Day (14th December, 2018). It is an Energy Conservation Building Code for Residential Sector.
- A total of 225 Commercial buildings have been star rated under different categories of buildings as on date.

- For monitoring of energy consumption pattern of all new and existing buildings, EMIS (Energy Management Information System) portal is developed.
- Labelling program for Residential buildings launched in February 2019.
- More than 50 capacity building workshops conducted for ECBC awareness.
- "Energy Efficiency Label for Residential Buildings" launched by Hon'ble Minister of State (IC) for Power and Renewable during the conference of Ministers for Power, New & Renewable Energy of States & Union Territories held at Gurugram, Haryana on 26th February, 2019.

Fuel Efficiency in Transport Sector

India's dependence on imported fossil fuels rising continuously due to the limited domestic petroleum resources. India ranked as the fourth-largest petroleum consumer in the world following China, the United States, and Russia. The country's energy demand continues to climb as a result of its dynamic economic growth and modernization. India's consumption of petroleum products increased by 5.3% to previous year which is more than 200 MMT causing a significant expenditure on oil import. Keeping in view the growing demand of fossil fuel and rapidly growing motor vehicle fleet in India, Govt. of India set a target to reduce 10% reduction on import by 2022. BEE is working on the Development of fuel efficiency norms for Vehicles that could moderate the rising demand of fuel.

Fuel Economy Norms for Heavy Duty Vehicles: In August 2017 the Government of India finalized fuel efficiency norms for commercial vehicles (CVs) with a gross vehicle weight (GVW) of 12 tonnes or greater. Manufacturers must demonstrate compliance with the rule by evaluating vehicles over the constant speed fuel consumption (CSFC) test procedure. In the CSFC protocol, trucks are driven at constant speed on a test track at 40 and 60 kilometres per hour (kph), and buses are run at 50 kph. Recently Ministry of Road Transport and Highways has revised the safe axle weight limits, subsequently the norms for HDVs is under review to meet the revised GVW range.

In addition to norms for CVs greater than 12 tonnes, the development of fuel efficiency standards for CVs between 3.5 and 12 tonnes is ongoing. The norms for this lighter segment of CVs will also be centred around CSFC testing. The norms are finalized and notification is under process by Ministry of Power.

Corporate Average Fuel Economy Norms for Passenger Cars: The Government of India, Ministry of Power, issued average fuel consumption standards for cars on 23rd April 2015. This standard is applicable for the motor vehicle using petrol or diesel or liquefied petroleum gas or compressed natural gas, which carry passengers and their luggage and comprising not more than nine seats including driver's seat, and of Gross Vehicle Weight not exceeding 3,500 kilograms tested.

The fuel consumption standards would be effective from 2017-18 onwards, and a second set of standards would come into force from 2022-23. The standards relate the Corporate Average Fuel Consumption (in liters/100 km) to the Corporate Average Curb Weight of all the cars sold by a manufacturer in a fiscal year. According to the first standard, the average weight of all cars is expected to be 1037 kg in 2016-17, and the Average Fuel Consumption Standard would have to be less than 5.49 km/100 liters for this average weight. The second standard assumes car average weight of 1145 kg in 2022, and requires the average fuel consumption to be less than 4.77 l/100km at this average weight. It may be noted that the standards apply to the Corporate Average Fuel Consumption i.e. the average of the standard fuel consumption of all vehicles sold by the manufacturers in the fiscal year, and not to the fuel consumption of an individual model. The fuel consumption is measured under standard conditions at the nationally accredited labs over the national driving cycle.

It is expected that these standards would lead to a reduction of 22.97 million tons of fuel consumption by 2025.

Other initiatives in Fuel Efficiency in Transport Sector: In addition to the above mentioned, BEE is also working on the development of Fuel Economy norms for Light & Medium Commercial vehicles of Gross vehicle weight ranging from 3.5 tonnes to 12 tonnes. The norms have been developed and the notification process is under progress.

Development of Fuel Economy norms for Agricultural tractors is also under process and likely to be finalised soon. For vehicular tyres standard and labelling programme has been initiated also. It has also been initiated the development of a computer-based simulation tool (like VECTO in EU) as per Indian specific conditions. The tool will be helpful to reduce the cost and time for testing of vehicles.

STANDARDS AND LABELING SCHEME

Standards and Labelling (S&L) scheme is a flagship initiative

of Ministry of Power that was launched with the key objective of providing consumers an informed choice regarding the energy savings and thereby the cost-saving potential of various energy consuming appliances. S&L scheme covers the star labelling program for 23 appliances, out of which 10 appliances are under mandatory regime and remaining 13 appliances are under voluntary regime.

Achievements:

- Revision of energy consumption standards for Tubular Fluorescent lamps, Direct Cool Refrigerators, Frost Free Refrigerators, Storage type electric water heaters, Color Television has been done during the year 2018 with a view to bring more efficient appliances in the market from 1st January, 2019.
- The star labelling program for Inverter Air Conditioners and LED Lamps has been made mandatory w.e.f. January, 2018. The energy consumption standards for Inverter Air Conditioners have been notified in the Gazette of India vide S.O. 2528 (E) dated 8th August, 2017. The energy consumption standards for LED lamps have been notified in the Gazette of India vide S.O. 4097(E) dated 27th December, 2017.
- Conducting Phase-I of retailer training programme called "National Retailer Training Programme on Standards and Labelling (NRTP)", under which total 18 workshops have been conducted over a period of time in various cities. Approximately 2200 retailers were educated regarding the various facets of standards and labelling scheme. 2nd phase of retailer training program initiated in the year 2018. In phase 2 of Retailer Training Programme total 34 workshops were organized wherein in 1950 retailers were trained on the provisions of Standards & Labelling scheme.
- BEE signed Memorandum of Understanding (MoU) with National Accreditation Board for Certification Bodies (NABCB) as Independent Agencies for Monitoring & Evaluation (IAME) on 28th May 2018.
- Voluntary star labelling program for commercial (water and air cooled) chillers was launched on 14th September, 2018.
- Voluntary star labelling program for Washing machines and Microwave Ovens was launched on 8th March, 2019.
- LED testing facility set up was inaugurated at CPRI Bangalore by Secretary Power on 27th November, 2018.
- BEE provided technical inputs to develop India Cooling Action Plan which was launched on 8th March, 2019 by MoEF& CC.

CAPACITY BUILDING OF DISCOMS

Demand Side Management (DSM) measures in the Energy Sector is a cost-effective tool. As a customer strategy, DSM programs encourage the installation of end-use technologies that consume less energy, thereby reducing and/or shifting the customers' overall electric bill. DSM programs can help utilities to reduce their peak power purchases on the wholesale market, thereby lowering their overall cost of operations.

The capacity building and other support is essential for the DISCOMs to implement DSM in their respective areas. In this context, Bureau of Energy Efficiency has launched a programme for capacity building of DISCOMs. This will help in capacity building of DISCOM officials and development of various mechanisms to promote DSM in their respective areas.

Achievements:

The objective of the programme is to carry out load management activities, development of DSM action plans and implementation of DSM action in their respective areas. Following have been the major achievements so far under this programme.

First Phase

- 34 DISCOMs were selected for participating as beneficiary DISCOMs under this programme and Memorandum of Understanding (MoU) was signed with them.
- DSM Cell has been established by these DISCOMs.
- DSM regulation has been notified in 22 States for 34 DISCOMs.
- Manpower support was provided to each DISCOM for facilitation of DSM related activities. This provision will be continued for the period 2017-20.
- Load survey is completed for all 34 DISCOMs and their DSM action plans have been prepared.
- National Power Training Institute was engaged by BEE to conduct training programmes for the officials of DISCOMs to create Master Trainers on DSM and Energy Efficiency. Under this programme, 504 officials of senior/ middle-level management of these DISCOMs were trained as Master Trainers under Training of Trainers activity.

- About 5000 circle level officials of DISCOMs have been trained on DSM and Energy Efficiency.

Second Phase

- 28 DISCOMs have been identified on PAN India level as beneficiary DISCOMs under this programme.
- Memorandum of Understanding (MoU) has been signed amongst BEE, the selected 28 DISCOMs and respective SDAs for smooth and effective implementation of necessary activities.
- About 1000 senior officials of these DISCOMs would be trained as Master Trainers on DSM & Energy Efficiency and capacity building programme for about 4000 circle level officials would be undertaken.

AGRICULTURE DEMAND SIDE MANAGEMENT

Agriculture sector is one of the most important sector of Indian economy. Agriculture plays a significant role in the overall socio-economic development of India.This sector accounts for approximately 80% of India's total water consumption. Pumps being the most vital element of the irrigation process and presently there are about 20 million pump sets energized in India.

Upgradation of existing pumping systems presents an immediate need and an unprecedented opportunity. The sector is dominated by highly in-efficient pump sets having average efficiency range of 25%-30% while efficiency level of star rated energy efficient pump sets (EEPS) is 40%-45%. Therefore, there is a need to tap the huge energy savings potential promised in agriculture pumping sector.

Achievements:

- An MoU was signed between Indian Council of Agricultural Research (ICAR) and Bureau of Energy Efficiency (BEE), Ministry of Power, to create awareness for energy efficient pumpsets and operational practices so as to adopt energy and resource efficient approaches with aim to create awareness on energy efficiency and conservation in agricultural practices, particularly in using agriculture pumpsets, tractors and other machines and to improve fuel and water resource use efficiency thereby reducing the cost of cultivation so as to increase farmer's income in harmony with strategies of "Per drop more crop" and "Doubling Farmers' income".
- As per MoU signed between BEE and Indian Council of Agriculture Research (ICAR), various training and awareness programs has been conducted in several states like Andhra Pradesh, Chhattisgarh, Sikkim, Uttarakhand, and Gujarat.

- States of Haryana, Punjab, Karnataka, Kerala issued state wide notification for using EEPS. Chhattisgarh & Rajasthan are providing free power/incentive to consumers using EEPS.
- Mizoram has carried out the feasibility for demo project for implementation in Rural Drinking Water Pumping Systems.

MUNICIPAL DEMAND SIDE MANAGEMENT

The energy consumption of the municipalities is characterized by frequent changes and rising peaks in power load curves in the morning hours due to water pumping and evening hours for street lighting. The inefficient use of electricity due to limited diffusion of energy efficient technologies and Demand Side Management (DSM) initiatives have considerably increased the energy spent by the municipalities. The need for affordable electricity and the energy and peak shortages make the Municipal Demand Side Management (MuDSM) programme important for India, as it can improve the overall energy efficiency of the ULBs which could lead to substantial savings in the electricity consumption, thereby resulting in cost reduction/savings for the ULBs.

SMALL AND MEDIUM ENTERPRISES (SMEs)

The MSME (micro, small and medium enterprises) sector, is a heterogeneous sector in terms of the products manufactured, sizes, manufacturing processes, output and technology used in manufacturing. MSMEs engaged in manufacturing, account for about 33% of India's manufacturing output and around 28% contribution in the GDP as whole.

MSMEs typically are characterized with a high degree of heterogeneity within the manufacturing processes across various geographic locations even for similar product offerings. When compared with large enterprises they have smaller scale of operations, smaller capital base and do not have access to cheaper finance and technology solutions. Hence, they prefer low-cost sub-standard solutions leading to inefficient production. The enterprises engaged in energy intensive operations incur disproportionately higher costs. Vulnerability of MSMEs to increasing energy prices is higher as they pay more per unit of energy as compared to large industries.

The MSMEs in India are around Sixty-Three million – and majority of them have not implemented any energy efficiency (or) technology upgradation measures and continue to depend on obsolete, low efficiency technologies that result in wasteful energy consumption, thereby reducing profitability and competitiveness of MSME sector in India.

BEE's Programme to Improve Energy Efficiency of MSME Sector –

With the collective efforts towards improving the energy performance, the current state of awareness, perception and responsiveness towards energy efficiency programmes of MSME segment in India, Energy Efficiency interventions in SME sector are yet to become the mainstream across the country.

Although the energy saving potential is immense in this sector which BEE intends to unlock, there are challenges faced by Indian MSME entrepreneurs such as risk averseness, cumbersome documentation and lack of awareness/ motivation.

Bureau of Energy Efficiency has also implemented EE technologies in many energy intensive clusters of India with the support from Global Environment Facility (GEF) through UNIDO and World Bank.

Major Achievements –

- Four (4) Audio Visual case studies were prepared on implemented EE technologies. These audio video tutorials are developed to educate, showcase the actual savings realised (monetary benefits) and motivate SME entrepreneurs to adopt EE technologies.
- Established EMC in 3 clusters Morbi, Sikkim & Kerala with portable energy audit instruments worth of 30 lakhs, thereby established 12 Energy Management Centres Pan India.
- National Stakeholder Consultation Workshop was organised at Indore to achieve transformational results and scaling up the project activities.
- More than forty (40) dissemination workshops were organised through State Designated Agencies (SDAs) to disseminate the knowledge and experience gained, savings achieved, energy efficient technologies.
- 14th and 15th meeting of SAMEEEKSHA was organised at Kolkata and Coimbatore

- Fifty (50) energy efficient technologies pursuant to energy intensive clusters were shortlisted to be used to develop the multimedia tutorials.

- More than Two Hundred (200) SME entrepreneurs were trained on "Best Operating Practices" that should be adopted to achieve maximum energy efficiency under GEF – UNIDO – BEE Programme.
- To ensure the replication of the demonstration projects in the cluster, cluster level entities were strengthened by means of empanelment of local service providers, dissemination workshops, capacity building of unit owners etc. and more than Eight Hundred (800) Local Service Providers were trained at Clusters.
- Six B2B exhibition were organised followed by an implementation support and awareness workshop under GEF – World Bank – BEE Programme.
- Demonstration Project on the technology "Conversion of existing Bull Trenched Kilns (BTKs) to ZigZag Kilns" were implemented at Bhatinda and Abohar.
- Under GEF – UNIDO – BEE Programme more than120 small scale energy saving projects with 40 energy efficient technologies implemented.
- Twenty-four (24) pilot projects worth an investment 891 Lakhs Indian Rupees has been implemented. This in turn has saved 1450 TOE energy with avoided 3947 tons of CO2emissions.
- Implementation support for ISO 50001 was provided for 50 MSMEs

STRENGTHENING OF STATE DESIGNATED AGENCIES TO PROMOTE EFFICIENT USE OF ENERGY

In exercise of the powers conferred by section 15(d) of EC Act 2001, all 36 State Governments/ UT Administrations have designated an agency as State Designated Agency (SDA) to coordinate, regulate and enforce the provisions of this Act within the State, either by assigning additional responsibilities to one of the existing departments of the State Government or by establishing a dedicated Stand-Alone SDA for energy efficiency.

Achievements:

The SDAs have carried out capacity building activities like workshops and training programmes involving the Energy Managers, Energy Auditors and Designated Consumers appraising about their roles as per the mandate of the EC Act 2001. Media and awareness campaign has been undertaken by the SDAs in their respective states. The major focus areas include promotion through electronic and print media, awareness campaign in schools and colleges through brochures and banners etc. Most of the SDAs celebrate Energy Conservation Day with due recognition given to those who have taken lead in promoting the cause of energy efficiency in the state. In addition to this, some of the major successful accomplishments of the scheme are as follows:

- About 25 demonstration projects in the areas of street lighting, water pumping and waste heat recovery have been successfully completed by SDAs.
- 30 nos. of villages have been taken up by the SDAs under "Model Energy Efficient Village Campaign" for converting them into model energy efficient villages by replacing existing inefficient electrical appliances with BEE star rated appliances including household bulbs, street lights, fans, water pumps, etc.
- Replacement of existing conventional appliances with energy efficient appliances in about 3000 nos. of Govt. schools by SDAs is underway. This endeavor has been completed in about 700 nos. of schools.
- Almost 200 nos. of employees are engaged by the SDAs, who are exclusively involved in facilitating and enforcing efficient use of energy and its conservation at the State level.
- SDAs have conducted many workshops/seminars and capacity building programmes to disseminate information and address practical issues faced by various stakeholders. Target audience of these workshops include accredited/certified energy auditors, energy managers, Designated Consumers, building professionals, architects, Financial Institutions, ESCOs, etc. Many such workshops cum training programmes have been organized by the SDAs.
- All the SDAs have established dedicated website highlighting energy efficiency measures undertaken in the state. The websites are linked with Bureau of Energy Efficiency and other SDAs to facilitate information exchange.

CONTRIBUTION TO STATE ENERGY CONSERVATION FUND (SECF)

Section 16(1) of the Energy Conservation Act 2001 requires State Governments to constitute a fund called SECF for the purpose of promotion of efficient use of energy and its conservation within the state. In this context, a scheme called "Contribution to State Energy Conservation Fund (SECF)" to be governed by BEE was approved by the Ministry of Power.

The SECF can facilitate to overcome the major barriers for implementation of energy efficiency projects. It is intended to be used as an instrument to facilitate implementation of energy efficiency projects through market transformation.

The contribution under SECF is made to those State Governments / UT Administrations who have created their SECF and finalized the rules and regulations to operationalize the same. The scheme is for contribution to all the State/ UTs with a maximum ceiling of Rs. 4.00 Crore for any State/ UT provided in two installments of Rs. 2.00 Crore each. The second installment of Rs. 2.00 Crore under contribution to SECF is released only after the states have provided a matching contribution to the first installment of Rs. 2.00 Crore provided by BEE. It may be mentioned here that the matching contribution by the State Government for North Eastern States and the UT Administrations is relaxed to Rs. 25.0 lakhs instead of Rs 2.0 Crore.

Achievements:

SECF has been constituted in 30 states, out of which, 25 states have provided matching contribution.

NATIONAL ENERGY CONSERVATION AWARD AND PAINTING COMPETITION

The National Energy Conservation Awards are presented to industry and other establishments every year by the Ministry of Power with the objective of promoting energy conservation among all sectors of economy. These awards recognize and encourage endeavors of industrial units, institutions and establishments in reducing energy consumption by felicitating them with Energy Conservation Awards on the occasion of National Energy Conservation Day, celebrated on 14th December every year.

The awards were given for the first time on December 14, 1991, which was declared as the 'National Energy Conservation Day'. Since then, National Energy Conservation Awards (NECA) has been attracting the attention of all the stakeholders and has witnessed increasing participation level year after year. These awards are presented on EC day by eminent dignitaries and highest functionaries such as Hon'ble President, Hon'ble Prime Minister and Hon'ble Union Minister of Power.

Achievements:

- Hon'ble Speaker of Lok Sabha was the Chief Guest for the NECA – 2018 and awards were presented to the awardees by the Hon'ble Speaker and Hon'ble Minister of State (IC) for Power & NRE.
- From 2017 onwards, applications are invited for NECA on rolling cycle of three years, which implies that few sectors are allowed to participate every year and every sector will get a chance to apply for the NECA within a block of three years.
- 333 industrial units, establishments, and organizations participated in NECA-2018. 2384 nos. of applications were received for "Most Energy Efficient Appliance of the Year"
- 13 units were awarded First Prize, 13 units Second Prize, 26 units Certificate of Merit and 5 Awards for the Most Energy Efficient Appliance of the Year. The awards are recognition of their demonstrated commitment to energy conservation and efficiency.
- The participating units of 2018 Awards have collectively invested Rs. 1327 Crores in energy conservation measures, and achieved a monetary savings of Rs. 2069 Crores, having an average payback period of 8 Months.
- The participating units have saved electrical energy of 3917 Million kWh of electrical energy, which is equivalent to the energy generated form a 739 MW at a PLF of 60.5 %. In other words, these participating units have avoided the installation of power generating capacity equivalent to 739 MW in 2017-18, which would otherwise have been required to meet the power demand of these units.

An awardee receiving award from Hon'ble Lok Sabha Speaker

Painting Competition on Energy Conservation for School Children

Ministry of Power is organizing National Painting Competition since 2005 under the National Awareness Campaign to promote energy conservation in the country for students of 4th, 5th and 6th standards. Painting competition for students at the School, State and at National level has been included as one of the activities of the campaign, which would not only make aware the children about the need of conserving energy but at the same time would educate and involve their parents as well in the above cause. The identified activity is one of the measures, which can help in creating awareness in the domestic sector. In order to strengthen and for added cognizance, higher classes of 7th, 8th and 9th standards have been included from 2013 in addition to existing classes of 4th, 5th and 6th Standards.

The painting competition is held in three stages, namely, School, State and National Level under two categories. Students of 4th, 5th & 6thstandard are under Category 'A' and 7th, 8th& 9th standard students are under Category 'B'.

Achievements:

This year across the country 90,78,735 students from 4th to 9th standard participated in the Painting Competition. This competition is organized all over the country in association with 12 CPSUs under Ministry of Power. The paintings drawn by children reflect their interest in the energy conservation activities and their concern about energy crises and climate change, and have effectively conveyed inspiring ideas through their impressing paintings. This year 108 children, all winners of the State Level Painting Competition, reached the National Level Painting Competition. Paintings of winning children were displayed in the exhibition gallery during the award function at Vigyan Bhawan.

Winners of the National Painting Competition with Hon'ble LokSabha Speaker

A child explaining about his painting to the Hon'ble LokSabha Speaker

NATIONAL MISSION FOR ENHANCED ENERGY EFFICIENCY (NMEEE)

The National Mission for Enhanced Energy Efficiency (NMEEE) is one of the eight missions under the National Action Plan on Climate Change (NAPCC). NMEEE aims to strengthen the market for energy efficiency by creating conducive regulatory and policy regime and has envisaged fostering innovative and sustainable business models to the energy efficiency sector.

The NMEEE spelt out four initiatives to enhance energy efficiency in energy intensive industries which are as follows:

(i) **Perform Achieve and Trade Scheme (PAT),** a regulatory instrument to reduce specific energy consumption in energy intensive industries, with an associated market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded.

(ii) **Market Transformation for Energy Efficiency (MTEE),** for accelerating the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable.

(iii) **Energy Efficiency Financing Platform (EEFP),** for creation of mechanisms that would help finance demand side management programmes in all sectors by capturing future energy savings.

(iv) **Framework for Energy Efficient Economic Development (FEEED),** for development of fiscal instruments to promote energy efficiency.

The Mission seeks to upscale the efforts to unlock the market for energy efficiency which is estimated to be around Rs. 74,000 crore and help achieve total avoided capacity addition of 19,598 MW, fuel savings of around

23 million tonnes per year and green- house gas emissions reductions of 98.55 million tonnes per year at its full implementation stage.

Achievements:

(i) Perform Achieve and Trade Scheme (PAT):

- Perform, Achieve and Trade (PAT) scheme is one of the flagship programs under NMEEE aiming at energy savings in large energy intensive industries. The energy saved by the large industries is converted into tradable emoluments called Energy Saving Certificates (ESCerts) and are traded at the Power Exchanges. The Central Electricity Regulatory Commission (CERC) is the market regulator for trading of ESCerts with The National Load Dispatch Centre (POSOCO) being the registry and the trading of ESCerts is done through the Power Exchanges.
- In the first cycle of PAT (2012-2015), 478 industrial units in 8 sectors (Aluminum, Cement, Chlor- Alkali, Fertilizer, Iron & Steel, Paper& Pulp, Thermal Power, Textile) were mandated to reduce their specific energy consumption (SEC) i.e. energy used per unit of production. The achievement in PAT cycle -I with respect to 427 DCs comes out to be 8.67 Mtoe which is 30% over-achievement against the assigned target of 6.686 Mtoe for 478 DCs of PAT Cycle I.
- PAT Cycle II had commenced from 1st April, 2016 under which 621 DCs (448 existing, 89 additional DCs from existing sectors and 84 DCs from new sectors viz. Railways, Electricity DISCOMs and Refineries) from the 8 existing and 3 new sectors (Railways, Electricity DISCOMs and Refineries) were notified with overall reduction targets of 8.869 mtoe.
- Subsequently, upon recommendation of various committees, PAT scheme is now being implemented on a rolling cycle basis i.e. inclusion of new sectors and new DCs every year. Hence, PAT cycle-III was notified with effect from April, 2017 with projected energy savings of 1.06 mtoe.
- PAT cycle –IV was notified with effect from 1st April 2018 in which 109 DCs from the existing sectors and two new sector namely Petrochemicals and Commercial Buildings (Hotels) have been notified with a total energy saving target of 0.6998 mtoe.
- PAT cycle -V has commenced with effect from 1st April 2019. Under PAT cycle -V, 110 DCs from the existing sectors of PAT i.e. Aluminum, Cement, Chlor-Alkali, Commercial Buildings (Hotels), Iron & Steel, Pulp & Paper, Textile and Thermal Power Plant have been notified. The total energy consumption of these DCs comes out to be 15.244 million toe and it is expected to get a total energy savings of 0.5130 million toe through the implementation of PAT cycle -V.
- Currently, 956 designated consumers belonging to thirteen energy intensive sectors have been included under the PAT scheme. Further, in the subsequent cycles PAT Scheme will be expanded both vertically and horizontally to enhance energy efficiency.
- Energy Saving Certificates (ESCerts): Trading of Energy Saving Certificates (ESCerts) at the Power Exchanges commenced on 26th September 2017. A total of seventeen sessions of trading of ESCerts earned in lieu of excess energy saved took place at the Power Exchanges resulting into a total traded volume of about 12.98 lakh ESCerts and a business of about INR 100 crores. The trading facility was inaugurated by the Hon'ble Minister of Power and New and Renewable Energy, Shri R K Singh

Inauguration of ESCerts Trading by Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy, Shri R K Singh

(ii) Market Transformation for Energy Efficiency (MTEE)

This initiative under the National Mission for Enhanced Energy Efficiency (NMEEE) aims to accelerate the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable.

(iii) Framework for Energy Efficient Economic Development (FEEED)

Framework for Energy Efficient Economic Development (FEEED), seeks to develop fiscal instruments to promote energy efficiency including innovative fiscal instruments and policy measures like the Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) and Venture Capital Fund for Energy Efficiency (VCFEE).

Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)

PRGFEE is a risk sharing mechanism to provide financial institutions (banks and NBFCs) a partial coverage of risk involved in extending loans for energy efficiency projects. The guarantee will not exceed Rs. 10 crore per project or 50% of loan amount, whichever is less. Government of India has approved funds of Rs. 312 crore for PRGFEE. Sectors to be covered under PRGFEE are Government buildings, Private buildings having commercial or multi-storey residential accommodations, Municipalities, SMEs and Industry.

Achievements:

- BEE appointed an Implementing Agency (IA) for operationalization of PRGFEE.
- Andhra Bank, YES Bank, IDFC Bank, Tata Cleantech Capital Ltd. and IndusInd Bank have been empanelled as Participating Financial Institutions.
- PRGFEE Rules have been notified.
- Operations Manual for the PRGFEE has already been published.

Venture Capital Fund for Energy Efficiency (VCFEE)

Venture Capital Fund for Energy Efficiency (VCFEE) is a fund to provide equity capital for energy efficiency projects. Any single investment by the fund shall not exceed Rs. 2 crore. The Fund will provide last mile equity support to specific energy efficiency projects, limited to a maximum of 15% of total equity required, through Special Purpose Vehicles or Rs. 2 crore, whichever is less. Sectors covered under VCFEE are government buildings, Private buildings and Municipalities. The support under VCFEE has been provided to only government buildings, private buildings (commercial or multi-storey residential buildings) and municipalities.

Achievements:

- The Trust of VCFEE has been constituted under provisions of Indian Trust Act 1882, the trust deed was registered with jurisdictional sub-registrar Government of Delhi.
- Board of Trustees for VCFEE has been constituted.
- VCFEE Rules have been notified.

(iv) Energy Efficiency Financing Platform (EEFP)

EEFP is one of the important initiatives under NMEEE with the objective to provide a platform to interact with financial institutions and project developers for implementation of Energy Efficiency projects. Under this programme, MoUs have been signed with financial institutions to work together for development of energy efficiency market and for identification of issues related to this market development. MoUs are already being signed by BEE with M/s. PTC India Ltd, M/s. SIDBI, Tata Capital and IFCI Ltd. to promote financing for Energy Efficiency projects.

For capacity building of FIs, BEE has signed MoU with Indian Banks' Association for training programmme on Energy Efficiency financing for Scheduled Commercial Banks. With an objective "to build greater knowledge and confidence through training programme within the financial sector on EE financing", in Phase 1 BEE has successfully completed 4 training of trainers (ToT) workshops. BEE launched the Phase 2 of these training workshops to create awareness amongst the loan officers / risk managers / credit managers towards technical/financial appraisal of EE projects. More than 650 banking/NBFC officials have been trained on EE financing under thisprogramme.

Following are the publications:

- Training Manual for Energy Efficiency Financing in India.
- Success stories for Energy Efficiency Projects Financed in India.
- Market Assessment for Partial Risk Guarantee Fund for Energy Efficiency and Venture Capital Fund for Energy Efficiency.
- Guidelines for Financing Energy Efficiency Projects in India.

CHAPTER 12

CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES

For the promotion of electric vehicles/clean mobility solutions Government of India identified the need for creating charging infrastructure as a critical area to push the plan to promote Electric Vehicles in the country and **suggested the role of facilitating the establishment of Charging Infrastructure for Ministry of Power.** In this regard, NITI Aayog constituted a committee under the chairmanship of Secretary (Power) for finalization of details for Charging Infrastructure for Electric Mobility.

Actions taken

To facilitate the establishment of Charging Infrastructure for Electric Vehicles following actions have been taken by the Ministry of Power:

i. Clarification on Charging Infrastructure for Electric Vehicles:

Ministry of Power on 13.04.2018 has issued clarification on Charging Infrastructure for Electric Vehicles with reference to the provisions of the Electricity Act, 2003. It has been clarified that during the activity of charging of battery for use in electric vehicles, the charging station does not perform any of the activities namely transmission, distribution or trading of electricity, which require license under the provisions of the Act (vis-à-vis Section 12 of Electricity Act, 2003), hence the charging of batteries of electric vehicles through charging station does not require any license under the provisions of Electricity Act, 2003.

ii. Grid Connectivity and Safety regulations:

Regarding Grid Connectivity and Safety of supply for Charging Stations, CEA has drafted amendments to following regulations of Central Electricity Authority (CEA):

a. Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations 2013.

b. Central Electricity Authority (measures relating to the Safety and Electric Supply) Regulations 2010.

iii. Amendments in Draft Tariff Policy 2018:

Amendments to address the issue of tariff to be charged by the DISCOMs from Charging Stations have been proposed in Draft Tariff Policy 2018. Following amendments in the Draft Tariff Policy 2018 has been proposed:

a. Tariff shall be less than or equal to the average cost of supply determined based on AT&C loss level of 15% or actual, whichever is lower, and

b. Single part tariff for this purpose in the initial 3 years

Guidelines and Standards

"Charging Infrastructure for Electric Vehicles – Guidelines & Standards" Vehicles have been issued by Ministry of Power vide MoP Communication No. 12/2/2018-EV on 14.12.2018. The formulation of Guidelines involved multi-stakeholder consultations with various private entities, State Governments, Central Government Ministries/Departments, NitiAayog etc. A discussion paper was circulated among the key states (Maharashtra, Delhi, Haryana, Uttar Pradesh, West Bengal, Tamil Nadu, Karnataka, Andhra Pradesh, and Gujarat) for their views and comments. The draft "Charging Infrastructure for Electric Vehicles – Guidelines and Standards" was circulated to all the States/UTs, Ministry of Road Transport and Highways, Department of Science and Technology, Department of Heavy Industry, Department of Industrial Policy & Promotion and NITI Aayog for comments and the guidelines were issued after considering the comments of all the stakeholders. The key features of the "Charging Infrastructure for Electric Vehicles – Guidelines and Standards" are as below:

I. Phase-wise Installation of Charging Infrastructure:

The guidelines envisage a phase wise installation of Charging Infrastructure for Electric Vehicles in selected cities as below:

i. Phase I (1-3 years) – To target 4 million plus cities and connected Expressways/ important Highways

ii. Phase II (3-5 years) – To target State Capitals, UT headquarters & important connected Highways.

II. Nodal Agencies:

Two Nodal Agencies namely Central Nodal Agency and State Nodal Agency have been provided in the Guidelines and Standards for facilitation of Charging Infrastructure installment at Center and State Level respectively.

i. Central Nodal Agency – Bureau of Energy Efficiency has been designated as the Central Nodal Agency under the provisions of "Charging Infrastructure for Electric Vehicles – Guidelines and Standards" issued by Ministry of Power on 14.12.2018.

ii. State Nodal Agency – Guidelines provide for designation of a State Nodal Agency by the State

Governments. Every State Government shall nominate a Nodal Agency for that State for setting up charging infrastructure. The State DISCOM shall generally be the Nodal Agency for such purposes. However, State Government shall be free to select a Central/State Public Sector Undertaking (PSU) including Urban Local Bodies (ULBs), Urban/Area Development Authorities etc. as its Nodal Agency.

Funds allotted under Scheme for Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (FAME India Phase II)

Department of Heavy Industry (DHI) has issued notification in Gazette of India on 08th March 2019 regarding Phase - II of FAME India Scheme. The scheme provides for incentives and funds for the establishment of Charging Infrastructure for Electric Vehicles. The scheme provides for following provisions with regards to the Charging Infrastructure for Electric Vehicles:

i. Breakup of fund allocation year wise, for the scheme's duration:

(Rupees in Crore)

Year	2019-20	2020-21	2021-22	Total Fund
Funds allocated for Charging Infrastructure	300	400	300	1000

ii. The Scheme envisages support for setting up of adequate public charging infrastructure to instill confidence amongst EV users, through active participation and involvement of various stakeholders including Government agencies, industries, and Public Sector Enterprises (PSEs)

iii. All these charging infrastructures will be established as per Ministry of Power Notification vide No. 12/2/2018-EV dated 14th Dec 2018 on the subject "Charging Infrastructure for Electrical Vehicles - Guidelines and Standards" and as amended from time to time.

iv. In addition, for charging of electric buses, it is proposed to provide to the buyer one slow charger per e-bus and one fast charger for every 10 electric buses to be funded under the scheme.

v. Flexibility of funding for establishment of charging infrastructure to the extent of 100% of cost depending upon the project proposal shall be available for promoting electric mobility.

vi. Projects for charging infrastructure will also include infrastructure projects required for extending electrification for running of vehicles like pantograph charging, flash charging etc.

vii. Inter-linking of renewable energy sources with charging infrastructure, smart grid, use of ICT etc. shall be encouraged.

Amendments issued by Ministry of Housing and Urban Affairs

Ministry of Housing and Urban Affairs has issued following amendments for facilitation of Charging Infrastructure for Electric Vehicles:

I. Amendments in Model Building Bye-Laws (MBBL – 2016) for Electric Vehicle Charging Infrastructure.

II. Amendments in Urban and Regional Development Plans Formulation and Implementation Guidelines (URDPFI – 2014) for Electric Vehicle Charging Infrastructure.

CHAPTER 13

PRIVATE SECTOR PARTICIPATION IN POWER SECTOR

1. POLICY ON PRIVATE SECTOR:

Ministry of Power recognizes the fact that private investors have important role to play in the power sector growth map of India. The stipulation under section 63 of Electricity Act 2003 has provided impetus to the participation of private sector in Generation and Transmission. Provision of open access and tariff framework under Tariff Policy has been put in place to create an enabling environment for the private investors.

Setting up of a power plant is a de-licensed activity. As per Section 7 of the Electricity Act 2003, any generating company may establish, operate and maintain a generating station without obtaining a license/ permission if it complies with the technical standards relating to connectivity with the grid.

2. MAJOR POLICY INITIATIVES TO STREAMLINE THE PROCESS OF PROJECT DEVELOPMENT:

To accelerate capacity addition several policy initiatives have been undertaken by Ministry of Power. Some of the prominent policies which have boosted the private players' confidence in the sector are:

- National Electricity Policy.
- Ultra Mega Power Project Policy.
- Mega Power Policy.
- Tariff Policy.
- New Hydro Policy, 2008

3. FDI in Power Sector:

Automatic approval for 100% foreign equity is permitted in generation, transmission, and distribution and trading in power sector without any upper ceiling on the quantum of investment. Further, extant policy provides for 49% FDI under automatic route in Power Exchanges registered under the CERC (Power Market) Regulations, 2010. However, FII/FPI purchases were restricted to secondary market only. It has now been decided to do away with this provision, thereby allowing FIIs/FPIs to invest in Power Exchanges through primary market as well.

NEEPCO

120 MW Dibbin HEP, Arunachal Pradesh:

NEEPCO signed Shareholders' Agreement (SHA) with M/s KSK Energy Ventures Ltd. (KSKEVL) on 12th June 2014 for setting up of 120 MW Dibbin HEP in the State of Arunachal Pradesh. An SPV viz. M/s KSK Dibbin Hydro Power Pvt. Ltd. (KSKDHPPL) was created in this regard between NEEPCO and KSKEVL with equity participation of 30% and 70% respectively. TEC was accorded to the Project by CEA in 2009. However, MoEF&CC subsequently brought out the Bichom Basin Study Report with fresh recommendation on e-flow to be released downstream of the project. Consideration of e-flow as per Bichom Basin Study Report reduces the design energy from 371 MU as per TEC to 295 MU. Consideration of e-flow impacts the commercial viability of the Project due to high tariff.

Various financial engineering options were explored including proposal for grant, staggering/ waiver of free power etc. for progress of the project which however, could not make any headway.

Secretary (Power), GoI on 20.04.2018 took a meeting in presence of representatives from CEA, Govt. of Arunachal Pradesh, NEEPCO, NHPC, THDC and SJVNL wherein it was recommended inter-alia to make an internal assessment of the feasibility of certain projects including the Dibbin HEP by the CPSUs. As intimated subsequently by the State Govt. the developer has already been served Show-cause notices and termination of the project is in process.

NEEPCO updated the cost estimate of the Project and assessed some amount of grant shall keep the tariff below Rs. 6.00 per unit with unaltered installed capacity and aforesaid revised design energy. NEEPCO vide letter dated 06.11.2018 requested GoAP for allotment of the Project to NEEPCO for development with grant.

NEEPCO vide letter dated 10.09.2018 requested CEA to confirm the extent of applicability of the TEC for revival of the Project with approval of grant for unaltered installed capacity and revised design energy. CEA convened a meeting in this regard on 23.10.2018. As suggested in the meeting, NEEPCO on 07.02.2019 submitted cost estimates and memorandum of changes for two alternate machine combinations of 3x40 MW and 2x40 MW for the project in comparison with the updated cost estimate of 2x60 MW at Nov' 18 PL. KSK initiated process for carrying out site specific e-flow requirement study.

Joint Secretary (Hydro) in the meeting held on 28.03.2019 at NEEPCO, New Delhi advised KSK to assess the site specific e-flow requirement and come up with proposals for making the project viable as per the new norms and Policy.

TRANMISSION

1. Promotion of competition in the electricity industry in India is one of the key objectives of the Electricity Act, 2003. As per the provisions under Section 63 of the Electricity Act, 2003 and the Tariff Policy dated 6th January, 2006, Ministry of Power, issued "Guidelines for Encouraging Competition in Development of Transmission Projects" and Tariff Based Competitive Bidding Guidelines for Transmission Services". These

guidelines aim at laying down a transparent procedure for facilitating competition in the transmission sector through wide participation in providing transmission services and tariff determination through a process of tariff based competitive bidding.

2. As envisaged in the Guidelines, Ministry of Power had constituted an Empowered Committee on Transmission to .identify inter-state transmission projects to be developed through competitive bidding and to oversee the process of competitive bidding. Ministry of Power has also issued Standard Bidding Documents (SBDs), viz. Request for Qualification (RfQ), Request for Proposal (RfP), Transmission Service Agreement (TSA) and Share Purchase agreement (SPA). As provided in the Guidelines, Ministry of Power has appointed PFC Consulting Limited (PFCCL) and REC Transmission Projects Company Limited (RECTPCL) as the Bid Process Coordinators (BPC) for carrying out the bidding process.

3. Further, MoP in compliance with provisions laid down in Tariff Policy dated 6th January, 2006 issued an O.M on 9th December, 2010 which provides that since 6th January, 2011, all the ISTS transmission projects are to be implemented through tariff based competitive bidding except some projects as identified by MoP which are to be implemented by CTU under compressed time schedule.

4. The Revised Tariff Policy issued by Ministry of Power on 28th January, 2016 states the following: -

   Clause 5.3: The tariff of all new generation and transmission projects of company owned or controlled by the Central Government shall continue to be determined on the basis of competitive bidding as per the Tariff Policy notified on 6" January. 2006 unless otherwise specified by the Central Government on case to case basis.

   Further, intra-state transmission projects shall be developed by State Government through competitive bidding process for projects costing above a threshold limit which shall be decided by the SERCs."

   Clause 7.1(7): "While all Futtire inter-state transmission projects shall, ordinarily be developed through competitive bidding process. the Central Government may give exemption from competitive bidding „for (a.) specific category of projects of strategic importance, technical upgradation etc. or (b) works required to be done to cater to an urgent situation on a case to case basis'

5. Recently, MoP has reconstituted the Empowered Committee on Transmission(ECT) and has also constituted the National Committee on Transmission(NCT) vide office order no. 15/3/2017-Trans dated 13.04.2018. The NCT recommends the mode of implementation {Tariff Based Competitive Bidding (TBCB) / Regulated Tariff Mechanism (RTM)). of transmission schemes agreed in Regional Standing Committee on Transmission (RSCTs). Based on the recommendations of NCT, ECT allocates the transmission projects to BPCs.

6. As far as Inter-State transmission system is concerned, till date forty-one projects have been awarded through Tariff Based Competitive Bidding out of which twenty-two projects have already been commissioned/ready for commissioning and fifteen projects are under implementation by various Transmission Service Providers. Out of balance four projects, one project has been cancelled by CERC, in one project the TSP has requested for closure and construction of two projects could not start due to litigation. Apart from this, there are twelve projects which are presently under bidding process out of which one project is currently on hold.

   Details of the Schemes notified through Tariff Based Competitive Bidding (TBCB)

   a. Schemes already commissioned/ready for commissioning by Transmission Service Providers:

   1. Transmission system for Strengthening in SR for Import of Power from ER.
   2. ATS of Unchahar TPS
   3. Northern Region System Strengthening Scheme, NRSS-XXXI (Part-A)
   4. Transmission System associated with Gadarwara STPS (2x800 MW) of NTPC Part-A
   5. Transmission system associated with Gadarwara STPS (2x800 MW) of NTPC (Part - B)
   6. Transmission System Strengthening associated with Vindhyachal - V
   7. System strengthening for WR
   8. System strengthening common for WR and NR
   9. Scheme for enabling import of NER/ER surplus by NR
   10. Part ATS for RAPP U-7&8 in Rajasthan
   11. Eastern Region System Strengthening Scheme-VII
   12. Northern Region System Strengthening Scheme, NRSS-XXIX
   13. Connectivity Lines for Maheshwaram (Hyderabad) 765/400 kV Pooling Sits
   14. Eastern Region Strengthening Scheme-VI (ERSS-VI)
   1S. Northern Region System Strengthening Scheme, NRSS-XXXI (Part-B)
   16. Transmission System required for evacuation of power from Kudgi TPS (3x800 MW in Phase-I) of NTPC Ltd.

17. Transmission System for Patran 400kV S/S
18. Transmission System Associated with Krishnapattnam UMPP- Synchronous interconnection between SR and WR (Part-B)
19. Common Transmission System for Phase-II Generation Projects in Odisha(Orissa) and Immediate Evacuation System for OPGC (1320 MW) Project in Odisha
20. Additional System Strengthening for Sipat STPS
21. Transmission system associated with IPPs of Nagapattinam / Cuddalore Area - Package - A
22. Additional System Strengthening Scheme for Chhattisgarh IPPs - Part-B

b. Schemes under implementation by the Transmission Service Providers

1. North Eastern Region System Strengthening Scheme - VI (NERSS - VI)
2. Transmission System Strengthening in India System for transfer of power frrim new HEPs in Bhutan
3. Strengthening of Transmission System beyond Vemagiri
4. System Strengthening Scheme in Northern Region (NRSS-XXXVI)" along with LILO of Sikar-Neemrana 400kV D/C line at Babai (RRVPNL)
5. System strengthening for IPPs in Chhattisgarh and other generation projects in Western Region
6. Additional inter-Regional AC link for import into Southern Region i.e. Warora - Warangal and Chilakaluripeta - Hyderabad - Kurnool 765kV link
7. Creation of new 400kV GIS Substations in Gurgaon and Palwal area as a part of ISTS
8. Transmission system for NERSS-II Part B and NERSS-V
9. Transmission System Strengthening in WR associated with Khargone TPP (1320 MW)
10. 765 kV System Strengthening Scheme in Eastern Region (ERSS-XVIII) 11.Additional 400 kV feed to Goa (ii) Additional System for Power Evacuation from Generation Projects pooled at Raigarh (Tamnar) Pool
12. New WR- NR 765 kV Inter-regional corridor
13. Transmission system for Ultra Mega Solar Park in Fatehgarh,distt. Jaisalmer Rajasthan
14. Eastern Region Strengthening Scheme-XXI (ERSS-XXI)
15. Immediate evacuation for North Karanpura (3X660 MW) generation project of NTPC S. Creation of 400/220 kV sub-station at Dhanbad-Proposal of JUSNL (ERSS-XIX) B

c. Schemes under bidding process by Bid Process Coordinators:

1. Connectivity System for Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) and Inter State Transmission system strengthening in Chhatarpur area in Madhya Pradesh
2. Western Region Strengthening Scheme- XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme- IX (NERSS-IX)
3. 400 kV Udupi (UPCL) - Kasargode D/C line
4. WRSS -21 Part-A (TBCB) - Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS
5. WRSS -21 Part-B- Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS
6. Transmission system associated with RE generations at Bhuj -II, Dwarka & Lakadia
7. Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat
8. Jam Khambaliya Pooling Station and Interconnection of Jam Khambaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat) & Installation of 400/220 kV ICT along with associated bays at M/s CGPL Switchyard
9. Transmission system associated with LTA applications from Rajasthan SEZ Part-B
10. Transmission system associated with LTA applications from Rajasthan SEZ Part-C
11. Transmission system associated with LTA applications from Rajasthan SEZ Part-D
12. Construction of Ajmer (PG)-Phagi 765 kV D/c line along with associated bays for Rajasthan SEZ

Group photo of Indian and UK delegation

CHAPTER 14

INTERNATIONAL CO-OPERATION

International Cooperation Division works for enhancing Cooperation with various countries in the Power Sector. Active interest has been taken in enhancement of Bilateral Cooperation with Bangladesh, Bhutan, Nepal, Japan, Germany, United Kingdom, USA, Denmark etc. Multilateral engagements under the umbrellas of SAARC, Clean Energy Ministerial (CEM), International Energy Agency (IEA) and BRICS were also undertaken.

Representatives of many countries regularly visit Ministry of Power, which demonstrates their confidence in the policies of power sector in India.

The following high level visits were undertaken during 2018-19:

(i) Secretary (Power) visited Myanmar during 23-24 April, 2018 to participate in the 2nd meeting of India – Myanmar Joint Steering Committee and 1st meeting of Joint Working Group.

(ii) Secretary (Power) visited Thailand during 22-23 June, 2018 to participate in the 7th South Asia Power Secretaries Roundtable.

(iii) Hon'ble Minister of State (IC) for Power and NRE visited South Africa during 28-29 June, 2018 to participate in the 3rd meeting of BRICS Energy Ministerial.

(iv) Secretary (Power) visited Sri Lanka during 6-7 July, 2018 to participate in the 3rd meeting Joint Working Group between India and Sri Lanka on Power Sector.

(v) Secretary (Power) visited Bangladesh during 24–25 September, 2018 to participate in the 15th meeting Joint Steering Committee/ Joint Working Group between India and Bangladesh.

(vi) Secretary (Power) visited Italy during 9-11 October, 2018 to participate in the meeting of World Energy Congress.

(vii) Hon'ble Minister of State (IC) for Power and NRE visited the UK during 10-13 September, 2018 to participate in the Electric Vehicle Summit and the India – UK Energy Dialogue.

(viii) Secretary (Power) visited Harvard University, USA during 16-19 February, 2019 to participate in the India Conference 2019.

BILATERAL COOPERATION

BANGLADESH

An MoU between the Govt. of the Republic of India and the Govt. of the People's Republic of Bangladesh on Cooperation in Power Sector was signed on 11th January, 2010.

Bangladesh has been connected with both Eastern and North Eastern Region of India and total power upto 1160 MW is being transferred from India to Bangladesh.

A high capacity cross border interconnection between India and Bangladesh through Baharampur (India) - Bheramara (Bangladesh) 400kV D/c line along with a HVDC Back-to-Back terminal at Bheramara, which facilitates transfer up to 1000 MW power to Bangladesh.

Further, additional cross border interconnection between India and Bangladesh through Surjyamaninagar in Tripura (India) to North Comilla (Bangladesh) – South Comilla (Bangladesh) 400 kV D/c link (presently operated at 132 kV) operating in radial mode for import up to 160 MW power from Tripura side of India to the Eastern side of Bangladesh is in operation since March, 2016.

NEPAL

An Agreement between the Govt. of Nepal and the Govt. of the Republic of India on Electric Power Trade, Cross – Border Transmission interconnection and grid connectivity was signed on 21st October, 2014.

At present, Nepal is drawing about 570 MW of power from India through 11kV, 33kV ,132 kV voltage level transmission lines connecting with state grids of UP, Uttarakhand& Bihar and Dhalkebar (Nepal) – Muzaffarpur (India) 400 kV D/C line (presently operating at 220 kV), which was commissioned in Feb'16 for transfer of bulk power between the two countries.

With upgradation of Dhalkebar-Muzzafarpur400 kV D/c line to its rated voltage (presently operating at 220KV), the export of power would increase further by around 250-300 MW to Nepal.

BHUTAN

An Agreement between the Govt. of the Republic of India and the Royal Govt. of Bhutan concerning Cooperation in the field of Hydroelectric Power was signed on 28th July, 2006.

India and Bhutan already have existing arrangements for

exchange of power. Bulk power generated at Tala HEP (1020 MW), Chukha HEP (336 MW) and Kurichu HEP (60 MW) in Bhutan is being exported to India through 400kV, 220kV and 132kV lines, respectively. Presently, about 1500 MW power from the existing hydro projects in Bhutan is being imported to India from Bhutan.

The expected import capacity from Bhutan would increase by about 3000 MW by 2022-23 from various upcoming Hydro Electric power plant (HEPs) in Bhutan like Mangdechu (720 MW), Punatsangchu-I (1200 MW) and Punatsangchu-II (1020 MW) HEPs etc.

MYANMAR

An MoU between the Govt. of the Republic of India and the Govt. of the Republic of the Union of Myanmar on Cooperation in the field of Power Sector was signed on 19th October, 2016.

India is providing about 2-3 MW of power (since April, 2016) from Manipur (India) to Myanmar through 11 kV transmission line from Moreh in Manipur (India) to Tomu town in Myanmar

SRI LANKA

Trincomalee Power Company Ltd. (TPCL) is a joint venture Company between NTPC Ltd. and Ceylon Electricity Board, Sri Lanka (CEB) incorporated in Sri Lanka on September 26, 2011. NTPC and CEB each hold 50% equity share capital of the Company.

This Joint Venture Company was formed to undertake the development, construction, establishment, operation and maintenance of coal based thermal power plant of 500 MW (2 x 250 MW) capacity at Trincomalee in Sri Lanka.

Further, Government of Sri Lanka (GoSL) has requested GoI for changing fuel sources to Liquefied Natural Gas (LNG) and for relocating the Project at Kerawalpitiya. The same has been agreed by GoI.

GoSL has issued letter of intent to GoI for development of 500 MW LNG project and 50 MW solar project. Revised Project Agreements are under finalisation.

GERMANY

The Indo-German Energy Forum (IGEF) has been established in 2006 as an institutionalized energy dialogue with the aim of promoting Indo-German co-operation in the areas of energy security, energy efficiency including energy conservation, renewable energy, investment in energy projects and collaborative research and development taking into account the environmental challenges of sustainable development.

The IGEF is co-chaired by the Secretary (Power) from the Indian side and the Parliamentary Secretary, Federal Ministry for Economic Affairs & Energy (BMWi) from the German side. The meetings of the Forum are held alternately in Germany and India. Two of the four Sub-Groups under the IGEF are steered by Ministry of Power.

Following four Sub-Groups have been constituted under the Forum:

(i) Sub Group-I: "Efficiency Enhancement in Fossil Fuel based Power Plants" [co-chaired by JS (Thermal)]

(ii) Sub Group-II: "Renewable Energies" [co-chaired by JS, MNRE]

(iii) Sub Group-III: "Demand side energy efficiency and low carbon growth strategies" [co-chaired by DG, BEE]

(iv) Sub Group-IV: "Green Energy Corridors" [co-chaired by JS (ABC), DEA]

Out of these, the Sub-Group - I and III are handled by Ministry of Power.

Sub Group-I: "Efficiency Enhancement in Fossil Fuel based Power Plants"

The last meeting of the Sub Group I was held on 11.04.2019 in Germany. The summary of decisions taken is as under:

- Flexibilisation of coal fired power plants to adapt to fluctuating renewable energy generation remains a priority relevant energy issue for the work of this subgroup,
- Task force to ensure speedy implementation of recommendations as suggested by M/S Siemens in view of Test run completed at one of NTPC plant DADRI U#6 (500 MW)for minimum load operation at 40% load and higher ramp test run.
- Deployment of Flexperts from VGB for facilitation of commissioning activities like installation of mill scheduler, automatic start of pump and fans.
- Input for Regulatory, aspects of flexibilisation are in place and final framework is expected.
- New emission standards have a high impact on the energy security of India and power generator like NTPC is taking concrete steps in installing DE-SO_x and DE-NO_x plants apart from renovating ESPs to handle high fugitive ash control. IGEF and VGB will mutually share its learning.

- Maintaining highest emission norms will be the challenge under low load and frequent load following conditions but NTPC will comply with the norms by adhering to standard operating practices.
- One more workshop for state Gen cos and IPPS may be carried out in cooperation of IGEF, VGB, EEC.

Sub Group-III: "Demand side energy efficiency and low carbon growth strategies"

Activities under the framework of Sub Group – III are as under:

- The opportunities for combined heat and power generation has been discussed since a long time and now with the cooperation of GIZ, a demo trigeneration plant was set up at the Jai Prakash Narayan Apex Trauma Center, New Delhi.
- In the residential buildings sector, Fraunhofer institute and TERI jointly developed an energy performance assessment tool which calculates energy savings potential for various energy efficiency measures in the residential buildings in India.
- For developing an international internet-based knowledge platform for energy efficiency in various fields, the German side has taken an initiative named bigEE which means "Bridging the Information Gap on Energy Efficiency".
- Deep Dive Workshop on "Cooling Demand and Energy Efficiency Potential of India" held in New-Delhi in December 2017.
- Indo-German Business Roundtable on "Future Business Opportunities in Energy Efficiency" in New-Delhi with focus on market and technology development in cooling as well as energy efficient building materials held in December 2017.
- Active participation of Co-Chairs at official side event of National Energy Efficiency Day "Enhancing Energy Efficiency: A Step towards Sustainable Development" organized by BEE with input on Energy Efficiency through Networking and NAPE (National Action Plan on Energy Efficiency in Germany) in December 2017.
- Report launched on 'Demand Analysis for Cooling by Sector in India in 2027', in October 2018. It explores India's cooling demand in buildings, mobile air-conditioning, refrigeration, cold-chain and process cooling in industries, and identifies key technological, operational and market interventions for the largest energy and carbon savings in cooling.
- Report launched on 'Energy Efficiency Potential in India' which underlined the potential of saving energy and greenhouse gas emissions, through energy efficiency measures.
- Coordination of working group to support BEE data visualisation project implemented by World Resource Institute (WRI), is ongoing and will be launched soon.

JAPAN

The cooperation with Japan in the energy sector is steered under the Indo – Japan Energy Dialogue. There are five Working Groups under the India – Japan Energy Dialogue namely,

o Electricity & Power Generation;

o Energy Efficiency;

o Coal;

o Renewable Energy;

o Petroleum and Natural Gas

The 9th meeting of the India – Japan Energy Dialogue was held on 1st May, 2018 in New Delhi. Both the ministers appreciated the relevance of the grid stability given the high penetration of variable renewable energy. Both countries agreed to initiate the discussion towards development of Electric Vehicles (EVs). A Joint Statement, stating our mutual areas of cooperation, was also signed after the Dialogue.

The Minister of State (IC) for Power and NRE Mr. Raj Kumar Singh and the Minister of Economy, Trade and Industry, Japan Mr. Hiroshige Seko exchanging the Joint Statement at the 9th Japan -India Energy dialogue

An Indian delegation led by Joint Secretary (Thermal & IC) participated in the Electric Vehicle Summit (EVS 31) and the meeting of the Joint Working Group on Electricity (under the India – Japan Energy Dialogue) in Japan during 30th September 2018 to 3rd October, 2018.

Indian Delegation with H.E. the Ambassador of India to Japan

Discussions were held on developing a Road Map for India-Japan co-operation on Integrating variable RE and EV charging systems into Power System. Options and way forward for the same were deliberated. Further, the on-going cooperation activities between India and Japan – including designing of ancillary market, improving electricity quality, T&D losses, grid stability, energy storage, pumped storage were also discussed.

UNITED KINGDOM

A Memorandum of Understanding in the Energy Sector with the UK Govt. was signed on the sidelines of the visit of Hon'ble PM to UK in November, 2015.

Rt. Hon'ble Greg Clark, United Kingdom's Secretary of State for Business, Energy and Industrial Strategy welcoming Hon'ble Minister of State (IC) for Power and NRE Shri R. K. Singh during the India-UK Energy for Growth Dialogue, London, UK

An Indian delegation led by Hon'ble Minister of State (IC) for Power and NRE visited United Kingdom during 9-13 September, 2018 to participate in the Zero Emissions Vehicles (ZEV) Summit and the India – UK Energy for Growth Dialogue. The meeting of the Joint Working Group (JWG) on Power under the dialogue was also held on 10.09.2019 in the UK.

During the dialogue, the on-going Power Sector Reform (PSR) programme was reviewed. The JWG reviewed the progress of work done by the Task Forces on Utility and Energy Efficiency and areas of future cooperation were identified.

UNITED STATES OF AMERICA

An MoU between the Govt. of the Republic of India and the Govt. of the United States of America to enhance cooperation on Energy Security, Clean Energy and Climate Change was signed on 2nd June, 2016.

The cooperation between India and the US in the Power sector is under the umbrella of US – India Strategic Energy Partnership. The SEP has four pillars viz., Oil & Gas, Power & Energy Efficiency, Clean & Renewable Energy, Sustainable Growth. The pillar on Power & Energy Efficiency is led by Ministry of Power.

The first meeting of US – India Strategic Energy Partnership was held on 17th April, 2018 in India which was chaired by US Secretary of Energy Mr. Rick Perry and Indian Minister of P&NG Shri Dharmendra Pradhan. Both the Ministers took stock of the ongoing activities under the different pillars of the SEP.

The priority areas of cooperation under the Power & Energy Efficiency pillar to be taken up with the US side have been finalized in consultation with all the stakeholders.

MULTILATERAL COOPERATION: INTERNATIONAL ENERGY AGENCY (IEA)

The International Energy Agency (IEA) is an autonomous organization which was set up in response to the 1973-74 oil crisis. The oil crisis was the result of an embargo imposed on the USA by OPEC in retaliation for the US decision to support Israel during the Arab-Israel war. The nodal Ministry dealing with IEA in the Government of India is the Ministry of Power.

India became a partner country of IEA in November, 2013. India has been a partner country until March 30, 2017 and cooperation with IEA has been through the Joint Statement and joint schedule of actions, agreed during the IEA Ministerial

every two years. On 30th March 2017, India announced the activation of "Association" status with the International Energy Agency (IEA).

The Ministry is considering an invite to India for a meeting with the IEA Board Members to discuss the possibility of India becoming a full-fledged member of IEA. According to Dr. Birol, this is the first time in the history of IEA that a non-member country has been invited for a meeting with the Board of IEA.

BRICS

A Memorandum of Mutual Understanding in energy saving and energy efficiency among the ministries and governmental agencies of BRICS, responsible for energy and energy efficiency was signed in November, 2015.

Hon'ble Minister of State (IC) for Power and NRE visited South Africa during 28-29 June, 2018 to participate in the 3rd meeting of BRICS Energy Ministerial. Members agreed to establish a BRICS Committee of Senior Energy Officials to coordinate and elevate energy cooperation activities and implementation in a manner that advances intra-BRICS energy security and transitioning to more environmentally sustainable energy systems.

CLEAN ENERGY MINISTERIAL (CEM)

Clean Energy Ministerial (CEM) is a high level global forum created since 2009, initially with the support from US-Department of Energy to share lessons learnt and best practices, and to encourage the transition to a global clean energy economy. It was announced during the United Nations Framework Convention on Climate Change (UNFCCC) conference in Copenhagen in December 2009, by the then U.S. Secretary of Energy who also hosted the first CEM. The CEM is currently the only regular meeting of energy Ministers focused exclusively on clean energy. The CEM presently has 26 members. The CEM focuses on three global climate and energy policy goals:

- Improve energy efficiency worldwide.
- Enhance clean energy supply.
- Expand clean energy access.

India is participating in the following initiatives under CEM:

- The Super-Efficient Equipment and Appliance Deployment (SEAD) Initiative.
- Electric Vehicles (EVI).
- Energy Management Working Group (EMWG).
- The 21st Century Power Partnership.
- The International Smart Grid Action Network (ISGAN).
- The Multilateral Solar and Wind Working Group.
- The Clean Energy Solutions Center.
- Advanced Cooling Challenge.
- Accelerating the Adoption of Distributed Generation in Strategic regions.
- EV30@30 campaign.
- Advanced Power Plant Flexibilisation campaign.

The next (10th) Clean Energy Ministerial (CEM10) is scheduled to be held Vancouver, British Columbia, Canada from 27-29 May, 2019. A delegation led by Secretary (Power) is proposed to participate in the same.

INTERNATIONAL FUNDING

List of projects approved by Ministry of Power for foreign funding (loan/grant) in FY 2018-2019:

Sr. No.	Name of the Project	Govt/Implementing Agency	Project cost (in Crore)	Loan Amount (in Crore)
1.	Uttarakhand Transmission Strengthening and Distribution Improvement Program	Govt. of Uttarakhand	1754	1403
2.	Proposal for 2nd Line of Credit for US$ 500 million from Asian Development Bank	EESL	6981	3490.5
3.	Uttar Pradesh Power Sector Improvement Project	Govt. of U.P	9400	6400
4.	Enhancement of Intra State Transmission System of Assam	Govt. of Assam	3857.71	3185.73

5.	High Voltage Distribution System (HVDS) & other power distribution system strengthening implementation program in Maharashtra	Govt. of Maharashtra	5048	2248
6.	Assam Distribution System Enhancement and Loss Reduction	Govt. of Assam	3284.04	2627.23
7.	'Bangalore Smart Energy Efficient Power Distribution Project' by Govt. of Karnataka with external assistance from ADB	Govt. of Karnataka	1917.68	710
8.	Meghalaya Power Sector Improvement Project.	Govt. of Meghalaya	1172.10	937.68
(A) Total Amount (in crores)			**33,414.53**	**21,002**
9.	JICA Grant assistance for improvement ,of Power Supply in Andaman and Nicobar Islands through the installation of 15 MW DG sets + 1 MWh Battery system + SCADA	Andaman & Nicobar Admn.	Grant	Grant
10.	Loan Agreement on Renovation, Modernization & Upgradation of UmiamUmtru Stage-III HEP" for JICA ODA loan under FY 2018-19	Meghalaya	408	326.4
11.	1000 MW Turga Pumped Storage Project (4 x 250 MW)	West Bengal	6922	5001
(B) Total (In crore)			**7330**	**5327.4**
12.	Rural Electrification Corporation ODA of Euro 200 million from KfW to support, Renewable energy development under Indo-German Development Cooperation	REC	2000	1500
13.	REC project proposal of Euro 200 million RIL from KfW to support Energy Efficiency initiatives of Uttar Pradesh State Power Utilities under Indo-German Development Cooperation-	REC	4500	1500
(C)Total (In crore)			**6500**	**3000**
14.	World Bank Loan Assistance for Distribution Network Strengthening with HVDS, LT AB cabling, Underground cabling & creation of IT backbone for AMI and SCADA under West Bengal State Electricity Distribution Company Limited (WBSEDCL)-	West Bengal	2825.54	1988.38
15.	Non-Lending Technical Assistance (NLTA) support from the World Bank for implementation of Direct Benefit Transfer for Electricity (DBTE) Pilot in Punjab- regarding.	Punjab	-	-
(D) Total in Crores			**2825.54**	**1988.38**
Total A+ B+C+D (In crores)			**50,070.07**	**33,317.78**

CHAPTER 15

POWER DEVELOPMENT ACTIVITIES IN NORTH EASTERN REGION

NEEPCO

The various power projects being developed by NEEPCO in the NE Region are as under:

PROJECTS UNDER CONSTRUCTION:

Sl. No.	Name of the Project	State	Installed Capacity (MW)	Anticipated Commissioning
1.	Kameng H.E. Project	Arunachal Pradesh	600	Unit I & II-August' 2019 Unit-III & IV- Decmber' 2019
	T O TA L		**600**	

FUTURE PROJECTS PLANNED BY NEEPCO ON OWNERSHIP BASIS:

Sl. No.	Name of the Project	State	Installed Capacity (MW)
		Hydro	
1.	Wah Umiam St-III HEP	Meghalaya	85
2.	Wah Umiam St-I HEP	Meghalaya	50
3.	Wah Umiam St-II HEP	Meghalaya	100
		Hydro Total	**235**

FUTURE PROJECTS PLANNED BY NEEPCO THROUGH JOINT VENTURE BASIS:

Sl. No.	Name of the Project	State	Installed Capacity (MW)
		Hydro	
1.	Kurung HEP	Arunachal Pradesh	330
2.	Dibbin HEP	Arunachal Pradesh	120
3.	Siang Upper St-II HEP#	Arunachal Pradesh	3750
	Total Joint Venture		**4200**

 # Note: MoP vide Letter Dtd.18th Nov'15 communicated its decision to put on hold the works on Siang upper Stage II HE Project.

SJVN

In terms of hydro power, the North Eastern Region has huge hydro potential i.e. around 40% of the country's total hydro potential. Additionally, the Region also has abundant resource of coal, oil and gas for thermal power generation. In spite of such huge potential the Region ranks lowest in the country in terms of per capita energy consumption. This has been mainly due to inhospitable climatic conditions, remote location and inaccessibility of geographical locations.

However with continual improvement of infrastructure and communication facilities, the North East region stands to become the Power House of India by utilising its surplus power potential especially in the hydel sector. In view of above, SJVN is pursuing with Govt. of Arunanchal Pradesh and exploring the avenues in the region for developing Hydro Projects.

NTPC

NTPC's Bongaigaon Thermal Power Project in Assam has three units of 250 MW each. All three units have started commercial operation. This station supplies power to Assam, Meghalaya, Tripura, Manipur, Mizoram, Arunachal Pradesh and Nagaland.

TRANSMISSION

1. In order to tap the hydro potential in the North-Eastern Region an outline of Transmission system has been made for evacuation of power from hydro projects of about 50,000 MW in NER and 15,000 MW in Sikkim/ Bhutan. The Inter State Transmission System consists of interconnecting the NER with the National Grid for exchange of power by high capacity AC as well as HVDC lines have been/ are being planned / implemented. In this regard, a milestone has been achieved with commissioning of Pole–1(1500 MW) of ±800kV, 6000MW HVDC bi-pole line from Bishwanath Chariali (NER) to Agra (NR), which interconnecting en-route at Alipurduar (ER), with 3000 MW terminals each at Bishwanath Chariali & Alipurduar and 2x3000 MW terminal at Agra. This transmission system also includes 4 nos. Of high capacity corridors, each of 6000 MW capacity in the Right-of-Way constrained Chicken Neck area, thereby reserving total transmission capacity of 24,000 MW in this constrained corridor.

2. For development of Intra-State Transmission and Distribution (T&D) system in the states of NER, a Comprehensive Scheme for strengthening of the intra-State Transmission and Distribution system comprising transmission, sub-transmission and distribution system (33 kV & above) has been prepared, as two separate projects, and approved by the Govt. of India for implementation by POWERGRID. For the T&D project in Arunachal Pradesh & Sikkim, the entire cost of the project will be borne by Government of India through the Plan Scheme of Ministry of Power. For the remaining six states, i.e. Assam, Manipur, Meghalaya, Mizoram, Tripura and Nagaland, the scheme will be funded by the Govt. of India through the Budget of Ministry of Power and the World Bank on 50:50 basis. POWERGRID has initiated implementation activities of above projects and both the projects are under various stages of implementation.

CHAPTER 16

CENTRAL ELECTRICITY AUTHORITY (CEA)

1. Constitution of the CEA

The Central Electricity Authority (CEA) is a statutory organization constituted under Section 3(1) of the repealed Electricity (Supply) Act, 1948 and continued under Section 70 of the Electricity Act, 2003. It was established as a part –time body in the year 1951 and made a full- time body in the year 1975.

As per section 70(3) of the Electricity Act, 2003, the Authority shall consist of not more than 14 members, including its Chairperson of whom not more than 8 shall be full-time Members to be appointed by the Central Government. The CEA is headed by a Chairperson who, as the Chief Executive of the Authority, oversees largely the development of Power Sector in the country. A Secretary, appointed by the Authority with the approval of the Central Government under section 72 of Electricity Act 2003, assists the Chairperson in discharging CEA's statutory functions. The Secretary also assists him in all matters pertaining to administration and technical including Human Resource Development and Techno-Economic Appraisal and concurrence of power projects etc. Presently, there are six wings, namely Planning, Hydro, Thermal, Grid Operation & Distribution, Economic & Commercial and Power System, each headed by a Member of the Authority. Besides, there are also two C.P.E.S. Cadre posts of Principal Chief Engineer(PCE) in the HA Grade. Under each Member, there are technical divisions, each headed by an officer of the rank of Chief Engineer. CEA has its Headquarters in New Delhi. In addition, CEA has offices located in various parts of the country. The CEA is responsible for overall power sector planning, coordination, according concurrence to hydro-electric schemes, promote & assist in timely completion of projects, specifying of technical standards, safety requirements, Grid Standards as well as conditions for installation of meters applicable to the Power Sector of the country. The CEA advises the Central Government on the National Electricity Policy and formulates the Perspective Plans for development of the electricity system. It also advises the Central and State Governments as well as the Electricity Regulatory Commissions on all technical matters relating to generation, transmission and distribution of electricity. It also has the mandate to collect, record and make public, data related to all segments of the electricity sector, carry out investigations and promote research.

2. Functions of the CEA

The Functions and duties of the Authority are delineated under section 73 of the Electricity Act, 2003. Besides, the CEA has to discharge various other functions as well under Sections 3, 8, 34, 53, 55 and 177 of the Act. As per Section 73 of the Electricity Act, 2003, the Central Electricity Authority shall perform such functions and duties as the Central Government may prescribe or direct, and in particular to-

a. Advise the Central Government on the matters relating to National Electricity Policy, formulate short-term and perspective plans for development of the electricity system and coordinate the activities of the planning agencies for the optimal utilization of resources to subserve the interests of the national economy and to provide reliable and affordable electricity to all consumers;

b. Specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid;

c. Specify the safety requirements for construction, operation and maintenance of electrical plants and electric lines;

d. Specify the grid standards for operation and maintenance of transmission lines;

e. Specify the conditions for installation of meters for transmission and supply of electricity;

f. Promote and assist in the timely completion of schemes and projects for improving and augmenting the electricity system;

g. Promote measures for advancing the skills of persons engaged in electricity industry;

h. Advise Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter if, in the opinion of the Authority, the recommendation would help in improving the generation, transmission, trading, distribution and utilization of electricity;

i. Collect and record the data concerning the generation, transmission, trading, distribution and utilization of electricity and carry out studies relating to cost, efficiency, competitiveness and such like matters;

j. Make public from time to time the information secured under this Act, and provide for the publication of reports and investigations;

k. Promote research in the matters affecting generation, transmission, distribution and trading of electricity;

l. Carry out, or cause to be carried out, any investigation for the purpose of generating or transmitting or distributing electricity;

m. Advise any State Government, licensees or the generating companies on such matters which shall enable them to operate and maintain the electricity system under their ownership or control in an improved manner and where necessary, in coordination with any other Government, licensee or the generating company-owing or having the control of another electricity system;

n. Advise the appropriate Government and the appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity; and

o. Discharge such other functions as may be provided under this Act.

In addition to above functions and duties, CEA has to perform the following functions in terms of the under-mentioned section of the Electricity Act, 2003 :-

Section 3-National Electricity Policy and Plan

1. The Central Government shall, from time to time, prepare the National Electricity Policy and Tariff Policy, in consultation with the State Governments and the Authority for development of the Power System based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy;

2. The Central Government shall publish the National Electricity Policy and Tariff Policy from time to time;

3. The Central Government may, from time to time, in consultation with the State Governments and the Authority, review or revise the National Electricity Policy and the Tariff Policy referred to in sub-section(1).

4. The Authority shall prepare a National Electricity Plan in accordance with the National Electricity Policy and notify such plan once in five years;

PROVIDED that the Authority while preparing the National Electricity Plan shall publish the draft National Electricity Plan and invite suggestion and objections thereon from licensees, generating companies and the public within such time as may be prescribed;

PROVIDED FURTHER that the Authority shall-

a. Notify the Plan after obtaining the approval of the Central Government;

b. Revise the Plan incorporating therein directions, if any, given by the Central Government while granting approval under clause (a);

5. The Authority may review or revise the National Electricity plan in accordance with the National Electricity Policy.

Section 8-Hydro –Electricity Generation

1. Any generating company intending to set up a hydro generating station shall prepare and submit to the Authority for its concurrence, a scheme estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government, from time to time, by notification.

2. The Authority shall, before concurring in any scheme submitted to it under sub-section (1) have particular regard to, whether or not in its opinion:

a. The proposed river-works will prejudice the prospects for the best ultimate development of the river or its tributaries for power generation, consistent with the requirements of drinking water, irrigation, navigation, flood control or other public purposes, and for this purpose the Authority shall satisfy itself, after consultation with the State Government, the Central Government, or such other agencies as it may deem appropriate, that an adequate study has been made of the optimum location of dams and other river-works;

b. The proposed scheme meets, the norms regarding dam design and safety.

3. Where a multi-purpose scheme for the development of any river in any region is in operation, the State Government and the Generating Company shall coordinate their activities with the activities of the persons responsible for such scheme in so far as they are interrelated.

Section 34- Grid Standards

Every transmission licensee shall comply with such technical standards, of operation and maintenance of transmission lines, in accordance with the Grid Standards, as may be specified by the Authority.

Section53-Provision Relating to Safety and Electricity Supply

The Authority may, in consultation with the State Governments, Specify suitable measures for :-

a. Protecting the public (including the person engaged in the generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation, maintenance or use of any electric line or electrical plant;

b. Eliminating or reducing the risks of personal injury to any person, or damage to property of any person or interference with use of such property;

c. Prohibiting the supply or transmission of Electricity except by means of a system which conforms to the specification as may be specified;

d. Giving a notice in the specified form to the appropriate Commission and the Electrical Inspector, of accidents and failures of supplies or transmission of electricity;

e. Keeping by a generating company or licensee the maps, plans and sections relating to supply or transmission of electricity;

f. Inspection of maps, plans and sections by any person authorized by it or by Electrical Inspector or by any person on payment of specified fee;

g. Specifying action to be taken in relation to any electric line or electrical plant, or any electrical appliance under the control of a consumer for the purpose of eliminating or reducing the risk of personal injury or damage to property or interference with its use.

Section 55- Use etc. of meters

1) No licensee shall supply electricity, after the expiry of two years from the appointed date, except through installation of a correct meter in accordance with the regulations to be made in this behalf by the Authority;

Provided that the licensee may require the consumer to give him security for the price of meter and enter into an agreement for the hire thereof, unless the consumer elects to purchase a meter;

Provided further that the State Commission may, by notification, extend the said period of two years for a class or classes of persons or for such areas as may be specified in that notification.

2) For proper accounting and audit in the generation, transmission and distribution or trading of electricity, the Authority may direct the installation of meters, by a generating company or licensee at such stages of generation, transmission or distribution or trading of electricity and at such locations of generation, transmission or distribution or trading, as it may deem necessary.

3) If a person makes default in complying with the provisions contained in this section or the regulations made under sub-section (1), the appropriate Commission may make such orders as it thinks fit for requiring the default to be made good by the generating company or licensee or by any officer of a company or other association or any other person who is responsible for its default.

Section 177- Powers of the Authority to make Regulations.

1. The Authority may by notification, make regulations consistent with this Act and the rules generally to carry out the provisions of this Act,

2. In particular and without prejudice to the generality of the power conferred in sub-section (1), such regulations may provide for all or any of the following matters, namely:-

   a. The Grid Standards under section-34.

   b. Suitable measures relating to safety and electricity supply under section-53;

   c. The installation and operation of meters under section-55;

d. The rules of procedure for transaction of business under sub-section (9) of section-70;

e. The technical standards for construction of electrical plants and electric lines and connectivity to the grid under clause (b) of section-73;

f. The form and manner in which and the time at which the State Government and licensees shall furnish statistics, returns or other information under section-74

g. Any other matter which is to be, or may be, specified;

3. All regulations made by the Authority under this Act shall be subject to the conditions of previous publication.

Framing and Amendments of the CEA Regulations under Section 177 of the Electricity Act, 2003:

The Central Electricity Authority has been vested with the powers to make Regulations under Section 177 of the Electricity Act, 2003. The status of the notification of principle regulations and their subsequent amendments since the enactment of the Electricity Act, 2003, is as under:

A. Notified Regulations:

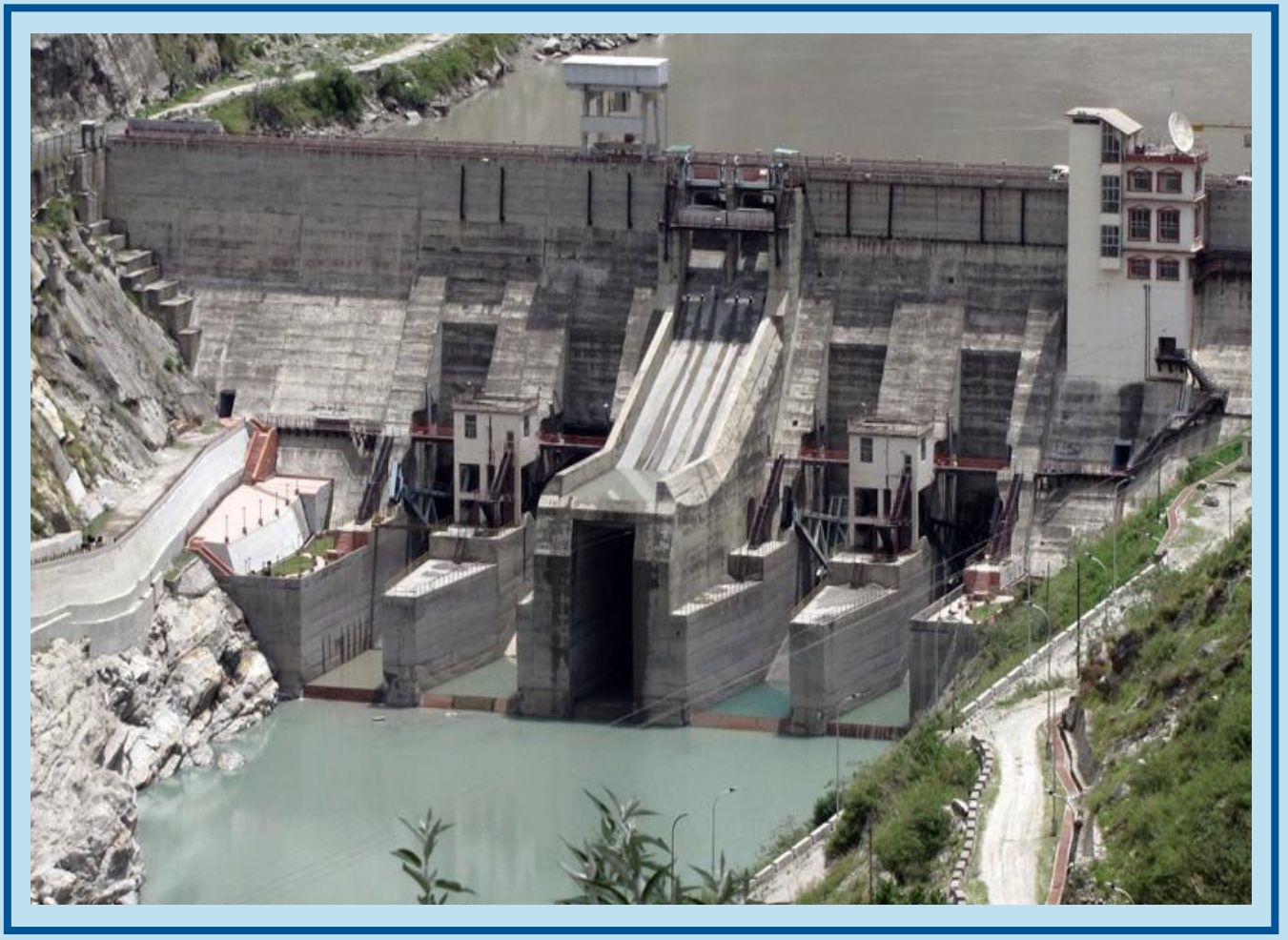
The following are the principle regulations already been framed and notified by the Authority during previous years since the enactment of the Electricity Act, 2003:

Sl. No.	Regulation	Date of publication in Gazette of India
1	CEA (Installation & Operation of Meters), Regulations 2006	22.03.2006
2	Central Electricity Authority (Procedure for Transaction of Business) Regulations, 2006	22.8.2006
3	Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulation, 2007	09.03.2007
4	Central Electricity Authority (Furnishing of Statistics, Returns & Information) Regulation, 2007	19.04.2007
5	Central Electricity Authority (Grid Standards) Regulation, 2010	26.06.2010
6	Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations, 2010	24.09.2010
7	Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010	20.08.2010 (English Version) & 07.09.2010 (Hindi Version)
8	Central Electricity Authority (Safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations, 2011	14.02.2011
9	Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013	07.10.2013
10	Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2019	Under Process

B. Notified/proposed to be notified Amendments of Regulations:

The regulations are regularly reviewed and amended by the Authority as per the requirements of various stakeholders in the power sector including general public at large. The amendments notified/proposed to be notified by the Authority during previous years since the enactment of the Electricity Act, 2003 are as under:

Sl. No.	Regulation	Date of publication in Gazette of India
1	Central Electricity Authority (Installation and Operation of meters) (Amendment) Regulations 2010	26.06.2010
2	Central Electricity Authority (Technical Standards for Connectivity to the Grid) Amendment Regulations, 2013	15.10.2013
3	Central Electricity Authority (Installation and Operation of meters) (Amendment) Regulations 2014	26.11.2014
4	Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Amendment Regulations, 2015	06.04.2015
5	Amendment to Central Electricity Authority (Measures relating to Safety and Electricity Supply) Amendment Regulations, 2015	13.04.2015
6	Amendment to Central Electricity Authority (Measures relating to Safety and Electric Supply) Amendment Regulations, 2018	01.03.2018
7	Central Electricity Authority (Technical Standards for Connectivity below 33 kV)(First Amendment) Regulations, 2019	08.02.2019
8	Central Electricity Authority (Technical Standards for connectivity to the Grid) (Amendment) Regulation, 2019	08.02.2019
9	3rd Amendment to Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010	Amendment under process
10	1st Amendment to Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007	Amendment under process
11	4th Amendment to Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010- **Periodic Comprehensive Review**	Amendment under process
12	3rd Amendment to Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006	Amendment under process
13	2nd Amendment to Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010- Periodic Comprehensive Review	Amendment under process
14	3rd Amendment to Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010	Amendment under process



Nathpa Jhakri Hydro Power Station

CHAPTER 17

CENTRAL ELECTRICITY REGULATORY COMMISSION (CERC)

1. INTRODUCTION

The Central Electricity Regulatory Commission (CERC), an autonomous statutory body with quasi-judicial powers, was constituted on 25th July, 1998 under the erstwhile Electricity Regulatory Commissions Act, 1998 and continues to be recognised under the Electricity Act, 2003. The Commission consists of a Chairperson and three full time Members apart from the Chairperson of the Central Electricity Authority as Ex-Officio Member.

2. FUNCTIONS OF CERC

As per the Electricity Act, 2003 the Commission has the responsibility to discharge the following functions:

a. to regulate the tariff of generating companies owned or controlled by the Central Government;

b. to regulate the tariff of generating companies other than those owned or controlled by the Central Government specified in clause (a), if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one State;

c. to regulate the inter-State transmission of electricity;

d. to determine tariff for inter-State transmission of electricity;

e. to issue licenses to persons to function as Transmission Licensee and electricity trader with respect to their inter-State operations.

f. to adjudicate upon disputes involving generating companies or transmission licensee in regard to matters connected with clauses (a) to (d) above and to refer any dispute for arbitration;

g. to levy fees for the purposes of this Act;

h. to specify Grid Code having regard to Grid Standards;

i. to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees.

j. to fix the trading margin in the inter-State trading of electricity, if considered, necessary; and

k. to discharge such other functions as may be assigned under this Act.

Section 79 (2) of the Electricity Act. 2003 lays the onus on CERC to advise the Central Government on matters such as:

a. formulation of National Electricity Policy and tariff policy;

b. promotion of competition, efficiency and economy in activities of the electricity industry;

c. promotion of investment in electricity industry; and d. any other matter referred to the Central Commission by that Government.

3. MAJOR ACTIVITIES DURING THE YEAR 2018-19 (Upto 31st March, 2019)

A. Major Regulations/ Amendments Notified

i. Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019

The Commission vide notification dated 7th March, 2019 issued the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019, which are applicable for the tariff period 2019-24.

Important provisions as notified in these Regulations include retaining Rate of Return on Equity at 15.50% (for all regulated entities except pump storage hydro projects) and 16.50% (for pump storage hydro projects). However, additional return of 0.5% for timely completion of projects has been discontinued. Further, addition or reduction in ROE, depending upon ability to achieve ramp rate is introduced with effect from 1.4.2020 (separate guidelines to be issued by NLDC subsequently).

For computation of interest on working capital, receivables reduced from 60 days to 45 days, coal stock reduced from 15 days to 10 days for pit-head and from 30 days to 20 days for non-pit head stations.

Further, while computing Energy Charge Rate of a coal based generating stations, an additional allowance of 85 kCal/kg on GCV 'as received' on account of variation during storage is allowed.

The Regulations provide for supplementary capacity charges for additional capitalization and

supplementary energy charges, on account of implementation of revised emission standards in existing generating station or new generating station.

Provision of special single part tariff has been introduced so that such tariff may be recovered based on actual dispatch in respect of thermal generating station which have completed 25 years of operation from the date of commercial operation, where the generating company and the beneficiary may agree on an arrangement.

Generating Stations which have signed Power Purchase Agreements on or before 5.1.2011, but not achieved financial closure by 31.3.2019, are required to obtain fresh consent from beneficiaries.

These Regulations introduced differential rate regime (to be effective from 1.4.2020) during Peak Hours and Off-Peak Hours for recovery of Capacity Charges, including a High Demand Season of three months (continuous or otherwise) and Low Demand Season of remaining 9 months (to be declared by the concerned RLDCs at least six months in advance).

The Regulations also provide for incentive for exceeding specified normative plant load factor at the rate of 65 paise/ kWh for ex-bus scheduled energy during Peak Hours and a 50 paise/ kWh for ex-bus scheduled energy during Off-Peak Hours. Further, In case of Hydro Generating Stations, the energy charge rate for secondary energy has been revised from ninety paise per kWh to one hundred twenty paise per kWh.

ii. Central Electricity Regulatory Commission (Planning, Coordination and Development of Economic and Efficient Inter-State Transmission System by Central Transmission Utility and other related matters) Regulations, 2018

CERC (Indian Electricity Grid Code) Regulations, 2010 provides Planning Code for inter-State transmission under Part-3, which covers various aspects of Planning relating to inter-State transmission systems. CERC (IEGC) Regulations, 2010 under the Planning Code specifies the philosophy and procedures to be applied in planning of National Grid, Regional Grids and Inter Regional links.

These Regulations are aimed at creating a facilitative regulatory environment to enable CTU to plan an efficient, reliable and economical inter-State Transmission System and associated intra-State systems through a transparent process of extensive. informed and inclusive consultation with stakeholders and get it developed in terms of the Electricity Act, 2003 and policies formulated under the Act.

The objectives of the Regulations include. laying down the broad principles. procedures and processes to be followed for planning and development of an efficient. co-ordinated, reliable and economical system of inter-State transmission system (ISTS) for smooth flow of electricity from generating stations to the load centres. ensuring wider participation of stakeholders in the planning process and specify the procedures for stakeholders consultation and participation, specifying procedures to bring about transparency in the planning process, demarcating roles and responsibilities of various organisations in line with the Act etc.

iii. Central Electricity Regulatory commission (Open Access in inter-State Transmission) (Fifth Amendment), Regulations, 2018

The fifth amendment to CERC (Open Access in inter-State Transmission) Regulations was notified with an objective to create an enabling regulatory framework for the implementation of National Open Access Registry (NOAR).

It is envisaged that the NOAR would constitute a centralized electronic platform through which the short-term open access to the inter-State transmission system shall be administered. All the applications & approvals related to short-term open access in inter-State transmission system shall be made through the NOAR. The NOAR shall contain the relevant information viz. standing clearances provided by SLDCs/ RLDCs, availability of transmission corridor, short-term open access granted to the customers, and application status etc. which shall be automatically updated and accessed by the concerned stakeholders online. NOAR shall also interface with Power Exchanges for verification of Standing Clearance and processing of Day Ahead & Term Ahead transactions.

Further. it is envisaged that the NOAR shall facilitate financial transactions by providing the payment gateway for making all payments related to short-term transactions. The NOAR shall also provide the audit trail of applications and dashboard facility summarizing the information necessary for market monitoring and market design evaluation purposes. All of these features are expected to bring in substantial improvements in efficiency and transparency in administering the short term open access to inter-state transmission system of the country.

iv. Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations, 2018

The DSM Regulations as notified in 2014 provide for revision of DSM price vector. A number of developments have taken place in the power sector since 2014. In this backdrop, the Commission considered it necessary to review the existing operational band of frequency with due regard to the need for safe, secure and reliable operation of the grid and to review the principles of deviation settlement mechanism (DSM) rates, including their linkage with frequency in the light of the emerging market realities.

Accordingly. the Commission notified the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations. 2018, following the due procedure.

The amendment to the Regulations provide for revision of DSM Price Vector by linking it (the price at 50 Hz) to the daily average Area Clearing Price discovered in Day Ahead Market segment of power exchange besides revision of reference frequency band (viz. 49.85 Hz to 50.05 Hz) for DSM Price Vector. The amendment also provides for the maximum ceiling limit for average Daily ACP discovered in the DAM segment of Power Exchange at 50.00 Hz to be Rs. 8/- per unit, and also linked the cap rates for regulated and non-regulated entities separately. As an important measure towards grid discipline, number of time blocks for change of sign in case of sustained deviation in one direction. have been reduced from 12 time-blocks to 6 time-blocks.

v. Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) (Sixth Amendment), Regulations, 2019

In supersession of MoP Order No. 23/12/2016-R&R dated 30 September, 2016 and Order No. 23/12/2016-R&R dated 14 June, 2017, Ministry of Power notified that for generation based on solar and wind resources, no inter-State transmission charges and losses will be levied on transmission of electricity through the inter-State transmission system for sale of power by such projects commissioned till 31 March, 2022, subject to fulfilment of other related conditions. The Commission considered the above and notified the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges & Losses) (Sixth Amendment) Regulations, 2019 which provides that no transmission charges and losses for the use of ISTS network shall be payable for the generation based on solar and wind power resources for a period of 25 years from the date of commercial operation of such generation projects if such generation capacity has been awarded through competitive bidding process in accordance with the guidelines issued by the Central Government; such generation capacity has been declared under commercial operation between 13.2.2018 till 31.3.2022; Power Purchase Agreement(s) have been executed for sale of such generation capacity to all entities including Distribution Companies for compliance of their renewable purchase obligations.

vi. Central Electricity Regulatory Commission (Cross Border Trade of Electricity) Regulations, 2019

The Commission in accordance with the relevant provisions of the Electricity Act 2003 and the Guidelines on import and export of Electricity issued by Ministry of Power, Government of India, notified the Central Electricity Regulatory Commission (Cross Border Trade of Electricity) Regulations, 2019 which are applicable to the Participating Entities in India and the neighbouring countries which are engaged in cross border trade of electricity with India. However, the entities located in India who are seeking connectivity or long- term access or medium-term open access or short-term open access to the Indian grid in the course of cross border trade of electricity between India and any

of the neighbouring countries shall continue to be governed by Connectivity Regulations and the STOA Regulations.

These Regulations provide that Cross border trade of electricity between India and the neighbouring country(ies) shall be allowed through mutual agreements between Indian entity(ies) and entity(ies) of the neighbouring country(ies) under the overall framework of agreements signed between India and the neighbouring country(ies) consistent with the provisions of the prevailing laws in the respective country(ies), including through bilateral agreement between two countries; through bidding route: or through mutual agreements between entities. However, in case of tripartite agreements, the cross border trade of electricity across India shall be allowed under the overall framework of bilateral agreements signed between Government of India and the Governments of the respective neighbouring countries of the Participating Entities.

vii. Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) (Seventh Amendment) Regulations, 2019

The Ministry of New & Renewable Energy (MNRE) has vide notification No. 238/78/2017-Wind dated 14th May, 2018 issued "National Wind-Solar Hybrid Policy" with objective to provide a framework for promotion of large grid connected wind- solar PV hybrid system for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power generation and achieving better grid stability. The main objective of the Policy is to provide a framework for promotion of large grid connected wind-solar PV hybrid system for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power generation and achieving better grid stability. Policy also aims to encourage new technologies, methods and way out involving combined operation of wind and solar PV plants.

These Regulations introduced New category of renewable projects such as Renewable Hybrid Generating Station with or without storage, Renewable Power Park authorized by the Central Government or State Government as Renewable Power Park developer, entity designated by the Central Government or State Government as Renewable Energy Implementing Agency on behalf of the Renewable Energy Generating Station(s) and Standalone Storage project has been made eligible to seek such connectivity and LTA to 1STS. Applications for grant of Connectivity are required to be processed in the two stages (Stage-1 Connectivity and Stage-II Connectivity) as per the Detailed Procedure issued from time to time.

B. Inter-State Trading License

By the end of 2017-18. there are 36 inter-State trading licensees. However, of these about 28 trading licensees have been undertaking trading in electricity. These trading licensees undertake bilateral contracts for both buyers and sellers, separately for Round the Clock (RTC) period, peak period and other than RTC & peak periods. The volume of electricity transacted through trading licensees has increased from 26.72 BU in 2009-10 to 38.94 BU in 2017-18.

C. Power Exchange Business

Power Exchanges. established in 2008 and in operation for 10 years are functioning and providing trading platform for day-ahead contracts, term-ahead contracts (weekly contracts. intra-day contracts etc.). Renewable Energy Certificates and Energy Saving Certificates. The electricity transacted on power exchanges has grown from 7.2 BU in 2009-10 to 47.70 BU in 2017-18. The number of participants in power exchanges has also grown with over 4000 open access consumers across various states.

The Commission in its Order dated 8.4.2015 directed the Power Exchanges to operationalize the extended market session (i.e. Round-the-clock, intra-day I contingency market). The power exchanges have started their operations on extended market session in July 2015 while continuing with the existing products for day-ahead contingency and intra-day markets.

D. Power Market Monitoring

A well-functioning electricity market requires an effective market monitoring process. As part of the

electricity market monitoring process. the Central Electricity Regulatory Commission (CERC) has been preparing and disseminating information through two reports. These are:

a. Monthly report on short-term transactions of electricity in India with the objective:

i. to observe the trends in volume and price of the short-term transactions (contract period of less than one year) of electricity;

ii. to analyse competition among the market players; and

iii. to disclose / disseminate all relevant market information.

Here, "short term transaction of electricity- refers to contracts of less than one year period for electricity transferred under bilateral transactions through inter-State Trading Licensees (only inter-State part) and directly by the Distribution Licensees, Power Exchanges and Deviation Settlement Mechanism (DSM).

b. Annual Report on the Short-term Power Market in India: CERC brought out the Report on Short-Term Power Market in India for the year 2017-18. The report mainly analyses the trends in short-term transactions of electricity, analysis of open access consumers on power exchanges, major sellers and buyers of electricity through trading licensees and power exchanges, effects of congestion on volume of electricity traded through exchanges. trading margins charged by trading licensees. trading of Renewable Energy Certificate on power exchanges and Comparison of short-term price with tariff of long term sources of power for various distribution companies.

E. Draft Regulations/ Discussion Papers (other than those for which final regulations have been issued)

i. Draft Central Electricity Regulatory Commission (Grant of Connectivity. Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) (Seventh Amendment) Regulations, 2018

ii. Draft Central Electricity Regulatory' Commission (Staff Car Driver) Regulations, 2019

iii. Draft Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2019

iv. Discussion Paper on "Market Based Economic Dispatch of Electricity: Re-designing of Day-Ahead Market (DAM) in India-

v. Discussion Paper on "Re-Designing Ancillary Services Mechanism in lndia-

vi. Discussion Paper on -Re-Designing Real Time Electricity Market in India"

vii. Staff paper on -Revised Methodology for Application of the Escalation Rates for Payment'

F. E-Court System - SAUDAMINI

Keeping with the dream of Digital India, Central Electricity Regulatory Commission (CERC) has launched an e-filing application w.e.f. 04.04.2016 under its project -Court Case Management Automation System" (CCMAS) to develop an integrated, flexible and dynamic database for filing of petitions and other documents online. Through the e-filing application, users can file their petitions/ replies/ rejoinders/ other documents online and can track/ view the status of their petitions. It offers quick and easy access to CERC's legal system and is a part of the organisation's on-going efforts to achieve the objectives of speedy disposal, transparency, introducing economy and efficiency. With features such as SMS intimations, online service of notices, online communication of record of proceedings, orders etc., the e-filing system is aimed at transforming the manner in which the legal system in CERC functions.

In exercise of the powers conferred by Section 83 of the Electricity Act, 2003, the Central Government constituted a two member (including Chairperson) Joint Electricity Regulatory Commission for all Union Territories except Delhi to be known as 'Joint Electricity Regulatory Commission for Union Territories' with Headquarter at Delhi as notified vide notification no. 23/52/2003 - R&R dated 2nd May, 2005. Later with the joining of the State of Goa, the Commission came to be known as 'Joint Electricity Regulatory Commission for the State of Goa and Union Territories' as notified vide notification no. 23/52/2003 - R&R (Vol. II) on 30th May, 2008. The Joint Electricity Regulatory Commission for the State of Goa and

Union Territories started functioning with effect from August 2008. The office of the Commission is presently located in a rented building in the district town of Gurgaon, Haryana.

1. As per the Electricity Act, 2003, the Commission is vested with the responsibility of discharging the following functions:

   a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be;

   b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State/Union Territories;

   c) facilitate intra-state transmission and wheeling of electricity;

   d) issue licenses to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State/ Union Territories;

   e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person and also specify for purchase of electricity from such sources a percentage of the total consumption of electricity in the area of a distribution license;

   f) adjudicate upon the disputes between the licensees and generating companies and to refer any dispute for arbitration;

   g) levy fee for the purposes specified under this Act;

   h) specify State Grid Code consistent with the Indian Electricity Grid Code (IEGC) specified by Central Electricity regulatory Commission;

   i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;

   j) fix the trading margin in the intra-State trading of electricity, if considered necessary;

   k) approval of Power Purchase Agreements, and

   l) discharge such other functions as may be assigned to it under the Act.

2. The Commission shall advise the State/ Union Territory Government on all or any of the following matters, namely:-

   a) promotion of competition, efficiency and economy in activities of the electricity industry;

   b) promotion of investment in electricity industry;

   c) reorganization and restructuring of electricity industry in the State/ UTs

   d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the Joint Commission by that Government.

2.1 The Commission shall ensure transparency while exercising its powers and discharging its functions.

2.2 In discharge of its functions, the Joint Commission shall be guided by the Electricity Act, 27303, the National Electricity Policy, National Electricity Plan and Tariff Policy.

The Joint Electricity Regulatory Commission is committed to fulfill its mandate for creating an efficient and economically viable electricity system in the State of Goa & the Union Territories, balance the interests of all stakeholders while fulfilling its primary responsibility to ensure reliable supply of power at affordable rates and shall be guided by the principles of transparency, accountability, equitability and participation in discharge of its functions, to safeguard the interests of the licensees and generating companies in the State of Goa & Union Territories and to give a fair deal to consumers at the same time.

2.3 To achieve the above, the Commission aims to:

a) Promote competition, efficiency and economy in the activities of the Electricity Industry within the State of Goa & Union Territories;

b) Regulate effectively the power purchase and procurement process of the distribution licensees for sale, distribution and supply of electricity within the State of Goa & Union Territories;

c) Encourage cogeneration and use of energy generated from Renewable Sources;

d) Ensure Consumer satisfaction and create a mechanism to redress complaints immediately;

e) Introduce open-access & reduce the cross-subsidy;

f) Improve access to information for all Stakeholders.

3. Notification/Amendment of Regulations

The following Regulations have been notified/amended keeping in view of the latest developments in the power sector: -

1. Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Connectivity and Open Access in Intra-State Transmission and Distribution) Regulations, 2017notified on 14.03.2018.
2. Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Generation, Transmission and Distribution Multi Year Tariff) Regulations, 2018 notified on 10.08.2018.
3. Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Electricity Supply Code) Regulations, 2018 notified on 28.11.2018.

4. Annual Revenue Requirement and Tariff determination for FY 2018-19

The Commission had approved ARR Orders for the FY 2018-19 and determined tariff for FY 2018-19 as per detailed below:-

i.	Goa	28.03.2018
ii.	DNH Power Distribution Corporation Limited	30.01.2018
iii.	Daman & Diu	13.03.2018
iv.	Puducherry	28.03.2018
v.	Chandigarh	28.03.2018
vi.	Andaman & Nicobar Islands	26.02.2018
vii.	Lakshadweep	19.03.2018
viii.	Dadra & Nagar Haveli (Transmission)	30.01.2018
ix.	Puducherry Power Corporation Limited	16.03.2018

Tariff Orders for all the Utilities were issued within the scheduled time and they have been well implemented by all the Departments.

5. The Commission has already issued8 Orders for approval of Business Plan for Multi-Year Control Period from FY 2019-20 to FY 2021-22 for all the territories under the jurisdiction of JERC namely Andaman & Nicobar Islands, Chandigarh, Daman & Diu, DNH Power Distribution Corporation Limited, Puducherry, Lakshadweep and the State of Goa and one Transmission Company namely Dadra & Nagar Haveli (Transmission).

6. Major Target likely to be achieved upto 31′ March 2019

1. Generation, Transmission and Distribution ARR/Tariff Orders (Nine in numbers) for Multi-Year control period from FY 2019-20 to FY 2021-22 are likely to be issued for all the seven distribution utilities under the jurisdiction of JERC namely Andaman & Nicobar Islands, Chandigarh, Daman & Diu, DNH Power Distribution Corporation Limited, Puducherry, Lakshadweep and the State of Goa,one Generation Company namely Puducherry Power Corporation Limited (PPCL) and one Transmission Company namely Dadra & Nagar Haveli (Transmission).
2. The Commission has extended the Solar Regulations for a period of one year alongwith some other dispensations. In the meantime the Commission intends to review the existing Solar Regulations and issue comprehensive Renewable Regulations considering other renewable mode of Generation viz. Bio Mass, Tidal, Floating solar etc.

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CHAPTER 18

APPELLATE TRIBUNAL FOR ELECTRICITY (APTEL)

1. The Appellate Tribunal for Electricity (APTEL) has been set up under the provisions of the Electricity Act., 2003 (Section 110) with all India Jurisdictions (except the state of J&K) and has been established on 13th May, 2005. It started accepting appeals w.e.f. 21st July, 2005. The Tribunal is presently located at 7th Floor, Core-4, SCOPE Complex, Lodhi Road, New Delhi-110003.

2. APTEL is headed by a Chairperson. Hon'ble Mrs. Justice Manjula Chellur former Hon'ble Chief Justice of High Courts of Mumbai, Karnataka and Kerala is the Chairperson of the Tribunal w.e.f. 13.08.2018. The Tribunal is also having the posts of One Judicial Member and three Technical Members. Hon'ble Mr. Justice N. K. Patil, former Judge of Karnataka High Court is the Judicial Member and Shri S. D. Dubey is the Technical Member of this Tribunal. Hon'ble Shri I.J. Kapoor was also the Technical Member of the Tribunal upto 20.08.2018.

3. The Tribunal has also been conferred jurisdiction under the Petroleum and Natural Gas Regulatory Board Act., 2006 to hear appeals against the orders/decisions of the Petroleum and Natural Gas Regulatory Board set up under the Act. The Tribunal is having one Technical Member (P & NG), Sh. B. N. Talukdar.

4. At present Dr. Ashu Sanjeev Tinjan is the Registrar of the Tribunal. She is a member of Haryana Superior Judicial Services in the rank of Addl. District & Sessions Judge.

5. APTEL hears and disposes of appeals filed against the orders of the Central Electricity Regulatory Commission, State Electricity Regulatory Commissions, Joint Commissions and Adjudicating Officers. Subsequent to the setting up of APTEL, the appeals pending in the High Court of all States except the State of Jammu & Kashmir on the subject were also transferred to this tribunal.

6. Any person aggrieved by an order made by an adjudicating officer under the Electricity Act, 2003 (except under section 127) or an order made by the Appropriate Commission under this Act may prefer an appeal to the Appellate Tribunal for Electricity. Any person appealing against the order of the adjudicating officer levying any penalty shall, while filing the appeal, deposit the amount of such penalty. Every appeal shall be filled within a period of 45 days from the date on which a copy of the order made by the adjudicating officer or the Appropriate Commission is received by the aggrieved person (Section 111).

7. Proceedings are conducted in two Courts, each Court consisting of one Judicial Member and a Technical Member.

8. As on 31st March, 2019, 12175 appeals/petitions/matters etc. have been filed. Out of which 9872 have been disposed of (number of pending matters as on 31.03.2019 is 2303 including Appeals, Interim Applications, Original Petitions, Review Petitions, Revision Petitions, Execution Petitions & Contempt Petitions etc.

9. Thus within a short span of its operating, APTEL has become fully operational and has been successful in disposing of a large number of matters, thus expediting justice. The Tribunal is also operating Circuit Benches sitting in Chennai, Mumbai and Kolkata.

10. The website of the Tribunal (www.aptel.gov.in) is providing easy access to the daily cases lists and judgments/orders.

NTPC-Kaniha plant, Talcher

CHAPTER 19

NTPC LIMITED

1. NTPC Limited, a Maharatna Company of the Government of India, is the largest power generator in India with comprehensive in-house capabilities in constructing and operating power stations. NTPC has an authorized share capital of Rupees 10,000 Crore, while the paid up capital is Rupees 8,245.5 Crore. As on 31st March 2019, 56.19% equity is held by the Government of India.

   NTPC's Vision is "To be the world's leading power company, energizing India's growth" and Mission is to "Provide reliable power and related solutions in an economical, efficient and environment friendly manner, driven by innovation and agility".

   Core Values of NTPC are as below:

   - **I**ntegrity,
   - **C**ustomer Focus,
   - **O**rganizational Pride,
   - **M**utual Respect and Trust,
   - **I**nnovation and Learning" and
   - **T**otal Quality and Safety".

   In short, it is referred to as ***"ICOMIT"***.

   Over the years, NTPC has attained a global stature. In the Platts Top 250 Global Energy Companies for 2018, NTPC has been ranked number 1 Independent Power Producer in the world.

2. OPERATIONAL PERFORMANCE HIGHLIGHTS FOR THE YEAR 2018-19

2.1. Gross generation from NTPC stations, excluding joint ventures is 274.451 BU. During the period, NTPC coal based stations achieved a PLF of more than 76.81 % with 90.67 % availability including Reserve Shutdown.

2.2. Six NTPC coal stations achieved more than 85 % PLF, viz. Sipat (91.58%), Vindhyachal (90.03%), Talcher Thermal (89.46%), Korba (88.18%), Rihand (86.33%) and Barh (85.14%).

2.3. Installed capacity of NTPC is 55,126 MW (including 7,801 MW under JVs & Subsidiaries). Details of NTPC's installed capacity are placed at Annexure-I.

2.4. NTPC has discontinued operations at Badarpur Thermal Power Station, New Delhi having installed capacity of 705 MW with effect from 15th October 2018 as per the Graded Response Action Plan (GRAP) of Environment Pollution (Prevention and Control) Authority. An Eco-park would be developed at this site.

2.5. Construction work is in progress at 21 projects with an aggregate capacity of 19,856 MW.

2.6. Kudgi Unit-3 (800 MW), Bongaigaon Unit-3 (250 MW), BRBCL Unit-3 (250 MW), and Solapur Unit-2 (660 MW), i.e. total 1,960 MW started commercial operation in the current financial year.

2.7. NTPC acquired Barauni Thermal Power Project from Bihar State Power Generation Company Limited (BSPGCL) where two units of 110 MW each are in commercial operation and two units of 250 MW each are under construction.

2.8. NTPC so far has commissioned 870 MW Solar PV, 50 MW wind and 8 MW small hydro-based Renewable capacity. Currently, 245 MW capacity Solar PV power project is under construction in EPC mode.

3. COMMERCIAL PERFORMANCE

3.1. **3.1. Extension of TPA:** Government of India has approved the extension of the Tri Partite Agreement (TPA) signed amongst the Central Government, Reserve Bank of India and the respective State Governments. The TPA mechanism secures the payments of the Central Power Sector Companies towards supply of electricity to the Distribution Utilities. 29 States/ UTs have so far signed the Agreement and signing by 2 states namely Maharashtra and Punjab is awaited.

3.2. **Billing and Realization:** NTPC has been able to consistently maintain 100% realization of bills for 16 years in succession. During the 2018-19 NTPC has realized INR 93,665 Cr (Rupees Ninety Three Thousand Six Hundred Sixty Five Crore) against the billing of INR 93,494 Cr.(Rupees Ninety Three Thousand Four Hundred Ninety Four

Crore). As part of the payment security, Letters of Credit (LC) of the amount equal to 105% of the average monthly billing of beneficiaries is being maintained by most of the beneficiaries.

3.3. Customer Relationship Management: Customer Focus has been central to NTPC's commercial philosophy. This is in line with the core values of NTPC, which contains Customer Focus as a key element.

To intensify the customer focus, several initiatives have been taken by NTPC. Customer Relationship Management (CRM) is one of the key initiatives undertaken to strengthen the relationship with customers.

Under CRM, regular structured interactions with customers take place for getting feedbacks from the customers and understanding their expectations. Based on these interactions, NTPC identifies potential areas of cooperation and provides various support services like Distribution loss reduction, sharing of best practices, Power Plant performance improvement, Commercial aspects of power business etc. to them. This also provides an opportunity for sharing of each other's best practices. Further, NTPC offers training programs to the representatives of beneficiary companies at Power Management Institute (PMI). In 2018-19, 74 participants from various customer organizations attended training in 20 programs.

3.4. Sale of URS Power: NTPC has been selling URS power in the Power Exchange on the basis of consents received from the beneficiaries. During 2018-19 financial year, NTPC sold 615 MU URS Power. The gains from this sale has been shared with the beneficiaries in the ratio of 50:50, in line with provisions under Tariff Policy.

4. FINANCIAL PERFORMANCE

NTPC has been maintaining sound financial performance. During April-December 2018, NTPC recorded a total income of INR 69,634 Cr (Rupees Sixty Nine Thousand Six Hundred and Thirty Four Crore) (Unaudited) and net profit after tax of INR 7,400 Cr (Rupees Seven Thousand Four Hundred Crore) (unaudited).

5. GROWTH

NTPC has prepared its long term Corporate Plan for a time horizon till 2032, which lays the broad roadmap for NTPC's growth. Under this plan, NTPC has targeted to have an installed capacity of 130 GW by the year 2032 with a well-diversified fuel mix of Coal (65.4%), Gas (4.6%), Solar (23.1%), Hydro (3.8%), Other RE (1.5%) and Nuclear (1.5%).

5.1. Capacity Addition Program

Construction work is in progress for 19,856 MW capacity at 21 project locations including Joint Ventures & Subsidiaries. Details placed at **Annexure-II.**

5.2. Growth through Joint Ventures/ Subsidiaries: NTPC has formed Joint Venture and Subsidiaries companies for pursuing growth. Details of these companies are placed at Annexure-III.

5.3. Initiatives for Capacity Addition in neighboring Countries (through JVs)

5.3.1. Bangladesh: NTPC has formed a joint venture company called Bangladesh India Friendship Power Company Limited (BIFPCL), which is a 50:50 Joint Venture company of NTPC and Bangladesh Power Development Board (BPDB) to set up a coal based power plant. This JV company is setting up a 1,320 MW coal based power project in Bangladesh at Rampal (Khulna). This project has been christened as Maitri Power Project. Construction activities are in progress.

5.3.2. Sri Lanka: NTPC has a joint venture company 'Trincomalee Power Company Limited' in Sri Lanka with equal (50:50) equity contribution from NTPC and Ceylon Electricity Board (CEB) of Sri Lanka.

This JV Company was formed to undertake the development, construction, establishment, operation and maintenance of coal based thermal power plant of 500 MW (2 x 250 MW) capacity at Trincomalee in Sri Lanka.

Further, the Government of Sri Lanka (GoSL) has requested the GoI for changing fuel sources to Liquefied Natural Gas (LNG) and for relocating the Project at Kerawalpitiya. The same has been agreed by GoI.

GoSL has issued letter of intent to GoI for development of 500 MW LNG project and 50 MW solar project. Revised Project Agreements are under finalisation.

5.3.3. NTPC is also exploring business opportunities in Myanmar, Oman, Qatar and Morocco.

5.4. Renewable Energy

The brief status of NTPC's renewable initiatives is given below:

5.4.1. Solar Power Projects: NTPC has already commissioned 870 MW of solar projects under EPC mode and 2,750 MW of Solar projects under Developer Mode. NTPC has won 245 MW of Solar projects under Tariff based competitive bidding and presently under implementation. Also 1,000 MW of Solar projects under Developer mode is under implementation.

Further NTPC has recently awarded 2000 MW of Solar projects with ISTS connectivity and located anywhere in India in Developer Mode. PPA/PSA for these projects are likely to be concluded shortly.

Further, solar projects of aggregate capacity 134 MW in the land available in NTPC's Power stations are under various stages of tendering.

Floating Solar projects of 272 MW capacity in water reservoirs of NTPC thermal stations are under various stages of tendering.

In addition, NTPC has already installed Roof Top Solar projects and also planning to further install on some of its townships and office buildings wherever adequate shadow free area is available.

5.4.2. Wind Power Project: NTPC has commissioned its first wind energy based 50 MW project in Gujarat. Further NTPC has recently awarded 1,150 MW of Wind projects with ISTS connectivity and located anywhere in India in Developer Mode . PPA/ PSA for these projects are likely to be concluded shortly.

5.5. Nuclear Power

NTPC Limited has formed a JV company with Nuclear Power Corporation of India Limited (NPCIL) with equity holding 49% and 51% respectively to set up Nuclear Power Projects. This JV Company named "Anushakti Vidyut Nigam Limited" was incorporated on 27.01.2011.

5.6. Strategic Diversification: In order to strengthen its competitive advantage in power generation business, NTPC has diversified its portfolio to areas such as coal mining, consultancy, power trading etc.

5.6.1. Development of Captive Coal Mines: Coal mining is integral to NTPC's fuel security strategies. NTPC realizes that greater self-reliance on coal will go a long way in ensuring the sustained growth of generation.

Govt. of India has allocated 10 mines to NTPC. Eight coal mines namely Pakri-Barwadih, Chatti-Bariatu, Kerandari, Talaipalli, Dulanga, Banai, Bhalumuda and Mandakini-B have directly been allocated to NTPC. In addition, Government of India has also allocated Kudanali-Luburi coal block jointly to NTPC and Jammu & Kashmir State Power Development Company Limited (J&KSPDCL). Similarly, Banhardih coal block, allocated earlier to Jharkhand Urja Utpadan Nigam Limited, has now been allocated to Patratu Vidyut Utpadan Nigam Limited, a subsidiary company incorporated between NTPC and Government of Jharkhand. Further Badam Coal Mine, linked to Barauni Thermal Power Project is also under process of taking over by NTPC.

The estimated geological reserve of all coal blocks allocated to NTPC is about 7.3 billion Tonnes with an estimated ultimate production capacity of 116 Million Tonnes of coal per annum.

Coal production has commenced from Pakri-Barwadih and Dulanga coal mines. During the current Financial Year 2018-19 7.31 MMT coal has been produced from these mine. Other mines are under different stages of development.

5.6.2. Consultancy: Consultancy Wing of NTPC was set up in 1989 to share Company's varied experience and proven systems. It provides consultancy services to Domestic and International clients in various phases of power plants. The services

cover "Concept to commissioning activities and beyond" such as Owners Engineer Services, Lender's Engineer Services, Project Management & Construction Supervision Services, O&M Services including Performance enhancement, Renovation & Modernization Services, Quality Assurance, Inspection services, Customized Training & IT related Services, ERP services, Procurement, Recruitment and HR related services, O&M of Stranded assets, etc. Major clientele in domestic sector include various state utilities / PSUs and private sector companies. NTPC Consultancy is activity engaged in providing support to various clients in areas of FGD/ De-NOx installation to meet new environment norms, renewable energy projects, coal mining, fuel gas waste heat based air conditioning/ desalinating, R&M etc.

NTPC Consultancy has been associated with a capacity of around 50,000 MW in India and abroad.

NTPC Consultancy had successfully provided O&M services to 2x120 MW Siddhirganj Peaking Power Plant (SPPP) for last 6 years with effect from 01-11-2012. NTPC has been instrumental in providing all systems for efficient operation of power plant. NTPC consultancy has provided Owner's Engineers Services to 1,200 MW (2x600 MW) Singareni Collieries Corporation Limited Thermal Power Plant (SCCL TPP) till commissioning of both units.

Further, during the year FY 2018-19, NTPC Consultancy has secured 144 work/ job orders worth Rupees 227 Crore.

5.6.3. Power trading: NTPC's 100% wholly owned subsidiary NTPC Vidyut Vyapar Nigam Limited (NVVN) is involved in power trading and in the current financial year till 31st March, 2019 it has traded 17,222 MU (provisional). Total volume traded up to 31st March 2019 includes 5,310 MU (provisional) traded under solar & thermal bundled power, 995 MU under SWAP arrangements, 2,349 MU under bilateral trade, 3,112 MU through Power Exchange and 5,456 MU traded under Cross Border Power Trading.

NVVN has also traded 97 MU of Renewable Energy Certificates (RECs) till 31st March 2019 in Power exchange.

6. TECHNOLOGY INITIATIVES

NTPC Ltd has pioneered the adoption of several new technologies including floating solar PV, 765 kV Switchyard, Ash water recirculation, Liquid waste management systems, PADO (Performance Analysis and Diagnostic Optimization), Tunnel Boring Machines, and Supercritical technology. These technologies have contributed to increase efficiency and greater environmental protection in its operations, and these have been adopted widely in the Indian power industry as well.

With emphasis on efficiency of electricity generation, NTPC has adopted ultra-super critical technology by improving the steam parameters for North Karanpura (3X660 MW) to 260 kg/cm2, 593°C/ 593°C. For Khargone (2X660 MW), Telangana (2X800 MW) and Patratu (3x800 MW), steam parameter are 270 kg/cm2, 600°C/ 600°C. Plant efficiency of these units is expected to increase by around 8% over that of a conventional sub-critical 500 MW unit and 3% over conventional super critical units using similar coal.

To reduce water usage, Air-cooled condenser technology is under implementation at North Karanpura Super Thermal Power project and Patratu Super Thermal Power Project.

NTPC has formed an ash mound at its National Capital Power Station, Dadri for storage of fly ash. This technology has come out as the most viable alternative for ash disposal in an economic and environment friendly way by minimum use of land and water.

Indian program to develop AUSC technology is underway by a consortium of NTPC, BHEL and IGCAR. The program envisages development of indigenous technology for steam parameters of 310 Kg/cm^2 and 710°C/720°C temperature. Such parameters are way higher than steam parameters used in contemporary plants globally and would result in top of line efficiency of 46%. It will result in reduction of CO_2 emissions to the tune of 20% compared to a sub-critical plant. The phase-I of the program, which constitutes R&D for technology development, started from April 2017. Second phase of

the program i.e. setting up of an 800 MW technology demonstration plant (TDP) is being planned at NTPC's Sipat plant located in Chhattisgarh.

7. NTPC ENERGY TECHNOLOGY RESEARCH ALLIANCE (NETRA)

As a leading player in the world energy sector, NTPC recognized the potential of cutting edge technology in further improving its services and efficiency. The company is fully aligned to the needs of adapting to emerging technologies and upgrading the technologies through research and development. The company is particularly sensitive to Research & Development and the paradigm shift which it can make. NETRA (NTPC Energy Technology Research Alliance) set up in 2009 is the outcome of this vision. Its core areas of research are:

i. Efficiency improvement,

ii. New and renewable energy,

iii. Climate Change and Environment Protection

iv. Waste to Energy

v. Scientific support to NTPC and external utilities for improving availability, reliability and efficiency.

NETRA has taken up projects in the above mentioned core areas. Some of the major projects are as below:

- Solar Sea Water Desalination at NTECL – Vallur
- 1 MW floating solar at NTPC Kawas
- High quality fuel generation from Municipal Solid Waste (with Tokyo University)
- Setting up of 5 TPD Bio-CNG Production from biomass (Agri residue/ waste)
- Solar Thermal Hybrid Plant at NTPC Dadri
- Light Weight Aggregate (LWA) Plant at Sipat
- Bottom Ash as Fine Aggregates in cement concrete
- Development of Nano lubricant for coal mill gear box
- Super hydrophobic Nano-coating for solar PV panel cleaning
- Development of Nano fluids as a novel coolant
- CFD Services for Auxiliary Power Savings
- Cooling Tower Design & Performance Improvement,
- Solar PV performance and degradation study
- Development of micro-algae based process for utilization of CO_2 in flue Gas-Bio-methanation
- Application of UAVs/ Drones in Power Sector (e.g. Solar PV Inspection & Volumetric Analysis of coal etc.)
- Development of High Accuracy Solar Forecasting model capturing Atmospheric Aerosol and Cloud movement with satellite image data with ISRO

Apart from various projects NETRA also provides advanced scientific support to NTPC Stations and outside power utilities in various areas such as Non Destructive Evaluation and Imaging, Metallurgy & Failure Analysis, Transformer, Generator Health, Creep & fatigue analysis, Corrosion & Water Chemistry, Coal & Combustion and Environment etc.

NETRA has collaborated with various international and national Institutes/ organizations like CSIRO-Australia, NETL-USA, Curtin University-Australia, Newcastle University-Australia, DLR/ ISE-Germany, Tokyo Institute of Technology-Japan, CIPET Chennai, CBRI, CGCRI, ARCI Hyderabad, INST Mohali, IISC Bangalore, IIT Bombay, IIT Kanpur, IIT Delhi, IIT Kharagpur, IIT Roorkee, IIT Guwahati, IOC-R&D, ONGC, NIT Calicut etc. The tie up for these organization have been done for research related to development of cost economic technologies in the field of climate change, new & renewable energy, efficiency & reliability enhancement of thermal power generation, CO_2 mitigation/ fixation, development of micro grids, etc.

A Research Advisory Council (RAC) comprising of eminent scientists and experts from India and abroad has been constituted to steer NETRA for high end research. In-house Scientific Advisory Council (SAC) has also been constituted to provide directions for improving plant performance & reducing cost of generation.

8. SUSTAINABLE DEVELOPMENT

Sustainable development is intended to meet the needs of present generation without compromising the ability of future generation to meet their own need. Sustainable Development calls for socially inclusive and environmentally sustainable economic growth. In NTPC, Sustainable Development is a central concept to its

business. The Company has been pioneer in adopting technology and practices that promote environmental management, social responsibility and economic performance (triple bottom line approach). The philosophy of sustainability is embedded in all aspects of NTPC's business activities.

8.1. Efficiency management- CenPEEP

'Center for Power Efficiency and Environmental Protection' (CenPEEP), was set up to reduce Greenhouse Gas (GHG) emissions through efficiency improvement of coal fired stations. It is a symbol of NTPC's voluntary, proactive approach towards GHG reduction and its commitment towards environmental protection.

CenPEEP is working for improvement of efficiency and reliability of NTPC power stations through systems, strategic initiatives and introduction of new techniques & practices. The Centre carries out Performance gap analysis & Capability tests to identify and solve issues related to efficiency and reliability. A structured 'Auxiliary Power' reduction program' is being implemented at all stations to optimize Auxiliary Power Consumption (APC). On-line performance monitoring tools like Thermal Loss Analysis (TLA) are used for identifying the performance gaps and plan for suitable improvement actions. Implementation of action plans during unit overhauls and opportunity shutdowns is closely monitored.

Parametric Optimization at part loads has been identified as a thrust area including optimization of number of running auxiliaries, sliding pressure operation, excess air optimization etc. Performance of condensers & cooling towers also has potential for improvement and improvement action plans are being implemented at stations. Use of advanced analytical tools like risk grid and risk plot has helped in identifying reliability issues and plan for timely remedial actions. These Heat Rate and APC improvement initiatives have helped NTPC stations to sustain high level of performance. CenPEEP is also working towards reduction in specific water consumption in coal and gas stations.

A dedicated group CEETEM – Centre for Energy Efficient Technology & Energy Management, conducts regular Energy audits to identify potential improvement areas and improvement actions.

CenPEEP also coordinated implementation of Perform, Achieve & Trade (PAT) scheme under Prime Minister's National Mission on Enhanced Energy Efficiency (NMEEE). Overall NTPC coal and gas stations exceeded the Net Heat Rate improvement targets and earned around 1,70,653 ESCerts (Energy saving certificates) in PAT-I Cycle. NTPC actively participated in ESCerts trading through NVVN & IEX. Subsequent to the trading, NTPC is having 161,759 EScerts that will be used for PAT Cycle-II. NTPC has taken all measures for Heat rate & APC improvement for meeting PAT Cycle-II (2016-19) targets for Coal & Gas stations for which 2018-19 is the evaluation year.

8.2. Energy Conservation

In its concern for climate change and sustainable development, NTPC continued its commitment towards energy conservation through proper monitoring of power consumption of major equipment's and by maintaining good operational & maintenance practices.

During the financial year 2018-19, Mandatory Energy Audits have been conducted in selected stations. NTPC has taken an initiative for complete replacement of existing lighting with LED light fittings at its all stations including townships. Till March 2019, 8.5 lakh LED fittings (70.5 % of the population) have been replaced on Pan NTPC basis. Commissioning of HT VFD on ID Fans of Unit-1 of Talcher Kaniha and Unit-1 of Dadri Coal have been completed and now being kept in service to take advantage of energy saving. Retrofitting of VFD in CEP of Unit 6 completed. HT VFD in Ramagundam Unit 4 ID fans, Dadri Unit 2 ID fans and Korba Units 4 & 5 CEP's are also being taken up.

8.3. Environment Management

NTPC since inception has been proactive in addressing environmental concerns. NTPC has identified Environment Management as a

thrust area to achieve excellence. To meet the environmental challenges, NTPC has adopted sound Environment Management practices and advanced environment protection system to minimize impact of power generation on environment.

All NTPC Stations are equipped with advanced Environmental Protection and Pollution Control Systems such as High Efficiency Electrostatic Precipitators in its coal based units. Ash Water Re-Circulation Systems (AWRS), Liquid Waste Treatment Plant (LWTP) and Sewage Treatment Plant (STP) are available in most of the Power Stations. NTPC has taken proactive approach of making all its power stations to operate with ZLD (Zero Liquid Discharge) progressively in phases. By adopting above measures NTPC is able to conserve water in its various units while following the principle of "3 R's" (Reduce, Recycle and Reuse).

For reduction of SO_x emission, NTPC has installed Flue Gas Desulphurization (FGD) unit at Vindhyachal Stage-V of 500 MW capacity. Construction work of FGD at various stations and projects (31,370 MW capacity) is in progress. Further, NTPC has issued NIT for more than 28,000 MW capacity.

For NOx reduction, NTPC has taken up study of Selective Catalytic and Non Catalytic Rectors (SCR and SNCR) on Pilot Basis at its stations and after completion of pilot study, these would be retrofitted at its coal-based power stations. NTPC has also taken up Combustion modification to reduce NOx emission.

Most of NTPC stations have been ISO 14001 certified by reputed National/ International certifying agencies. In order to monitor key environmental parameters of Ambient Air and Stack Emissions continuously on real time basis, Automation in Monitoring Techniques has been taken up in NTPC. NTPC has installed continuous Ambient Air Quality Monitoring Systems to monitor air quality around its all operating power plants and access of data has been provided to CPCB on real time basis.

NTPC has installed CEMS (Continuous Emission Monitoring System) to monitor emissions of SO_2, NO_x and CO_2 and EQMS (Effluent Quality Monitoring System) for monitoring of treated effluents in all its stations on real time basis with online real-time basis access to the regulators.

NTPC has planted a total of over 34 million trees for protection of environment which act as CO_2 sink and also help in absorption of pollutants.

8.4. Corporate Social Responsibility (CSR)

To achieve the aim of inclusive growth and equitable development, CSR has been synonymous with Company's core business of power generation. The Company's spirit of caring and sharing is embedded in its mission statement. The Company has a comprehensive Resettlement & Rehabilitation (R&R) policy covering community development (CD) activities which has been revised and updated from time to time. CD activities in green field area are initiated as soon as project is conceived and thereafter extensive community / peripheral development activities are taken up along with the project development. Separate CSR Community Development Policy, formulated in July 2004 and Sustainability Policy formulated in November 2012 were combined and revised in 2015 and further in 2016 as "NTPC Policy for CSR & Sustainability" in line with Companies Act 2013 and Department of Public Enterprises (DPE) Guidelines for CSR. It covers a wide range of activities including implementation of specific programs through NTPC Foundation.

Corporate Social Responsibility (CSR) & Sustainability programs undertaken by the NTPC include activities specified in Schedule VII of the Companies Act 2013 & rules made there under and any other activity for benefit of community at large. Focus areas of NTPC's CSR & Sustainability activities include health, sanitation, drinking water, education, capacity building, women empowerment, Social Infrastructure Development, support to Physically Challenged Person and activities contributing towards Environment Sustainability.

Preference for CSR & Sustainability activities is given to local areas around NTPC's operations. Therefore, the NTPC ensures that majority CSR funds are spent for activities in local areas. However, considering Inclusive Growth & Environment Sustainability and to supplement Government effort, activities are taken up anywhere in the country.

Over the past year, more than 500 villages and more than 400 schools have been benefitted by NTPC for various CSR initiatives in the previously mentioned focus areas at different locations. NTPC's CSR initiatives have touched the lives of around 10 lakhs people in one or the other way, residing at remote locations. The NTPC has been creating a large amount of social infrastructure through construction of community centers, multipurpose halls, roads, culverts, bus stands, cremation sheds, installation of streetlights, high mast lights. In addition to this, it has also provided financial support to preserve sites of historical heritage. The NTPC has been promoting the use of renewable energy by installing solar streetlights, setting up of integrated domestic energy system, providing clean solar energy and cooking solutions, solar water heaters etc. Some of the other CSR initiatives undertaken over the past year are:

- One-month residential summer workshops for 400 girl children in the age group of 10-12 years through Flagship Program Girl Empowerment Mission (GEM) wherein interventions were taken to make the girls self-reliant and confident in all walks of life. The girls were chosen from various schools in villages surrounding NTPC power stations in Singrauli and Sonbhadra districts (Aspirational districts) around NTPC stations.
- Construction of school & hostel for tribal children near NTPC Rihand, in Uttar Pradesh and a full-fledged Science & IT lab for a school catering marginalized children.
- Support for Combating cancer through infrastructure & equipment at National Cancer Institute Nagpur and AIIMS New Delhi.
- Setting up Burn Units at AIIMS Patna, AIIMS Bhubaneswar & King George Hospital Lucknow.
- Revival and operation of Mechanized Solid Waste Management plant at Karsada, Uttar Pradesh.
- Installation of Bore wells and Electric pump sets benefitting scheduled tribe farmers at Nagram village Telangana.
- Supporting 'Archery' Sports under CSR.
- Support for developmental & beautification works at Charminar Hyderabad, under 'Swachh Iconic places Project' of Govt. of India.
- Installation of Solar Thermal Cooking system in Government schools in Lakshadweep

Another Major initiative of the NTPC was "Provision for income generation opportunities" through vocational training, skill upgradation and income generation programs. NTPC had adopted 18 ITI's and is setting up eight new ITI's. NTPC had signed MoU with NSDC for skill development of 30000 youth over a period of 05 years spread in 12 states. To enhance Income generation of the village community the NTPC has been providing vocational training to the village youth and had taken livestock developments and crop management Projects.

In the area of education, NTPC is providing quality education primarily to rural community children through 34 schools located in NTPC Townships. NTPC has provided support for setting up 'NTPC- ALL Girl Super 30' at Varanasi, Uttar Pradesh for providing free residential coaching and mentoring for admission in IITs, NITs and prestigious Engineering Institute. NTPC is also taking up distribution of educational tablets having study material to resource poor students of standard VIII to X in selected schools in Maharashtra. NTPC has taken up the construction of ITI in Ganjam District, Odisha & ITI Baloda, Sipat, Chhattisgarh under CSR. Utkarsh Scholarship Scheme for marginalized sections of society in the villages surrounding NTPC's power plants to pursue industrial training in ITIs, full time BE/ B. Tech in IITs, NITs and Govt. Engineering Colleges and full time MBBS in Govt. Medical colleges.

To promote healthcare besides other activities like free health camps & surgical camps, NTPC is taking up the construction of Eye hospital near NTPC Dadri. NTPC has provided financial support for Electro Chemotherapy Device & Electrodes for the treatment of cancer patients at All India Institute of medical Sciences, New Delhi.

NTPC has committed support for Mobile Medical Units in Hamirpur, Himachal Pradesh and Sheohar, Bihar.

NTPC is taking up initiatives for waste management, water is promoting usage of renewable energy by taking installation of roof top solar systems on public buildings, solar plants, solar lights, solar water pumps and solar water heaters etc. which is further enhancing the quality of life.

To improve irrigation facilities, NTPC has taken installation of motorized bore wells in different locations for community farming and has committed funds for installation of energy efficient water pumping system in the fields of farmers residing near NTPC stations located in in various districts of Uttar Pradesh. NTPC is providing safe drinking water. RO water plants/ Water ATMs and water filters.

NTPC has taken up preservation and conservation of 3 monuments, Group of Monuments, Mandu (MP), Excavated site at Vikramshila (Bihar), and Archaeological site, Lalitgiri (Odisha), in association with Archaeological Survey of India (ASI) and National Culture Fund (NCF). For protection and promotion of heritage of dying art forms of Odisha, NTPC is supporting Society for Development of Rural Literature for establishing Purvasha Folk and Tribal Art Museum, Odisha.

NTPC has undertaken conservation of vulnerable & endangered species of Olive Ridley Turtles' the smallest of all sea turtles that travel from Mexico to Indian shores just to breed and nest in peace.

NTPC is undertaking tree plantation covering vast areas of land in and around its projects and till date about 34 million trees have been planted throughout the country. NTPC is supporting the restoration works for developing Brahma Jahari Forest in Chaumuha in Mathura District, Uttar Pradesh

Further, NTPC has embarked upon long-term Memorandums with State authorities to assist achievement of Intended Nationally Determined Contributions (INDC) in COP 21, 10 million trees are planned to planted over a period of 10 years.

NTPC has also set up the NTPC Foundation, engaged in serving & empowering the physically challenged and economically weaker section of the society. Current activities are providing IT education to physically & visually challenged students, establishing Disability Rehabilitation Centres (DRC) and operating Directly Observed Treatment cum Designated Microscopy Centre (DOTs cum DMC) with Mobile ambulance facilities. A flagship program of foundation 'NTPC Utkarsh' - Merit Scholarship for students to encourage and motivate students who are pursuing secondary, high school, engineering & medical science studies envisages benefiting 7300 students every year.

During the year, NTPC has won the following CSR awards:

- ET Now CSR Leadership Award
- ISC-FICCI Sanitation Awards 2018.
- SKOCH Order of Merit Award.
- FAME Excellence Award.
- NTPC Anta won the Diamond Trophy at QCFI's 1st HR Conference held at Vadodara.
- Seven (7) awards (Sipat, Vindhyachal and Bhilai in "Par Excellence" category, Kawas, Rourkela and 2 village QC teams of Singrauli in "Excellent Category") in QCFI's 32nd National Convention on Quality Concepts (NCQC) at Gwalior.
- NTPC CSR Coffee Table Book "Mega Watts from Our Hearts" has won the 2nd prize in the 40th All India Public Relations Conference held at Dehradun.
- Dainik Jagran CSR Awards 2019 in Education Category

8.5. Rehabilitation & Resettlement (R&R)

NTPC is committed to help the populace displaced for execution of its projects and has been making efforts to improve the Socio-economic status of Project Affected Persons (PAPs). In line with its social objectives, the Company has focused on effective Rehabilitation and Resettlement (R&R) of PAPs and also on Community Development (CD) works, in and around its projects.

Govt. of India has enacted combined Land Acquisition and R&R Act - 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT LARR Act, 2013) which is applicable since 01.01.2014. NTPC has revised its R&R Policy

to incorporate R&R entitlements as per RFCT LARR Act, 2013 as also retained NTPC's good practices/ guidelines on facilities to be extended for Project Affected Families (PAFs).

NTPC takes measures for R&R of PAFs as per its R&R Policy provisions with the objective that the PAF will improve or at least regain their previous standards of living. As per the Policy and in line with provisions of RFCT LARR Act 2013, a Socio-economic Survey (SES)/ Census Survey will also have to be conducted by the State Government to collect detailed demographic details of the area which shall form the basis for the preparation of 'Rehabilitation and Resettlement (R&R) Plan/ Scheme'. Apart from the R&R Plan formulated in line with RFCT LARR Act, need based Community Development (CD) activities will also be included for contributing to socio-economic development of the people/ project vicinity.

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

Achievement during 2018-19:

R&R/ CD activities are being implemented at the new Greenfield / Brownfield Thermal projects at Barh, Bongaigaon, Darlipali, Gadarwara, Khargone, Kanti, NPGC Nabinagar, BRBCL Nabinagar, Kudgi, Lara, Meja, Mouda, North-Karanpura, Solapur, Tanda-II, Unchahar-IV, Vindhyachal Stage-IV, Vindhyachal Stage-V, Telangana, Hydro projects at Koldam, Tapovan Vishnugad, Rammam Stage-III and Coal Mining Projects at Pakri-Barwadih, Chatti-Bariatu, Kerendari, Dulanga and Talaipalli. These activities are taken up under approved R&R Plans and on case-to-case basis requirement for specific projects to cater local requirements / stakeholders request and keeping in view the improvement in Social Development Indicators.

Areas for Community Development activities:

- **Swachh Bharat Abhiyan –** Various initiatives were taken to make project affected villages 'Open Defecation Free' by taking up activities related to construction of individual toilets and awareness programs.
- **Drinking water –** Planning and implementation for access to drinking water for 100% coverage of all project-affected villages of NTPC projects under construction is being undertaken.
- **Capacity building / Skill up gradation –** Need based training are being conducted to enhance the skills of affected persons for increasing their employability and livelihood.
- **Education –** Construction activities under progress for Medical College cum Hospital at Sundargarh (Odisha) and Engineering College at Shivpuri (Madhya Pradesh).
- **Health -** For the benefits of project affected persons and neighboring population, 'Mobile Health Clinic', Medical camps and dispensaries are being operated for comprehensive health coverage of PAPs at various projects.

Socio-economic Survey (SES)/ Social Impact Assessment (SIA)/ Social Impact Evaluation (SIE)/ Need assessment Survey (NAS) / Census and Survey (C&S): SIE is being carried out at Koldam as per NTPC Policy. SIA, as per provisions of RFCT LARR Act has been carried out at Talaipalli & Korba.

8.6. Sustainability Report

NTPC has prepared its Sustainability Report FY18 based on various initiatives taken in the areas of environment, economic, labour practices, human rights, society and product responsibility. This is the 7th Sustainability Report of NTPC, covering all sustainability parameters of Type 2 high level (Compressive)-l, as per the most widely accepted GRI (Global Reporting Initiative) Standards. The report has been assured by an independent external assurance provider.

9. CORPORATE GOVERNANCE

As a good corporate citizen, NTPC is committed to sound corporate practices based on conscience, openness,

fairness, professionalism and accountability besides building confidence in its various stakeholders, thereby paving the way for long term success.

NTPC firmly believes that sound Corporate Governance is critical for enhancing and retaining investor trust. We are committed to meet our performance goals with ethics and good governance. NTPC is constantly striving to adopt emerging best practices in corporate governance. It is our endeavor to achieve higher standards and provide oversight and guidance to management in strategy implementation and risk management and fulfilment of stated goals and objectives.

The Company has broadly complied with all the requirements of SEBI LODR, Companies Act, 2013 and Guidelines on Corporate Governance for Central Public Sector Enterprises issued by Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Government of India, except requirement regarding number of independent director during 28/4/2018 to 29/7/2018 and evaluation of Directors.

Ministry of Corporate Affairs (MCA) vide notifications dated 5th June, 2015 has exempted Government Companies from the following provisions:

1. regarding performance evaluation of Board of Directors by the Nomination & Remuneration Committee
2. mentioning the manner of formal evaluation of its own performance by the Board / Committees/ individual Director in Board's Report if directors are evaluated by the Ministry or Department of the Central Government which is administratively in charge of the company, or, as the case may be, the State Government as per its own evaluation methodology.

Further vide notification dated 5th July, 2017, MCA exempted Government Companies from requirement of review of performance of Independent Directors & Board as whole, review the performance of Chairperson by Independent Directors in separate meeting and requirement of performance evaluation by Independent Directors by entire Board. Similar exemptions were sought from the SEBI, however, view of SEBI is awaited.

It may be noted that Department of Public Enterprise (DPE) has already laid down a mechanism for performance appraisal of all functional directors. Further, NTPC enters into Memorandum of Understanding (MoU) with Government of India each year, which demarcates key performance parameters for the company. The MoU targets are cascaded down and form an integral part of the performance appraisal of the individuals. The internal MoU covers all operational and performance parameters like – Plant Performance and Efficiency, Financial targets, Cost cutting targets, Environment, Welfare, Community development and any other relevant factor. The performances of the Company are evaluated by the Department of Public Enterprise vis-à-vis MoU entered into with the Government of India.

10. SAFETY

Occupational Health and Safety at workplace is one of the prime concerns of NTPC Management and utmost importance is given to provide safe working environment and to inculcate safety awareness among the employees. Safety is part of NTPC's core values.

To provide safe working environment and strive for zero incidents at work, NTPC has reviewed and revised its Safety policy on 20th August 2018. The safety policy is supported by safety rules and procedures as applicable for all business activities carried out by NTPC.

NTPC has 3-tier structure for Occupational Health and Safety management, namely at Stations/ Projects, at Regional Head Quarters and at Corporate Centre. At corporate level, Corporate Safety Department is headed by Executive Director and is responsible for making Policies/ Guidelines on safety, review & monitoring regions and sites.

Business Unit Head and Senior Management carry out regular plant inspection and review. Internal safety audits of all sites by its own safety officers of various Projects/ Stations and external safety audits by reputed organizations like Du-Pont, National Safety Council Mumbai, Disaster Management Institute Bhopal etc. are carried out for each Project/ Station. Recommendations of auditors are regularly reviewed and complied with.

Cross-functional safety task forces are functional at all Projects/ Stations to monitor unsafe working conditions at site and their rectification. All sites have been divided into zones and a leader for each zone have been identified for maintaining safety. A Safety Coordinator

at the level of Additional General Manager (AGM) and suitable numbers of qualified safety officers are posted at all units as per statutory rules/ provisions to look after safety of workforce & materials. For strict compliance & enforcement of safety norms and practices by the contractors, safety clauses are included in General Conditions of Contract/ Erection Condition of Contract. A pre bid discussion is also carried out with the contractor and a written commitment is taken from the contractor for following NTPC safety systems.

To mitigate the on-site emergencies at all operating stations, effective engineering controls are provided to indicate and handle emergency situation. Detailed emergency plans have been developed and responsibilities are assigned to each concerned to handle the emergencies. Mock drills are conducted regularly to check the healthiness of the system. These activities are also reviewed by Factory inspector during their visits to the plants.

NTPC's commitment towards the safety has won many safety awards and laurels to the company's units from reputed institutions, namely Ministry of Labour & Employment-Government of India, National Safety Council, Mumbai/ State chapters, Institution of Engineers, Greentech Foundation as well as State Governments.

11. RISK MANAGEMENT

Pursuant to compliance with the Companies Act, 2013 and Regulation 21 of SEBI's Listing Obligations and Disclosure Requirements, NTPC has implemented an elaborate Enterprise Risk Management framework for following:

- To finalize risk assessment under the risk management framework,
- Monitor and review risk management plan/ framework, as approved by the Board
- Informing the Board about the risk assessed and action required to be take/ already taken for mitigating the risks on quarterly basis
- Take up other matter, as directed by the Board from time to time.

A Functional Director level "Risk Management Committee (RMC)" has been entrusted with the responsibility to identify & review the risks and formulate action plans and strategies to mitigate them on short term as well as long term basis.

The RMC meets regularly to deliberate on strategies. Risks are monitored through reporting of key performance indicators. Outcomes of RMC are submitted for information of the Board of Directors.

12. BUSINESS EXCELLENCE

In its pursuit to embrace digital and paperless working, NTPC has implemented an IT enabled initiative- Corporate Performance Management and Business Intelligence system to enable strategy execution and communication, analytics, query response, reporting and automating few business processes that shall provide effective decision support for the management across different tiers. The system implementation was completed in August 2018.

NTPC has developed and adopted 'NTPC Business Excellence Model' on the lines of globally accepted Performance Excellence frameworks such as the Malcolm Baldrige Performance Excellence framework, the European Foundation for Quality Management (EFQM) Excellence Model, Deming and ITC sustainability model. In this financial year 2018-19, NTPC has completed assessment of 21 generating stations using this performance excellence framework. The outcome of assessment process is qualitative and quantitative feedback to respective station on strength and areas to improve.

Other contemporary Total Quality Management (TQM) concepts and techniques like ISO, Quality Circles, Professional Circles, 5S etc. have been deployed across the organization. Quality Circle team 'Zen X' of NTPC – Korba had participated in International QC Convention held at Singapore in October 2018.

13. USING INFORMATION AND COMMUNICATION TECHNOLOGY FOR PRODUCTIVITY ENHANCEMENT

NTPC has implemented Enterprise Resource Planning (ERP) application to integrate all its business functions to improve information availability, transparency and decision making. Process Integration data system has been developed to capture, display and analyze the plant performance parameters on real time basis. ERP has been upgraded to the latest version.

Non-ERP applications in other areas such as Engineering Drawings approval, Quality Control Management,

Hospital Management, Guest House Management, Right to Information and Security Control have been implemented.

NTPC plants and Offices across India, are connected to Corporate Office and Data Centre through high speed MPLS (Multi-Protocol Label Switching) to facilitate seamless communication. The progress of ongoing projects and issues of the running power stations are discussed regularly over high definition Video Conferencing system at Project Monitoring Centre of Corporate Office. NTPC has its own mailing solution with main and back up systems

A vendor portal was developed to facilitate vendors to get registered, bid and track their bills for payment without any physical interaction. The same is now available on a mobile App as well.

Security of digital assets of NTPC is of top most priority and hence a 24x7 Security Operation Centre (SOC) was started. Round the clock monitoring of all external and internal data traffic is being monitored through SOC and latest threat management tools have been deployed to prevent any cyber-attack or data theft.

NTPC has its own Disaster Recovery Site. Both the data center and disaster recovery center are now ISO 27001 certified.

NTPC has initiated the process of switching to Paperless Office. All approvals and entire process from procurement to payment are envisaged to be paperless.

14. HUMAN RESOURCE DEVELOPMENT

NTPC takes pride in its highly motivated and trained Human Resource that has contributed its best to bring NTPC to its present height. The total employee strength of NTPC stands at 20,239 as on 31st March 2019 (excluding Trainees).

14.1. Induction Plans

Several initiatives have been taken to ensure a robust talent pipeline in order to meet the increasing requirement of manpower for the Company's growth program. Considering the significant capacity addition plan, Executive Trainees as well as Diploma & ITI Trainees are recruited as per the requirement & continuous efforts have been made to effectively utilize the manpower by rationalization.

14.2. Training & Development

Understanding the necessity of consistently creating knowledge and developing new skills and competencies, NTPC has set up a comprehensive training infrastructure comprising NTPC Power Management Institute (NTPC-PMI) at the apex level, Regional Learning Institutes at NTPC regions and Employee Development Centers (EDCs) at sites. NTPC also sponsors employees to external training facilities in India and abroad. As on date only Sipat RLI has a simulator. The Solapur Simulators, which will is a set of two simulators capable of running four units 660 MW & 800 MW each have will be functional only by Sept 2019. Additionally most of the 500 MW units of NTPC have a small BHEL simulator that can be used to provide basic training. The 250 & 500 MW simulators at Korba have already been renovated and installation of one 250 MW simulator at Bongaigaon and one more 500 MW Simulator in Unchahar is under planning stage.

Apex level NTPC-PMI at Noida is the cornerstone of NTPC's learning infrastructure. It has the primary responsibility of enhancing and upgrading the intellectual capital of the organization. Over the last 35 years, it has emerged as a leading institute providing learning on management, technical competencies and leadership. In fact, assuming for itself the role of a change agent, NTPC-PMI has become the learning facility for the entire power sector. It is playing a pivotal role in developing world-class competencies by providing state-of-the-art training to power professionals from India and other developing countries. During 2018-19 (up to 31st March 2019), PMI has conducted total 2,184 (2003 Instructor led training and 181 e-Learning modules) training programs covering 10,180 executives, logging a total of 2,00,882 training man-days (1,34,190 man-days of e-Learning and 66,692 man-days of Instructor Led training).

NTPC has also adopted latest Virtual Reality Based cognitive technologies to provide an immersive experiential training for safe operation of its electrical Low Tension &High Tension switchgears. It is also in the process of

developing many such training modules on various other areas of power plant equipment. NTPC-PMI is also implementing Project Analytics for faster and better project delivery, dynamic Risk management using International bookmarked methodology.

The training imparted is in tune with emerging needs and challenges and for this purpose, the existing training programs are reviewed and some new programs are included in the annual calendar every year.

From the current year, NTPC-PMI is additionally giving special priority to Safety, Health and Environment (SHE) as it goes a long way in establishing operating practices that make power plants efficient and sustainable. NTPC is developing a Safety Academy at Unchahar.

In order to take training closer to the employees, NTPC-PMI has adopted training through video conferencing, web conferencing and e-learning. Additionally NTPC has introduced learning through e learning as a platform to provide training to its employees at anywhere, anytime basis through Harvard Manage Mentor and GPiLearn. It has also put in place its own Learning Management Server (LMS) and has developed NTPC specific technical and ERP related e learning modules. With the introduction of learning through e-Learning, the L&D scenario in NTPC has taken a leap jump with as much as 35% learning happening through e learning.

At the international level, PMI conducted a 4 weeks program in Abu Dhabi this year for ABB on Power Plant Operation and Simulator Training on GE Combined Cycle Gas Power Plant. Three programs for Bangladeshi employees of NTPC's Joint venture company BIFPCL, giving them inputs on Power Plant Construction.

NTPC imparts hands-on training on Power Plant Operations through its 660 MW, 500MW and 250 MW Simulators at Korba and Sipat, to freshly recruited engineers as well as professionals from NTPC and other power utilities.

NTPC-PMI is also responsible for designing, imparting and evaluating the one-year intensive, compulsory training of freshly recruited Executive Trainees (ETs) in NTPC. This year ET program has been Restructured and Redesigned as NTPC Induction Program to unleash new Talents (NIPUN). In 2018, NTPC recruited 234 ETs in Finance, Electrical, Mechanical, C&I, and Mining, disciplines. In separate groups, these ETs are presently undergoing training in functional areas at NTPC-PMI and Regional Learning Centres at VSTPP, Sipat and Simhadri projects.

For all round development of India's power sector, PMI has conducted several customized training programs for the benefit of State utilities from Rajasthan, Uttar Pradesh and Haryana; CPSEs like Power Finance Corporation (PFC), National Hydroelectric Power Corporation (NHPC), THDC India Limited, EdCIL and EESL, and private sector companies like Reliance Industries Limited (RIL) and Tata Power, etc., at their locations as well as in PMI. In addition, several individuals from State utilities have benefited from the regular training programs being conducted at PMI, Noida. In all 5,742 man-days of training were provided to from other organizations by PMI till March'2019.

15. SUPPORT TO THE SECTOR

NTPC has extended its services for the development of Indian Power Sector in several programs of the Government of India through NSM, DDUGJY, SAUBHAGYA and NSDF. Some of the highlights of NTPC's role in India's power sector development are as below:

15.1. National Solar Mission (NSM)

The Government of India has designated NVVN as the Nodal Agency for Phase-I of National Solar Mission (NSM) with a mandate for purchase of power from the solar power projects connected to grid and for sale of such power bundled with the power sourced from NTPC coal power stations to Distribution Utilities under Phase-I of NSM, which envisaged setting up of 1,000 MW solar capacity. NVVN introduced transparent bidding process involving reverse bidding for selection of Solar Power developers, which helped to bring down solar tariff very significantly below CERC

notified tariff at that time. Already 70 projects with solar generation capacity of 733 MW (533 MW Solar PV and 200 MW Solar Thermal) has been commissioned under the scheme.

This solar power bundled with power from equivalent capacity out of from unallocated quota of NTPC coal power stations is presently being supplied to Discoms / Utilities of Rajasthan, Maharashtra, Punjab, Andhra Pradesh, Telangana, West Bengal, Assam, Odisha, Uttar Pradesh, Chhattisgarh, Tamil Nadu, Karnataka and DVC.

During the current FY 2018-19, NVVN has supplied 5,310 MU (provisional) of bundled power to Discoms/ Utilities.

NTPC had been entrusted to develop 15,000 MW Solar PV through NSM Phase-II in three tranches from 2014-15 to 2018-19, where NTPC would be the facilitator/ trader between Discoms and the project developers. NTPC would purchase power from the developers and sell it to the Discoms. Under Tranche-I, NITs were published for 3,000 MW of solar capacity and state specific levellised solar tariff got determined through transparent reverse auction process. After signing of Power Sale Agreements (PSAs) with State Discoms, Letter of Intent (LOI) had been placed on selected solar project developers (SPDs). NTPC also entered in to Power Purchase Agreements (PPAs) with the selected SPDs. So far, solar projects of 2,750 MW capacity have been commissioned and a solar project of balance 250 MW is under construction.

15.2. DDUGJY and SAUBHAGYA

NTPC has been entrusted with Rural Electrification work under DDUGJY (Deen Dayal Upadhyay Gram Jyoti Yojana) and SAUBHAGYA (Pradhan Mantri Sahaj Bijli Har Ghar Yojana) schemes of GoI. All the districts have been saturated by providing nearly 8 Lakhs Household connections as per the eligible beneficiary list received from respective DISCOMs/ Government of Odisha. Out of a revised village scope of 17,223 numbers (Un-electrified & Partially electrified), infrastructure work has been completed in 13,127 Villages and work is in progress in 778 Villages. Remaining work and handing over of the completed infrastructure to DISCOMs is expected to be achieved by June 2019.

15.3. National Skill Development Fund (NSDF)

NTPC has entered into 2 tripartite MoUs with Ministry of Skill Development & Entrepreneurship (NSDF-National Skill Development Fund) and National Skill Development Corporation (NSDC) and has allocated total Rupees 36.50 Crore from its CSR fund for various skill development programs. NTPC will provide fund to NSDF as per the provisions of the MoU and NSDC will draw the money from NSDF to execute these skill development programs at various locations.

These skill development programs are being carried out in different parts of the country to train 30,000 youths in different market linked vocational skill sets for various sectors like service sector, manufacturing sector, industry sector, etc. through specialized implementation partners of NSDC.

The Multi Skill Centers at Talcher, Solapur, Sundargarh, Mouda, Patna (Barh), Kahalgaon, Vindhyanagar, Talaipalli, Dadri, Kudgi, Ramagundam & Simhadri have been started.

Till date 15,836 number of candidates have been trained and 2,527 are undergoing training. 13,237 trained people have been assessed and 8,670 have been placed.

16. AWARDS AND ACCOLADES

NTPC, the Maharatna company, has been consistently recognized by local & international bodies in the fields of Productivity, Environment and Safety. Major awards and rankings received by NTPC during the period 2018-19 are as under:

- Global ranking: NTPC Limited ranked no. 1 Independent Power Producer and Energy Trader Globally in the Platt's Top 250 Global Energy Company Ranking, 2018.
- Great Place to work: In a study carried out by Great Place to Work and The Economic Times, NTPC has been recognized for being among the best in the Industry - Public Sector Company to work for the year 2018. NTPC is overall ranked 25 among 100 organizations across the

country who participated in the assessment of the study - "India's Best Companies to Work for 2018".

- Dun & Bradstreet Award: The Dun & Bradstreet Infra Award-2018 has been conferred on NTPC Limited for Excellence in Power Generation. Shri Prakash Tiwari, Director (Operations) received the award from Shri Amitabh Kant, IAS, Chief Executive Officer of Niti Aayog, GOI in New Delhi on 31st October 2018.
- Global Energy Management Award: NTPC's three stations Ramagundam, Vindhyachal and Kawas has received Global Energy Management Award 2018 in Thermal and Gas Power category for excellence in energy efficiency.
- FICCI Water Award: NTPC's research arm NETRA, received FICCI Water Award (3rd position) at India Industry water conclave, on sustainable Water Management , under Technology Innovation category for development of low cost seawater desalination process using waste heat from flue gas at Simhadri Power plant.
- CII-Customer Engagement and Satisfaction Practices award: NTPC-Vindhyachal won 2nd runner up award for 'CII- Customer Engagement and Satisfaction Practices' under the category Infrastructure and power at function organized at Bangalore.
- Innovative Practices Awards for Sustainable Development Goals (SDGs): NTPC is among Top Performers at Innovative Practices Awards for Sustainable Development Goals (SDGs) organized by Global Compact Network on 8th June 2018.
- Dainik Jagran CSR Award: NTPC Ltd. has been conferred with "Dainik Jagran CSR Awards 2019" in Education Category in a function held in New Delhi on 27th February 2019. The Award was given by Shri Manoj Sinha, Hon'ble Minister of State (I/c) for Communication and Minister of State for Railways.
- Award in the field of learning and development: NTPC has received the prestigious Association for Talent Development (ATD) Best 2018 Award -a globally respected award in the Learning & Development and Talent Development space. This global award is conferred by ATD, USA to the organizations that demonstrate enterprise-wide excellence in Learning & Development and Talent Development.
- ISTD National Award for Innovative Training Practices - NTPC has won the ISTD National Award for Innovative Training Practices 2017-18 (First Prize).
- BML Munjal Award for learning and development: NTPC secures the 2nd position and wins the BML Munjal Award 2018 for Sustained Excellence in Learning & Development after competing with private and public sector companies. The team was felicitated by Dr. Pranab Mukherjee, former President of India, at New Delhi on 19th April 2018.
- SKOCH Award of Merit for CSR: NTPC has been awarded the prestigious SKOCH award of Merit for top CSR projects in India for "Enhancing agricultural incomes by improving farm productivity".
- FICCI Safety Systems Excellence Awards: NTPC's Faridabad Gas Power Station has been awarded "Certificate of Appreciation for Good Practices in Safety Systems" at the 7th FICCI Safety Systems Excellence Awards for Industry 2018.
- National Safety Award: NTPC's Talcher Super Thermal Power Station and Jhanor Gandhar Gas Power Station received the Prestigious National Safety Award from Govt. of India, New Delhi on 17.09.2018.
- Kalinga Safety Award: NTPC's Talcher Thermal Power Station and Talcher Super Thermal Power Station have been conferred with the much coveted Gold and Silver "Kalinga Safety Award" at the 8th Odisha State Safety Conclave on 2nd November 2018.
- Safety Culture Award: NTPC Ananthapuramu Solar Project received Best Safety Culture Award from National Safety Council, Andhra Pradesh Chapter on 8th March 2019 on the occasion of Safety Week Celebrations.
- CBIP awards: NTPC has been awarded as the Best Performing Utility of the Country in Thermal Power Sector by Central Board of Irrigation and Power (CBIP) on 4th January, 2019 at a function held in New Delhi.

Annexure-I

LIST OF NTPC COMMISSIONED STATIONS / PROJECTS

I. COAL BASED PROJECTS

Sl.	Project	State	Capacity (MW)
1	**Simhadri- I & II**	**Andhra Pradesh**	**2000**
2	Bongaigaon	Assam	750
3	Kahalgaon- I & II	Bihar	2340
4	Barauni	Bihar	220
5	Barh-II	Bihar	1320
6	Sipat- I &II	Chhattisgarh	2980
7	Korba- I, II & III	Chhattisgarh	2600
8	Lara	Chhattisgarh	800
9	Kudgi	Karnataka	2400
10	Mouda-I&II	Maharashtra	2320
11	Solapur	Maharashtra	1320
12	Gadarwara	Madhya Pradesh	800
13	Vindhyachal- I, II, III, IV & V	Madhya Pradesh	4760
14	Talcher STPS- I & II	Odisha	3000
15	Talcher TPS	Odisha	460
16	Ramagundam- I, II, & III	Telangana	2600
17	Rihand- I,II & III	Uttar Pradesh	3000
18	Singrauli- I&II	Uttar Pradesh	2000
19	Dadri- I & II	Uttar Pradesh	1820
20	Unchahar- I, II, III & IV	Uttar Pradesh	1550
21	Tanda	Uttar Pradesh	440
22	Farakka- I , II & III	West Bengal	2100
	Total (Coal)		**41580**

II. COMBINED CYCLE GAS/LIQUID FUEL BASED PROJECTS

Sl.	Project	State	Capacity (MW)
1	Jhanor-Gandhar	Gujarat	657
2	Kawas	Gujarat	656
3	Faridabad	Haryana	432
4	Kayamkulam	Kerala	360
5	Anta	Rajasthan	419
6	Dadri	Uttar Pradesh	830
7	Auraiya	Uttar Pradesh	663
	Total (Gas/Liquid)		**4017**

III. HYDRO BASED PROJECTS

Sl.	Project	State	Capacity (MW)
1	Koldam	Himachal Pradesh	800
2	Singrauli Small Hydro	Uttar Pradesh	8
	Total (Hydro)		**808**

IV. RENEWABLE PROJECTS

Sl.	Project	State	Capacity (MW)
1	A&N Solar	A&N	5
2	Faridabad Solar	Haryana	5
3	Raigarh Solar	MP	50
4	Talcher Solar	Odisha	10
5	Ramagundam Solar	Telangana	10
6	Dadri Solar	UP	5
7	Singrauli Solar	UP	15
8	Unchahar Solar	UP	10
9	Ananthapuram Solar	Andhra Pradesh	250
10	Bhadla Solar	Rajasthan	260
11	Mandsaur Solar	Madhya Pradesh	250
12	Rojmal Wind	Gujarat	50
	Total (Renewable)		**920**

V. POWER PROJECTS UNDER JOINT VENTURES AND SUBSIDIARIES

Sl.	Project	State	Capacity (MW)
1	Muzaffarpur (KBUNL)	Bihar	610
2	Nabinagar (BRBCL)	Bihar	750
3	Bhilai (NSPCL)	Chhattisgarh	574
4	Jhajjar (APCPL)	Haryana	1500
5	Ratnagiri (RGPPL)	Maharashtra	1967
6	Rourkela (NSPCL)	Odisha	120
7	Vallur (NTECL)	Tamil Nadu	1500
8	Durgapur (NSPCL)	West Bengal	120
9	Meja (MUNPL)	Uttar Pradesh	660
	Total (Under JVs)		7801
	GRAND TOTAL (I+II+III+IV+V)		**55126**

Annexure-II

DETAILS OF ONGOING PROJECTS

Sl.	Name of the project (Fuel)/State/Country)	Capacity (MW)
1	Barh-I (Coal)/Bihar	1980
2	Barauni (Coal)/Bihar	500
3	Lara-I (Coal)/ Chhattisgarh	800
4	North Karanpura (Coal)/ Jharkhand	1980
5	Gadarwara (Coal)/ Madhya Pradesh	800
6	Khargone (Coal)/ Madhya Pradesh	1320
7	Darlipalli (Coal)/ Odisha	1600
8	Auraiya (Solar)/ Rajasthan	20
9	Telangana (Coal)/ Telangana	1600
10	Bilhaur (Solar)/ Uttar Pradesh	225
11	Tanda-II (Coal)/ Uttar Pradesh	1320
12	Lata Tapovan (Hydro)/ Uttarakhand#	171
13	Tapovan Vishnugad (Hydro)/ Uttarakhand	520
14	Rammam (Hydro)/ West Bengal	120
15	Nabinagar- Wholly owned Subsidiary of NTPC (Coal)/ Bihar	1980
16	Nabinagar-JV with Railway (Coal)/ Bihar	250
17	Patratu – JV with JBVNL (Coal)/ Jharkhand	2400
18	Meja – JV with UPRVN (Coal)/ Uttar Pradesh	660
19	Rourkela- JV with SAIL (Coal)/ Odisha	250
20	Durgapur-III- JV with SAIL (Coal)/West Bengal)	40
21	Khulna- JV with BPDB (Coal)/ Bangladesh	1320
	Total	**19856**

Work has been stopped since 08.05.2014 as per Hon'ble Supreme Court order dated 07.05.2014.

Annexure-III

NTPC Group-Joint Ventures and Subsidiaries

SI. No.	Name of the JV/ Subsidiary Co. (Incorporated on)	Equity Holding as on 31st March 2019	Area (s) of Operation/Status
Joint Ventures /Subsidiaries for Capacity Addition			
1	NTPC-SAIL Power Company Pvt. Ltd. (NSPCL) (08.02.1999)	NTPC-50% Steel Authority of India Limited (SAIL)-50%	The company owns and operates captive power plants for SAIL at Durgapur (120 MW), Rourkela (120 MW) & Bhilai (74 MW) and Bhilai PP-III (2X250 MW), which is supplying power to SAIL, Chhattisgarh, Dadra & Nagar Haveli and Daman & Diu. Its present installed capacity is 814 MW. NSPCL is constructing new Coal based Capacities at Rourkela PP-II Expansion (1 x 250 MW) & Durgapur PP-III (2 x 20 MW). Solar Power capacity of 200 MW at various plant locations of SAIL is also being pursued.
2	NTPC Tamil Nadu Energy Company Limited (23.05.2003)	NTPC-50% TANGEDC0-50%	The Joint Venture Company was formed to set up a coal-based power station of 1,500 MW (3 X 500 MW) capacity, at Vallur, using Ennore port infrastructure facilities. All three units are under commercial operation.
3	Bhartiya Rail Bijlee Company Ltd. (22.11.2007)	NTPC 74% Indian Railways-26%	This Subsidiary Company was formed to undertake various activities related to setting up a 1,000 MW coal based thermal power plant (4x250 MW) at Nabinagar, District-Aurangabad, Bihar. Unit-1, 2 & 3 are in commercial operation. Construction work for Unit-4 is in progress.
4	Kanti Bijlee Utpadan Nigam Ltd. (06.09.2006)	NTPC- 100%	The company owns and operates 610 MW (2x110 MW+2x195 MW) Muzaffarpur Thermal Power Station. All four units are under commercial operation. Due to buyout of BSPGCL stake by NTPC in KBUNL, this is now a wholly owned subsidiary Company of NTPC.
5	Patratu Vidyut Utpadan Nigam Ltd (15.10.2015)	NTPC-74% JBVNL-26%	This Subsidiary Company was formed to improve performance of existing capacity and further capacity expansion of Patratu Thermal Power Station (PTPS). Keeping in view the high cost of generation, age of the units and difficulty in complying with the new environmental norms, operations of all existing units has been stopped w.e.f. 24.01.2017. PVUNL is developing thermal power project of 2400 MW (3 X 800 MW). EPC package has been awarded to BHEL & construction activities are under progress.
6	Nabinagar Power Generating Company Private Ltd. (09.09.2008)	NTPC-100 %	This Joint Venture Company was formed to set-up a coal based power project having capacity of 1,980 MW (3x660 MW) and operation & maintenance thereof at Nabinagar in district Aurangabad in the State of Bihar. Construction work is under progress. Due to buyout of BSPGCL stake by NTPC in NPGCL, this is now a wholly owned subsidiary Company of NTPC.
7	Meja Urja Nigam Private Ltd. (02.04.2008)	NTPC-50% UPRVUNL-50%	This Joint Venture Company was formed to set-up a power plant of 1,320 MW (2x660 MW) at Meja Tehsil of Allahabad district in the state of Uttar Pradesh. Construction work is under progress.

8	Aravali Power Company Private Ltd. (21.12.2006)	NTPC-50% IPGCL-25% HPGCL-25%	APCPL has setup Indira Gandhi Super Thermal Power Station of 1,500 MW (3x500 MW) in District Jhajjar, Haryana. All the 3 units are under commercial operation.
9	Ratnagiri Gas and Power Pvt. Ltd. (RGPPL) (08.07.2005)	NTPC -25.51%, GAIL -25.51%, IFIs-35.47% MSEB Holding Co.-13.51%	This company was formed, as a joint venture among NTPC, GAIL, MSEB Holding Co. Ltd. and Indian financial institutions for taking over and operating gas based Dabhol Power Project along with LNG terminal. All the three Power Blocks with a combined capacity of 1,967.08 MW (after re-rating) are under commercial operation since May 2009. PPA has been signed by RGPPL with Indian Railways for supply of ~500 MW for 5 years w.e.f. 01.04.2017 and Gas Supply Agreement was signed with GAIL for supply of 1.75 MMSCMD of RLNG w.e.f. 01.04.2017 for 5 years. Due to no schedule from MSEDCL & other beneficiaries, RLNG is not being purchased from GAIL beyond railways requirement. There is deficit of domestic gas for full utilization of RGPPL installed capacity. After demerger of LNG business of RGPPL into a new Company M/s Konkan LNG Private Limited (KLPL) came into effect from 26.03.2018 with appointed date of 01.01.2016.
10	Trincomalee Power Company Limited (TPCL) (26.09.2011)	NTPC-50%, CEB-50%	This Joint Venture Company was formed to undertake the development, construction, establishment, operation and maintenance of coal based thermal power plant of 500 MW (2 x 250 MW) capacity at Trincomalee in Sri Lanka. Further, the government of Sri Lanka has requested the GoI for changing fuel sources to liquefied natural gas and for relocating the Project at Kerawalpitiya. The same has been agreed by GoI. GoSL has issued letter of intent to GoI for development of 500 MW LNG project in June 2017 and 50 MW solar project. Revised Project Agreements are under finalization.
11	Bangladesh India Friendship Power Company (Pvt.) Limited (31.10.2012)	NTPC-50%, BPDB-50%	This Joint Venture Company was formed to undertake the development, implementation, operations and maintenance of the project in Bangladesh on a build, own and operate basis. The company is currently constructing a 1,320 MW (2X660 MW) coal based power project at Khulna, Bangladesh. M/s BHEL was selected as the EPC agency through international competitive bidding to execute the project. Construction activities are in progress.
12	Anushakti Vidyut Nigam Limited (27.01.2011)	NTPC-49%, NPCIL- 51%	This JV company was incorporated between NTPC Ltd. and Nuclear Power Corporation of India Ltd. (NPCIL) for setting up nuclear power project(s). Department of Atomic Energy has permitted joint venture of two CPSEs to set up Nuclear Power Project, due to change in definition of Government Company under Atomic Energy (Amendment) Act, 2015. Currently, no activities are being taken up by the Company.

Joint Ventures / Subsidiaries — Forward Integration			
1	NTPC Electric Supply Co. Ltd. (21.08.2002)	NTPC-100%	NTPC Electric Supply Company Ltd. (NESCL), a wholly owned subsidiary, transferred and vested all its operations, with effect from April 1, 2015, to NTPC Limited. NESCL was incorporated for the distribution business and later started deposit and consultancy works. The transfer and vesting of existing operations would enable a focused business approach in the area of distribution, the objective for which NESCL was incorporated. Although currently NESCL does not have any business operations in retail distribution, the same will be taken-up at an appropriate time when the opportunity becomes visible.
2	NTPC Vidyut Vyapar Nigam Limited (01.11.2002)	NTPC-100%	NTPC Vidyut Vyapar Nigam Ltd. (NVVN), a wholly owned subsidiary, is engaged in the business of Power trading. NVVN has a trading License under Category-I (highest category). NVVN has been designated as the nodal agency for cross border trading of power with Bangladesh, Bhutan and Nepal. As per Power Purchase Agreement (PPA) with Bangladesh Power Development Board (BPDB) 250 MW and 160 MW power is being supplied by NVVN from NTPC stations, and Tripura State Electricity Corporation Limited (TSECL) respectively during the financial year 2018-19. Further, NVVN has signed another Agreement with BPDB for supply of 300 MW power through DVC and supply of power commenced from 10th September 2018. NVVN has been designated as the nodal agency for cross border trading of electricity with Nepal. PPA has been signed between NVVN and Nepal Electricity Authority. Presently NVVN is supplying up to 240 MW power to Nepal through 400 kV Muzaffarpur- Dhalkabar transmission line presently charged at 220 kV.
Joint Ventures / Subsidiaries — Strategic Alliance			
1	International Coal Ventures Pvt. Ltd. (20.05.2009)	NTPC-0.27%, RINL-24.80%, SAIL- 49.59, NMDC-24.80%, CIL-0.54%	International Coal Ventures Pvt. Ltd. (ICVL), a Joint Venture Company was incorporated on 20.05.2009 under the name 'International Coal Ventures Private Limited' in association with Steel Authority of India Limited (SAIL), Coal India Limited (CIL), Rashtriya Ispat Nigam Limited (RINL), NMDC Limited (NMDC). In view of lack of suitable commercially viable opportunities for thermal coal, NTPC has decided to exit from ICVL. As the Company was formed by a directive from the Government of India, approval of the Government is awaited for exit.

2	CIL NTPC URJA PRIVATE LIMITED (27.04.2010)	NTPC-50% CIL-50%	CIL NTPC Urja Pvt. Ltd. (CNUPL) is a 50:50 JV incorporated between NTPC Ltd. and Coal India Ltd. for undertaking the development, operation & maintenance of Brahmini and Chichro Patsimal coal blocks in Jharkhand and integrated coal based power plants. MOC vide its communication dated 14.06.2011, de-allocated Brahmini & Chichro-Patsimal coal blocks from the JV Company. Further, Hon'ble Supreme Court in September 2014 had cancelled allocation of 204 coal blocks including these two blocks. So far, Brahmini and Chichro Patsimal coal blocks have not been considered for allocation/ auction.
3	KLPL(Konkan LNG Private Limited)	NTPC : 20.225 %, GAIL: 40.921% , RGPPL:0.001 % IFIs- 28.136 % MSEB Holding Co.- 10.717 %	Demerger scheme filed by RGPPL was approved by NCLAT on 28.02.2018, thereby separating the RLNG business from RGPPL to the new entity Konkan LNG Private Limited (KLPL). The demerger scheme came into effect from 26.03.2018 with appointed date of 01.01.2016. With this, the LNG business and all its associated assets and liabilities have been merged in to a separate company, namely KLPL, with minor shareholding of RGPPL.
Joint Ventures / Subsidiaries — Strategic Diversification			
1	Hindustan Urvarak & Rasayan Limited (HURL) (15.06.2016)	NTPC -29.67% CIL - 29.67 % IOCL-29.67% FCIL- 7.33% HFCL- 3.66%	HURL was incorporated in joint venture with CIL, IOCL, FCIL & HFCL on 15.06.2016 to establish and operate new fertilizer and chemicals complexes (urea- ammonia and associated chemical plants) at Gorakhpur & Sindri Units of FCIL and Barauni unit of HFCL and to market its products, taking into consideration the assets of FCIL and HFCL at Gorakhpur, Sindri and Barauni. The Cabinet Committee on Economic Affairs (CCEA), Government of India formally approved the revival of the Gorakhpur & Sindri units of FCIL and Barauni unit of HFCL on 13.07.2016 Financial Closure achieved for all 3 Projects. Loan Agreement was signed on 20.09.18 for Gorakhpur and 11.10.18 for Barauni & Sindri Projects. Pre Project-activities have been almost completed and basic infrastructure is in position at all three locations. Required major approvals and clearances obtained. Scrap disposal and site clearance completed. Gas pipe line work by GAIL is in progress. Sites have been mobilized by agencies in April 18 and July 18 at Gorakhpur and Barauni / Sindri Projects respectively and presently construction works are in progress.
2	Transformer & Electricals Kerala Ltd. (09.12.1963)	NTPC-44.60% Govt. of Kerala-54.56% Others-0.84%	NTPC Ltd. joined hands with Government of Kerala for strategic acquisition of 44.60% stake in TELK in the year 2007. TELK manufactures and repairs high-voltage transformers and associated equipment. This venture was expected to enable NTPC to meet the requirements of its own power stations, and also service the very large, ageing fleet of transformers in the country. Due to change in business environment, NTPC Board has accorded in-principle approval for withdrawal of NTPC from TELK on 28.04.2016. MoP through letter dated 25th January 2017 has given approval for NTPC's Exit from TELK.

3	NTPC BHEL Power Projects Private Ltd. (28.04.2008)	NTPC-50% BHEL-50%	NTPC BHEL Power Projects Pvt. Ltd. (NBPPL) is a joint venture company formed between NTPC and BHEL for taking up activities of Engineering, Procurement and Construction (EPC) of power plants and manufacturing of equipment. The manufacturing plant of NBPPL at Mannavaram, Tirupati District, Andhra Pradesh for CHP and AHP has commenced production from 1st December 2014. Due to changed business scenario, the promoters have decided to windup the Company and winding up activities are in progress.
4	BF-NTPC Energy Systems Ltd. (19.06.2008)	NTPC-49%, Bharat Forge Ltd.-51%	BF-NTPC Energy Systems Ltd. (BFNESL) a joint venture company formed between NTPC and Bharat Forge Ltd. to manufacture castings, forgings, fittings and high pressure piping required for power projects and other industries. Due to change in business scenario, it has been decided to wind up the Company. Activities for winding up are in progress
Joint Ventures / Subsidiaries — Service Business			
1	Utility Powertech Ltd. (23.11.1995)	NTPC-50%, Reliance Infrastructure Ltd. 50%	Utility Powertech Ltd. (UPL) is a joint venture company of NTPC and Reliance Infrastructure Limited formed to take up assignments of construction, erection and supervision of business in power sector and other sectors like O&M services, Residual Life Assessment Studies, non-conventional projects etc.
2	NTPC GE Power Services Private Limited (NGSL) (27.09.1999)	NTPC-50%, GE Power Systems-50%	NTPC GE Power Services Private Limited (NGSL), earlier known as NTPC Alstom Power Services Private Limited, is a joint venture company of NTPC and GE Power Systems, formed for taking up R&M services, renovation, modernization, refurbish, rehabilitate, up-grade, reverse engineering, component damage assessments, residual life assessment, reengineering of power plants in India and abroad, utilizing state-of-the-art technology.
3	National High Power Test Laboratory (Private) Ltd. (22.05.2009)	NTPC-20%, NHPC-20% PGCIL-20%, DVC-20%, CPRI-20%	National High Power Test Laboratory Pvt. Ltd. (NHPTL) is a JV Company formed in association with NHPC Limited, Power Grid Corporation of India Limited, Damodar Valley Corporation and Central Power Research Institute. The Company was incorporated on 22.05.2009 for setting up facility for short-circuit testing of transformers and other electrical equipment. The laboratory is located at Bina, Madhya Pradesh and has started Commercial operations w.e.f 01.07.17.
4	Energy Efficiency Services Ltd. (10.12.2009)	NTPC-36.36% PFC-36.36% PGCIL- 5.58% REC-21.70%	Energy Efficiency Services Ltd. (EESL), is a joint venture company formed with Power Finance Corporation Ltd., Power Grid Corporation of India Ltd. and Rural Electrification Corporation Ltd., for implementation of Energy Efficiency projects and to promote energy conservation and climate change. EESL is working on Energy Audit of Buildings, Perform Achieve Trade (PAT) scheme work and standard & labeling work of BEE, Consultancy work, implementing Bachat Lamp Yojana, Street Lighting National Program (SLNP) and Agricultural & Municipal Pump replacement for various State Governments.

Considering the aspects like change in business environment, lack of opportunities, non-availability of suitable partner, non-attainment of business objectives on case-to-case basis, NTPC has closed down 3 JV companies namely National Power Exchange Limited (NPEX), Pan-Asian Renewables Private Ltd & NTPC-SCCL Global Venture Pvt. Ltd.

CHAPTER 20

NHPC LIMITED

NHPC was incorporated on November 7, 1975 as a private limited company under the name "National Hydroelectric Power Corporation private Ltd". NHPC was converted to Public limited company w.e.f. April, 2, 1986. The name of the company was changed to its present name "NHPC Limited" in 2008. Its vision is to become "To be a global leading organization for sustainable development of clean power through competent, responsible and innovative values".

NHPC is a Schedule-'A' Enterprise and a Mini Ratna company with 73.33 % owned by Government of India. With an Authorized share capital of Rs. 15,000 crore and an investment base of over Rs. 55459 Crore (Dec'18) , NHPC is ranked as a premier organization in the Country for development of Hydropower. NHPC is an ISO: 9001:2015, ISO-14001:2015 and OHSAS 18001:2007 certified company.

NHPC is a multi-disciplinary organization and has acquired sufficient expertise and state-of-the-art technology for investigation, Planning, designing and executing large and small size hydropower projects. It has the strength of highly qualified and experienced professionals in design & engineering, geotechnical engineering, construction planning and construction Management for building hydroelectric projects. The technical & engineering proficiency and experience of NHPC places it in a leading position in the field of hydropower development in India and neighboring countries.

The brief of the corporation activities / operations is as under::

An overview of NHPC projects:			
Hydro Power stations under operation:	**22 Nos**	**:**	**6971.20 MW**
Own	20 No.	:	5451.20 MW
JV	02 No.	:	1520 MW
Wind Power Project under operation:	**01 Nos**	**:**	**50 MW**
Solar Power Project under operation:	**01 Nos**	**:**	**50 MW**
Projects under construction	**05 No.**	**:**	**4924 MW**
- On its own			
Hydro	03 No.	:	3300 MW
- In Joint Venture			
Hydro	02 No.	:	1624 MW
Projects under Clearances	**12 No.**	**:**	**7361 MW**
- On its own	**08 No.**	**:**	**5953 MW**
Hydro	07 No.	:	5945 MW
Wind	01 No.	:	8 MW
- In Joint Venture	04 No.	:	1,408 MW
Hydro (In India)	02 No.	:	606 MW
Hydro (In Bhutan)	01 No.	:	770 MW
Solar	01 No.	:	32 MW
Projects under S&I	**01 No.**	**:**	**630 MW**
Hydro	01 No.	:	630 MW
Projects under Anvil (pre- S&I)	**03 No.**	**:**	**581 MW**
Hydro	03 No.	:	581 MW

NHPC has also completed Projects on Turnkey & deposit work basis in India & Abroad aggregating capacity of 89.35 MW

NHPC has also added 1006.2 kWp rooftop grid connected solar power plants.

PROJECTS UNDER OPERATION

NHPC has so far commissioned 24 Projects in the states of Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Sikkim, Manipur, West Bengal, Madhya Pradesh, Rajasthan and Tamil Nadu with a capacity of 7071.2 MW (including wind, solar & projects taken up in joint venture).

PROJECT ALREADY COMMISSIONED ON TURNKEY / DEPOSIT BASIS:-

NHPC has commissioned 5 projects with installed capacity of 89.35 MW namely Devighat – 14.1 MW in Nepal, Kurichu – 60 MW in Bhutan, Kalpong- 5.25 MW in A&N islands, Sippi-4 MW and Kambang -6 MW in Arunachal Pradesh on Turnkey Deposit basis.

ACTUAL GENERATION & PLANT AVAILABILITY FACTOR (PAF) FROM NHPC POWER STATIONS FOR THE YEAR 2018-19.

Total generation of NHPC during 2018-19 from its own 22 Power Stations till Mar'19 is 24193 MU. Overall PAF achieved by NHPC during 2018-19 till Mar'19 is 84.84%.

PROJECTS UNDER CONSTRUCTION

NHPC is presently engaged in construction of 3 Hydro Projects with aggregate installed capacity of 3300 MW. Construction activities in ongoing project Parbati-II HEP are in progress.

Construction activity of Subansiri HE Project is stalled due to ongoing protest by various agitation groups in Assam from 16.12.2011.

Further, Developer of Teesta-VI HE Project (500 MW) i.e. M/s Lanco Teesta Hydro Power Limited (M/s LTHPL) is under the Corporate Insolvency Resolution Process (CIRP). Resolution plan submitted by NHPC for acquisition of M/s LTHPL was approved by Committee of Creditors (CoC) on 05.12.2018 and is presently with NCLT for approval. Investment approval by CCEA for acquisition of M/s LTHPL and execution of balance works of Teesta-VI HE Project has been conveyed on 8.3.19.

In addition, Pakal Dul (1000 MW) Project & Kiru (624 MW) in J&K are being executed under Joint Venture namely Chenab Valley Power Projects Pvt. Ltd. (CVPPL). Power House, Dam and E&M packages of Pakal Dul HE Project awarded and HRT-TBM package of Pakal Dul HE Project is yet to be awarded. For Kiru, MOP on 08.03.2019 has conveyed the Investment Sanction of the project at an estimated cost of Rs. 4287.59 Crores at July'18 price level. The award of works is under process by M/s CVPPPL.

BRIEF OF NHPC PROJECTS UNDER CONSTRUCTION

1. PARBATI - II -800 MW (4X200 MW) – HIMACHAL PRADESH

The Parbati-II hydroelectric project is a run of the river scheme on the River Parbati located in Kullu District of Himachal Pradesh. The project is estimated to generate 3124.6 MU. Approved Cost of the project is Rs. 3920 Cr at Dec '01 Price Level. Dam concreting and Power House concreting have been completed. Out of total 31.5 Km long HRT, 28.47 Km excavation and 26.58 Km lining have been completed. E&M and HM works are almost complete. However, Unit 1 & 2 have been successfully synchronized with grid at part load on 14.09.2018 & 22.09.2018 using discharge from Jiwa Nallah. The Project is likely to be completed in Dec. 2021.

2. SUBANSIRI LOWER HEP (8x250=2000 MW), ARUNACHAL PRADESH

The project is located in Lower Subansiri/ Dhemaji district of Arunachal Pradesh/ Assam on river Subansiri, a tributary of Brahmaputra. CCEA approval for implementation was accorded on 09.09.2003 at sanctioned cost of Rs. 6285.33 Crores (at Dec'02 PL). Annual energy generation of the project is estimated to be 7422 MU in 90% dependable year. The work of Subansiri Lower HE Project commenced from 01.01.2005 and apart from minor hindrances on different occasions by locals / stakeholders, till Dec'11, works were in progress. Unfortunately, due to the agitation and protest by a few sections of the civil society, the project construction work came to a grinding halt in Dec'11. In the case related to the Project, NGT stayed restart of the work vide order dated 11.12.2015. However, Project Proponent (NHPC) was allowed to undertake emergency maintenance works for safety and protection of the public and property.

To resolve the issues, various Committees were constituted by Central Govt. /State Govt. / NHPC and they have submitted their reports/recommendations. Hon'ble NGT, Kolkata has disposed off two cases related to the project on 16.10.2017 mentioning to formulate a committee. In reference to the judgment, MoEF &CC has constituted the Committee of three expert members on 27.11.2017 for resolving the various issues pertaining to Project. The report by the committee is to be submitted within a period of three months. Expert Committee

report would be placed before Expert Appraisal Committee (EAC) for appraisal under Environmental Impact Assessment (EIA) Notification 2006. Thereafter EAC within 60 days would place it before the competent authority for final decision.

Two meeting of the Expert Committee were held on 21st & 22nd Dec'17 and 16th Jan'18. The third meeting of Expert Committee was scheduled on 15.02.2018 at Guwahati. In the meantime, the Applicant (Sh. Abhijeet Sharma and Sh. Tularam Gogoi) raised objection in NGT, Kolkata on the constitution of committee by Ministry of Environment, Forest & Climate Change (MoEF &CC). Hon'ble NGT, Principle Bench, New Delhi vide order dated 15.02.2018 deferred the meeting of Committee till further order. The Hon'ble NGT, Principal Bench, New Delhi on 19.11.2018 & 14.12.2018 dismissed the applications of petitioner Sh. Abhijeet Sharma and Sh. Tularam Gogoi respectively.

Subsequent to order of Hon'ble NGT, Principal Bench, dated 19.11.2018, 3rd meeting of Expert Committee was held on 12.12.2018 at MoEF & CC, New Delhi.

Expert Committee also visited Guwahati, Subansiri Lower Project and Pare HE Project of NEEPCO during 8-11th Jan'19. During the visit, the committee had its 4th meeting at Circuit House, Guwahati on 08.01.2019. The 5th meeting of the Expert Committee was held during 6-7th Feb'19 at MoEF&CC, New Delhi. Review meeting of Expert Committee was held on 7-8th March 2019. Thereafter, Report of the Expert Committee was submitted on 26.03.2019 to MOEF & CC.

The petitioners Sh.Tularam Gogoi and Sh. Aabhijeet Sharma approached Hon'ble Supreme Court on 20.02.2019 and 12.03.2019 respectively, challenging NGT orders dtd 14.12.2018 and 19.11.2018 with prayer for setting aside the said orders. In the said matter, after hearing the parties on 11.03.2019/12.03.2019, Hon'ble Supreme Court set aside the impugned orders dtd. 19.11.2018 and 14.12.2018 of Hon'ble NGT and ordered the applications to be restored to the file of the Tribunal for determination afresh. The restored application of Sh. Abhijeet Sharma was listed for admission on 26.03.2019 in Hon'ble NGT, New Delhi. Application of Sh. Tularam Gogoi was also tagged with the aforesaid application on 26.03.2019. The same was further listed for hearing on 09.04.2019. The case could not be taken up by Hon'ble NGT, New Delhi on 09.04.2019 and is now listed for hearing on 25.07.2019. The balance works of the Subansiri Lower Project is expected to be completed within 4 years after resumption of the work.

3. Teesta-VI -500 MW (4X125 MW) – SIKKIM

Developer of Teesta-VI HE Project (500 MW) i.e. M/s Lanco Teesta Hydro Power Limited (M/s LTHPL) is under the Corporate Insolvency Resolution Process (CIRP). Resolution plan submitted by NHPC for acquisition of M/s LTHPL was approved by Committee of Creditors (CoC) on 05.12.2018 and is presently with NCLT for approval. Investment approval by CCEA for acquisition of M/s LTHPL and execution of balance works of Teesta-VI HE Project has been conveyed on 8.3.19

STATUS OF PROJECTS UNDER GOVT. CLEARANCE/ SANCTION

1. KOTLI BHEL IA (195 MW)

All statutory clearances such as Concurrence from CEA , Defence Clearance, Environment Clearance and Forest Clearance (St-I) have been received. PIB recommended implementation of Project on 23.10.2013. However, the project could not be posed before CCEA pending clearance from Hon'ble Supreme Court. Hon'ble Supreme Court dated 24.11.2015 directed MoP, MoEF&CC and MoWR to arrive at a common policy framework amongst three ministries. In compliance, additional time of three months as sought by MoEF&CC for the eighth time from Hon'ble Supreme Court of India for arriving at a common policy framework amongst three ministries viz. MoP, MoEF&CC and MoWR has lapsed on 06.02.2019. Meanwhile, two member committee constituted by MoWR on 01.03.2019 visited the project site on 24.03.2019 for the assessment of the project. Construction shall start after final decision of Supreme Court.

2. DIBANG MULTIPURPOSE PROJECT (2880 MW), ARUNACHAL PRADESH:

All statutory clearances viz. Concurrence from CEA (2880 MW); Forest Clearance, Environment Clearance and Defence Clearance, have been obtained. Compliance of conditions under Forest Clearance (Stage-I) viz. identification of land for CA, CAT plan approval has been completed. Demand of Rs. 628.69 cr towards payment of NPV, CA, CAT and wildlife Management plan has been

received from Forest Department on 17.10.2017. Ministry of Tribal Affairs has accorded Clearance to the project on 04.01.18. PIB meeting for implementation of project held on 03.01.2019. PIB has recommended the expenditure of Rs.1600 cr on pre-investment activities and various clearances of the project. Accordingly, material for Cabinet Note submitted to MoP on 22.01.2019

3. TEESTA-IV (520 MW), SIKKIM

All statutory clearances have been received except Forest Clearance (Stage-II). State Forest Dept. on 31.01.2018 had forwarded compliance report to FC (St-I) letter to MoEF&CC. MoEF&CC after examination of compliance report, forwarded certain observations to State Forest Dept. on 03.04.2018. Reply to the observations of MoEF&CC was submitted by State Forest Dept. to MoEF&CC on 07.1.2019. In response, MoEF&CC on 05.02.2019 has again raised certain observations and forwarded it to Principal Secretary (Forests), Govt. of Sikkim. Nodal officer on 14.03.2019 has requested NHPC to furnish additional information in consultation with DFO (T), North. The matter is being followed up with DFO. SIA report submitted by SIA unit (DESM&E) to Secretary (Land Revenue & Disaster Management) on 07.08.18. Report has to be reviewed by Expert Committee, which is yet to be constituted by State Govt. PIB memo for implementation of Project circulated by MoP on 29.11.2018. Reply to comments of all scrutinizing agencies stands submitted.

4. TAWANG -I H.E. PROJECT (600 MW), ARUNACHAL PRADESH

All statutory clearances viz. TEC, Environment Clearance and Defence Clearance have been obtained. However, Forest Clearance (Stage-I) is pending. For Forest Clearance (Stage-I), meetings as required under FRA, 2006 have been conducted at 03 villages out of 19 villages. For remaining villages, matter is being pursued with State Govt. Further, FAC on 16.05.2017 also desired NHPC to get study conducted regarding habitat of black necked crane in the project area through WII, Dehradun. The matter is being taken up with State Forest Deptt. DIB meeting for pre-investment activities held on 24.10.2018. MOM issued on 12.11.2018. ATR submitted on 29.11.2018 & 10.12.2018. Approval of pre-investment activities conveyed by MOP on 09.01.2019.

5. TAWANG -II H.E. PROJECT (800 MW), ARUNACHAL PRADESH

All statutory clearances viz. TEC, Forest Clearance (Stage-I), Environment Clearance, pre-investment approval and Defence Clearance have been obtained. However, Forest Clearance (FC) Stage-II is pending. FC (Stage-II) is linked with Tawang Basin Study Report and compliance under FRA 2006. Tawang basin Study Report was accepted by MoEF & CC on 03.02.2016. Regarding compliance under FRA 2006, Gram Sabha Meetings have been conducted at 7 villages out of 13 villages.

6. BURSAR (800MW), J&K

The DPR submitted to CEA on 06.01.2017. Presently the DPR is under examination at CEA/CWC/GSI. EAC in its meeting on 05.12.2017 has recommended for grant of EC to the project. MoEF&CC vide letter dated 23.01.2018 has requested that Forest Clearance letter may be submitted for issuance of Environment Clearance letter to the project. NHPC on 15.11.2018 has requested MoEF&CC to extend the period of recommendation of EAC by another 6 months for submission of FC letter as per MoEF&CC's OM dated 09.09.2011. Proposal for Forest Clearance submitted to J&K Govt. State Forest Dept. started joint inspection and enumeration of trees on forest land to be diverted for the project on 30.04.2018, however the work has been stopped from 05.04.2018 due to local opposition. Wildlife clearance proposal for the project was discussed by State Board of Wildlife, J&K on 20.09.2018 and project was approved with some additional conditions. Standing Committee of NBWL has recommended the project and the same was communicated by MoEF&CC vide letter dated 25.03.2019.

Further, NHPC has requested MOP to take up the matter with MOWR for release of expenditure of Rs. 225 crores incurred for preparation of DPR to NHPC. Secretary (Power) has requested Secretary MOWR for the same vide DO letter dated 07.09.2018. A detailed proposal seeking in principle approval for a grant of Rs. 11698.23 crore submitted to MoP vide letter dated 02.04.2018. The release of fund awaited from MoWR.

MOP desired the Draft PIB proposal for complete project cost. NHPC intimated that the same shall be submitted after DPR examination is completed by CEA/ CWC/ MOWR.

In a meeting chaired by JS(H), MoP on 10.07.2018, it was mentioned that in a recent high level meeting , problems of irrigation potential of J&K was discussed. Accordingly, it seems unlikely that MoWR will be able to give grants to NHPC on that account. However, NHPC may request CWC to decide accordingly and to return proposal to CEA for developing it as a project without current irrigation component. Accordingly, NHPC vide its letter dated 18.07.2018 made a request to CWC. The response of CWC is awaited.

7. GORIGANGA STAGE-IIIA HE PROJECT (150 MW), UTTARAKHAND

ToR clearance-Accorded. Project is under DPR preparation Stage and S&I activities in progress. Preliminary Draft EIA/EMP submitted by Consultant. All major clearances to be processed after DPR preparation. DPR uploaded on CEA website on 30.03.2018 and the same has been submitted to CEA on 02.04.2018. The same is under examination at CEA.The proposal seeking approval for Pre-investment activities shall be submitted after receipt of concurrence from CEA.

PROJECTS UNDER S&I

1. GARBA TAWAGHAT HE PROJECT, 630 MW, UTTARAKHAND

Project allotted by GoUK on 07.04.2005 MOU for Implementation agreement Signed with GoUK 21.11.2005 (Further extended upto 31.08.2019).PCCF & Chief warden (Wild life) granted permission on 23.07.2016 for S&I activities of the project. MoP on 20.9.2017 forwarded the proposal to Joint Secretary (Trans), MoP with a request that the implementation of the project may kindly be included as agenda item for next scheduled meeting of JWG with Nepal. As per MoM of JWG and JSC meeting on 16-17 April, 2018, there was no mention about the project. So a request letter was issued to MoP on 25.04.2018 requesting to take up the matter in the next JWG/JSC meeting. Same was again requested to MoP on 06.08.2018. In response to MoWR letter dated 27.12.2018 regarding 8th meeting of JCWR on 11.01.2019, the proposal of the project was forwarded to MoWR on 02.01.2019 with a request to take up as agenda item for due proposed meeting.

PROJECTS UNDER ANVIL (PRE-S&I)

1. DUGAR, 449 MW, HIMACHAL PRADESH

The project is located on Chenab river in Chamba district of Himachal Pradesh. It was earlier alloted to Dugar Hydro Power Limited, a JV Company between Tata Power and SN Power. The statutory clearances are available. Techno Economic Clearance (TEC) letter is yet to be issued. Now, Govt. of Himachal Pradesh(GoHP) has conveyed allotment of this Project to NHPC vide letter dated 07.08.18 with certain terms & conditions. Terms & conditions are under finalization/negotiation with GoHP.

2. TEESTA INTERMEDIATE, 84 MW, WEST BENGAL & SIKKIM

The power house location of the project lies on Sikkim side and consequent upon withdrawn of concurrence by Govt. of Sikkim, the Survey & Investigation activities could not proceed further. However, NHPC is willing to continue further investigation for an alternate barrage site, for which other issues are being studied.

3. RAMMAM-I, 48 MW, WEST BENGAL

Due to new stipulation of environmental consideration resulting in substantial reduction of Installed Capacity and due to inaccessibility to the project components, the project is proposed for handing over back to Govt. of West Bengal.

JOINT VENTURE PROJECTS

1. LOKTAK DOWNSTREAM (66 MW) MANIPUR

The project is being executed by Joint Venture Company (JVC) Loktak Downstream Hydroelectric Corporation Ltd. (LDHCL), formed between NHPC and Govt. of Manipur (GoM) in year 2009 with a share holding of NHPC (74%) and Government of Manipur (26%).

All statutory clearances of project except CCEA are available. Before the process for Investment approval, various options considering sub-debt have been explored by NHPC to bring down the tariff below Rs. 5 per unit. Tendering of all major works is in process. The same has been submitted by NHPC on 09.04.2019, which is under perusal.

2. PAKAL DUL AND OTHER HYDROELECTRIC PROJECTS IN J&K

Pakal-Dul and other hydroelectric projects in the Chenab River Basin of J&K are to be developed through Joint Venture Company "Chenab Valley Power Projects (Private) Limited" amongst JKSPDC, NHPC Ltd. and PTC with share holding of 49%, 49% and 2%, respectively.

PAKAL DUL (1000MW)

MOP on 28.10.2014 has conveyed the Investment Sanction of the project at an estimated cost of Rs. 8112.12 Crores at Mar'13 price level. MOP vide letter dated 19.10.2016 issued modified Sanction letter of Pakal Dul HE Project to the extent that the equity part of JKSPDC i.e. 1192 crore shall be released by Government of India as a Grant to M/s CVPPPL. Dam and Powerhouse packages have been awarded and work has started. Letter of Award for E&M works issued to M/s Voith Hydro Limited on 02.01.2019. Tendering for other two packages is in progress.

KIRU (624MW)

MOP on 08.03.2019 has conveyed the Investment Sanction of the project at an estimated cost of Rs. 4287.59 Crores at July'18 price level. Bids have been evaluated and shall be placed before the Board for approval.

KWAR (540MW)

All clearances except Indus Water Treaty Clearance are available. PIB Memo circulated by MOP on 07.03.2018. All replies to comments of respective Agencies/ Ministries stands submitted. GoJK has exempted the payment of levy of tolls on all imports by the contractors to be engaged by CVPPPL. Proposal for waiver of 12% free power and water usage charges is under active consideration of GoJK. Bids for Civil Works and HM Packages are under evaluation. Tendering for E&M Package has been floated.

3. CHAMKHARCHHU-I HEP (770MW), BHUTAN

Intergovernmental (IG) Agreement signed on 22.04.2014 between Govt of India (GOI) and the Royal Govt of Bhutan (RGOB) for implementation of Chamkharchhu-I HEP (770MW) in Bhutan, through JV between NHPC & Druk Green Power Corporation (DGPC) of Bhutan. Appraisal of DPR of Chamkharchhu-I HEP was conveyed by CEA on 29.12.2014. PIB memo was circulated by MoP vide letter No. 14/8/2016-Fin, dtd 8th Sept, 2017. Comments of CEA, MEA, NITI Aayog, Deptt. of Expenditure & Deptt. Of Economic Affair has been replied. Joint Venture cum Share Holding Agreement and Article of Incorporation will be executed after Govt. Approval.

Besides above, a Memorandum of Understanding (MoU) has been signed for implementation of Ratle Hydro Electric Project (850 MW) through a Joint Venture Company (JVC) to be incorporated with equity shareholding of 51% by NHPC & 49% by Jammu and Kashmir State Power Development Corporation (JKSPDC).

NHPC OTHER JOINT VENTURE INITIATIVES

1. NARMADA HYDROELECTRIC DEVELOPMENT CORPORATION LTD. (NHDC)

The company was incorporated on 01.08.2000 with equity share of NHPC Ltd. (51%) & Government of Madhya Pradesh (49%) for development of hydropower, thermal and other renewable energy potential in the state of Madhya Pradesh. Two Hydro projects on river Narmada viz. Indira Sagar Power Station (1000 MW) and Omkareshwar Power Station (520 MW) have been commissioned in the year 2005 and 2007 respectively. Both the projects were commissioned ahead of schedule.

2. NATIONAL HIGH POWER TEST LABORATORY PRIVATE LIMITED (NHPTL)

NHPTL, a Joint Venture Company of NHPC, NTPC, POWERGRID and DVC with equal equity participation of 25% each, was incorporated on 22.05.2009 for setting up an On-line High Power Test Laboratory in Bina, Madhya Pradesh for short circuit test facility in the country. Later CPRI was inducted as fifth equal equity partner in NHPTL. A supplementary Joint Venture Agreement was signed on 15.02.2012 between NHPC, NTPC, POWERGRID, DVC & CPRI with equal equity participation of 20% each. Date of Commercial Operation (DOCO) of the HVTR laboratory was declared on 01.07.17. After declaration of the DOCO, NHPTL has become capable for doing short circuit test of 50 MVA, 132 kV Class to 315 MVA, 400kV Class transformers. The laboratory capacity has been enhanced further upto 765 kV level and short circuit test (online) on first commercial 765 kV transformers was completed on 11.09.17. Now, NHPTL is also capable for doing online short circuit test of 765 kV Class transformers for 85 MVA to 333.3 MVA. NHPTL became NABL accredited laboratory after grant of NABL accreditation on 12.10.17. MVTR lab is expected to be commissioned by Oct/Nov.'19.

OTHER INITIATIVES BY NHPC

A. SOLAR POWER PROJECTS

(i) 50MW Solar PV Power project in Kalpi, UP by Bundelkhand Saur Urja Limited (BSUL) a JV between

NHPC & UPNEDA: - NHPC (Minimum 74%) & UPNEDA (upto 26%)

The Company was incorporated on 02.02.2015 for development of 50 MW Solar Power Project in Tehsil Kalpi, District Jalaun, U.P. and other conventional & non-conventional power projects entrusted by the Government of U.P.

63.491 Ha land has been transferred to BSUL. On the basis of availability of land, a 32 MW Solar Power Plant has been envisaged for implementation. Previous tenders cancelled due to high quoted price. Techno-commercial evaluation of bids after retendering is under progress. Issues regarding Power Purchase Agreement (PPA), Connectivity and allotment of land for balance 18 MW plant is being pursued with concerned Departments of State Govt.

(ii) 10 MW Floating Solar Project, Kerala :

NHPC is in the process of development of Floating Solar Power project in Kallad, Kerala. As desired by Kerala State Electricity Board (KSEB), 10 MW shall be developed in Ist Phase. Bid evaluation concluded. Signing of PPA being expedited before the issue of Letter of Award. Signing of Tripartite Agreement for transfer of land to NHPC is in process.

(iii) 100 MW NHPC Solar Park in Odisha (40 MW in Ist Phase):

MNRE has conveyed in-principle approval for setting up of one solar park of capacity 100 MW in Odisha by NHPC. 40 MW shall be developed in Ist Phase at the identified land in Ganjam District. Approval of State Technical Committee (STC) for 40 MW has been conveyed by M/s Green Energy Development Corporation of Odisha Ltd (GEDCOL) on 25.08.2018. Transfer of Land, signing of PPA and connectivity approval in process. NIT for EPC Contract for development of 40 MW at Ganjam District has been floated on 03.04.2019. Development of balance capacity is being explored.

B. WIND POWER PROJECTS

(i) Kerala Wind Power Project (8 MW in first phase):

NHPC has taken up Wind Power Projects for development in the State of Kerala and has signed MoU with the Power Department, Government of Kerala in 2014. In the first instance, the Kerala Government has asked NHPC to tap the high wind potential available in Agali village of Palakkad district as per availability of evacuation infrastructure. Previous called tender for EPC Contract for 8 MW had to be cancelled due to non-response. Project parameters being reviewed for retendering. Land allotment, PPA and connectivity approval is in process

COMMERCIAL PERFORMANCE UPTO 31.03.2019

- Achieved cumulative realization of ₹ 6498.7 Crs. up to 31.03.2019 during the year 2018-19 including late payment surcharge collection of ₹ 190.76 Crs.
- Principal outstanding dues for more than 60 days as on 31.03.2019 are ₹ 1356.09 Crs.
- CERC vide its order dated 23.04.2018 granted a Category-I license to NHPC for interstate trading in Electricity in whole of India.
- NHPC obtained trader membership in Indian Energy Exchange on 17.05.2018 & PXIL membership on 07.02.2019.
- NHPC has also registered on DEEP (Discovery of Efficient Electricity Price) portal for short /medium term of Power Trading which is activated w.e.f 16.05.2018.
- NHPC received LOA from PDD, J&K on 12.12.2018 for sale/purchase of Power in Power Exchange for period of one year through competitive bidding. Award is for buying 1000 MUs and sale of 400 MUs through power Exchange.
- NHPC has been appointed as "Aggregator" under Pilot Scheme–II notified by Ministry of Power, Govt. of India on 30.01.2019 for procurement of aggregated Power of 2500 MW for 03 years through PFC Consultancy Limited– the Nodal Agency. Power will be tied up with Discoms after the Generator and Tariff is finalized by PFC Consulting.
- A MOU was signed between NHPC and NLC for Power Trading on 18.02.2019 wherein NHPC will offer surplus power available with generators/discoms in Northern & North-eastern region to NLC who in turn offer the same to the open access consumers in the southern region. Trading Margin will be shared in the ratio of 50:50
- Power Purchase agreements in respect of Dhauliganga, Chamera-II, Salal, Tanakpur, Chamera-I, Uri-I, Chamera-III, Bairasuil & Parbati-III Power Stations of NHPC were renewed with Himachal Pradesh on 11th

May 2018 for 35 years from COD of individual Power Station.

- Power Purchase agreement in respect of Kishanganga Power Station was signed with UP on 22.06.2018 for 35 years from COD.
- Power Purchase agreement in respect of Chamera-III Power Station was renewed with Rajasthan on 05.10.2018 for 35 years from COD
- Power Purchase agreement in respect of Bairasuil Power Station was signed for Intervening period +25 years from R&M of last unit with Himachal Pradesh on 11.05.2018
- Power Purchase agreement in respect of Bairasuil Power Station was signed for Intervening period +25 years from R&M of last unit with TPDDL, Delhi on 09.01.2019
- NHPC has signed Power Purchase agreement (PPA) on 26.03.2019 with Rajasthan Urja Vikas Nigam Limited (RUVNL) in respect of Parbati-III Hydro Electric Project for a period of 35 years from COD.

STATUS OF RURAL ELECTRIFICATION WORKS UNDER RAJIV GANDHI GRAMIN VIDYUTIKARAN YOJNA (RGGVY)

RGGVY (now DDUGJY – DEEN DAYAL UPADHYAYA GRAM JYOTI YOJANA)

NHPC implemented 36 nos. Rural Electrification projects under the Xth and XIth plan scheme of DEEN DAYAL UPADHYAY GRAM JYOTI YOJNA (Erstwhile RGGVY) in various states of India on the basis of fixed agency fees i.e. 09-12% of the cost of the project. Rural electrification projects were allocated to NHPC in 27 districts spread over five states viz. West Bengal, Bihar, J&K, Chhatisgarh and Odisha at an estimated cost of approx. Rs. 2700 crores. Out of 36 projects, works have been completed in 35 nos. projects except Leh project in J&K.

Major achievements of Rural Electrification works till 31.03.2019 are as under:

- Electrified 9077 nos. Un-electrified/ De-electrified villages.
- Electrified 18693 nos. Partially electrified villages.
- Provided service connections to 16.1 Lacs BPL families.
- Constructed 11 nos. 66/11 KV new sub-stations in Leh and Kargil.
- Constructed 48 nos. 33/11 KV new sub-station.
- Augmented / Up-graded 104 nos. 33/11 KV new sub-stations

RURAL ROAD PROJECTS UNDER PRADHAN MANTRI GRAM SADAK YOJNA (PMGSY)

An MOU was signed amongst NHPC; Ministry of Rural Development, Government of India and Government of Bihar for the construction of rural roads in six districts namely Vaishali, Muzaffarpur, Sitamarhi, East Champaran, Sheohar and West Champaran of Bihar under the Pradhan Mantri Gram SadakYojna (PMGSY). Under the scheme, NHPC awarded the works for execution of 758 roads spread over 06 districts and having cost of Rs. 1725.65 Crores. Till 31.03.2019, 753 roads having 3084 km length have been completed. Further, construction of balance 05 roads in Vaishali district is under progress.

As per the Tripartite Agreement, maintenance of all 758 roads are to be carried out for five (05) years after completion of their construction. Out of 753 roads already completed, maintenance period of five years of 734 roads covering 2982 km of road length is over, while 19 roads having 102 km of road length are under maintenance period.

CHAPTER 21

POWER GRID CORPORATION OF INDIA LIMITED (PGCIL)

Power Grid Corporation of India Limited (POWERGRID) was incorporated on October 23, 1989 & has been notified as Central Transmission Utility since 1998. The Corporation is responsible for integrated development of inter-State transmission system in the country for evacuation of power from central sector projects & IPPs, system strengthening scheme etc., and for implementation of transmission projects assigned to it.

POWERGRID: An Overview

POWERGRID, the Central Transmission Utility of the country, has been contributing significantly towards development of Indian power sector by undertaking coordinated development of power transmission network through continuous innovations in technical & managerial fields. Recognizing the contribution of Company for overall development of power sector, it has been conferred with **'Navratna'** status by Govt. of India in May, 2008. POWERGRID is listed company with Govt. of India as the major stake holder. The company has been receiving highest rating i.e., **"Excellent"** under MoUs since signing of first MoU in 1993-94.

POWERGRID continued to earn laurels for its performance and at the **Dun & Bradstreet PSU Award 2018** event, the company bagged three awards, including award for the **"Best Navratna Overall"**. The other awards were for **"Electricity Sector: Transmission"** and **"Best Navratna: Services"**. **Hon'ble Governor of Andhra Pradesh & Telangana** and President of the Indian Red Cross Society (IRCS) has presented **Gold Medal to POWERGRID** for mobilizing resources in conducting medical camps in AP and Telangana. POWERGRID has been adjudged as the **winner of the "Golden Peacock Award for Corporate Social Responsibility"** for the year 2017.

The Company is certified for Integrated Management System as per Publicly Available Specification, **PAS 99:2006** integrating requirements of **ISO 9001:2008** (Quality Management System), ISO 14001:2004 (Environment Management System) and **OHSAS 18001:2007** (Occupational Health & Safety Management System). All the Establishments of the Company have been audited for its Social accountability systems & certification for Social Accountability Standard, **SA 8000:2008.**

At the end of March 31, 2019, the Company owns & operates a transmission network **around 1,53,128 ckt. Kms.** of transmission lines along with **242 Extra High Voltage (EHV) AC & DC sub-stations with transformation capacity of about 3,65,467 MVA,** spread over the length and breadth of the country. The Company has been able to display its capability in consistently maintaining the availability of this gigantic transmission network over 99%, comparable with the best international standards. POWERGRID transmission network comprises about 85% of total Inter-State Transmission network of the country.

During FY 2018-19 upto Mar'19, availability of over **99.71%,** was maintained for the transmission system. Also no.of tripping per line was restricted to 0.46. For centralized remote monitoring, operation & control of sub-stations "National Transmission Asset Management Centre" has been implemented which will further improve the efficiency and transparency in the operation of the transmission system in the country.

The Company has recorded an impressive financial performance during FY 2017-18, achieving a turnover of ₹ 30,766 Crore and Net Profit of ₹ 8,239 Crore.

During FY 2018-19 (upto March 31, 2019), the company achieved a turnover of about ₹ 36,618 Crore (Unaudited) and Net Profit of ₹ 9,939 Crore (Unaudited). The gross asset base of the Company has been enhanced to ₹ 1,97,793 Crore as on 31.03.2019.

The company made a Capex of ₹ 25,791 Crore during FY 2017-18 for implementation of various transmission projects. The requisite funds were mobilized from domestic market and proceeds of ongoing loans from multilateral funding agencies, The World Bank, KfW and Asian Development Bank etc. were the organizations, besides internal resources.

During FY 2018-19, out of envisaged Capex of about ₹ 25,000 Crore, an investment of ₹ 25,807 Crore (Unaudited) has been made till 31st March' 19 for implementation of various projects.

During April' 18 – March' 19, about 8,681 ckm of transmission lines, 35,860 MVA of transformation capacity and 8,400 MW of inter-regional power transfer capacity have been added by POWERGRID.

GRID INTEGRATION OF RENEWABLE ENERGY

The demand for electricity in the country has been growing at a rapid rate. In order to meet the increasing requirement of electricity, generating capacity addition through conventional and renewable energy sources has been planned and GoI has set a target to establish 175 GW Renewable Generation capacity by 2022 which includes 100 GW from Solar and 60 GW from wind.

India is bestowed with abundant Renewable Energy potential. To harness above potential, the Government of India (GOI) has been facilitating implementation of broad spectrum of renewable energy programme through an elaborate implementation mechanism. Among various renewable energy resources, India possesses a large solar and wind energy resource confined in the States of Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh, Gujarat and Rajasthan.

Presently, about 74,786 MW grid interactive (Wind-35,138 MW, Solar-25,212 MW, Small Hydro Power-4,517 MW, others-9,900 MW) and 1144 MW off grid Renewable Energy (RE) generation capacity is available in the country [As on 31.12.18: Source-MNRE]. RE is contributing 20% penetration in the capacity portfolio and about 8-9% penetration in energy. As per GoI target of 175 GW Renewable Generation by 2022, it is envisaged that balance about 100 GW renewable generation capacity shall be added in the next 2-3 years (2021-22) mainly through wind, solar & small hydro in the renewable rich states.

For integration of large scale renewable generation capacity, Green Energy Corridors (GEC) scheme was evolved. The scheme includes Intra state transmission [in states of Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat, Maharashtra, Madhya Pradesh, Rajasthan & Himachal Pradesh] and Interstate transmission system strengthening. The scheme also includes control infrastructure comprising establishment of Renewable Energy Management Centers (REMC), forecasting of RE generation etc. GEC-Intra state transmission scheme is being implemented by respective STUs. GEC-Inter State transmission system (ISTS) includes about 3200 ckt km high capacity transmission lines along with 6 nos. substations (17,000 MVA), which is under implementation by POWERGRID. Part inter-State transmission scheme [765kV Chittorgarh-Ajmer D/C along with 400kV Chittorgarh - Chittorgarh D/C & 400kV Ajmer-Ajmer D/C lines and 765/400kV, 3000MVA Chittorgarh & Ajmer substations, Tirunelveli Gas Insulated Substation (GIS) (2x500 MVA) along with Tirunelveli-Tuticorin 400kV 2XD/C(Quad) line] is already commissioned. Balance transmission scheme is under various stages of implementation with commissioning schedule in FY 2018-19.

As part of Control Infrastructure, establishment of REMCs comprising RE forecasting & RE scheduling systems, integrated with existing SCADA co-located at renewable resources rich states' SLDCs/RLDCs/NLDC is being carried out by POWERGRID at 11 locations (SLDCs of Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat, Maharashtra, Madhya Pradesh, Rajasthan, SRLDC, WRLDC, NRLDC & NLDC). REMCs are scheduled for commissioning progressively from March' 19.

As part of ***Green Energy Corridors-II*** scheme, POWERGRID is implementing Interstate transmission scheme for eight (8) solar parks [7200 MW] viz. Ananthapur (1500 MW), Pavagada (2000 MW), Rewa (750 MW), Bhadla-III (500 MW), Bhadla-IV (250 MW), Essel (750 MW), Banaskantha (700MW) & other solar parks in MP (750MW). Transmission scheme for NP Kunta (1500 MW] UMSPP, Tumkur Ph-I (1000MW) & Rewa Solar Park (500MW) are already commissioned, whereas balance are under implementation. LTA from other solar parks in Madhya Pradesh (750MW) is awaited.

BUSINESS DEVELOPMENT

In-house expertise has been acquired by the company at par with global standards in the field of Planning, Design, Engineering, Load Despatch and Communication, Telecommunication, Contracts, Finance and Project Management. Utilising this expertise, consultancy is being offered at national & international level.

In the international arena, Company has footprints in 20 countries and currently executing 14 consultancy projects in Bangladesh, Bhutan, Nepal and Fiji.

On the domestic front, during FY 2018-19, POWERGRID bagged 27 new domestic consultancy assignments with revenue potential of approx. ₹ 349.8 Cr during FY 18. Major Assignments bagged during FY 18 include Strengthening of Sub-transmission works and Rural Electrification works in the state of J&K under Prime Minister Development Program (PMDP) with estimated cost of ₹ 426 Cr and ₹ 489 Cr, respectively.

POWERGRID is executing transmission works in difficult geographic terrain areas such as the Six States of NER for

implementation of "NER Power System Improvement Project" funded by The World Bank and Comprehensive Scheme for Strengthening of Transmission & Distribution in the States of Arunachal Pradesh & Sikkim. The Company is also implementing transmission project in J&K to provide grid connectivity and reliable power supply to the strategically important Ladakh region. In addition, other important consulting assignments under implementation include Strengthening of transmission network in Delhi and execution of transmission system for evacuation of power from Lalitpur power plant of Uttar Pradesh.

POWERGRID completed electrification of 63 Rkm Mansi-Saharsa - Dauram Madhepura single line section of Indian Railways before allotted time in FY18.

TECHNOLOGY DEVELOPMENT

In order to sustain the future competitive market, POWERGRID has been supporting a number of Research & Development activities in the field of Power Transmission.

The company has made striving efforts for the application of Resin Impregnated Paper bushings for 800 kV Transformers and reactors. The development of same is under progress.

The company has carried out in-house development of software for automatic fault detection of Transformer based on online Dissolved Gas analysis and successfully completed its installation in the National and Regional Transmission Asset management Centers of POWERGRID.

The company has also ventured into extending services to distribution utilities for tackling the voltage problems. A 33 kV mobile capacitor bank has been developed for the same and is presently commissioned at one of the substation of HVPNL, Haryana.

Gaining experience from the earlier pilot projects, company has ventured into a task of retrofitting conventional control and protection system of an old substation into state-of-the art Process Bus based substation automation system. This is a part of the ongoing initiative towards fully digital substations in the upcoming years.

Understanding the need for high end reliability of power transmission system against faults due to pollution flashover, it was felt necessary to create data repository on pollution severities across length and breadth of the country, which can be utilized for further improving system design. A massive project in co-ordination with State Transmission Utilities of Eastern Region has been undertaken for Pollution Mapping of the entire geography of Eastern region and the final report is under preparation.

Further, for boosting its research and technology development portfolio, the Company has setup an Advanced Research and Technology Centre at Manesar, Gurgaon comprising of various state of the art laboratories for power system analysis including Real Time Simulator and various software, design simulation and validation, Phasor Measurement Units, Control and Automation, Material Science analysis and an Advanced Diagnostic Centre.

CONTRIBUTING TO DISTRIBUTION REFORMS

Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY):

Govt. of India has been implementing "Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY)" for Strengthening and augmentation of sub-transmission and distribution infrastructure in rural areas, facilitating judicious rostering of agriculture and non-agriculture consumers and rural electrification etc.

POWERGRID played a significant role in carrying forward the distribution reforms through undertaking DDUGJY works on behalf of Govt. of India in various parts of the country. Under DDUGJY 10th and 11th Plan cumulatively, till Dec 31, 2017, infrastructure has been created for electrification of 71,578 villages and service connections to about 36.34 Lakh BPL households have also been released.

Further under RE (Rural Electrification) work of 15 districts in Odisha and 1 district in UP have been assigned to POWERGRID under DDUGJY at an estimated cost of around ₹ 2100 Crore, involving electrification of about 16,133 (UE-1636 & PE-14,497) villages and providing service connections to about 2.76 lakh BPL households. Cumulatively till end Dec' 2018, infrastructure has been created for electrification of 14, 464 villages and service connections to about 2.76 Lakh BPL households have also been released. Total BPL service connections released till 31-12-2018 are 39.1 lacs.

In 8 district of J&K total 6040 nos service connections have been released (in Jammu-4180 nos,in Kashmir-1618 nos & in Leh package-242nos).

SAUBHAGYA:

Govt. of India has launched 'Pradhan Mantri Sahaj Bijli Har

Ghar Yojna- **Saubhagya** to achieve universal house hold electrification in the country.

Under Saubhagya Scheme 4.38 Lakhs service connections are released in Odisha along with associated infra scheme in respective villages in 15 Districts. In Deoria district of Uttar Pradesh, 10921 nos service connections are released under Saubhagya scheme.

LEVERAGING HUMAN CAPITAL TO ACHIEVE EXCELLENCE

A succession plan is 'Integrated HR' in practice as this nudges the short-sighted, reactive, and standalone HR policies to a long term, proactive, and integrated view of building the leadership engine of the organization.

To this end, POWERGRID has made policy on Succession Planning. The objective of POWERGRID Policy on Succession Planning is to identify a talent pool of high performing executives and raise the quality of their leadership through focused interventions to enable them to take charge of key positions in POWERGRID in future; who shall navigate POWERGRID to the next level of market, product, service, customer, technology, finance, brand and people leadership.

Further, Human Resource Development Interventions are directed towards learning new competencies and to reinforce good work practices & change workplace behavior as per the Organizational requirements. The HRD Action Plan for the year 2018-19 was based on the premise of the outcome of two pronged strategy namely Organizational Need Analysis (ONA) and Competency based Training Needs Assessment (CTNA).The Company has been able to link the Individual development plans (IDP) of employees as per the business requirement which helps the organization to keep updating the competencies of employees to meet current and future requirements.

In order to align with growing competitive business environment, POWERGRID imparted training on Hands on training on Transformers & Reactors, SAS and Remote operation, , GIS, HVDC, Right of Way & New Land acquisition Act, certified Project Management programmes, Latest survey techniques, Cyber Security and Networking Skills, Team building, Leadership development etc.

POWERGRID has also been conferred **"BML Munjal AWARD for excellence in Learning & Development" and "Special Commendation Award for Innovative Training Practices by Indian Society for Training and Development"."**

POWERGRID Academy of Leadership (PAL) is a state-of-the-art Institution which has become fully functional the various HRD interventions are going on there in addition to Executive Training induction program. Apart from In-house training programs including induction training of ETs, PAL also conducts series of programs for other National and International power utilities on regular basis. Apart from these, POWERGRID is providing consultancy to state utilities in North Eastern Region for Power System Improvement and capacity building.

CITIZEN'S CHARTER

The Company has formulated its Citizen's Charters providing a visible front of its objectives, mission, commitments, terms of service and its obligation to various stakeholders. Information about its schemes, policies, project plans and issues of general interest to stakeholders is available in the offices.

SOCIAL JUSTICE

Government directives on reservation, concessions and relaxations to SCs, STs, OBCs & PWDs are strictly followed in the POWERGRID. In order to implement reservation policy and to look after the welfare of reserved category employees following steps have been taken to implement the reservation policy of Government of India:

i. Constitution of Reservation Cells in all regional establishments and Corporate Centre.

(ii) Nomination of separate Liaison Officer for matters related to reserved categories at regional establishments and Corporate Centre.

(iii) Maintenance of post-based, discipline and grade-wise recruitment reservation rosters in all aforesaid establishments of the Corporation.

(iv) Annual inspection of reservation rosters internally and periodical inspection by Ministry Officials.

(v) Availability of Liaison Officer separate for SCs/STs, OBCs & PWDs to hear the complaints of the concerned employees.

(vi) Availability of a Compliant Register in Reservation Cell for reserved and PWD categories employees to lodge their complaints, if any.

(vii) Submission of periodical Report/ return to Government/ Ministry of Power.

(viii) Filling up backlog reserved vacancies for reserved categories as part of regular recruitment as well as through Special Recruitment Drives from time to time.

MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ISSUES

The increased awareness about environmental issues and their impact on society has brought a paradigm shift in the attitude of Business organizations about the negative externalities associated with their business processes. The businesses are now moving beyond mere compliance to a more elaborate voluntary disclosure framework based on the principle of Continual Improvement. Increasing emphasis of Policy makers, Regulators, Consumers and Investors as well as members of general public on proper management of Environmental and social impacts has resulted in this welcome change.

POWERGRID as a responsible corporate entity has always remained ahead of the curve in ensuring compliance with not only the applicable regulations but actually going beyond them. Way back in year 1998, POWERGRID disclosed its first Environmental and Social Policy & Procedures (ESPP), which outlines the Company's approach to deal with environment & social issues and lays out management procedures and protocols to address the same. This comprehensive Board approved document was further revised in year 2005 and 2009 to keep it updated in line with the changing regulatory regime and expectations of Multi-lateral funding agencies. Certifying the detailed and comprehensive coverage of POWERGRID's ESPP, two leading Multi-lateral agencies of the world, i.e. The World Bank and the ADB have recognized it under their policy of "Use of Country System (UCS)" and "Country Safeguard System (CSS)" respectively, which is not only a unique distinction, but also has no parallel in the world.

Though not mandated by the law of the land, POWERGRID undertakes detailed Environmental & Social Assessment of its projects as prescribed in its ESPP and selects the most optimum route/alignment/site with least adverse/negative impacts. As part of this exercise, POWERGRID avoids environmentally and socially sensitive areas such as Forest, Wildlife, habitated areas, historical/archeological sites, religious places etc. Following the principle of avoidance, involvement of forest land has been reduced progressively from 6 % in 1998 to less than 2.5% in 2018-19 as a result of adoption of various technological and managerial innovations.

With the continuous support and guidance of MoP/GoI, POWERGRID undertook focused efforts towards optimization of Forest/Wildlife clearance process for linear projects specially transmission Lines. This resulted in several progressive changes such as Empowerment of Standing Committee of the National Board for Wildlife (NBWL) and Regional offices of MoEFCC, which in turn, eased the process of forest and wildlife clearance. Till March, 2018, POWERGRID was able to obtain In-Principle (Stage-I) forest clearances for about 980 Ha. of forest land covering 29 lines such as 400 kV D/C Jigmeling- Alipurduar, 800 KV Raigarh-Pugalur, 765 kV D/C Chilakaluripeta - Kadapa, 400 kV D/C Mundra -Bhuj and Final (Stage- II) clearance for 664 Ha. covering 33 lines such as 765 kV D/C Jharsuguda - Dharamjaygarh, 765 KV D/C Srikakulam Pooling Station – Angul, 765 KV D/C Wardha – Hyderabad, 400 KV D/C Kala-Kudus, 400 KV Aurangabad-Boisar etc.

Further, on the front of Sustainability, POWERGRID has taken various initiatives to fulfill its commitment towards the goal of sustainable development and to further reduce organization's Environmental Impacts. Key initiatives in this regard are change in tower design to conserve the precious Right of Way (RoW), enhancing the carrying capacity of existing lines through various technological interventions, Rain water harvesting made an integral part of substation design, installation of LED bulbs & solar street lighting in substation, fuel catalysts devices for DG sets etc. Recognizing the importance of solar power in combating Climate change and in-line with GOI's commitment towards Paris Agreement, POWERGRID is in the process of installing 5 MWp Rooftop Solar PV Systems covering more than 50 locations in its premises. This initiative will result in saving of 7-8 million units (MUs) of Grid connected energy per annum, thereby, reducing atmospheric emission of 35916 mt of CO_2 per year. Another significant initiative undertaken by POWERGRID is the use of inductive power in earth wire for powering of telecom antennas. This inductive power which otherwise goes waste will eliminate the use of DG sets, a constant source of pollution and GHGs emission. The technology has been successfully tested at pilot scale and if approved by the regulator, will be implemented at commercial scale.

In a country like India, where the population is much higher compared to availability of quantum of usable land, conflicts are common, whenever, the question of land acquisition arises. Considering this, POWERGRID has taken the initiative to secure land through direct purchase on willing buyer

willing seller basis on market/negotiated rate to avoid public resistance and court intervention faced during land acquisition. Always, a firm believer in leveraging the role of technology in addressing the pressing needs of the society, POWERGRID has been forthcoming in up gradation and adoption of new and better technologies such as Gas Insulated Switchyard (GIS) which requires lesser area Compared to the traditional Air Insulated Switchyard (AIS).

Further, to resolve the ROW issues and reduce social impacts, POWERGRID has started making payment for tower base land and corridor in all the 13 states of the country, which have adopted the landmark guidelines on ROW compensation issued by MoP. Such additional payment for land cost/ diminishing land value has revolutionized/transformed the very basis of compensation and has paved the way for true inclusive growth.

CORPORATE SOCIAL RESPONSIBILITY

POWERGRID has taken many proactive measures for improving the quality of life of people through its CSR initiatives in the field of Healthcare, Education, Rural Development, and Sanitation Skill Development programmes, Rural Development, Sanitation and Environmental Sustainability etc. as mandated by the Companies Act 2013. POWERGRID earmarked ₹ 186.72 Cr. under CSR for FY 2018-19, which is 2% of its average net profit of the preceding three years budget for its CSR activities.

As on 31st December, 2018, POWERGRID has approved a total of 177 number of CSR initiatives amounting to ₹ 187.37 Cr. These CSR initiatives are directed towards various thrust areas with major allocation in Healthcare (₹ 54.44 Crore), Rural Development (₹ 48.65 Crore), Sanitation & Drinking Water (₹ 40.29 Cr.), Environment (₹ 17.01 Cr.), Skill Development (₹ 13.05 Cr.), Education (₹ 9.38 Cr.) etc.

Further, a total of 34 number of CSR projects amounting to ₹ 75.46 Crore are under approval as on 1st January, 2019:

POWERGRID is undertaking various integrated development initiatives in nine aspirational districts allocated by Government of India as under:

1. Sitamarhi (Bihar)

- Construction of community center, installation of high mast light, supply of garbage rickshaw and motorized tricycles for Divyang.

2. Ranchi (Jharkhand)

- Construction of POWERGRID Vishram Sadan at RIMS, Ranchi

3. Rajnandgaon (Chhattisgarh)

- POWERGRID has inaugurated "Samarthya" Chatravaas (School cum Hostel for Divyang children) at Rajnandgaon, Chhattisgarh
- POWERGRID has also undertaken up gradation of Community Health Centre, Manpur, Rajnandgaon services up to Indian Public Health Standards

4. Kalahandi (Odisha)

- Providing medical equipments and instruments at various hospitals of Kalahandi District
- POWERGRID has undertaken "Improving Rural Livelihood through Integrated Watershed Management" at Jaipatna Block of Kalahandi district in Odisha through ICRISAT.
- Providing RO drinking water system in various Residential schools of Kalahandi District
- Providing 01 no Organic Compost Machine, 01 no Vehicle Compactor, 10 no Dumper Bin, 01 no Vehicle Mounted Fogging Machine, 01 Mortuary Van and 01 no Bobcat Machine at Bhawanipatna Municipality of Kalahandi District

5. Damoh (Madhya Pradesh)

- Construction of Dining with Kitchen and provision of table and bench at Govt. Blind, Deaf & Dumb School at Damoh
- Installation of Solar lights at Diamond park, Damoh
- Providing 100 nos. High-tech sewing machines and 5 nos. semi-automatic Sanitary Napkin manufacturing machines at Damoh, Madhya Pradesh.

6. Hailakandi (Assam)

- Repairing and renovation of 100 bedded S.K.Roy Civil Hospital, Hailakandi, Assam.
- Construction of 20 bedded new ward at S.K.Roy Civil Hospital, Hailakandi.

7. **Baran (Rajasthan)**

- Transformation of Aspirational District Baran with Renovation of 106 Anganwadi centre in 29 Gram panchayats in Shahbad Block, Renovation & minor repairing of 60 Primary Health Centre/ sub centre in Blocks of Shahbad, Kishanganj,Baran.

8. **Ferozpur (Punjab)-** Projects are being finalized by the District administration.

9. **Muzaffarpur (Bihar) -** Projects are being finalized by the District administration.

Among the notable initiatives, POWERGRID has completed "POWERGRID Vishram Sadan" at AIIMS with an objective of providing affordable accommodation facility to the deprived sections. POWERGRID has approved 6 more Vishram Sadans bearing an estimated cost of ₹ 87.77 Crore at major Govt. health institution during the year (IGIMS-Patna, Guwahati Medical College, Guwahati, RIMS, Ranchi, NIMHANS, Bengaluru, Medical College, Darbhanga, King George Medical University, Lucknow.

POWERGRID have undertaken comprehensive development activities at Baba Baidyanath Dham, Deogarh, Jharkhand adopted under "Swachh Iconic Place.

Among rural development initiatives of POWERGRID "Improving Rural Livelihoods and Protecting Environment through Farmer centric Integrated Watershed Management" in about 10,000 Ha of semi-arid land each in Kurnool district (Andhra Pradesh) and Vijayapura district (Karnataka), is underway, which has already yielded result through substantial increase of 96,950 m^3 in net water storage capacity resulting in conservation of more than 1,45,000 m^3 of water and increase in crop productivity in the range of 10-40% in the targeted area.

Further, POWERGRID have undertaken "Swachh and Bhavya Kurukshetra" programme for Kurukshetra (₹ 7.24 Crores), Rural Development projects in Bhojpur Ara, Bihar (₹ 11 Crores), Skill Development programme for 6000 youths in power sector area (₹ 10.18 Crore),Equipping 100 Railway Stations with fast Wi-Fi services in Mumbai sub-urban areas and 5 stations in Samastipur Railway division (₹ 30 Crores). Provisioning of 19,800 dustbins (₹ 8.75 Crore) at various railway stations of West Central, South West Central zones, and Samastipur Divisions and Ladies Hostel for Kerala Agriculture University, Thrissur (₹ 4.45 Crores) has also been undertaken.

As on 31.12.2018, around 300 CSR initiatives are under implementation across various locations of the country.

TELECOM BUSINESS

POWERGRID has diversified from its core power transmission business to Telecom business by utilizing spare fibers installed in Unified Load Dispatch Centre schemes, leveraging its country wide transmission infrastructure. OPGW based optical telecom network provides reliable telecommunication connectivity to various customers around the country.

The Company holds Infrastructure Provider Category-I (IP-I) Registration, and Unified License (UL) with National Long Distance (NLD) and Internet Service Provider (ISP) Category 'A' Service Authorizations. The Company has established high capacity telecom network based on N X 100 G DWDM and SDH technologies across the country. A pan India IP/MPLS network has also been established for serving enterprise customers with a requirement of Virtual Private Network (VPN) and Internet Services. The MPLS network is implemented in 3 tier architecture with Core, Edge and Access layers. The network is capable of carrying voice, Data and Video streams securely to a customer's multiple locations with applied QoS.

With its brand name **POWERTEL,** it offers services such as (i) Domestic Leased Circuits (both annual and long term contracts) and (ii) Internet Services & Enterprise Services such as VPN on its Multi-Protocol Label Switching (MPLS) Network. The Company operates a telecom network of about 47,700 km providing connectivity to all metros, major cities & towns including remote areas of J&K and North-East States and offering value added services to major telecom service providers, enterprises & Government organizations.

Govt. of India is in the process of implementation of Bharat Net or National Optic Fiber Network (NOFN) for providing connectivity to 2,50,000 Gram Panchayats in the country. POWERGRID has been nominated as one of the implementing agencies for this project and has been entrusted with the task of development and maintenance of the Bharat Net network in four states viz. Telangana, Himachal Pradesh, Jharkhand and Odisha under Phase I of the project. Further, Department of Telecommunications (DoT) has authorized POWERGRID to execute Phase-II of Bharat Net project in states of Himachal Pradesh and Uttarakhand.

The Company is also providing high speed, reliable and secure data communication network to various educational and

research institutions across the country under the National Knowledge Network (NKN) project of Govt. of India.

POWERGRID's EFFORTS TOWARDS DEVELOPMENT OF NORTH EASTERN REGION (NER)

In order to tap the hydro potential in the North-Eastern Region an outline of Transmission system has been made for evacuation of power from hydro projects of about 50,000 MW in NER and 15,000 MW in Sikkim/ Bhutan. The Inter State Transmission System consists of interconnecting the NER with the National Grid for exchange of power by high capacity AC as well as HVDC lines have been/ are being planned / implemented. In this regard, a milestone has been achieved with commissioning of Pole–1(1500 MW) of ±800kV, 6000 MW HVDC bi-pole line from Bishwanath Chariali (NER) to Agra (NR), which interconnecting en-route at Alipurduar (ER), with 3000 MW terminals each at Bishwanath Chariali & Alipurduar and 2x3000 MW terminal at Agra. This transmission system also includes 4 nos. Of high capacity corridors, each of 6000 MW capacity in the Right-of-Way constrained Chicken Neck area, thereby reserving total transmission capacity of 24,000 MW in this constrained corridor.

For development of Intra-State Transmission and Distribution (T&D) system in the states of NER, a Comprehensive Scheme for strengthening of the intra-State Transmission and Distribution system comprising transmission, sub-transmission and distribution system (33 kV & above) has been prepared, as two separate projects, and approved by the Govt. of India for implementation by POWERGRID. For the T&D project in Arunachal Pradesh & Sikkim, the entire cost of the project will be borne by Government of India through the Plan Scheme of Ministry of Power. For the remaining six states, i.e. Assam, Manipur, Meghalaya, Mizoram, Tripura and Nagaland, the scheme will be funded by the Govt. of India through the Budget of Ministry of Power and the World Bank on 50:50 basis. POWERGRID has initiated implementation activates of above projects.

Shri Narendra Modi, Hon'ble Prime Minister of India dedicating Srinagar-Leh-Kargil Transmission Line to the Nation

CHAPTER 22

POWER FINANCE CORPORATION LTD.

1.0. OVERVIEW OF PFC

1.1. Introduction

PFC was incorporated on July 16, 1986, as a part of Government of India's initiative to enhance funding to power projects in India, with an objective to provide financial resources and encourage flow of investments to the power and associated sectors. It was declared a Public Financial Institution (PFI), under Section-4A of Companies Act, in 1990.

Power Finance Corporation Limited (PFC) is a leading Power Sector Public Financial Institution and a Non-Banking Financial Company, providing fund and non-fund based support for the development of Indian Power Sector.

PFC is a Schedule-A, Navratna CPSE in the Financial Services Sector, under the administrative control of the Ministry of Power, with 59.05% shareholding of the Government of India as on 31.3.2019. Its Registered and Corporate Offices are at New Delhi.

The Corporation has been conferred with the status of 'Navratna' by Government of India on June 22, 2007. RBI has re-classified PFC from a 'Loan Company' to an 'Infrastructure Finance Company' (IFC) on July 28, 2010.

1.2. PFC's Clients and Products

PFC provides a comprehensive range of financial products and related advisory and other services from project conceptualization to the post-commissioning stage for our clients in the power sector, including for generation (conventional and renewable), transmission and distribution projects as well as for related renovation and modernization projects. PFC provides various fund based financial assistance, including project finance, short term loans, buyer's line of credit and debt refinancing schemes, as well as non-fund based assistance including default payment guarantees and letters of comfort. PFC also provides various fee-based technical advisory and consultancy services for power sector projects through 100% owned subsidiary, namely, PFC Consulting Limited.

PFC has well established relationships with the GoI and State governments, regulatory authorities, major power sector organizations, Central and State power utilities, as well as private sector power project developers.

1.3. PFC's association with Government of India

PFC is involved in various Government of India programs for the power sector, including acting as the Nodal agency for implementation of UMPPs and the newly christened Integrated Power Development Scheme (IPDS) [erstwhile R-APDRP program has been subsumed into IPDS], and as a bid process coordinator for the Independent Transmission Projects and implementation partner of Capacity Building under R-APDRP.

1.4. Joint Ventures and Subsidiaries

The Cabinet Committee on Economic Affairs gave its 'In Principle" approval for strategic sale of the Government of India's 52.63% of total paid up equity shareholding in REC to PFC alongwith the transfer of management control. On 28 March, 2019, PFC acquired GoI's 52.63% shares of REC by paying an amount of Rs.14,500 crores to Govt. of India. PFC has entered into the group of promoters of REC. The acquisition would enable increased efficiencies in leaning processes and policies across both the institutions and would create public value by offering better loan products to the power sector. The convergence between the entities as combined group entities would help the power sector reap benefits from a decentralized outreach of REC and a professional project finance expertise of PFC. Further, the ensuing diversification of assets of the group, as well as portfolio risk, would help in resolution of stressed power sector assets of the group in a better and co-ordinated manner.

As a Corporate Strategy, PFC is focusing on various specific business opportunities and areas of operations such as consultancy, renewable energy, etc. PFC is also entering into joint venture collaborations in areas of national interest leading to environmental preservation as well as development of power markets such as 'Energy Efficiency Services Limited', 'National Power Exchange Limited' and PTC India Ltd.

Subsequent to acquisition of REC, PFC is the joint promoter and holding company of Energy Efficiency Services Ltd. (EESL).

1.5. Expansion and Diversification Strategy

PFC has also strategically expanded its focus areas to include projects that represent forward and backward linkages to the core power sector projects, including procurement of capital equipment for the power sector, fuel sources for power generation projects and related infrastructure development.

2.0. PFC'S STRENGTHS

2.1 Memorandum of Understanding with Govt. of India

PFC has been signing MoU with the Govt. of India since 1993-94 and has consistently been rated 'Excellent' based on MOU targets in respect of various performance parameters. ('Very Good' in FY 2004-05).

2.2 Favorable Credit Rating and Access to Various Cost-competitive Sources of Funds

Excellence in performance is also reflected in consistently obtaining the highest Credit Rating from domestic rating agencies and investment grade rating from international credit rating agencies.

PFC Credit Ratings		
Rating Agency	**Long Term borrowings**	**Short Term Borrowings**
Domestic Rating		
CRISIL	'AAA' (Stable)	`A1+' (Highest Rating)
ICRA	'AAA'	'A1+' (Highest Rating)
CARE	'AAA'	'A1+' (Highest Rating)
International Rating (at par with 'Sovereign' rating)		
Moody's	Baa3	
Standard & Poor's	BBB-	
FITCH	BBB-	

2.3 Effective Resource Mobilization

PFC raises the funds through market borrowings of various maturities and currencies. PFC accesses domestic debt markets through various instruments which include Long Term Infrastructure Bonds, Tax Free Bonds, Long Term and Short-term Loans, Commercial papers, Inter-corporate deposits etc. from various Bank and Financial Institutions. PFC also raises its funds from international market through ECBs and Loans from Bilateral and Multilateral Agencies.

2.4 Experienced and Committed Human Capital

PFC has an experienced, qualified and committed management and employee base. Many of PFC's employees, particularly senior management, have worked with PFC for significantly long periods. PFC has an efficient and lean organizational structure relative to the size of its operations and profitability. PFC's personnel policies are aimed towards recruiting talented employees and facilitating their integration into the Company and encouraging the development of their skills.

PFC's management has significant experience in the power sector and the financial services industry, which has enabled it to develop a comprehensive and effective project appraisal process, implement a stringent risk management framework, identify specific requirements of power sector projects and offer comprehensive financing solutions and advisory assistance to such projects.

2.5 High Net Worth

Most projects in the Power Sector are highly capital intensive and are large size projects, which require considerable amount of financial resources. Considering the RBI regulatory regime, lending towards each such project is dependent upon the total permissible exposure in respect of the specific borrower. Since PFC has considerably high net worth, it is able to take significant exposure in projects of each borrower. This, in turn, leads to an early financial closure leading to faster capacity addition.

2.6 Robust Appraisal Methodology

PFC has developed extensive knowledge and experience in the Indian power sector, and has comprehensive credit appraisal policies and procedures, which enable PFC to effectively appraise and extend financial assistance to various power sector projects. PFC follows a systematic institutional and project appraisal process to assess and mitigate project and credit risk. PFC's internal processes and credit review mechanisms reduce the number of defaults on loans and contribute to profitability.

2.7 ISO Certification

PFC's operations are 'ISO 9001:2008' certified and the initial certification was done in January 2010. 'ISO 9001:2008' Presently PFC's operations are ISO 9001:2015 certified and the certification is valid till 07-Jan-2019.

3.0 PERFORMANCE HIGHLIGHTS

3.1 PFC has been a profit-making enterprise right since inception and has registered impressive growth in its net profit every year. It posted a net profit of Rs.2,728 Crore (Based on Ind AS financials adopted w.e.f. 01.04.2018 and the effective date of transition was 01.04.2017, prescribed under section 133 of the Companies act, 2013 read with relevant rules issued thereunder) during the half-year ended 30.09.2018.

3.2 NPA/stage III Assets:

- The level of net Non-Performing Assets (NPAs) has been recorded at Rs.20,600 crore which is 7.39% to the Gross Loan Assets as on 31.03.2018.
- Further, net Stage-III Loan Assets (>90 days overdue) are Rs.13,841 crore which is 4.66% of the Gross Loan Assets as on 30.09.2018.

3.3 A snapshot of PFC's financial performance for the last 3 years based on IGAAP Financials is under:

(Rs. Crore)

FINANCIAL PERFORMANCE AT A GLANCE (LAST 3 YEARS)			
PARTICULARS	**2015-16**	**2016-17**	**2017-18**
Sanctions	65,042	1,00,603	1,16,233
Disbursements	46,588	62,798	64,414
Profit before tax	9,061	5,110	8,327
Profit after tax	6,113	2,126	5,855
Dividend (Interim + Final)	1,835	1,320	2,059

4.0 AWARDS & ACCOLADES

i. Received the coveted 'Rajbhasha Kirti Pratham Puruskar' for the year 2017-18 (in the category of Region "A") from Shri M. Venkaiah Naidu, Hon'ble Vice President of India.

ii. Received the prestigious 'CBIP Award 2019' for being the Best Power Financing Company.

iii. PFC ranked 8th Highest Profit Making PSU in the country as per DPE, Government of India Survey, 2017-18.

5.0 OPERATIONAL HIGHLIGHTS

PFC sanctioned loans amounting to Rs. 1,16,233 Crore during fiscal 2017-18 to State, Central, Private and Joint Sector entities. An amount of Rs. 64,414 Crore was disbursed during the same period. With this, as on March 31, 2018, the cumulative sanctions amount to Rs.6,78,986 Crore and cumulative disbursements amount to Rs. 5,19,769 Crore. The loan assets as at 31.03.2018 stand at Rs. 2,78,915 Crore out of which 89% of the loan assets are regular in servicing of dues and no stress is envisaged.

6.0 RESOURCE MOBILISATION

6.1 Domestic

PFC mobilized funds amounting to Rs.61,313 crore from the domestic market during FY 2018-19 till 31.03.2019. Out of the above, Rs.8,391 crore was raised through issue of taxable bonds in the nature of debentures, Rs. 182 crore through Capital Gain Bonds, Rs.33,029 crore through term loan and Rs.19,711 crore by way of issue of Commercial Paper.

6.2 External

PFC diversified its borrowing through tapping international market. During FY 2017-18, PFC's foreign currency raising amounts to USD 1,659 million (eq. INR 10,686 crores) and during FY 2018-19 (up to March, 2019) PFC has raised USD 1,350 million (eq. INR 9,415 crores) under ECB Guidelines / FCNR (B) loans.

PFC issuance of maiden Green Bonds under MTN programme for USD 400 million in December 2017 at a coupon of 3.75% p.a. was Climate Bonds Initiative certified and is listed on the London Stock Exchange and the Singapore Stock Exchange. The pricing of the Green Bonds saw the tightest ever spread of 157.5 bps (basis points) over 10-year US Treasury by any Indian issuer for the inaugural 10-year transaction.

Also, PFC's entire existing foreign currency loan portfolio of equivalent US$ 1,100 million was successfully negotiated for refinancing / repricing. This has resulted in reduction of cost of up to 70 bps and saving of approximately Rs.52 crores for the residual maturity of the said borrowings.

7.0 NEW BUSINESS INITIATIVES

7.1 Investment in Power Exchanges

PFC has invested Rs.3.22 crores in the equity share capital of Power Exchange India Ltd. (PXIL), which is 6.64% of the paid up equity capital of Rs. 48.47 crores up to 31.03.2018.

Power Exchange India Limited (PXIL) is India's first institutionally promoted Power Exchange that provides innovative and credible solutions to transform the Indian Power Markets. PXIL, provides nation-wide, electronic Exchange for trading of power and handles power trading and transmission clearance, simultaneously, it provides transparent, neutral and efficient electronic platform. PXIL offers various products such as Day Ahead, Day Ahead Contingency, Any Day, Intra Day and Weekly Contracts. PXIL provides trading platform for Renewable Energy Certificates. Due to erosion of Net Worth of PXIL, PFC has provided the entire investment amount of Rs. 3.22 crore as provision for diminution in the value of investment in its books.

8.0 STRUCTURED PRODUCTS GROUP (SPG)

The information relating to SPG is as below:

8.1 Short Term Loans/ Medium Term Loans/Long Term Loans to State Gencos/Discoms/Transcos

PFC has been providing financial support under Short Term Loans, Mini Short Term Loans, Flexi Line of Credit, Medium Term & Long Term Loan to State Sector Gencos/Discoms/Transcos that are in the business of generation/distribution/transmission of power to meet their immediate requirement of funds such as working capital loans under UDAY Scheme of Government of India, purchase of fuel for power plant, purchase of consumables, essential spares, emergency procurement / work for generating plant & T&D network in the nature of repair & maintenance work, purchase of power and against receivables. PFC has Sanctioned total amount Rs. 23,599 Cr to Gencos/ Discoms/Transcos of states namely Rajasthan, Punjab, Uttar Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu, Haryana, Telangana, Meghalaya, Andhra Pradesh and Karnataka during the reported period under the above said loans.

8.2 Short Term Loan to Private Sector Borrowers:

PFC has sanctioned Short Term Loan to Private Sector Borrower (i.e., PTC India Financial Services Limited) amounting to Rs. 500 crore during the reported period.

8.3 Buyers Line of Credit

PFC has been providing non-revolving rupee line of credit to State Sector Gencos/Discoms/Transcos for purchase of machinery, equipment and other capital goods. PFC has Sanctioned amount Rs.74.33 Cr to Discoms/Gencos/Transco of one state namely Rajasthan during the reported period.

8.4 Other Loans

PFC has been providing financial support under Regulatory Assets funding, Rupee Line of Credit for Import of Coal and Financing for Purchase of Power through Power Exchange. PFC has not sanctioned any new loans under the above products during the reported period.

8.5 Investment

PFC has been investing in IPO/FPO/OFS of Central Public Sector Undertakings (CPSUs). Till date, PFC has invested in the IPOs of Rural Electrification Corporation Limited (REC) and Power Grid Corporation India Limited (PGCIL) and in OFS of Coal India Limited and NHPC Ltd.

PFC has also been investing in the Equity Share Capital of Joint Venture company i.e., Energy Efficiency Services Limited (EESL) and its Subsidiaries/SPVs/ UMPPs. PFC has invested in Equity Shares in Power Exchange India Limited (PXIL) & PTC India Limited. Further, PFC has invested in Perpetual, Additional Tier I, Basel III Compliant, Non-Convertible Taxable Bonds of Andhra Bank. PFC has also invested in KSK- Small is Beautiful Fund (KSK-SIB).

9.0 RISK MANAGEMENT

As a part of Risk Management, the Corporation has to manage various risks associated with its business. For managing such risk, PFC has an integrated risk management framework which identifies the risk(s) impacting PFC and the appropriate measures to mitigate the same. The risks are monitored through a Risk Management Committee (RMC) which comprises of departmental heads who are responsible for monitoring and periodically reviewing the risk profile of their respective function. The RMC then apprise the Risk Management Committee of Board comprising of Board level members on the key risks associated with the business, its root causes and measures taken to mitigate the same.

Further, to monitor some key risk associated with the lending business, PFC has constituted separate committee(s). To monitor the liquidity and interest rate risk, PFC has an Asset Liability Management Committee (ALCO) headed by Director (Finance). The Asset Liability Management framework includes periodic analysis of long term liquidity profile of asset receipts and debt service obligations. Such analysis is carried out on a periodic basis in various time buckets and is being used for critical decisions regarding the time, volume and maturity profile of the borrowings and creation of mix of assets and liabilities in terms of time period (short, medium and long-term) and in terms of fixed and floating interest rates.

To manage the foreign currency risk, PFC has a separate Currency Risk Management Framework under which a separate Currency Risk Management Committee has been constituted. To protect against foreign currency risk, PFC enters into hedging transactions to cover exchange rate and interest rate risk through various instruments like currency forward, option, principal swap and forward rate swaps.

10.0 INSTITUTIONAL DEVELOPMENT OF BORROWERS

10.1 CATEGORISATION OF STATE POWER UTILITIES BY PFC

For purposes of funding, PFC classifies State Power Generation and Transmission utilities into A++, A+, A, B, C and Non-responsive categories. The categorisation (biannually) of State Power Generation and Transmission utilities is arrived based on the evaluation of utility's performance against specific parameters covering operational & financial performance including regulatory environment, generation of audited accounts, etc.

With regards to State Power Distribution utilities (including SEBs / utilities with integrated operations), PFC Categorisation policy provides for adoption of MoP's Integrated Ratings by aligning such ratings/ gradings with PFC's standard categories of A+, A, B and C.

The categorisation enables PFC to determine credit exposure limits and pricing of loans to the state power utilities. As on 31st December 2018, 127 utilities were categorised, 12 as 'A++', 44 as "A+", 38 as "A", 17 as "B", 14 as "C" and 2 as "Non-Responsive".

10.2 Ministry of Power's Integrated Rating Framework For State Distribution Utilities

Ministry of Power initiated action for development of an Integrated Rating Methodology covering the State Power Distribution Utilities keeping in view the poor financial health of the State Distribution Utilities due to multifarious factors.

The objective of the integrated rating is to rate all state distribution companies (including SEBs/ utilities with integrated operations) on the basis of their performance and their ability to sustain the performance level. The methodology adopted attempts to objectively adjudge the performance of state distribution utilities against various parameters broadly classified under i) Operational & Reform parameters ii) External Parameters and iii) Financial parameters. The evaluation of certain parameters would cover current levels of performance as well as relative improvement from year to year. The operational and reform parameters viz. AT&C Losses, Efficiency of Power Purchase cost, digital payment facility, etc. carry weightage of 52% and the financial parameters viz. cost coverage ratio, payables, receivables, timely submission of audited accounts, etc. carry weightage of 33%. External parameters relating to regulatory environment, State Govt. subsidy support, etc. have been assigned weightage of 15%. The methodology provides for assigning negative marks for non-compliance on such parameters viz. unavailability of audited accounts, non-formation of State Transmission Utility, non-filing of tariff petition, etc. The negative marks for such parameters give necessary depth to rating methodology.

The Integrated Rating framework covers all state distribution utilities (including SEBs/utilities with integrated operations) except state power departments. The integrated rating is carried out on an annual basis by independent credit rating agencies. Presently, ICRA and CARE are the designated rating agencies. PFC has been nominated by MoP as the nodal agency for coordinating the activities relating to integrated rating of state distribution utilities including appointment of credit rating agencies.

So far, six Annual Integrated Ratings have been declared by Ministry of Power with the last i.e. Sixth Annual Integrated Ratings covering 41 state distribution utilities having been declared in July 2018. The Seventh Integrated Rating exercise for rating year FY 2018 is in progress and is expected to be notified shortly.

10.3 Annual Performance Report of State Power Utilities

PFC brought out the 14th edition of the Report on the Performance of State Power Utilities (SPUs) for the years 2013-14 to 2015-16 covering 101 utilities for the year 2015-16. The Report is a part of PFC's effort to provide a reliable database which can help to determine the results associated with the reforms in the sector. The Report is also recognized by various stakeholders as a useful source of information regarding the state power sector. The Report analyses the financial and operational performance e.g. profitability, gap between average cost of supply and average realization (Rs./kwh), net worth, capital employed; receivables, payables, capacity (MW), generation (Mkwh), AT&C losses (%) etc. and consumption pattern of the sector at utility, state, regional and national level. The Report for the years 2014-15 to 2016-17 is under preparation.

10.4 24X7 Power For All (PFA)

Government of India had taken a joint initiative with all states and Union Territories (UTs) to provide 24 X 7 Power for All (PFA). This initiative aims at ensuring uninterrupted supply of quality power to existing consumers and providing access to electricity to all unconnected consumers. Ministry of Power (MoP) intended to prepare roadmap for all the States and UTs in the country. For the purpose, MoP mandated Power Finance Corporation Ltd (PFC) to appoint three consultants to prepare roadmap for state specific plan for supplying 24x7 Power for All (PFA) in various states and Union Territories (UTs) in time bound manner.

States and UTs of India (except Rajasthan and Andhra Pradesh for which documents have already been prepared) have been divided into three packages. Consultants were appointed for all the three packages and had completed the work. The study was conducted under overall supervision of Central Electricity Authority (CEA).

Power for All (PFA) documents have been signed by all the States. The signed PFA documents of all the States are available on website of Ministry of Power (www.powermin.nic.in) as well as Power for All (www.powerforall.co.in).

11.0 FINANCING TO GENERATION PROJECTS

11.1 THERMAL PROJECTS

Thermal power generation comprises a major proportion of India's installed capacity. During FY 2018-19 as on 31st December, 2018, the Company has sanctioned Rs. 3,151 Crore and disbursed an amount of Rs. 10,710 Crore. The cumulative financial support provided by the Company for thermal generation schemes is Rs. 3,06,944 Crore out of which Rs. 2,46,027 Crore has been disbursed till 31st December, 2018. Thermal generation projects sanctioned during the year are given below:

Name of the Project	Amount Sanctioned ₹ Crore
MPPGCL – SHREE SINGAJI TPS STAGE II 2X660 MW	1325
NUPPL – GHATAMPUR TPS, 3X660 MW	1826

11.2 HYDRO GENERATION PROJECTS

Hydro generation capacity in the country needs significant augmentation for overall systems to have optimal energy mix. During FY 2018-19 as on 31st December, 2018, the Company has sanctioned Rs. 376 Crore and disbursed an amount of Rs. 92 Crore. The cumulative financial support provided by the Company for hydro generation schemes is Rs.46,016 Crore out of which Rs. 34,445 Crore has been disbursed till 31st December, 2018.

12.0 RENOVATION, MODERNISATION AND LIFE EXTENSION

12.1 THERMAL PROJECTS

During FY 2018-19 as on 31st December, 2018, the Company has sanctioned Rs.443 Crore and disbursed an amount of Rs. 96 Crore against R&M of thermal projects. The cumulative financial support provided by the Company for R&M of thermal generation schemes is Rs.10,933 Crore out of which Rs. 9,605 Crore has been disbursed till 31st December, 2018.

12.2 HYDRO PROJECTS

During FY 2018-19 as on 31st December, 2018, the Company has not made any sanction against R&M of hydro projects but has disbursed an amount of Rs. 8 Crore. The cumulative financial support provided by

the Company for R&M of hydro generation schemes is Rs. 2,132 Crore out of which Rs. 1,399 Crore has been disbursed till 31st December, 2018.

13.0 MEMORANDUM OF UNDERSTANDING WITH GOVT. OF INDIA

For the Financial Year 2018-19, PFC has signed a Memorandum of Undertaking with Ministry of Power for following key financial targets:

S. No.	Financial Performance Criteria	Unit	MoU 2018-19 targets under excellent Category
i	**Turnover**		
	Revenue from Operation (Net)	₹ Crore	27,000
ii	**Operating Profit/Loss**		
	Operating Profit as a percentage of Revenue from operation (Net)	%	25.00%
iii	**Return on Investment**		
	PAT/Average Net worth	%	11.50%

14.0 HUMAN RESOURCE MANAGEMENT AND TRAINING

14.1 Human Resource Management

The company has put in place effective human resource acquisition and maintenance function, which is benchmarked with best corporate practices designed to meet the organizational needs. This apart from other strategic interventions leads to an effective management of Human Resources thereby ensuring high level of productivity.

The Industrial Relations within the organization has been very cordial and harmonious with the employees committing themselves entirely to the objectives of the organization. There was no mandays lost during the year under review. The attrition rate for the period from 1st April 2018 to 31st December 2018 comes out to NIL.

14.2 Welfare Measure

The Corporation follows good management practices. The employees of the company have access to the Top Management officials thereby contributing effectively in the management and growth of the Corporation.

Commitment of the workforce is ensured through an effective package of welfare measures which include comprehensive insurance, medical facilities and other amenities which lead to a healthy workforce.

14.3 Human Resource Development & Training

During the FY 2018-19 (upto 31st December, 2018), the focus of conducting in house programs was maintained in order to ensure specific skill development in line with the corporate goals. Customized programs like training on Know Your Customer Policy, Management Development Program, Leadership & Team Building, Experiential Learning Program for Women employees, Industrial Relations & Reservation Policy etc. were organized along with other need-based programs.

As on 31st December 2018, 10 Nos. of In-house training programs were organized by PFC for its employees. A total of 1129 man-days were achieved through conducting various in-house programs and by sponsoring PFC employees to the programs organized by other training agencies.

14.4 Capacity Building Process under R-APDRP

PFC is the Nodal Agency for operationalizing the programme for the Government of India. PFC has empanelled Partner Training Institutes (PTIs) to impart training to both level A&B and level C&D state Power Distribution Utility personnel. So far over 44,000 personnel of various utilities have been trained under IPDS (Subsumed RAPDRP) Capacity Building initiative.

15.0 CORPORATE SOCIAL RESPONSIBILITY (CSR) AND SUSTAINABLE DEVELOPMENT (SD):

PFC through its CSR initiative is undertaking projects for sustainable development focusing on the thrust areas mentioned in its policy such as ensuring environmental sustainability, skill development leading to employment for unemployed youth belonging to weaker sections of society, basic education, sanitation, drinking water etc. PFC is consistently endeavouring through its CSR initiatives for upliftment of women and supporting persons with disabilities.

15.1 CSR Expenditure:

For the FY 2018-19, PFC has earmarked a budget of Rs.148.15 crore against budget of Rs.149.21 crore for the previous FY (@2% of the average stand-alone PBT

of the three immediately preceding financial years as per Companies Act, 2013). PFC has sanctioned projects worth Rs.130.21 crore under CSR activities till 31st March 2019.

15.2 Major initiatives:

15.2.1 Rural Development: For development of rural areas in Bihar, PFC has sanctioned around Rs. 24.48 crores for development works in the 3 blocks (Piro, Bihiya, Jagdishpur) of Arrah, Bihar and creation of 'Adarsh Panchayat' in three villages Bhandari, Manchi and Maheshpur of Bhandari Panchayat in Belsand block, Sitamarhi, Bihar & transformation of two Government Schools in Bhandari village. Further, PFC sanctioned Rs. 41.40 crores for dissemination of information of 'Saubhagya' scheme in Jharkhand.

15.2.2 Environment Sustainability: PFC also focused on taking up Renewable energy/ Energy Efficiency projects considering the needs of basic lighting and energy needs of rural areas of the country. In FY 2018-19, PFC provided sanction of Rs. 17.34 crore for such projects.

15.2.3 Sanitation, Drinking Water & Health: PFC sanctioned Rs.15.23 crore on 'Swachhta' related activities, installation of RO units in 646 Government/ Government aided Schools of Ferozepur District, Punjab and installation & commissioning of operating micro scope in Bhagwan Mahaveer Cancer Hospital & Research Centre, Jaipur(BMCHRC).

15.2.4 Basic Education: In FY 2018-19, PFC has also sanctioned around Rs. 31.76 crores for construction of school building for the Blind in Meerut, infrastructure works in Dr. K.B Hedgewar School in Tiwadi, Goa, South Sikkim, Khamam and up-gradation of Government Schools (1280 Nos.) & District Library in Shravasti, Uttar Pradesh.

15.2.5 List of major Projects sanctioned during FY 2018-19:

- ✓ Project for display of hoardings of 'Pradhan Mantri Sahaj Bijli Har Ghar Yojana' (SAUBHAGYA) amounting to Rs. 41.40 crore in the state of Jharkhand
- ✓ Project for installation of 10000 Dustbins in the Varanasi district amounting to Rs.4.43 Crore
- ✓ Project for development works in the 3 blocks (Piro, Bihiya, Jagdishpur) of Arrah District, Bihar-Bhojpur Village Development Programme amounting to Rs.18.53 crore
- ✓ Project for Construction of Building of Brij Mohan School for the Blind in Meerut amounting to Rs.4.43 crore
- ✓ Project for providing Renewable Energy systems in various backward villages/blocks of Durgi and Veldurthy Mandals in Guntur District, Andhra Pradesh amounting to Rs.2.33 crore
- ✓ Project for supply, installation and commissioning of 500 nos. of LED based Solar Street Lighting System (SLS) in various villages of Agra , Uttar Pradesh amounting to Rs.1.13 crore
- ✓ Project for supply, installation and commissioning of 500 nos. of LED based Solar Street Lighting System (SLS) in various villages of Purnia, Bihar amounting to Rs.1.13 crore
- ✓ Project for supply, installation and commissioning of 500 nos. of LED based Solar Street Lighting System (SLS) in various villages of Lalganj, Uttar Pradesh amounting to Rs.1.13 crore
- ✓ Appointment of consultants for project for sanitation, cleanliness and environment improvement in and around Kalkaji temple amounting to Rs. 0.18 crore
- ✓ Project for supply, installation and commissioning of 500 nos. of LED based Solar Street Lighting System (SLS) in various villages of Baghpat, Uttar Pradesh amounting to Rs.1.13 Crore
- ✓ Project for supply, installation and commissioning of 43 Nos. of solar High Mast Lights Systems (SHLMS) in various villages of Satna District, Madhya Pradesh amounting to Rs. 0.97 crore
- ✓ Project for infrastructure works in Dr. K.B Hedgewar School in Tiwadi, Goa amounting to Rs.3.00 crore
- ✓ Project for supply, installation and commissioning of 500 nos. LED based Solar Street Lighting System (SLS) in various villages of Basti Region, Uttar Pradesh amounting to Rs.1.13 crore
- ✓ Project for supply, installation and commissioning of 500 nos. LED based Solar Street Lighting System (SLS) in various villages of Mahbubnagar and Ranga Reddy Districts in Telangana amounting to Rs.1.40 crore

- ✓ Project for creating Adarsh Panchayat in three villages, Bhandari, Manchi and Maheshpur of Bhandari Panchayat in Belsand Block, Sitamarhi district of Bihar and transformation of two Government Schools in Bhandari amounting to Rs.2.56 crore
- ✓ Project for providing portable solar Micro Pumping System (PSMP) to 20 Gram Panchayat Region, Uttar Pradesh amounting to Rs.0.69 crore
- ✓ Project for Supply, installation and commissioning of 100 nos. of Solar PV High-mast Lighting Systems in various locations of Giridih Region, Jharkhand
- ✓ Project for Supply, installation and commissioning of 500 nos. LED based Solar Street Light System (SLS) in various villages of Banda region, Uttar Pradesh
- ✓ Project for Supply, installation and commissioning of 100 nos. of Solar PV High-mast Lighting Systems (White LED) (SHMLS) in various villages of Basti Region, Uttar Pradesh
- ✓ Project for supply, installation and commissioning of 500 nos. of LED based Solar Street Lighting System (SLS) in various villages of Bikaner Region (Phase-II), Rajasthan
- ✓ Project for supply, installation, commissioning of 100 nos. of Solar PV Highmast Lightening System (White LED) (SHMLS) in various villages of Siddharthnagar District, Uttar Pradesh
- ✓ Financial Contribution of Rs.2 Crore to Swachh Kumbh Kosh for the benefit of Sanitation Workers engaged in Kumbh Mela 2019 under PFC's CSR initiatives
- ✓ Financial Assistance to Project for installation of RO units in 646 Government/Government aided Schools of Ferozepur District, Punjab
- ✓ Financial Assistance to Project for Up-gradation of Government Schools (1280 Nos.) & District Library in Shravasti District ,Uttar Pradesh
- ✓ Financial Assistance to Project for Up-gradation of Selected Government Schools and other Infrastructure Development Works in South Sikkim District
- ✓ Financial Assistance to Project for Up-gradation of various Government Schools in Khammam District, Telangana
- ✓ Financial Assistance to Project for Providing Skill Development Training to 140 Nos. Unemployed Youth belonging to SC/ST/OBC/PwD/Women/EWS sections of society in Kanyakumari District (Tamil Nadu)
- ✓ Financial Assistance to Project for Supply, installation and commissioning of operating micro scope in BMCHRC, Jaipur
- ✓ Financial Assistance to Project for Supply, installation of 250 Nos. of India Mark II Hand pumps for Drinking Water purposes in Mirzapur Region, Uttar Pradesh
- ✓ Financial Assistance to Project for Supply, installation and commissioning of 12 nos. of Solar PV Highmast Lighting Systems (SHMLS) in various locations of Khagaria Distt. Bihar
- ✓ Financial Assistance to construct new hostel building for SC/ST students in campus of V.M.H.E High School, siwan through Executive Engineer, Local Area Engineering Organisation (LAEO) ,Work Division-1 Siwan under the CSR initiative of PFC Limited.

16.0 PFC Consulting Ltd (PFCCL), A wholly owned subsidiary of PFC

16.1 Introduction

PFC Consulting Ltd (PFCCL) was incorporated on March 25, 2008 as a wholly owned subsidiary of Power Finance Corporation Limited to provide consultancy services to the Power Sector. PFCCL commenced its business on April 25, 2008. PFCCL is headquartered in New Delhi and has consultancy site offices in Bhubaneswar, Cheyyur, Kolkata, Ranchi, Banka and Sundargarh.

PFC Consulting Ltd (PFCCL), has undertaken assignments involving entire spectrum of power sector advisory services including Bid Process Management, regulatory matters like preparation & filing of tariff petitions & ARRs, Distribution System Improvement Scheme(IPDS / DDUGJY/Smart Grids), Resource Mobilisation, selection of EPC Contractor, Project & financial advisory for new power plant, Reforms and Restructuring of Power Sector, assistance to Regulatory bodies, power trading advisory, Transaction Advisory, project appraisal, PPA, strategy, Policy, Energy Audit, Contract related advisory, development of new Power Projects, Transmission Projects etc.

16.2 Services Offered

- Advisory services on issues emanating from implementation of Electricity Act 2003 like reform, restructuring, regulatory etc.
- Selection of Developer following Tariff based competitive bidding as per the Guidelines issued by MoP, GoI for various segments of Power Sector.
- Project Structuring/Planning/Development/Specific Studies including Environment & Social Impact Assessment Studies.
- Communication, information dissemination and feedback.
- Preparation of organization performance improvement plans.
- Contract related services for power sector
- Financial management, resource mobilization, accounting system etc.
- Coal block development
- Renewable and non-conventional energy project development.
- Transaction Advisory Waste to Energy (WtE) project development.
- Preparation of Detailed Project Reports (DPRs) for Projects like -Smart Grid and project management consultancy for transmission system and distribution system improvement schemes like DDUGJY, IPDS and SAUBHAGYA.
- Development of DEEP e-reverse bidding portal and conducting bidding on behalf of Discom's for short term and medium term procurement of Power.
- Acquisition of land, obtaining Environment and Forest clearance, carrying out technical studies for setting up of thermal power projects
- Exploration and preparation of Geological Report

In addition to above, PFCCL provides customized services for various needs of Power Utilities.

16.3 Operations

PFCCL's operations are spread over:

- Govt. of India initiatives like UMPPs and ITPs.
- Bid Process Management for selection of project developer for generation and transmission projects.
- Selection of JV partner for various segments of power sector.
- Preparation of Guidelines and Bidding Documents for renewable Power.
- Assisting MoP in preparation of Guidelines and Standard Bidding Documents under Section 63 of Electricity Act, 2003.
- Bidding on behalf of utility for short term and medium term procurement of Power through DEEP e-reverse portal.
- Regulatory advice and assistance.
- Consultancy for auction of Coal linkages to Independent Power Producers (IPPs) under SHAKTI Scheme.
- Procurement of Power from Stressed Assets under Pilot Scheme.

16.4 Footprints

Till date, services have been rendered to 62 clients spread across 24 States/UTs namely Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Puducherry, Punjab, Rajasthan, Telangana, Tripura, Uttar Pradesh and West Bengal. PFCCL is also handling the entire work on the UMPPs and behalf of PFC, the nodal agency for development of UMPPs. Apart from UMPPs and ITPs, 109 assignments have been undertaken by PFCCL till date.

Clients	No.
States Utilities	32
Licensees/IPPs	10
Public Sector Undertakings	8
State Governments	7
Regulatory Commissions	3
Central Govt. Department/Ministries	2
Total	62

UMPP

a) STATUS OF ULTRA MEGA POWER PROJECTS

Government of India through Ministry of Power launched the initiative of Ultra Mega Power Projects (UMPPs) i.e. 4,000 MW super thermal power projects (both pit head and imported coal based) in November 2005 with the objective to develop large capacity power projects in India. Power Finance Corporation Ltd (PFC) has been appointed as the Nodal Agency to facilitate the development of these projects. So far 16 UMPPs have been identified to be located in the States of Madhya Pradesh, Gujarat, Andhra Pradesh, Jharkhand, Karnataka, Maharashtra, Odisha, Tamil Nadu, Bihar, Chhattisgarh and Uttar Pradesh.

Ten (10) projects in Odisha (3), Tamil Nadu (1), Madhya Pradesh (1), Chhattisgarh (1), Jharkhand (2), U.P.(1) and Bihar (1) are domestic coal based while the other Seven (7) projects in Gujarat (2), Maharashtra (1), Karnataka (1), Andhra Pradesh (2) and Tamil Nadu (1) are based on imported coal. 19 Special Purpose Vehicles (SPVs) have been established for UMPPs. Out of these, 14 SPVs (Operating SPVs) were incorporated to undertake site activities like land acquisition, necessary statutory clearances for conducting the bidding process for the projects. These SPVs shall be transferred to successful bidder(s) selected through Tariff Based International Competitive Bidding Process for development, implementation and operation. Five additional SPVs (Infra SPVs) were incorporated by PFC for holding the land for power plant and land for coal blocks in case of domestic coal based UMPPs (Odisha, Bihar, Deoghar, Cheyyur and Tilaiya UMPPs). These Infra SPVs would be transferred to the respective procurers of power. Out of these, two SPVs namely Tatiya Andhra Power Ltd and Chhattisgarh Surguja Power Ltd are being closed on the direction of MoP as per the request of the respective state governments.

b) UMPPs in operation

UMPPs in operation are as follows:

Sl No.	Name of UMPP	Type	Date of Transfer	Levellised Tariff (in Rs. Per kWh)	Successful developer
1	Mundra, Guajarat	Coastal	22.04.2007	2.264	Tata Power Ltd
2	Sasan, Madhya Pradesh	Pithead	07.08.2007	1.196	Reliance Power Ltd

Reliance Power Limited have issued Termination Notice of Power Purchase Agreement on 28.4.2015 citing non transfer of land by Jharkhand Government. Jharkhand Urja Vikas Nigam Ltd. on behalf of Procurers had takenover Jharkhand Integrated Power Limited (JIPL) on 16.05.2018 from RPL. For Krishnaptnam UMPP, the developer has stopped work at site, citing new regulation of coal pricing in Indonesia. The procurers have issued termination notice. The matter is subjudice.

REC to Sponsor Season 3 of 'Main Kuch Bhi Kar Sakt iHoon'. The MoA for Rs. 10 crore was signed by Shri S.N. Gaikwad, Executive Director (CSR), REC and Ms. Poonam Muttreja, Executive Director, PFI in the presence of Dr. P. V. Ramesh, Chairman & Managing Director, REC in September 2018.

CHAPTER 23

RURAL ELECTRIFICATION CORPORATION LIMITED (REC)

1. REC Limited (REC) was incorporated as a Company under the Companies Act, 1956 in the year 1969 with the main objective of financing rural electrification schemes in the country. The mandate/object clause of REC was expanded in the year 2002 to enable financing all kinds of power projects without any restriction on population, geographical location or size. In the year 1992, REC was notified as a Public Financial Institution under Section 4A of the Companies Act, 1956 (corresponding Section 2(72) of the Companies Act, 2013). In the year 1998, REC was registered as a Non-Banking Financial Company (NBFC) under Section 45 IA of the RBI Act, 1934. The Government of India upgraded REC as a Schedule "A" PSU in the year 2001. REC was granted Mini Ratna Grade-I Status in the year 2002. REC was conferred with "Navratna Status" in May, 2008. REC has also been categorized as an Infrastructure Finance Company (IFC) by Reserve Bank of India (RBI) in September, 2010. The equity shares of REC are listed on the National Stock Exchange of India Limited (NSE) and BSE Limited (BSE) since March, 2008.

   Consequent upon change in the name of the Company from "Rural Electrification Corporation Limited" to "REC Limited", the Registrar of Companies, NCT of Delhi & Haryana has issued Fresh Certificate of Incorporation dated October 13, 2018. Further, the Company has also received requisite approvals/No Objection Certificate for the said change in name from Ministry of Power, Reserve Bank of India & Stock Exchanges.

   REC Limited is a premier financial institution of the country, with the objective of financing schemes for extending and improving the rural electricity infrastructure. REC finances projects in the complete power sector value chain, be it generation, transmission or distribution. REC provides financial assistance to state electricity boards, state governments, central/ state power utilities, independent power producers, rural electric cooperatives and private sector utilities, which are critical to the projected addition of installed capacity in the country. The Corporate Office of the company is located at New Delhi and there are 24 State Offices located in different states of the country, in addition to Training Institute, viz. REC Institute of Power Management & Training (RECIPMT).

   REC has also been appointed as a nodal agency for Government of India's flagship schemes i.e. Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagaya), Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and National Electricity Fund (NEF). REC also assists Ministry of Power in monitoring of the Ujjwal Discom Assurance Yojana (UDAY) and Power for All.

2 Highlights of Performance (during 2018-19)

2.1 The highlights of performance of REC Limited for the financial year 2018-19 are given below:-

Amount (₹ in crore)

Particulars	FY 2018-19	FY 2017-18
Loans Sanctioned	#1,15,930.67	1,07,534.05
Disbursements	72,165.43	61,712.47
Subsidy under DDUGJY-RE and DDG	19,663.91	10,568.72
Recoveries (including interest)	-	46,351.13
Resource Mobilization	76,858.00	51,164.89
Profit before Tax	*Being a Listed CPSU, the desired financial data as on 31.03.2019 cannot be shared as the same is under finalisation and are further subject to the approval of the Board of the Directors of the Company.*	6,852.09
Profit after Tax		4,647.00
Net Worth		35,490.51
Dividend (Interim + Final)		1,807.05
Business per employee*		204.67

**(Business per employee = Disbursements + Recoveries/ No. of Employees as on 31.03.2018) # Provisional*

2.2 Memorandum of Understanding with Ministry of Power (MoP)

The performance of REC in terms of Memorandum of Understanding (MoU) signed with the Ministry of Power; Government of India for the financial year 2017-18 has been rated as "Very Good".

2.3 Share Capital

As on April 1, 2018 and on March 31, 2019, the Authorized share Capital of the Company was Rs. 5,000 crore consisting of 500 crore equity shares of Rs.10/- each and

the Issued and Paid up Share Capital of the Company was Rs. 1,974.92 crore consisting of 197,49,18,000 equity shares of Rs. 10/- each.

As on April 1, 2018, the President of India held 1,15,16,78,783 equity shares i.e. 58.32% of the paid up equity share capital of the Company.

During the financial year 2018-19, the President of India acting through Ministry of Power, Government of India divested/sold 64,73,244 equity shares i.e. 0.33% of total paid up capital of the Company on June 18, 2018 through off market sale of shares under 'Bharat 22 Exchange Traded Fund'. The President of India on December 4, 2018, further divested/sold 10,14,70,139 equity shares i.e. 5.14% of total paid up capital of the Company through off market sale under third Further Fund Offer (FFO 3) of CPSE ETF Mutual Fund Scheme.

The President of India on February 21, 2019, further divested/sold 43,36,057 equity shares of face value Rs. 10/- each i.e. 0.22% of total paid up capital of the Company, to ICICI Prudential Asset Management Company Limited, the Asset Management Company of Bharat 22 ETF Scheme and accordingly the holding of President of India was reduced to 52.63% of the paid up equity share capital of the Company.

Further, in line with the "in-principle" approval on December 6, 2018 of the Cabinet Committee on Economic Affairs for strategic sale of shares held by the President of India, Government of India in the Company to Power Finance Corporation Limited (PFC), the President of India on March 28, 2019has divested/sold 1,03,93,99,343 equity shares of face value Rs. 10/- each i.e. 52.63% of total paid up capital of the Company held by President of India, GOI in the Company to PFC.

As on March 31, 2019, the President of India was not holding any equity shares in the equity share capital of the Company.

2.4 Mobilization of Funds

The total market Borrowing Programme of the Company for the financial year 2018-19 is at Rs. 85,000 crore. The amount mobilized from the market during the financial year 2017-18 was Rs. 63,274 crore and during the financial year 2018-19 the company has mobilized Rs. 76,858 crore. The domestic debt instruments of REC continued to enjoy "AAA" rating-the highest rating assigned by CRISIL, CARE, India Rating & Research & ICRA Credit Rating Agencies. REC also enjoys International credit rating equivalent to sovereign rating of India from International Credit Rating Agencies Moody's and FITCH which is "Baa3" and "BBB-" respectively. "Baa3" rated obligations denote moderate credit risk and "BBB"-rated obligations denote that expectations of default risk are currently low.

3. Progress made during the financial year 2018-19:

3.1 Sanctions

During the financial year 2018-19, REC has sanctioned financial assistance of Rs. 1,15,930.67 crore to various State & Private Sector Power entities as follows:

(₹ in crore)

Sl. No.	Particulars	Targets achieved till 31.03.2019 (Provisional)
1.	Transmission & Distribution (including DDUGJY)	50,710.29
2.	Generation Projects	41,313.68
3.	Renewable Energy	11,866.70
4.	Short Term Loan/Medium Term Loan	12,040.00
	Total	**1,15,930.67**

3.2 Sanctions under National Electricity Fund:

NEF scheme provides interest subsidy to State Power Utilities, Distribution Companies (DISCOMs) based on achievement of pre-defined reform parameters against the interest paid on loans availed by them – both in public and private sector for capital investment in distribution sector.

NEF provides interest subsidy spread over 14 years, for loan approved during financial years 2012-13 & 2013-14 against the projects. In respect of 920 NEF projects with loan component of Rs. 23,973 crore for 24 DISCOMs in 14 States, till March, 2019, around Rs. 17,740 crore loan have been released. Based on the interest subsidy evaluation i.e. reduction of AT&C losses and Revenue GAP as carried out by Independent Evaluator and Nodal Agency, the Ministry of Power has released Rs. 90.16 crore to States/Power Utilities, during the financial year 2018-19. In addition, during the FY 2018-19, MoP has also released Rs. 17.84 crore as Nodal Agency service charges under the scheme.

3.3 Disbursements

The highlights of performance of REC for the financial year 2018-19 are given below:-

Particulars	FY 2018-19
	April 1, 2018 to March 31, 2019
Disbursements (including subsidy under DDUGJY-RE & DDG)	91,829.34

The details of Disbursements (excluding subsidy under DDUGJY-RE & DDG)made during the financial year 2018-19, are as below:

Sl. No.	Particulars	Actual disbursement till 31.03.2019 (Rs. in crore)
1.	Transmission	10,761.42
2.	Distribution	20,603.00
3.	Generation - Conventional	19,581.63
4.	Renewable Energy	6,627.76
5.	Loan under Saubhagya scheme	1,251.22
6.	Loan under DDUGJY scheme	3,969.08
7.	Loan under RGGVY scheme	467.12
8.	Loan under DDG scheme	34.20
9.	Short Term Loan	3,840.00
10.	Medium Term Loan	5,030.00
	Total	**72,165.43**

3.4 Performance Highlights from 01.04.2018 to 31.12.2018

(Based on Limited Reviewed Financial Results)

Sl. No.	Financial Parameters	Unit	Achievement as at 31.12.2018 (Annualised)*	MoU targets for the year 2018-19	% Achievement
1	Revenue from operations	Rs. crore	25,481	22,250	115
2	Operating Profit/Revenue from Operations	%	33.73	24.00	141
3	PAT/ Average Net Worth	%	17.77	10.50	169
4	Net NPA/Loan Assets (Net) (excluding RKM Power Gen Pvt. Ltd.)	%	4.16	90% of the achievement in FY 2017-18 i.e. 5.25	Lower than the target signifies better achievement of the set target

*Being a Listed CPSU, the desired financial data as on 31.03.2019 cannot be shared as the same is under finalisation and are further subject to the approval of the Board of the Directors of the Company.

4. Wholly owned Subsidiaries of REC

REC has following two Wholly Owned Subsidiaries, to focus on additional business of consultancy in the areas of distribution, transmission etc.:

(1) REC Transmission Projects Company Limited; and

(2) REC Power Distribution Company Limited

4. 1 REC Transmission Projects Company Limited

REC Transmission Projects Company Limited (RECTPCL) is engaged inter-alia in the business to promote, organize or carry on the business of consultancy services and/ or project implementation in any field relating to transmission and distribution of electricity in India or abroad.

The Ministry of Power, Government of India, allocates independent transmission projects from time to time to RECTPCL to work as Bid Process Coordinator (BPC), for selection of developer as Transmission Service Provider (TSP) through Tariff Based Competitive Bidding Process. In order to initiate development of each transmission project, RECTPCL incorporates a project specific Special Purpose Vehicle (SPV) as Wholly Owned Subsidiary Company and after the selection of successful bidder through Tariff Based Competitive Bidding Process notified for transmission projects, the respective project specific SPV along with all its assets and liabilities is transferred to the successful bidder.

During the Current financial year 2018-19 (upto March 31, 2019), following two project specific companies for Intra – State Transmission Projects by UPPTCL have been transferred to the selected bidder as per following details:

Sl. No.	Name of Transmission Project	Name of project Specific SPV	Date of Incorporation of SPV	Transfer Details
1.	Evacuation of Power from 3X660 MW Ghatampur Thermal Power project. (Estimated Project Cost: Rs. 2,570 crore)	Ghatampur Transmission Limited	02.12.2016	Transferred to M/s Adani Transmission Limited on 19.06.2018.
2.	Evacuation of Power from 2 x 660 MW Jawaharpur Thermal Power Project and construction 400 kV substation at Firozabad along with associated Transmission Lines. (Estimated Project Cost : Rs. 608 crore)	Jawaharpur Firozabad Transmission Limited	20.08.2018	Transferred to M/s Power Grid Corporation of India Limited on 21.12.2018.

In addition to the above, the bid process of the following Inter-State transmission projects are under progress:

Sl. No.	Name of Transmission Project	Name of project Specific SPV	Bidding Status
1.	400 kV Udupi (UPCL) - Kasargode D/ c line. (Estimated Project Cost: Rs. 620 crore)	Udupi Kasargode Transmission Limited	Expected to conclude during 2019-20
2.	Construction of Ajmer (PG)-Phagi 765 kV D/C line along with associated bays for Rajasthan SEZ. (Estimated Project Cost: Rs. 583 crore)	Ajmer Phagi Transco Limited	
3.	Western Region Strengthening Scheme - 21 (WRSS-21) Part-A - Transmission System Strengthening for relieving over loadings observed in Gujarat Intra-State System due to RE Injections in Bhuj PS. (Estimated Project Cost: Rs. 856 crore)	WRSS XXI (A) Transco Limited	
4.	Transmission System associated with RE generations at Bhuj-II, Dwarka & Lakadia. (Estimated Project Cost: Rs. 1,075 crore)	Lakadia Banaskantha Transco Limited	
5.	Jam Khambaliya Pooling Station and Interconnection of Jam Khambaliya Pooling Station for providing connectivity to RE Projects (1500 MW) in Dwarka (Gujarat) and Installation of 400/220 Kv ICT along with associated bays at M/s CGPL Switchyard. (Estimated Project Cost: Rs. 435 crore)	Jam Khambaliya Transco Limited	
6.	Transmission system associated with LT A application from Rajasthan SEZ (Part -C). (Estimated Project Cost: Rs. 1,365 crore)	Khetri Transco Limited	

RECTPCL is acting as Bid Process Coordinator for following Six Intra-State transmission projects:-

1. Transmission System Strengthening in Jharkhand State (Package-1)
2. Transmission System Strengthening in Jharkhand State (Package-2)
3. Transmission System Strengthening in Jharkhand State (Package-3)
4. Transmission System Strengthening in Jharkhand State (Package-4)
5. Intra-State Transmission work associated with construction of 400 kV substation near Guna (Distt.- Guna) & Intra-State Transmission work associated with construction of 220 kV S/s near Bhind (Distt.- Bhind)
6. Construction of 765/400/220kV GIS Substation, Rampur and 400/220/132kV GIS Substation, Sambhal with associated Transmission Lines

Further, RECTPCL under the guidance of Ministry of Power Govt. of India has developed online web platform and Mobile App for better Transparency & Accountability as detailed below: -

Urja Mitra: Urja Mitra is an initiative of Ministry of Power, Government of India which provides Outage Management and Notification Platform for disseminating the outage information to power distribution consumers across India through SMS/email/push notifications. It also provides Pan-India integrated Mobile Application for Android and iOS platforms to enable citizen to access outage information for Distribution Companies. Power Consumers can also inform about power outage in their area through mobile app.

As on 31st March, 2019, data of around 19 Crore Rural/Urban/ Mixed feeder consumers of 52 DISCOMS have already been linked on web portal and the application is live in 48 Discoms with consumer base of approximately 15 Crore. Around 114.85 Crore SMSes have been sent to the consumers.

Tarang (Transmission App for Real Time Monitoring & Growth): - Tarang monitors the progress of transmission system in the country, both Intra State and Inter State Transmission Projects through Tariff Based Competitive Bidding (TBCB) as well as Regulated Tariff Mechanism. Tarang also shows the prospective upcoming Intra-State as well as Inter - State Projects along with NITs being floated by different Transmission Utilities Pan-India. Tarang provides advance information of upcoming transmission projects approved by Empowered Committee on Transmission helping bidders to gear up future transmission projects.

11 kV Rural Feeder Monitoring Scheme: - RECTPCL has been appointed as the nodal agency for "11 kV Rural Feeder Monitoring Scheme". The scheme aims to enable monitoring of energy input/power supply at feeder level and also to give an accurate picture of power supply in rural area of country to ensure achievement of "24x7 Power for All". Under the scheme, the distribution parameters viz.- Power supply hours, outage, voltage, Current & PF, are captured. The modem installation on 11 kV rural feeders is almost completed and data is being acquired at central server from where various reports are being generated. These reports are useful in decision support for betterment of rural power supply status.

The Company continued to do profitable business in the financial year 2018-19 and earned total income of Rs. 40.52 Crore and Net Profit after Tax of Rs. 23.39 Crore as on March 31, 2019. During the year, the Company has paid an interim Dividend of Rs. 33.50 crore.

4.2 REC Power Distribution Company Limited

REC Power Distribution Company Limited (RECPDCL) is an ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System), OHSAS 18001:2007 (Occupational Health & Safety) certified company and a wholly owned subsidiary of Rural Electrification Corporation Limited (REC), a "Navratna CPSE" under the Ministry of Power, Govt. of India.

RECPDCL is providing consultancy and fee based services in the areas of rural electrification, AT&C Loss reduction strategies, IT implementation work including setting up of Data Centre, Customer care centre, etc. with GIS integration, Implementation of Smart Grid Projects covering Smart Metering with AMI, Construction of Solar PV Plants, SCADA implementation, MRI/AMR based meter reading & billing works, DPR preparation & Project Management Consultancy for Power Distribution projects, Strengthening works of Power Distribution, Energy Efficiency projects and Quality & Quantitative Surveillance/ Inspections of the works executed.

The company is rendering expert consultancy services to power utilities across the country i.e. in 41 Distribution

Companies (DISCOMS) and 4 Co-operative societies in 27 States with a project cost more than INR 85,000 crore.

4.2.1 Progress of work done/achievement during the current year 2018-19

During the current financial year 2018-19, RECPDCL has been working on its ongoing project related to:

(a) **Project Implementing Agency (PIA)** projects namely (i) IT Implementation Works in GED, Goa under RAPDRP Part-A (ii) Implementation in JKPDD of Jammu & Kashmir under urban schemes (IPDS, PMDP and R-APDRP part-B) (iii) Installation of 2 lakh Smart Meters in JKPDD Discom of Jammu & Kashmir (iv) PIA for installation of 9.25 lakh smart prepaid electricity meters with communication module for JKPDD (v) Implementation of Solar Power Project in Arunachal Pradesh in 895 villages for SECI (vi) PIA for installation of off-grid stand-alone solar system in 3601 households in Tripura.

(b) **Project Management Agency (PMA) Projects:**

- PMA for implementation of Advanced Metering Infrastructure (AMI), SCADA & Distribution Transformer Monitoring Unit (DTMU) for CED under National Smart Grid Mission;
- Further, RECPDCL is providing PMA services under DDUGJY and IPDS schemes for APDA Discom of Arunachal Pradesh, BESCOM, CESCOM, MESCOM, HESCOM, GESCOM Discoms and Hukkeri Society of Karnataka, GED Discom of Goa, CSPDCL Discom of Chhattisgarh, MPMKVVCL& MPPKVVCL Discom of Madhya Pradesh, TSSPDCL & TSNPDCL Discoms of Telengana, WBSEDCL Discom of West Bengal;
- PMA Services under DDUGJY for APDCL Discom of Assam, APEPDCL, APSPDCL, KRECS, CRECS and ARECS Discoms of Andhra Pradesh;
- PMA Services under IPDS for DPL Discom of West Bengal, MePDCL Discom of Meghalaya, MSPDCL Discom of Manipur;
- In addition, RECPDCL is also providing PMC services for DVVNL Discom of Uttar Pradesh, JBVNL Discom of Jharkhand and TSECL Discom of Tripura under DDUGJY RE XII Plan scheme, and PuVVNL Discom of Uttar Pradesh under DDUGJY RE XI and XII Plan scheme, JBVNL Discom of Jharkhand under DDUGJY RE X Plan scheme (left out work).
- PMA services for implementation of IPDS-IT in CSPDCL

(c) **Material Procurement:** RECPDCL has completed the project of Material Procurement of Major materials (viz Transformer, Conductor, Cables, Pole, Insulator etc.) used in Power Distribution system for the state of Arunachal Pradesh, Assam, Tripura, Mizoram under Saubhagya/DDUGJY scheme with an project cost of more than Rs.500 Crore.

(d) **TPI Works:** : (i) JBVNL Discom of Jharkhand under Departmental scheme (ii) WBSEDCL Discom of West Bengal under BRGF scheme (iii) MSPDCL Discom of Manipur under DDUGJY RE XI Plan (iv) APDCL Discom of Assam under DDUGJY RE XII Plan scheme (v) NBPDCL & SBPDCL Discoms of Bihar under DDUGJY RE XI Plan

(e) **RQM & NQM works:** ((i) RQM XII Plan Works in Bihar, Chhattisgarh, West Bengal, Mizoram, Nagaland, Jammu & Kashmir and Manipur (ii) RQM works in Madhya Pradesh and Manipur under DDUGJY RE XI Plan scheme (iii) RQM New Project Works in 14 States under DDUGJY Scheme (iv) NQM works in Madhya Pradesh, Odisha and Rajasthan under DDUGJY RE XII Plan scheme.

(f) **Other Works:** (i) Review of capitalization of assets for DERC (ii) PMC/AMC Services for Street Lightning Project of EESL in Tripura, Rajasthan, Chhattisgarh, Jharkhand, Punjab and Chandigarh (iii) Management & Technical Services under the project SARTHI in UPPCL (iv) Power Management System for HPPC in UHBVN and DHBVN (v) AT &C Loss analysis in Narsinghpur, Madhya Pradesh.

The Company continued to do profitable business in the financial year 2018-19 as well and generated a Revenue of Rs. 152.36 crore (unaudited) and Net Profit before Tax of Rs. 47.63 crore (unaudited.) till March 31, 2019.

New Initiatives

During the current financial year 2018-19, the Company has undertaken following new initiatives:

a. Material Procurement in North Eastern states (Assam, Arunachal Pradesh, Mizoram & Tripura) under Saubhagya & DDUGJY

b. PIA for installation and commissioning of solar standalone system in 3601 Households in Tripura

c. DPR Preparation under STN Scheme for Chhattisgarh State

d. Extension of PMA under DDUGJY & IPDS in Chhattisgarh (CSPDCL), Madhya Pradesh (MPMKVVCL), Karnataka (HESCOM, MESCOM, GESCOM, BESCOM, HESCOM, HRECS & CESCOM) and West Bengal (WBSEDCL)

e. Extension of PMA under DDUGJY-12th plan in Tripura (TSECL) and Uttar Pradesh (DVVNL, PVVNL & PuVVNL)

f. Extension of PMA under IPDS in Manipur (MSPDCL)

g. TPIA work in Tripura and DVVNL

h. PMA work under IPDS for additional sanction of DPR in Uttar Pradesh (PVVNL) and Karnataka (3 towns of HESCOM namely Belgavi, Gokak, Hubbali)

i. IT & revenue assurance support cell for Goa Electricity Dept.

j. TPI for Surya Raitha Pilot Project in Kanakpura Taluk – BESCOM.

k. TPI for Solar PV Systems for UPNEDA.

l. Project Management Agency (PMA) for the works of replacement of bare LT conductor to AB Cable in the densely populated theft prone area of villages having population more than 1000 no's in all the 14 districts under PVVNL, Meerut.

m. PMA for additional DPR works in 3 circles under IPDS Scheme for MESCOM.

n. Empanelment of Third Party Independent Evaluating Agency (TPIEA) in U.P. Power Corporation Limited and its associated Discoms under Saubhagya Scheme.

o. TPI for underground Cabling work for 3 no. of towns namely Azamgarh (Nagpur), Mahmudabad (Sitapur) and Behraich (Nagar) in Uttar Pradesh for UPPCL.

Further, the following proposals are already submitted to DISCOMs/Power Depts. and they are expected to be awarded to RECPDCL in FY 2019-20:

a. Proposal for PMA works of SCADA/DMS and IPDS IT Phase-II in the JKPDD.

b. PMA for Construction of 66 kV GIS Substation at Diesel Power House Sec-26 along with U/G Cable from 66 kV IT Park Grid Substation at Chandigarh.

c. PMA for Up-gradation of 33 kV Grid Sub-Station at Sec-18 UT, Chd to 66/11 kV 2X20 MVA GIS Substation along with 66KV Transmission line with U/G Cable at Chandigarh.

d. PMA for Installation of 30 MVA 66/11 kV Power Transformer at Sec-39 Grid Sub Station in place of Damaged Transformer along with 11 kV Switchgear.

e. PMA for Replacement of 14 No. 66 kV MOCBs with SF6 Breakers and 45 Nos. 11 kV OCB's with VCB's at 66 kV Grid Substations Sector 52 & 12, Chandigarh." The validity of tender will expire on 22.06.2019.

f. Smart Metering DPR preparation and further implementation of Smart Metering in Mizoram.

g. AMC/PMC works for LED street light under EESL in the state of Maharashtra, Uttar Pradesh, Goa.

h. TPIA for refurbishing works of distribution network in 10 divisions of HESCOM.

i. PMA under Saubhagya/DDUGJY scheme in the state of Meghalaya.

The total contract value of the above mentioned works which is expected to be awarded to RECPDCL during financial year 2019-20 till date amounts to Rs. 144.50 crore. During the year, the Company has paid an interim Dividend of Rs. 11.50 crore.

5. Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

REC is Nodal Agency for Ministry of Power's schemes Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and Pradhan Mantri Sahaj Bijli Har Ghar Yojana – Saubhagya.

5.1 Achievements during 2018-19 under DDUGJY (RE & New Projects): (Upto 31.03.2019)

- 11 kV Feeder segregation including New 11 kV lines works of 2,46,717 CKm have been completed.
- 1,782 Sub-stations (including Augmentation of 930 Sub-stations) have been commissioned.
- 4,40,769 Distribution transformers (DTR) have been commissioned.
- Under the scheme, Ministry of Power released grant of Rs. 20,593 Cr to REC Limited for projects being implemented by the States/Power Utilities.

5.2 Saubhagya - Progress:

- As on 31st March, 2019, cumulatively 2.62 Crore Households have been electrified since launch of Saubhagya in which, 2.22 crore Households have been electrified during FY 2018-19.

- All the States have achieved saturation under Saubhagya Scheme by providing electricity connections to all willing households except few households in Chhattiagarh which are located in Bastar araa due to LWE issues.

6. National Electricity Fund (NEF)

REC Limited is the Nodal Agency for operationalization of the National Electricity Fund (NEF), an Interest Subsidy Scheme introduced by Ministry of Power, Government of India to promote capital investment in distribution sector in the country.

7. Renewable Energy Projects

Under the Renewable Energy, REC has sanctioned loan assistance of Rs. 11,866.70crore to projects with installed generation capacity aggregating 2197.56 MW, which includes private sector projects of various technologies viz. Wind, Solar, Small Hydro Project, waste to Energy & Solar pump sets and Rs. 3,200 crore to 3 state sector borrowers for meeting their RPO obligations. The total estimated cost of the above projects is Rs. 17,265.04 crore. The disbursement achieved during the year 2018-19 is Rs. 6,627.76crore. Out of the above projects, REC sanctioned loan assistance of Rs. 25.92 crore to 5 MW Solar Energy project at Sonitpur district, Assam.

8. North Eastern States

During the financial year 2018-19, REC has sanctioned loan assistance of Rs. 737.48 Lakh to Power Department, Government of Tripura, under DDUGJY scheme. During the financial year 2018-19, REC has made disbursement of Rs. 2,845.92 crore (Loan of Rs. 181.17 crore and Subsidy of Rs. 2,664.76 crore) to North Eastern States.

9. International Cooperation and Development (IC & D)

REC has availed two lines of credit from Japan International Cooperation Agency (JICA) under Official Development Assistance, with sanctioned amount aggregating JPY 41.55 billion for financing the Rural Electrification Project in the States of Andhra Pradesh, Madhya Pradesh and Maharashtra and for financing the Power Transmission project in the State of Haryana.

REC has also availed three lines of credit from KfW under Indo-German Bilateral Development Cooperation with an aggregate amount of EUR 240 million for financing Energy Efficiency program in Andhra Pradesh & Telangana, HVDS projects in Haryana, besides Renewable Energy projects in the country.

Implementation of the projects financed under the above mentioned five lines of credit has been completed.

In Fiscal 2018, REC has entered into a fourth loan agreement with KfW for financial assistance of Euro 200 million for re-financing Renewable energy projects.

10. Training Activities at REC Institute of Power Management & Training (RECIPMT), Hyderabad

REC Institute of Power Management and Training (RECIPMT) earlier known as Central Institute for Rural Electrification was established at Hyderabad in 1979 under the aegis of REC Limited (formerly known as Rural Electrification Corporation Ltd.) to cater to the training and development needs of engineers and managers of Power Sector organisations. The programmes are conducted on the state-of-art subjects of Power Generation, Transmission, Distribution and Renewable energy sources.

10.1 National Training Programmes (NTP) under DDUGJY:

REC/RECIPMT is the Nodal Agency for coordination and implementation of National Training Programmes for C&D Employees, under DDUGJY, sponsored by MOP, GOI. During the year 2018-19, as against the target of 20,000 C&D category of employees, 16,623 were trained.

RECIPMT on the request of power utilities, has conducted 113 batches of C&D Employees Programmes with 2,828 participants for JdVVNL, J&KPDD, HPSEBL, TSNPDCL and TSSPDCL at various locations under its banner.

10.2 International Programmes:

RECIPMT is empanelled by Ministry of External Affairs, Govt. of India to organise training programmes in the area of power sector under ITEC/SCAAP. During the year, RECIPMT has organised 8 International

programmes with 150 participants, on the topics, viz., Certificate Course in Power Distribution Management (5 Weeks); Concept to Commissioning of Solar Power Plants (5 weeks); Design, Erection, O&M and Protection of EHV Sub-Stations (6 weeks); Financial Management and Accounting Standards for Power Utilities (6 weeks); Management of Power Generation Plants (6 weeks); Planning and Management of Power Transmission and Distribution System (8 weeks); Emerging Trends in Rural Electrification & Power Management (8 weeks) and Certificate Course in Electric Power Management (12 Weeks) The participants from countries, viz., Afghanistan, Azerbaijan, Angola, Bangladesh, Bhutan, Botswana, Burundi,Cambodia, Democratic Republic of the Congo, Ethiopia, Gambia, Ghana, Guinea, Kenya, Lebanon, Mozambique, Mauritius, Mongolia, Myanmar,Niger, Nigeria, Rwanda, Seychelles, South Sudan, Swaziland, Sudan, Syria, Sierra Leone, Tajikistan, Tanzania, Thailand, Uzbekistan, Vietnam and Zimbabwe have attended the programmes.

10.3 SAUBHAGYA Programmes:

RECIPMT has organized training programs under SAUBHAGYA/ DDUGJY, to train scheme implementers i.e. DISCOM Engineers, Contractors and their workers. These trainings are to sensitize them in taking care of "Quality Aspects" while executing SAUBHAGYA/ DDUGJY scheme. 27 batches of ToT (1 day program) with 1,470 participants were organized & 23 batches of Field Workers Training (Two days program) with 1,181 participants were organized. In total, 2,651 were participants.

10.4 Behavioural Skills Programmes:

RECIPMT has organized under the sponsorship of REC, training of 850 top/ middle level executives on "Behavioural skills", with objectives (i) to make aware of Executives their potential, (ii) to orient on Behavioural aspects at work place, skill development, etc. and (iii) to enhance problem solving ability. The participation was from Distribution, Generation and Transmission utilities across the country and RECIPMT organized them as off-site programs (at utility premises).

10.5 Solar Programmes:

RECIPMT has been empanelled by National Institute of Solar Energy (NISE) as partner training institute for conduct of Solar Programmes and organised 5 programmes on "Solar Roof Top Power Generation" for Distribution Engineers of Telangana State Power Distribution companies at various locations and 2 programmes on "Entrepreneur Development programmes on Solar PV" for unemployed youth at RECIPMT Campus. In total, 278 participants were trained.

10.6 Regular National Programmes:

RECIPMT has organised 21 Regular Training Programmes for the personnel of various Power Utilities on different topics such as, Earthing Practices & Safety Measures in Electrical Installations; Implementation of GST; Power Transformer – Testing, Commissioning, Protection & Maintenance; Concept to Commissioning of Solar Power Plants and Grid Enabling; Open Access, Power Trading & Exchange; Latest Trends in Metering, Billing and Collection; Underground Cables – Design, Selection, Laying, Monitoring & Fault Detection; Distribution Transformers- Operation & Maintenance Practices for Failure Minimization; Design, Construction & Quality Control of EHV Substations; Smart Grid and Smart Cities; Labour Laws – Employee Compensation & Contract Labour Act- Procedure in Dealing with Court Cases; Protection System in EHV Sub-stations & Lines; Power Purchase Agreement; Gas Insulated & Indoor Sub-stations; IND AS (IFRS) Adoption in Power Sector; O&M of EHV Sub-Station and Lines and Quality Assurance; Distribution Loss Reduction Issues, Challenges and Remedial Measures; Design Construction & Testing of Distribution Sub- Station and Lines; Power Transmission Lines, Design, Construction and O&M; Tariff Policy and Submission of ARRs Regulatory Compliance; Operation, Maintenance and Protection aspects of Distribution Substation & Lines. A total number of 246 participants attended the above programmes.

10.7 Customized Programmes:

16 batches of customised programmes were designed and organised suitable to the utility requirements on their request. The programmes conducted are on "O&M of Distribution Sub-Station" for J&KPDD, Jammu & Srinagar (2 batches) and JBVNL, Ranchi (2 batches) for their Engineers. The programme on "Behavioural Training", "Safety Management", "

Distribution Transformer, Maintenance & Testing" (2 batches), "Electrical Safety and Inspection of Electrical Installations Under IE Rules" (2 batches), "Distribution Metering, Advanced Technologies" (2 batches) for JBVNL Engineers at Ranchi, and "Earthing Practices & Safety Measures in Electrical Installations", "Design, Construction and Quality measurement of EHV substation", " Power Transformer, Design, Manufacturing, Specification and Conditional and Predictive maintenance of major sub-station equipment", " Protection System in EHV Sub-stations & Lines" for MSETCL Executives/ Engineers at RECIPMT campus. In total, 347 participants were trained under customised programmes.

10.8 In-house Training Programmes:

RECIPMT also organised 4 in-house programmes for the employees of REC and 47 Employees have taken part in these programmes. The topics covered are Understanding of SPU's Grading and REC's Business Areas, Sponsored by REC; Loan Documentation, Goods and Services Tax Implementation and Leadership and Communication Skills.

10.9 In all, during the year 2018-19, RECIPMT has conducted 255 programmes on various themes/subjects and trained 7,397 personnel with 24,821 man-days of training, in addition to coordinating and monitoring the National Training Programmes for C&D employees, sponsored by Ministry of Power, Government of India.

11. Sustainable projects under Corporate Social Responsibility initiative by REC: Progress made during the current financial year 2018-19:

In line with the REC Corporate Social Responsibility & Sustainability Policy, Board of Directors, REC, has approved budgetary allocation of Rs. 157.29 crore for CSR & Sustainability activities for the financial year 2018-19. During the year the total disbursement under CSR & Sustainability activities was Rs. 104.20 crore. In pursuance of the REC Corporate Social Responsibility & Sustainability Policy, REC has undertaken Sustainable projects under Corporate Social Responsibility initiatives in project mode. While identifying CSR initiatives REC has adopted an integrated approach to address the community, societal and environmental concerns.

11.1 Major CSR projects taken up/ ongoing during financial year 2018-19:

- Amplifying the message of Swachh Bharat Mission - sustained and safe sanitation practices in addition to the issues around women's health and empowerment via communication intervention titled 'Main Kuch Bhi Kar Sakti Hoon' Season 3.
- Contribution in Swachh Bharat Kosh set up by Government of India to achieve the objective of Swachh and Open Defecation Free India.
- Supporting installation of water ATM machines in 10 villages of Chandrapur Maharashtra, in 25 bus stations under UPSRTC in Uttar Pradesh and 25 machines in Kumbh Mela at Prayagraj, Uttar Pradesh for Kumbh Mela visitors, which is being reallocated at different villages in India, for providing safe drinking water to the community.
- Supporting for installation of bore well hand pumps in rural villages in various districts in Bihar & Uttar Pradesh.
- Supply and fitment of Cochlear Implants to children with hearing impairments at various locations in India.
- Construction of blood bank cum administrative block and up-gradation of blood bank equipment at Ananthapuram, Andhra Pradesh.
- Construction of radiotherapy unit in Virat Hospice in Jabalpur Madhya Pradesh, run under Brahmrishi Mission Samiti, to support the terminally ill cancer patients.
- Construction of Integrated muscular dystrophy and rehabilitation center 'Manav Mandir' (third floor)' in Solan, Himachal Pradesh.
- Supporting for community based program for control of Sickle cell diseases and Thalassemia in the 30 districts of Odisha.
- Infrastructure development, procurement of new medical equipment and renovation works in Gandhi

Memorial hospital in Rewa Madhya Pradesh, All India Institute of Medical Sciences (AIIMS) in New Delhi and Swami Vivekananda National Institute of Rehabilitation Training and Research (SVNIRTAR), Cuttack, Odisha.

- Providing better health facilities to leprosy affected and other poor people by constructing & equipping operation theatre and maternity block in The Leprosy Mission hospitals in Champa, Chhattisgarh, Faizabad, Uttar Pradesh and Vadathorasalur, Tamil Nadu.
- Providing artificial limbs/ assistive aids & appliances to persons with special abilities from weaker sections of society.
- Supporting job oriented skill development training programmes for approx. 6,300 youths including women from economically weaker sections of society in across India.
- Providing desks and benches in government schools/ colleges of Motihari Bihar.
- Infrastructure support in schools in Mahbubnagar Andhra Pradesh, Ghaziabad, Uttar Pradesh and New Delhi.
- Providing support for studies, food and other basic necessities to 300 tribal children residing and studying in Kalinga Institute of Social Sciences (KISS) in Bhubaneshwar Odisha.
- Providing holistic education & rehabilitation services for children with visual impairment by providing teaching aids, infrastructural development etc. in New Delhi
- Supporting for construction of 60 seater shelter home with wellness facility for the care of the elderly in Ladakh region of Jammu & Kashmir.
- Contribution in Swachh Kumbh Kosh for benefits of sanitation workers engaged in KumbhMela, Uttar Pradesh.
- Supporting for installation of solar power panels in the campus of Madurai Kamaraj University in Tamil Nadu, Acharya Nagarjuna University in Andhra Pradesh, Shaheed Udham Singh Panjab University, Ferozepur, Punjab, Civil Hospital, Moga, Punjab, Indian Institute of Science, Bangalore, Sambalpur University, Odisha and IIM Tiruchirappalli in Tamil Nadu.
- Rural development works in villages of Arrah, Koilwar & Barhara blocks in the backward district of Bhojpur and villages in Sitamarhi district, Bihar.
- 'No one is left behind'- to empower local communities regarding food, nutrition and energy around them naturally and ensuring ultimate utilization of the same in Meghalaya and Nagaland.
- Part contribution for construction of Statue of Unity, National Museum and Garden in Sardar Sarovar Dam, Gujarat.
- Assistance for community based interventions through various projects namely, Mission Uday, Urja, Samta Samwad, Radio Rajasthan, Saathiya Cinema etc. across India.
- Setting up of electric crematorium in Ghaziabad Uttar Pradesh.
- Construction of multipurpose hall cum indoor stadium and construction of road in Ukhrul district, Manipur.
- Supporting for setting up of mechanized sweeping, collection and transportation of Municipal Solid Waste in Varanasi, Uttar Pradesh.
- Supporting for distribution/ supply of Giftmilk (milk & milk product) to school children in government schools in Jharkhand.
- Supporting for establishment of Virtual Classrooms (VCR) at Government schools in Karnataka.
- Setting up/ establishing khadi spinning, weaving and garment unit in Varanasi, Uttar Pradesh.

Shri Narendra Modi, Hon'ble Prime Minster dedicating Pare Hydro Electric Project (110 MW) in Arunachal Pradesh to the Nation on the 9th February 2019.

CHAPTER 24

NORTH EASTERN ELECTRIC POWER CORPORATION (NEEPCO) Ltd.

The North Eastern Electric Power Corporation (NEEPCO) Ltd, a schedule A- Mini Ratna (Category-I) CPSE with an authorized share capital of Rs. 5000.00 Crore, was incorporated on 2, April 1976 as a wholly owned Government of India Enterprise under the Ministry of Power to plan, promote, investigate, survey, design, construct, generate, operate and maintain hydro, thermal and solar power stations. At present, NEEPCO's total installed capacity is 1457 MW, out of which 925 MW is in Hydro, 527 MW in Thermal and 5 MW in Solar PV Sectors.

OPERATIONAL PERFORMANCE (April 2018 to March 2019):

The generation from NEEPCO's Power Stations during April'18 to Mar'19 is 6104 MU against a MOU (Very Good) Target of 8300 MU for the year 2018-19. Against an APAF Target 77.54% for the year 2018-19 under "Very Good" MOU rating, NEEPCO achieved APAF of 74.57% for the year. Plant Availability Factor (PAF) for Hydro Plants till Mar'19 is 79.43 % and for Thermal Plants is 65.89 % for the same period.

Power Station	Generation Target (MU) 2018-19 for "Very Good" MOU rating	Actual Generation (MU) 2018-19
Kopili H E Plant	1051	1327
Doyang HE Plant	227	231
Ranganadi HE Plant	1250	1052
Tuirial H. E. Project	214	169
Pare H.E. Project	402	347
AGBPP	1450	1639
AGTCCP	650	651
TGBPP	650	681
Monarchak Solar Plant	6	7
Kameng H.E. Project	2400	Yet to be commis-sioned
APAF Target (%) 2018-19 for "Very Good" MOU rating	77.54%	
Actual APAF (%) achieved during 2018-19	74.57%	

FINANCIAL PERFORMANCE (April 2018 to March 2019):

- The revenue from operation in the current financial year 2018-19 is Rs. 2007.04 Crore.
- The total income from FY 2018-19 is Rs. 2108.41 Crore.
- The Profit before Tax is Rs. 451.58 Crore for the FY 2018-19.
- The Share Capital (Paid up) for the FY 2018-19 is Rs. 3609.81 Crore.
- The Gross operating margin for FY 2018-19 is Rs. 864.36 Crore
- The Net Block for the FY 2018-19 is Rs. 6166.30 Crore.
- The Sales Turnover / Net Block (%) for the FY 2018-19 is 32.55%.

DECLARATION OF COMMERCIAL OPERATION (COD) OF NEWLY COMMISSIONED PROJECTS:

i) Tuirial Hydro Electric Project (60 MW), Mizoram:

COD of Tuirial Unit - 1 was declared w.e.f 30/10/2017 and Unit - 2 was declared 30/01/2018.

ii) Pare Hydro Electric Project (110 MW), Arunachal Pradesh:

COD of Pare Unit - 1 was declared w.e.f 28/05/2018 and Unit - 2 was declared w.e.f. 21/05/2018.

BRIEF STATUS OF PROJECTS UNDER CONSTRUCTION:

i) Kameng Hydro Electric Project (600 MW), Arunachal Pradesh

All major works required for commissioning of the project in March'2018 were completed by the last week of Feb'2018 and two hydro generating sets of 150 MW each (Unit-I & Unit-II) were put on trial mechanical run on 08/03/2018 and 10/03/2018 respectively. However, leakages in the penstocks were noticed on 12, March 2018. Inspection of penstocks to identify/map all the problem points were carried out and rectification works are in progress.

400 kV D/C Kameng-Balipara Transmission Line has been charged by PGCIL. Bus-I and Bay-9 (400 KV) at KaHEP switchyard have also been charged. Complete charging of the 400 KV Switchyard, 400 KV Reactors, 400/132 KVA Auto Transformers and 132 KV Switchyard have been completed.

Anticipated Commissioning after completion of present Penstock rectification work in Penstock-I and Penstock-II: August 2019 (Units - 1 & 2) and December 2019 (Units - 3 & 4).

FUTURE PROJECTS:

NEEPCO has planned for enhancing its capacity though some upcoming Hydro Projects in the State of Meghalaya and has also planned a Renewable Energy Project in Odisha. The projects are:

1. **Wah Umiam St-III HEP (85 MW), Meghalaya:** Approval of Rs. 67.95 Crore towards pre-investment activities for the Project was obtained from the Ministry of Power on 05.06.2017. The DPR for the Project is under scrutiny at CEA/CWC for according Techno- Economic clearance, which is expected shortly. Other activities like obtaining Environmental Clearance (EC), arrangement for construction power, land acquisition, approach road to the Project and obtaining comfort letters from the NE States for purchase of power are under process.

2. **Wah Umiam St-I HEP (50 MW), & Wah St-II HEP (100 MW), Meghalaya:** These projects are located on the upstream of the Wah Umiam St-III HEP stated above. Govt. of Meghalaya allotted these projects to NEEPCO on 12.03.2019. MOAs are under finalization. Preparation of Pre-Feasibility Report (PFR) has been taken up.

COMMERCIAL PERFORMANCE (2018-19):

As on 31.03.2019 bills amounting to Rs. 1923.75 crore were raised during 2018-19 on the beneficiaries. The total sales during the year was Rs. 1992.54 crore. During this period an amount of Rs. 1860.29 crore was realized as revenue. The principal dues outstanding for more than 60 days as on 31.03.2019 is Rs. 374.95 crore.

Also, Tariff order for the 60 MW Tuirial HEP in Mizoram was issued by the Hon'ble CERC.

PPA was signed with Chhattisgarh for the state's allocated share of 13 MW from the 600 MW Kameng HEP on 29.04.2018. PPAs with all beneficiaries for the existing power stations have been renewed during the year.

Shri R.K.Singh, Hon'ble Minister of State (IC) Power and New and Renewable Energy, Government of India, being received by Shri A.G.West Kharkongor, CMD, NEEPCO at Hotel Pinewood, on his visit to Shillong on 20th April 2018

CHAPTER 25

POWER SYSTEM OPERATION CORPORATION LTD. (POSOCO)

POSOCO Overview

"Power System Operation' is a mission critical function of national importance for smooth evacuation of power from generating stations and supply to the end consumers in the electricity supply value chain. System operators ensure the power balance in the interconnected power system on a real time basis in a secure and reliable manner. Power System Operation involves taking care of the overall reliability, security, economy and efficiency of the power system.

POSOCO has the onerous responsibility of operating the All India synchronous grid, one of the largest and most complex in the world, ensuring reliability and security. India is ranked third in terms of electricity generation, electricity consumption, installed generation capacity and size of transmission system in the world. The power sector in India has seen a transformational change with progressive policy-level reforms and effective implementation of the same in the recent years. POSOCO through its National Load Despatch Centres (NLDC) and five (5) Regional Load Despatch Centres (RLDCs), facilitates the inter-state transmission of power to utilities across India ultimately reaching to over 1.3 billion people. POSOCO also administers India's wholesale electricity market through coordination with thousands of entities every day for balancing demand and generation every 15 minutes, in line with the regulations of Central Electricity Regulatory Commission (CERC).

The functions of POSOCO have been evolving with the integration of power systems, increase in electrical energy demand, growth in the economy and changes in technology, regulations, market design, administration and management of the power system. POSOCO is a knowledge based organization and is fulfilling various other functions assigned by the Govt. of India, from time to time. POSOCO is facilitating and enabling power sector reforms by Ministry of Power and also giving regular feedback to the Central Commission, Authority and Central Transmission Utility on design & operational aspects pertaining to Power System and Power Market Operation.

POSOCO is committed to ensuring integrated operation of Regional and National Power Systems to facilitate transfer of electric power within and across the regions and trans-national exchange of power with reliability, security and economy. It ensures independent system operation and provides level playing field to all stakeholders.

Operational Highlights

The tremendous pace of expansion of the generation, transmission and distribution in terms of higher voltages, large footprint and new technologies has strengthened the Indian power grid supporting the Government of India's vision on attaining 'Power for all'. The operational highlights in 2018-19 are as follows:

	2018-19	2017-18	% Variation	Highest ever
All India Energy Met	1288 BU	1205 BU	+ 6.9	3925 MU on 19th September 2018
All India Highest Demand Met	175 GW	161 GW	+ 8.7	175 GW on 18th September 2018
All India Hydro Generation	140 BU	134 BU	+ 4.5	741 MU on 31st August 2018
All India Thermal Generation	1072 BU	1037 BU	+ 3.3	3088 MU on 15th September 2018 (Coal & Lignite Based)
All India Wind Generation	58 BU	49 BU	+ 18.4	467 MU on 12th June 2018
All India Solar Generation	36 BU	18 BU	+ 100	141 MU on 17th March 2019
Energy facilitated through inter-regional exchange	182 BU	150 BU	+ 21.3	-
Cross border interchange Export	8496 MU	7203 MU	+ 18	-
Import	4657 MU	5611 MU	-17	-
Energy approved through Short Term Open Access	120 BU	105 BU	+ 14.3	-

Achievements

Frequency Profile - During 2018-19, Frequency remained within Indian Electricity Grid Code (IEGC) band of 49.90-50.05 Hz for 76.17 % of time. Frequency remained within the IEGC band for highest 89.2 % of time on 03rd September, 2018. The average frequency was 49.98 Hz during 2018-19. Most of the days the average frequency is close to national reference frequency of 50 Hz.

Testing of Frequency Response - IEGC mandates periodic check-ups of primary frequency response of generating units at regular interval once in two years through independent agencies selected by RLDCs or SLDCs. POSOCO has formulated the terms of reference and procedure for conducting tests to verify primary response of generating units. POSOCO issued Expression of Interest on global basis from interested agencies on 1st October 2018. Issuance of Request for Proposal to shortlisted agencies is in progress.

Automatic Generation Control (AGC) pilot project - In addition to the pilot project at NTPC Dadri Stg-II operational since Jan 2018, two more pilots were operationalized in 2018-19. The AGC at NTPC Simhadri and NTPC Mauda were operationalized on 16th November, 2018 and 30th January, 2019 respectively. The implementation of AGC pilot at NTPC Barh & Bongaigaon plants is currently in progress. The full scale AGC pan-India, planned by 2022, shall enable efficiency and grid security in the Indian power system, making it ready to handle the 175 GW of renewables targeted by 2022.

Fast Response Ancillary Services (FRAS) – CERC, vide, order dated 16th July 2018, directed POSOCO to implement pilot project for FRAS covering all Central sector hydro generating stations. FRAS is implemented as 'fast' tertiary frequency control to handle frequency spikes at hourly boundary for short duration. FRAS was implemented by POSOCO on 26th November 2018. A total of 20 hydro stations in Northern, Eastern and North-Eastern regions with aggregate capacity of 8604 MW are participating in FRAS. Approx. 3 to 4 instructions are being issued on daily basis.

Security Constrained Economic Despatch (SCED) - A consultation paper on Security Constrained Economic Despatch of Inter-state generating stations pan India was prepared by POSOCO which primarily focused on enhancing the scope of optimization of ISGS schedules in India. The objective of the optimization exercise is to minimize the total generation cost while honouring the technical constraints of the power plants and the grid. CERC vide its order on 31st Jan 2019, directed POSOCO to implement SCED for all thermal ISGS on pilot basis for six months. Accordingly, requisite framework and infrastructure for implementation of SCED and its integration with scheduling has been put in place and the pilot has been operationalized on 1st April 2019.

Participation in Reforms Process

POSOCO actively supported Ministry of Power in the policy and legislative processes for amendments to Electricity Act, National Electricity Policy & Tariff Policy. At the regulatory level too, POSOCO was associated for introduction of Spinning Reserves, Primary Response, National Open Access Registry, Gate Closure, Real Time Markets, Fast Response Ancillary Services, Linkage of Deviation Settlement Mechansim (DSM) price to market discovery process, pilot on five minute scheduling and settlement, Security Constrained Economic Despatch, Cross Border etc.

Knowledge and Information Dissemination

A number of studies & simulations have been carried out in the recent past to understand various important aspects of Indian power system & electricity market, especially, for renewable integration. These include inter-alia studies on flexibility requirement, demand pattern, hydro generation optimization, gas generation optimization, market behaviour analysis, RE integration simulation studies, Renewable Energy Certificate (REC), ramping capability of thermal power stations etc. The wisdom gained from archived data & over a decade of experience has provided useful insights into the past, present and likely future of Indian power system. These studies have given confidence that the Indian power system is capable of integrating large scale renewables in a secure and reliable manner.

Grid Resilience

The impact of climate change leading to adverse weather conditions and/or natural disasters in many pockets as well as the increasing number of high impact low probability incidents bring about a need for making the system more resilient. POSOCO-NLDC as the Nodal Agency for Disaster Management in Power Sector coordinated for preventive measures and quick restoration during natural calamities such as floods in Kerala in August 2018, Cyclone Titli in AP-Odisha coast in October, 2018 & Cyclone Gaja in Tamil Nadu in November, 2018.

Institution Building and Strengthening

Human capital management and building sustainable institutions is a key priority area for POSOCO. The trainings & certifications to develop domain knowledge and analytical abilities of system operators is being ensured. POSOCO is collaborating with the State Load Despatch Centres in various functional areas, leading to knowledge sharing and overall development of the sector. POSOCO is well-positioned to lead the transition to greater renewable energy penetration, in the Indian power sector given our quality resources, experience and technical knowhow.

CHAPTER 26

SJVN LIMITED

1.0 About SJVN

SJVN Limited a Mini Ratna, Category-I and Schedule-'A' CPSE under administrative control of Ministry of Power, Govt. of India was incorporated on May 24, 1988 as a joint venture of the Government of India (GoI) and Government of Himachal Pradesh (GOHP) to plan, promote, develop all forms of power, both renewable as well as non-renewable and all ancillary activities related thereto, in India and abroad including planning, investigation, research, design and preparation of preliminary, feasibility and definite Project reports, construction, generation, comprehensive operation, maintenance, Renovation & Modernization of power stations and projects, transmission, sale of power generated at stations in India and abroad.

Govt. of India through an Initial Public Offer (IPO) of SJVN in the month of May, 2010 offered 10.03% of its share to the public and financial institutions. The Finance Ministry has rejigged the CPSE Exchange Traded Fund (ETF) and SJVN is also included in the Basket of Bharat 22. Present Equity share holding of GoI, GoHP and public is 61.93 %, 26.85 % and 11.22 % respectively after allocation of shares to ETF and buy back offer. The present authorized share capital of SJVN is Rs. 7,000 crore.

Beginning with a single Project and single State operation (India's largest 1500 MW Nathpa Jhakri Hydro Power Station in Himachal Pradesh) SJVN is presently implementing Hydroelectric Projects in Himachal Pradesh, Uttarakhand in India besides neighbouring countries viz. Nepal and Bhutan. All units of NJHPS are under commercial operation since May 18, 2004. Subsequently, Commercial operation of 412 MW Rampur HEP was achieved in December 16, 2014. During FY 2018-19, NJHPS and RHPS generated 6507.125 MUs (Gross Generation) and 1828.76 MUs (Gross Generation) up to March 31, 2019 respectively. SJVN also commissioned 47.6 MW Khirvire Wind Power Project in Maharashtra on May 20, 2014, 5.6 MW Charanaka Solar Power Project in Gujarat on March 31, 2017 and 50 MW Sadla Wind Power Project during FY 2018-19 (Commercial certification of 12 MW awaited). During FY 2018-19, Khirvire wind power plant, Sadla Wind Power plant and Charanaka Solar Power Project has generated 62.053 MUs (Gross Generation), 29.689 MUs (Gross Generation) & 7.397 MUs (Gross Generation) up to March 31, 2019 respectively.

SJVN has paid a total dividend of Rs. 864.56 Crores for FY 2017-18 out of which total dividend paid to GoI, GoHP & Public is Rs. 554.89 Cr, Rs. 221.55 Cr and Rs. 88.12 Cr respectively. The year wise details of dividend paid for the last four years is given as under:

(In Rs. Crores)

DIVIDEND DECLARED YEARWISE					
Sr. No.	**Year**	**GoI**	**GoHP**	**Public**	**Total**
1	2014-15	279.99	110.78	43.58	434.35
2	2015-16	293.33	116.05	45.65	455.03
3	2016-17	733.32	290.13	114.12	1137.57
4	2017-18	554.89	221.55	88.12	864.56

2.0 Progress Made During 2018-19

The Progress made during the year 2018-19 up to 31.03.2019 is as under:

Description	Total gross energy generation up to 31.03.2019	Total Target as per MoU for FY 2018-19
Gross Energy Generation in MUs (Hydro)	8335.89	9075
Wind Power (MUs)	91.743	117
Solar Power (MUs)	7.397	8
TOTAL (MU)	8435.03	9200

3.0 Awards and Achievements

CMD, SJVN conferred with ET Now Award for CEO with HR Orientation and Director (Personnel), SJVN conferred with ET Now Women Super Achiever Award.

SJVN Foundation for Corporate Social Responsibility has been conferred with 'Gold Plate Award' by HelpAge India. The award was presented by Former Hon'ble President of India Sh. Pranab Mukherjee to Chairman & Managing Director, SJVN Sh. Nand Lal Sharma in a function held at India Habitat Centre, New Delhi.

SJVN has been awarded with Aqua Foundation Excellence Award 2018 in the category of 'Sustainable Development in Hydro Power Sector (Public Sector)' during XII World Aqua Congress International Conference 2018.

SJVN has been conferred with the prestigious IPPAI Power Award -2018 under the Category of "Best Hydro Power Generator" during 19th Independent Power Producers Association of India (IPPAI) Retreat 2018 at Karnataka.

SJVN Limited conferred with Rajbhasha Kirti Award for effective Implementation of Official Language Policy for the year 2017-18. The award was presented by His Excellency Vice President of India, Shri Venkaiah Naidu to Shri Nand Lal Sharma, Chairman and Managing Director, SJVN.

4.0 Financial Parameters of SJVN

TThe financial performance of SJVN for the last four financial years is as under:-

(In Rs. Crores)

S. No.	Description (Rs. In Crores)	2017-18	2016-17	2015-16 (As per IND-AS)	2014-15
A	INCOME DETAILS				
I	Sales	2229.97	2679.31	2493.96	2817.53
II	Other income	357.10	440.59	409.86	438.39
III	Total income	2587.07	3119.90	2903.82	3255.92
IV	Profit before tax	1648.37	1873.93	1704.21	2047.25
V	Profit after tax	1224.88	1544.14	1407.34	1676.75
VI	Dividend Declared	864.56	1137.57	455.03	434.35
VII	Tax on Dividend	176.16	231.59	92.63	89.71
VIII	Reserves and Surplus	6764.91	7347.20	7161.24	6066.41

5.0 Future Plan for Capacity Addition

SJVN has drawn a comprehensive capacity addition plan to achieve a target of approximately 5000 MW installed capacity by the year 2023 to emerge as a major contributor in Power generation. SJVN has taken up the execution and subsequent operation and maintenance of the following projects in the states of India & Abroad.

6.0 Current Project Portfolio In India

Sr. No.	Name of Project	State	Capacity (MW)
	Under Operation		
1	Nathpa Jhakri Hydro Power Station	H. P.	1500
2	Rampur Hydro Power Station	H. P.	412
3	Khirvire Wind Power Project	Maharashtra	47.6

4	Sadla Wind Power Project (Commercial certification of 12 MW awaited)	Gujarat	50
5	Charanaka Solar Power Project	Gujarat	5.6
	Project Under Implementation		
6	Naitwar Mori Hydro Electric Project	Uttarakhand	60
7	Buxar Thermal Power Project	Bihar	1320
	Under various stages of clearances/ Survey & Investigation		
8	Luhri Hydro Electric Project (LHEP Stage I, LHEP Stage II, Sunni Dam HEP)	H. P.	Stage I-210 MW Stage II- 172 MW Sunni Dam- 382 MW
9	Dhaulasidh Hydro Electric Project	H. P.	66
10	Jangi Thopan Powari HEP	H.P	780
11	Devsari Hydro Electric Project	Uttarakhand	252
12	Jakhol Sankri Hydro Electric Project	Uttarakhand	44

Abroad

Sr. No.	Name of Project	Country	Capacity (MW)
	Nepal		
1	Arun-3 Hydro Power Project (Under Execution)	Nepal	900
	Bhutan		
2	Kholongchhu Hydro Electric Project (Under Execution)	Bhutan	600

Transmission Line

Sr. No.	Name of Project	Length (in ckm)
1	400 kV double circuit transmission line for evacuation of power from 900 MW Arun-III Project in Nepal upto Muzzaffarpur (India)	217
2	400 kV D/C transmission line from Nepal Connection Point to Muzaffarpur	86

7.0 Industrial Relations

Regular interactions are held with the representatives of various Associations/Unions. The thrust area for discussions is related to policies as well as issues concerning enhancing production, efficiency and improving organizational climate. The above actions of the Management paved the way for cordial and better employee-employer relations and the industrial relations during the year. Recreational, cultural and sports activities are being organized on different occasions for improving inter — personal relations and also to bring out the talent of employees and their family members.

8.0 Environment

At this point countries world over have assembled to decide the practical implementation of Paris Agreement, so that we create a sustainable environment for the generations to come. SJVN as a responsible company, has a keen concern to generate clean energy by promoting and developing hydropower and other

renewable sources of energy. Although hydropower is touted to be the cleanest source of energy but it has some environmental consequences. Therefore, at SJVN we have been making perpetual endeavors to better our environment and keep it pollution free.

SJVN has been religiously complying with all the stipulatory and regulatory requirements on environment. This applies not just to Clearances on Environment or Forests, we are also committed to newly introduced legislations on e-waste, solid waste management, hazardous waste, etc. In addition, we believe in promoting good environmental practices, like targeting efficient use of paper/recycling.

Rooftop Solar PV 40 kW (AC) plant at RHPS is catering to the load requirements for operation, control and illumination at Butterfly Valve House (BVH) since May 2018. Hence, the requirement of auxiliary consumption has reduced. Energy conservation measures have been taken at NJHPS by installing solar street lights, sensor based lighting system and LED lights at Naitwar Mori HEP (NMHEP). In the latter project, old heating appliances have been replaced with more efficient 4 - star rated appliances.

RHPS has installed an advanced warning cum alert system on River Satluj, so that inhabitants putting up on its banks are watchful of flood like situations. This system shall alert them who are living within fifteen kilometers downstream of station tailrace.

Solid waste generated at our project sites & offices, is segregated in colored dustbins & disposed off in an environmentally sound manner. The solid waste generated at RHPS Township is being treated for wet waste by 25kg capacity Organic Waste Converter. The vermi-composting units are also being developed at RHPS & NJHPS. Biodegradable waste generated from NJHPS canteen is being treated by the installed 40-60 kg Biomethanation Unit. Waste to energy plant, having capacity of 1 MW, is being proposed at the identified location of Wadhal (Kinnaur).Our corporate office building has a provision of 5000 litre rainwater harvesting system, which is utilized in horticulture & for recharging of groundwater. Entire biodegradable waste generated from corporate office building is processed in Bio- composter plant & the compost is utilized as in horticulture.

SJVN has been spreading ideas on environment conservation by organizing various competitive activities, Energy Awareness Programmes etc. Painting, declamation, quizzes, photography, best from waste, essay competitions, etc., promoting the theme "Beating Plastic Pollution", was organized to commemorate the World Environment Day, 2018. For a cleaner and greener environment, plantation has been carried out at various offices & projects of SJVN. Further SJVN joined hands with HP State Pollution Control Board in their campaign on Pollution Abating Plants Abhiyan (PAPA), wherein 160995 outdoor saplings and 1210 indoor saplings have been planted. The campaign has bagged Skoch Order-of-Merit Award in 2018 for qualifying amongst the top environment projects in India.

9.0 Corporate Social Responsibility and Sustainability

SJVN being a responsible corporate citizen has since been implementing CSR programs integral to its core business activities. The CSR programs are focused on inclusive growth of the societies in and around its operational areas. In compliance with the provisions of the Companies Act, 2013, the CSR and sustainability Plan for FY 2017-18 of SJVN was adopted with the budget outlay of Rs 37.50 Cr. Various CSR activities have been chosen as per the activities suggested under Schedule VII of the Companies Act, 2013. The entire 100% budgeted funds of Rs. 37.50 Cr were utilized. The details of the programs carried out are as under:

i) Free health care to local communities

The health and hygiene facilities in most rural areas are inadequate and SJVN has supported the betterment of healthcare services in these areas by creating suitable infrastructure and developing an outreach program at the doorsteps of rural households by deploying mobile medical units (MMU) under the banner of the `Satluj Sanjeevani Sewa' service in the state of Himachal Pradesh, Uttarakhand , Maharashtra and Bihar through HelpAge India. The MMUs are equipped with qualified medical staff (MBBS doctors, pharmacists, social protection officers) and basic diagnostic test equipments. Till date, 12 MMUs are in operation in various project areas of SJVN. The total no. of patients receiving treatment during 2017-18 143707 and cumulative no.of patients has crossed 5 Lakh.

In addition to the above, two MMUs one each at NJHPS and RHPS are being operated in project affected area providing free consultations and medicines by company doctor. The total number of treatments conducted in the FY 2017-18 through Departmental MMU is 1885.

SJVN Foundation has also conducted health check up camps in its project areas through HelpAge India. The objective of organizing health camps is to provide specialized medical services in the areas of gynaecology, ophthalmology, orthopaedics, paediatrics etc which also include various medical tests. Total 35 camps have been organized during FY 2017-18 benefiting 13,424 patients.

Apart from health camps through HelpAge, 30 health camps based on Ayurvedic system were organized through Bhartiya Dharoharin HP benefiting around 3406 people from SJVN project areas during 2017-18.

Financial assistance of Rs. 74,16,600/- was extended by SJVN to Shimla Rotary Charitable Trust for construction activities near IGMC Cancer Hospital to facilitate the cancer patients and their attendants.

A financial assistance amounting to Rs. 92,10,475/- which includes- Rs. 52,10,475/-for instruments for general diagnosis and Rs. 40,00,000/- for surgical instruments was provided to Vivekanand Medical Institute (a Unit of Vivekanand Medical Research Trust), Palampur, Distt.-Kangra, Himachal Pradesh.

ii) Care and close attention to those that need special care

Under the health and hygiene vertical, Divyang people get special attention and special CSR projects are implemented exclusively for them. SJVN Foundation for CSR is funding Indian Association of Muscular Dystrophy (IAMD) for construction of Manav Mandir - an Integrated Muscular Dystrophy Centre at Solan. In over 5 years, a total of Rs 456.09 Lakh has been contributed towards IAMD project. In FY 2017¬18, an amount of Rs. 43,34,717/- has been provided to IAMD for laying water harvesting system consisting of two rain water harvesting tanks, one water supply tank and water treatment plant.

iii) SJVN Empowering Women of Weaker Sections

Under the Women and Child Development (W&CD) scheme, a financial benefit of Rs. 10,000/- in two installments of Rs. 5,000/- each (during ante-natal and post-natal periods) is extended for the purpose of providing healthy nourishment to BPL Women. Besides the direct financial benefits, a gift pack worth Rs 1,000/- consisting of nutritional food items, soaps and other hygiene related items needed for the care of the new born is also provided. During the FY 2017-18, total 178 BPL women have benefitted under this scheme.

iv. Skill development programs and Strengthening & augmentation of infrastructural and other facilities

Govt of India has launched Skill India initiatives to transform young population as skilled man force to drive economic growth and at the same time to improve employability. In this direction, SJVN is implementing various Skill development programs in its project areas to supplement the Government's efforts of skilling youth. People benefited under various skill development programs undertaken by SJVN are as under:

S N	Name of program	Number of beneficiaries in FY 2017-18
1.	ITIs sponsorship for project youth- one to two years duration	117
2.	Skill development programme of one to three months duration	2870
3.	One week training to farmers in agriculture and horticulture	1600

Apart from above, SJVN has taken initiatives to develop six ITIs into the centre of excellence. Further Rs. 4 Cr has been released to 4 ITIs (1 crore each).

v. Promotion of education

The SJVN Silver Jubilee Merit Scholarship Scheme which aims at inculcating competitive spirit among students was launched in the FY 2012-13. The scheme is open for 12th class meritorious students for pursuing higher studies in different streams. Selected students are paid a scholarship of Rs. 2,000/- per month till the time they complete the course. 250 students have been awarded the scholarship under the SJVN Silver Jubilee Merit scholarship scheme in the states of HP, Uttrakhand, Maharashtra, Bihar and Arunachal Pradesh in the year 2017-18.

Under reward scheme to topper students of government schools located in project areas of SJVN, the topper students of class 8th, 10th and 12th of the local govt. schools are provided cash reward. In FY 2017-18, 745 students were given cash reward.

SJVN has consented to provide financial assistance of Rs.1.85 cr in 6 phases to Shri Dudhiya Baba Sanyas Ashram Rudrapur for construction of hostel building being run and managed under the supervision of Sewa Prakalp Sansthan. The construction of hostel building aims to accommodate 180 girls.

vi. Infrastructural Development and community assets

SJVN's infra development activities under CSR ranges from construction of panchayat building, mahila mandal buildings, toilets, school buildings, hospitals, bus stand, cremation grounds and others. In the year 2017-18, 67 assets have been created and 37 assets are under execution. These works are being executed by projects through Village Development Advisory Committee(VDAC), local contractor and SMC etc. During the FY 2017-18, an amount of Rs. 3,16,88,763/-has been sanctioned for construction of community assets in MC Shimla.

SJVN has provided consent to, HPPWD, Nirmand, Distt. Kullu, HP for financial support of Rs. 2,08,52,094/- for executing the work of metalling and tarring of 3.64 Km road from village Bayal (batching plant) to village Koyal.

SJVN has given consent for providing financial assistance of Rs. 2,33,90,071/-to Himachal Shiksha Samiti for finishing and site development work of newly constructed hostel building of Saraswati Vidya Mandir, Him Rashmi, Vikasnagar.

vii. Sustainable Development

Rehabilitation of water bodies is an important activity under the Sustainability Development vertical. In FY 2017-18, 26 water sources have been rehabilitated for reuse and 5 are under execution stage.

Under the Swach Vidyalaya Abhiyan, SJVN has constructed 2421 toilets in the state of HP, Uttarkhand, Bihar and Maharastra. Further 178 toilets are being constructed by Sarva Shiksha Abhiyan (SSA) of HP Govt. at a total cost of Rs.133.50 Lakh, out of which funds of Rs.66 Lakh in two installments have been released to SSA.

As per the directives of MOP a mechanism was evolved for maintenance of toilets in the schools and it was decided to keep a lump sum maximum amount of Rs. 5000/- per toilet per FY which can be released by respective project to the school for maintenance of toilet (for general maintenance like repair/ change of cistern, seat, tap, wash basin, doors, water tanks, other sanitary fitting, white washing, painting etc.) on receipt of duly verified copies of vouchers by Principal of the school. An amount of Rs. 3,11,472/- has been spent on the maintenance of the toilets during 2017-18.

SJVN Foundation for CSR has provided financial assistance of Rs. 49,65,140/- to Uttrakhand State Council for Science and Technology (UCOST), Dehradun for setting up of Biodiversity Park at Vigyan Dham, Dehradun under CSR. The work consist of surface dressing of area, construction of drainage system, horticulture & landscaping, irrigation system, construction of pond with fountain and lighting system, construction of green house.

MOU dated 28/03/2017 was signed with EESL for Rs. 71,74,008/- for installation of 100 solar street lights and 50 high mast lights in Lucknow (East). Apart from above, MOU dated 28/03/2017 was signed with EESL for Rs. 84,65,526/- for installation of LED based 25 high mast lights and 325 solar street lights in Deoria and Shahjahanpur area. As regard installation as on 10.04.2018, 96 solar street lights have been installed in Lucknow. 25 LED high mast lights have been installed in Shahajhanpur and as regards to installation of solar street lights 200 lights have been installed in Shahjahanpur.

viii. Preservation and promotion of culture and sports

To promote the composite culture of India, SJVN supports national and rural festivals. During FY 2017-18 an amount of Rs. 53.07 lakh has been spent towards the promotion of local culture and sports. Some of the notable festivals namely, International Lavi Mela, Shimla Summer festival, Kullu Dussehra, Hamir Utsav, Kinnaur Mahotsav etc. were supported,

SJVN has provided financial assistance of Rs.1 crore for construction of boundary wall, repair and reconstruction of parts of Bhimakali Temple complex at Sarahan as a measure to ensure environmental cleanliness in its premises and also for protection and the preservation of its rich cultural heritage and

Rs. 2 crore for ongoing renovation/reconstruction of the Tara Mata Temple complex, near Shimla. The renovation/up gradation work of Tara Devi is nearing completion and renovation/ up-gradation work at Bhimakali temple is yet to start.

ix. Assistance during natural disasters

Rs. 1 crore has been contributed towards HP Chief Minister's relief fund. Above, contribution of Rs. 25 Lakh towards Chief Minister Relief Fund. Bihar has been made on 13/09/2017. In addition. Rs. 21,38.900/- has been spent towards procurement and transportation of relief material for flood relief in Bihar.

Rehabilitation and Resettlement in SJVN

SJVN, being conscious of its responsibilities towards society, is committed to execute and operate power projects in a socially responsible manner by adopting generous Resettlement & Rehabilitation measures for the benefit of project affected families (PAFs) and by investing in socio-economic development of communities so as to continually minimize potential negative impacts as well as to establish sustainable positive impact of projects on them.

Well before any project is taken up for execution, Social Impact Assessment (SIA) study is carried out to ensure that the potential socio-economic benefits accrued from the project outweigh the social costs and adverse social impact. Public consultation meetings with the stakeholders are held by the project authorities to make the local communities aware of developmental facilities to be created in the field of health, education, sanitation, drinking water, approach roads and other community assets of the project and their benefits to the society. Subsequently, the R&R plan is devised based on conclusive findings derived from socio economic survey carried out by an independent expert agency. The R&R plan thus devised and approved, essentially prescribes mitigation measures for reconstruction and regeneration of economy of the PAFs.

During implementation stage of the R&R plan, regular monitoring of R&R activities is conducted through an external independent agency to ensure timely extension of R&R benefits to the PAFs. Similarly, after completion of R&R activities laid down under R&R plan, social impact evaluation is carried out by independent external agency to assess various tangible and intangible benefits accrued in the area of socio economic development. The R&R plans have been successfully implemented in 1500 MW Nathpa Jhakri Hydro Power Station (NJHPS) and 412 MW Rampur Hydro Power Station (RHPS) both located in Himachal Pradesh, whereas R&R plan is being implemented in 60 MW Naitwar Mori Hydro Electric Project (Uttrakhand). Several benefits under R&R Plan, like providing alternate agricultural land, allotment of constructed houses in rehabilitation colonies or grant of construction cost to houseless PAFs, suitable employment to eligible landless PAFs or financial assistance in lieu of employment, subsistence allowance have been provided to PAFs. In addition to these benefits, other capital assets have been created which include infrastructure and community development facilities like village paths, roads, panchayat bhawans, school infrastructure, playgrounds, drinking water, health & hygiene etc. The local farmers around RHPS were adequately compensated for reduction in crop yield as per the crop compensation policy of the Government of HP. Besides this, funds of Rs. 55.26 Crores have been spent under Local Area Development Fund (LADF) for carrying out various infrastructural development works. The Social Impact Assessment Study of 210 MW LHEP stage-I (H.P) has been carried out by GoHP empanelled agency.

The social impact evaluation studies of R&R plan implemented in NJHPS and RHPS was carried out by Agro-Economic Research Centre (AERC) of Himachal Pradesh University. The report submitted by AERC revealed that R&R implementation in the project-affected areas substantially enhanced socio-economic standards of the local population on various development parameters.

Shri D.V. Singh, CMD, THDCIL handing over Interim Dividend Cheque to Hon'ble MoS (IC), Power & NRE, GoI, Shri R.K. Singh at Delhi

CHAPTER 27

THDC INDIA LTD (THDCIL)

THDC India Limited is a Joint Venture of Govt. of India and Govt. of Uttar Pradesh. The Equity is shared between GoI and GoUP in the ratio of 3:1. The Company was incorporated in July' 88 to develop, operate & maintain the 2400 MW Tehri Hydro Power Complex and other Hydro Projects. The Authorised Share Capital of Corporation is Rs. 4000 Cr. Paid up Capital of the Company as on 31.03.19 is Rs. 3654.87 Cr and Rs. 4 Cr. as share capital pending allotment.

THDCIL was conferred 'Miniratna Category –'I' status in Oct'09 and upgraded to Schedule 'A' company in July'10 by the Govt. of India.

The 2400 MW Tehri Hydro Power Complex on the river Bhagirathi comprises of Tehri Dam & HPP (1000 MW), Koteshwar HEP (400 MW) and Tehri PSP (1000 MW). The Company successfully commissioned Tehri Dam & HPP (1000 MW) Stage-I and Koteshwar HEP (400 MW) in 2006-07 and 2011-12 respectively. 1000 MW Tehri PSP is under construction and is anticipated to be commissioned by June-22.

Vishnugad Pipalkoti Hydro Electric Project (444 MW) on the river Alaknanda in Uttarakhand is under construction. The Project is funded by World Bank. The Project is anticipated to be commissioned by Dec-22.

Dhukwan 24 MW Small Hydro Project (SHP) in Distt. Jhansi (UP) is under construction and scheduled to be commissioned by Oct-19.

THDCIL has also updated DPR of Sankosh HEP (2585 MW) and Bunakha HEP (180 MW) in Bhutan. Bunakha HEP is proposed to be implemented in Joint Venture with Bhutanese PSU.

Towards diversification of the Company into other energy areas, THDCIL has signed MOU for development of coal based 1320 MW Super Thermal Power Plant at Khurja in the state of Uttar Pradesh. Further, CCEA has approved investment approval on 07.03.2019.

THDCIL has also diversified into non- conventional and renewable sources of energy. THDCIL has successfully commissioned 50 MW Wind Power Plant at Patan, Gujarat on 29.06.16 and 63 MW Wind Power Plant at Devbhumi, Dwarka, Gujarat on 31.03.2017.

MoU has been signed with Solar Energy Corporation of India (SECI) on 13.02.2015 for setting up Grid Connected Solar Power Projects up to 250 MW capacity, of which it is proposed to initially take up 50 MW in the state of Kerala.

Tehri Dam Project constructed and owned by THDCIL has won the prestigious award of "International Milestone Project" of International Commission of Large Dams (ICOLD). Koteshwar HEP (400 MW) of THDC India Limited has won "PMI India 2012 Best Project of the year Award". Koteshwar HEP has also won "5th CIDC Vishwakarma Award-2013". THDCIL had been conferred Scope Meritorious Award for Corporate Social Responsibility and Responsiveness in the year 2012. THDC India Limited received First and Second Prize of "Indira Gandhi Rajbhasha Award" on the occasion of Hindi Diwas on 14th Sep-14 for the F.Y. 2012-13 and 15th Nov-14 for the F.Y. 2013-14 and third prize for year 2014-15 on 14th Sept-15 from President of India. THDC India Limited has been conferred with the Gold Trophy & a Citation under Prestigious "SCOPE Award for Excellence" for outstanding contribution to the Public Sector Management in the Institutional Category II (Mini Ratna I & II PSEs)" on 11.04.2016 for the year 2013-14. THDCIL received "Green Tech Platinum HR Leader Award" at Mumbai on 06.05.2016. "CBIP award for best maintained structure to Tehri Hydro Power Plant" has been received on 29.12.2016 at Delhi. For outstanding contribution to the Nation by use of latest technologies and Smart solutions, THDC India Ltd has been conferred with "CBIP award for Best Performance Utility in Hydro Power Sector" on 04.01.2019.

OPERATIONAL PERFORMANCE

THDCIL at present is generating power from Tehri HPP, Koteshwar HEP, Patan Wind Farm and Dwarka Wind Farm with total installed capacity of 1513 MW. Hydro Power generated is supplied to 09 beneficiary States / UT of Northern Region and Wind Power is supplied to State of Gujarat.

During the year 2017-18, Tehri Power Station generated 3080 MU of energy against a target of 3014 MU and Koteshwar HEP generated 1220 MU of energy against a target of 1225 MU. The reservoir operation committed to provide water for drinking to Delhi & UP and for irrigation in the command area.

During the current FY 2018-19, THDCIL has generated 4687.84 MU of energy against target of 4590 MU. Out of which, 3712.15 MU, 1213.79 MU, 108.32 MU and 183.51 MU is generated from Tehri HPP, KHEP, Patan WF and Dwarka WF respectively.

During the current FY 2018-19, Production Effeciency parameter (PAF) of Tehri HPP and KHEP stood at 84.521 % and 68.028 % respectively, while weighted average of these Hydro Plants was 79.809 % against target of 76.934 %. The Capacity

Utilisation factor (CUF) of Patan Wind Farm (WF) and Dwarka WF stood at 24.23 % and 33.25 % respectively, while weighted average of these Wind Plants was 29.48 % against target of 25.182 %.

FINANCIAL PERFORMANCE

The total income of the company during the Year 2017-18 is Rs. 2228.73 Cr. as compared to Rs. 2235.97 Cr. during the Previous Year (2016-17). THDCIL has earned a Net profit of Rs. 778.74 Cr. during the year 2017-18 as compared to Rs. 711.23 Cr. during FY 2016-17. The Net Worth of the Company as on 31.03.2018 was Rs. 8511.27 Cr. against Rs. 8100.81 Cr. as on 31.03.2017.

COMMERCIAL PERFORMANCE

Tariff order of Koteshwar HEP (400 MW) for the period 2011-14 and 2014-19 has been issued by Hon'ble CERC on 05.09.2018 and 09.10.2018 respectively. Review Petitions against these orders were filed on 10.10.2018 and 20.11.2018 respectively. Order of Review Petitions are kept reserved by Hon'ble CERC. Annual Fixed Cost (AFC) for F.Y. 2018-19 is Rs. 465.46 Cr.

For the financial year 2018-19, as on 04.04.2019, bills amounting to Rs. 2887.86 Cr. have been raised towards sale of energy. Revenue realization of Rs. 2402.07 Cr. achieved during the financial year 2018-19. As on 31.03.2019, principal outstanding dues for more than 60 days is Rs. 1335.79 Cr.

Power Purchase Agreements were signed with GUVNL, Gujarat for Wind Power Plants of 50 MW capacity at Patan and 63 MW capacity at Dwarka. Both plants have become operational. Since the PPAs were signed pro-actively and expeditiously and the plants became operational before 31st March 2017, both plants became entitled to receive Generation Based Incentive also @ Rs. 0.50/kWh of energy generated from these plants.

Power Purchase Agreement has been signed with UPPCL, Uttar Pradesh for Dhukwan Small Hydro Project (24 MW).

PROGRESS OF ONGOING PROJECTS

In Uttarakhand:

Tehri Pump Storage Plant (PSP) (1000 MW)

Investment approval was accorded in July-06. RCE-I for Rs. 2978.86 at PL Apr-10 was approved in Nov-11.

EPC/Turnkey contract has been awarded to consortium of M/S Alstom Hydro France and Hindustan Construction Company on 23rd June-11. Work on the Project commenced w.e.f. 27th July-11.

The Project cost is to be funded with a Debt Equity ratio of 70:30. Term Loan for Rupee portion of Rs. 1500 Cr. sanctioned by SBI Consortium (and drawn Rs. 1227.65 Cr.), which has been fully repaid by availing Rs. 600 Cr. loan from Bank of India and balance from Punjab National Bank. For Off-Shore Component, Loan Agreement has been executed with Societe Generale S.A. Bank, France for EURO 83.86 Million on 5th Feb 2015.

Project works progressed at slow pace due to fund crisis with the Contractor M/s HCC and strike by HCC workers. However, THDCIL is making all out efforts to bring the project works back on track.

Excavation with extensive stabilization measures in Surge Shafts, Penstock Assembly Chamber, Penstocks, Butterfly Valve Chamber, Bus Bar Galleries, Machine Hall and Tail Race Tunnels and for Outlet Slope Stabilization are in progress. In Machine Hall, out of total excavation of 226920 Cum, Cumulative excavation done is 225919 Cum. Power House excavation is expected to be completed by June-19. Concreting in TRTs, Bus Bar Galleries and Control room area is under various stages of progress. However excavation of Unit-5 has already been completed.

In Power House, pre-comissioning activities including Load Testing of both EOT Cranes has been completed. All 04 Generator Step Up (GSU) Transformers and erection of associated accessories has been completed.

Erection of GIS and GIB works are under progress.

Febrication of ferrules of Penstock Steel Liner has been completed. Supply of Electro-Mechanical equipment is in progress. Equipment / Material worth Rs. 823.14 Cr. have reached at site.

Project is targetted to be commissioned by June-22. Expenditure incurred on Tehri PSP Project till March-19 is Rs. 2792.49 Cr. including IDC & FC of Rs. 525.44 Cr.

Vishnugad Pipakoti HEP (444MW)

Govt. of India accorded investment approval for the execution of VPHEP in Aug-08 at a cost of Rs. 2491.58 Cr. including IDC & FC of Rs. 366.83 Cr. at March-08 PL.

Construction of project is proposed to be funded with a debt:equity ratio of 70:30. The equity portion; 50 % is to be shared by THDCIL and remaining 50 % is to be shared by GoI & GoUP in the ratio of 75:25 respectively. For funding of debt portion (70 %) of the Project, loan agreement for USD 648 million has been signed with International Bank for Reconstruction & Development (IBRD) on 10th Aug-11.

Contract agreement for Civil & HM works has been signed on 17.01.2014 with M/s HCC with completion period of 54 months.

Contract agreement for EM works has been signed on 18.11.2014 with M/s BHEL with completion period of 48 months. Model testing of Turbine has been successfully completed in BHEL, Bhopal on 01.08.2015. Design documents of Turbine, Generator, Excitation system and various auxiliaries are approved. Balance Design and Engineering work is in progress.

The Alaknanda river has been diverted on 02.04.18. The main project works in progress are excavation of underground desilting chambers, excavation/concrete of intake tunnels, development of TBM platform, assembly of TBM, construction of TBM launching chamber, construction of Power House and Transformer hall, excavation of Adits to Surge Shaft / Surge Tank, excavation of downstram Surge Tank, construction of portion of HRT by DBM & excavation of TRT. The TBM is scheduled to be commissioned and Trial Run by June-19.

Project works progressed at slow pace due to fund crisis with the Contractor M/s HCC and strike by HCC workers. However, THDCIL is making all out efforts to bring the project works back on track.

The project is targetted to be commissioned by Dec-22. The expenditure incurred on VPHEP project till Mar-19 is Rs. 1604.36 Cr. including IDC & FC of Rs. 92.78 Cr.

Other Projects:

Jhelum Tamak HEP (108 MW), Gohana Tal HEP (50 MW) of THDCIL have been affected due to Hon'ble Supreme Court order of Aug'2013 staying environment & forest clearance till further orders.

In Uttar Pradesh:

Dhukwan Small HEP (24MW)

Around 94% Civil works have already been completed.

In Unit-1, after completion of concreting of Generator barrel, Stator has been lowered. Assembly of Rotor at Service Bay is under progress. In Unit-2, concreting for Generator Barrel is in progress. While in Unit-3, Ultrasonic Test (UAT) including Hydrostatic Test (HST) of Spiral Case has been completed.

Switchyard Control Room Building works have been completed. Genterator Transformer (Unit-1, 2 & 3) have been shifted to their foundations. Embedment work for cable trays have been completed in Bay 4, 5 & 6.

Erection & Commissioning of Barrel Gates, Power Intake Gates including Trash Rack and Automatic Tilting Gate at Spillway have been completed.

The project is targeted to be commissioned by Oct-19. The expenditure incurred on Dhukwan project till Mar-19 is Rs. 255.18. Cr including IDC & FC of Rs. 7.43 Cr.

KHURJA STPP-1320 MW:

- Subsequent to PIB clearance in meeting held on 27.02.19, CCEA has also approved Investment Approval for Khurja Super Thermal Power Plant (STPP) in District Bulandshahar of Uttar Pradesh and Amelia Coal Mine in District Singraulli, Madhya Pradesh at an estimated cost of Rs. 11,089.42 Cr. and Rs. 1587.16 Cr. (at Dec-17 PL) respectively on 07.03.19.
- Hon'ble Prime Minister has also inaugurated Khurja Super Thermal Power Project on 09.03.19.
- Cost of power to be generated from this project is Rs. 3.61/ unit (levelised). First year tariff is estimated as Rs. 3.90/unit.
- Environmental Clearance to the project already stands accorded. Water commitment for 53 Cusec water from Upper Ganga Canal already obtained from Water Resources Department, GoUP. Revised Clearance for construction of 275 M high Chimney has been obtained from Airport Authority of India on 19th April-18.
- Physical possession of total 1200.843 Acres land including Gram Sabha land has been obtained. Land acquisition process by NHAI, for re-routing of National High way (NH-91) is in advance stage. After approval of DPR for Railway Siding by Indian Railways, acquisition of land is under process. Social Impact Studies has been awarded and report shall be ready by July-19.
- Out of 07 packages, technical bid for Turbine Generator packages and Steam Generator packages have been opend on 05.04.19 and 10.04.19 respectively, while preparation of tender documents for balance 05 packages is in progress.
- 1st & 2nd Unit is proposed to be commissioned in 48 months & 54 months respectively from the date of investment approval.
- The expenditure incurred till Mar-19 is Rs. 494.57 Cr.

Amelia Coal Mine:

- Allotment Order of Amelia Coal Mine to THDCIL has already been issued on 17.01.17. Mining lease for Amelia Coal Mine is already vested to THDCIL. While Environment Clearance issued in name of Prior allottee, shall be transferred in THDCIL name after grant of Ist Stage Forest Clearance.
- A total of 1411.61 Ha. land {336.59 Ha. Private / tenancy land, 178.13 Ha lease hold Revenue land, 53.13 Ha Revenue land for R&R site and 843.76 Ha. Forest land} for Amelia Coal Mine is under different stages of clearances.
- Stage-I Forest Clearance for diversion of 843.76 Ha forest land has been accorded by MoEF & CC on 12.12.18. An amount of Rs. 157.56 Cr. has been deposited in CAMPA account on 28.03.19 against NPV charges, Compensatory afforestation and SMC charges.
- MoU for diversion/shifting of existing 3 HT lines passing through Amelia Coal Mine has been signed with PGCIL on 28th March 2019 and an amount of Rs. 19.14 Cr. has been paid.
- Tender documents for selection of Mine Developer and Operator (MDO) for development and operation of Amelia Coal Mine for Rs. 1397.89 Cr. has been prepared and are under review.

The expenditure incurred till Mar-19 is Rs. 294.85 Cr.

MAHARASTRA

THDCIL submitted DPR of Malshej Ghat PSS with enhanced installed capacity of 700 MW to GoMH on 16th Sept-10. The EIA studies have been completed and the draft EIA / EMP report is ready.

THDCIL has submitted its consent on implementation of project through JV of THDCIL-NPCIL and Govt. of Maharashtra with 30% equity participation of Govt. of Maharashtra in the new JV. Signing of implementation Agreement is awaited.

PROJECTS - IN BHUTAN

Under Indo-Bhutan cooperation in power sector development, THDCIL has updated DPR of Sankosh HEP (2585 MW) and Bunakha HEP (180 MW) in Bhutan.

Presentation on final updated DPR of Sankosh HEP was made by THDCIL to Commissioner, Ministry of Water Resources, New Delhi on 17.07.17 for international clearance and one set of DPR submitted to MoWR. As per MoU with RGoB, final updated DPR of Sankosh HEP has been provided on 11.08.17. As per communication from DHPS, RGoB on 28.02.19 to update EIA and EMP studies, same are being updated as per site observation.

DPR for Bunakha HEP (180 MW) has been techno- economically concurred by CEA. Final DPR submitted to RGoB has been approved by the cabinet of RGoB in Feb-14. Bunakha HEP (180 MW) is proposed to be implemented in joint venture with Druk Green Power Corporation, Bhutan. Modalities for formation of JVC are being finalized.

Further, discussion at various levels at MoP and MEA, GoI are being held for implementation of Bunakha HEP.

KERALA SOLAR POWER PROJECT

As part of the National Solar Mission of Govt. of India for harnessing Clean Power, THDCIL has committed development of 250 MW Solar PV Projects to MNRE.

THDCIL & SECI have signed an MoU on 13.02.15 for setting up 250 MW Solar PV Projects in India. A Tripartite agreement amongst SECI, Kerala State Electricity Board (KESB) and THDCIL was signed on 31.03.15 for development of 50 MW Solar project in the 200 MW Solar Park at Distt. Kasaragod, Kerala.

After rigrous persuation by THDCIL & intervention of MoP with Kerala State Govt. from April-15 to Dec-18 for allocating the land & signing of Power Sale Agreement (PSA) for 50 MW solar park in District Kasargad-Kerala, PSA has now been signed between KSEB & THDCIL on 16.01.19 with upper cap limit of Rs. 3.10/unit, subject to discovery of tariff through competitive bidding and approval thereof from Kerala State Electricity Regulatory Commission (KSERC).

Land use agreement and implementation agreement have also been signed between THDCIL and Renewable Power Corporation of Kerala Ltd (RPCKL) on 7th Feb-19. Rs. 25.4 Cr. have been deposited with RPCKL by THDCIL as one time upfront development charges of Solar Park.

After issue of NIT for 50 MW Solar Project on 8th Feb-19, pre bid meeting is held on 27.02.19. Evaluation of bids is under process and work is likely to be awarded by May-19.

CHAPTER 28

DAMODAR VALLEY CORPORATION (DVC)

INTRODUCTION:

Damodar Valley Corporation, the first major Multipurpose Integrated River Valley Project of the country, conceived in line with Tennessee Valley Authority (TVA), came into existence on 7th July, 1948 by an Act of Central Legislature keeping in view of the integrated development of Damodar Valley region in the States of Bihar (presently Jharkhand) and West Bengal.

INSTALLED CAPACITY:

Thermal Power Generation Capacity of DVC at present is 7090 MW & Hydel Power Generation Capacity is 147.2 MW.

GENERATION PERFORMANCE:

Performance of Total Thermal Units (7090 MW) & Hydel Units (147.2 MW):

DVC Units	FY 2017-18	FY 2018-19	
		CEA Target	Actual Generation
Thermal Generation (MU)	35691	35589	36677
Thermal PLF (%)	56.04	57.30	59.05
Hydel Gen (MU)	267.2	205	186.4

Performance Highlights in 2018-19:

- In FY 2018-19, DVC achieved highest ever thermal generation of 36677 MU exceeding CEA target by 1088 MU.
- It has surpassed the previous record of 35691 MU achieved in FY 2017-18. It has also achieved lowest ever APC of 6.97 % in FY 2018-19 (previous best was 7.22 % in FY 2017-18) and lowest ever SOC of 0.63 ml/kwh in FY 2018-19 (previous best was 0.65 ml/kwh in FY 2015-16).
- On 24th April 2018, DVC achieved highest ever instantaneous Ex-Bus generation of 5763 MW at 02:59 Hrs. surpassing the previous record of 5657 MW. DVC also achieved highest ever daily generation of 136.44 MU on 24th April 2018 surpassing the previous record of 135.90 MU.

Financial Performance - 2018-19

SL	Particulars	(Provisional)
		April-18 to March-19
	Physical	
1	Plant Load Factor (%)	59
2	Sale of Power (MU)	36,440
	Financial (Rs. Crore)	
3	Revenue (Power) (A+B)	16,158
	A. Sale of Power	15,558
	B. Misc. Income	600
4	Revenue Expenses	17,286
5	Profit (Loss) from Power (3-4)	-1,128
6	Surplus (Deficit) on Irrigation & Flood Control)	-57
7	Net Profit (Loss) (5+6)	-1,185

CAPACITY ADDITION PROGRAMME AND ACHIEVEMENTS:

Performance Highlight in 2018-19:

- **Bokaro-A TPS (500 MW):** Coal feeding is being done through Inter-connecting Coal Handling route from existing coal handling system of BTPS-B plant. Balance part of new Coal handling system to feed coal directly from track hopper is expected to be commissioned by April 19.
- **Koderma TPS (2x500 MW):** Ash pond work recommenced from June 2017 after resolution of law and order issues. However, BHEL's sub-contractor (M/s NECL) has recently stopped construction activity of permanent ash pond owing to non-settlement of commercial issues between BHEL & NECL. DVC is in the process of floating tender for completion of balance part of permanent ash pond work with ash water recovery system at the cost of BHEL. Balance work is expected to be completed by December 2019.
- **Raghunathpur TPS Ph-I (2x600 MW):** Rail linkage work was started in October 2017. Railway infrastructure work is being carried out by M/s RITES. As of now, 13 Km out of 17.60 Km of rail linking work for single line connectivity has been completed from Jaichandi Pahar Station (JOC) to RTPS Plant. Single line connectivity for coal transportation is expected to be completed by June 2019.
- **Raghunathpur TPS Ph-II:** Decision was taken during DVC Board meeting held on 24.03.2018 to start discussion with respective vendors for revival of the contracts short closed earlier and also to undertake Due Diligence Study by engagement of a reputed consultant. Accordingly, on 26.07.2018, M/s Deloitte Touche Tohmatsu India LLP was engaged as consultant through open tendering for carrying out "Due Diligence study with respect to revival of RTPS Ph-II". Discussions with vendors have also been held to firm-up contract price in respect of changed scenario. M/s Deloitte submitted report on 24.01.2019 inviting comments from DVC for preparation of final report. Comments and additional data / information sought by M/s Deloitte had been provided. Final Report from M/s Deloitte is expected by April'19. On submission of due diligence report by the consultant, matter will be placed before DVC Board for further decision.
- **Pump Storage Hydro generating station at Lugu Pahar (6x250 MW):** The project has been contemplated on Bokaro River at Lugu Pahar, Bokaro district of Jharkhand. Pre-feasibility report has been prepared by M/s WAPCOS Limited. Stage-I clearance received from MoEF & CC, GOI. Engagement of consultant for preparation of DPR is under consideration.
- **50 MWp ground mounted solar PV station at Panchet:** In accordance with GOI's mission towards renewable energy, DVC has planned to set up 50 MWp ground mounted solar PV station at Panchet under Design-Built-Operate & Transfer (DBOT) model through Open Tendering process.

TRANSMISSION & DISTRIBUTION (T&D) SYSTEM:

Transmission and Distribution (T&D) network of DVC is spread over Damodar Valley command area and beyond. It is acting as a backbone for evacuation of power from DVC Generating Stations and distribution of the same to the Firm Consumers. It also transmits power to the interstate beneficiaries e.g. Karnataka, Kerala, Delhi, Punjab, Madhya Pradesh, Jharkhand & West Bengal Discoms as well as international beneficiaries e.g. Bangladesh.

T&D network of DVC comprises of 36 nos. of EHV Sub-stations, 13 nos. of 33 kV Receiving Sub-stations and 12 nos. Switchyards at the Generating Stations. These are connected through 6014 Circuit KM of EHV transmission lines at various voltage levels and 1533 Circuit KM of 33KV lines for distribution of power.

To maintain steady and reliable power supply, execution of T&D projects towards erection and commissioning of 731 Circuit KM of 220kV line, 60 Circuit KM of 132kV line and one no. 220kV Sub-station are in progress. Further, renovation and augmentation of age old control and protection system including related infrastructure of 10 nos. 220kV Sub-station through Power System Development Fund (PSDF), replacement of conductors of old EHV transmission lines, upgradation of transformation capacity at Sub-stations etc. are being taken up to enhance the system stability as well as to take care of the growth in power demand.

During the year, Transmission System availability has been 99.6%, which is well above the CERC benchmark enabling DVC to be eligible for Tariff incentives. Further, for proper upkeep of Sub-stations and lines, thermal imaging of equipment/ lines, DGA of transformer oil, measurement & monitoring of 3rd harmonic leakage current, Tan Delta test of equipment etc.

including planned maintenance strategies have been adopted to elevate the system availability.

To strengthen the existing T&D network further, steps like setting up of 220 kV Sub-station at Burdwan including connectivity with Parulia Sub-station, addition of 220/33kV infrastructure at Kalyaneswari Sub-station & CTPS Switchyard and extension of 132kV system at Jamuria Sub-station have been taken up. Moreover, considering the scarcity of land, DVC is going to adopt GIS technology for new Sub-stations, wherever necessary. DVC is also contemplating the use of newly designed Multi-Circuit towers at 220KV & 33KV Voltage level to cope up with Right-of-Way problems wherever technically feasible.

Overall loss in the T&D System including Generating Stations stood at 3.02% during the year. For proper accounting of T&D system loss and taking remedial measures thereof, DVC is in the process of implementation of 'System Energy Monitoring and Accounting (SEMA)' project covering the entire DVC Grid.

During the year, DVC added 16 new consumers and registered an internal load growth of 75.65 MVA including enhancement of existing contract demand.

Relay & Instrument Testing Laboratory:

DVC's Relay & Instrument Testing Laboratory under Central Testing Circle (CTC), Maithon is one of its kind in the Eastern region having testing facilities for Relays and Instruments as well as all major electrical equipment & switchgear. It achieved a new benchmark when its meter testing cell was accredited by the NABL in accordance with the international standard ISO/IEC 17025:2005. In-house facility for Dissolved Gas Analysis (DGA) of transformer oil, a useful technique for condition-monitoring of transformers has also been introduced in CTC. The department is providing testing and commissioning services across DVC and also extending its available services to various industries/utilities in the region.

Communication System:

In order to keep pace with modern technologies, DVC has successfully laid 1680 KM Optical Fibre Ground Wire (OPGW) cable through its EHV transmission network. Using this, Supervisory Control and Data Acquisition system (SCADA) has been implemented in SLDC at Howrah having connectivity with ERLDC, Tollygunge and DVC Towers. Unified Real Time Dynamic State Measurement (URTDSM) for all the Generating Stations including EHV Sub-Station has been successfully established.

ENERGY CONSERVATION:

DVC has been making continuous efforts to induct efficient and modern practices in Energy Management System to increase the availability of power with lower consumption of coal, oil, water and auxiliary power along with improvement in unit heat rate.

The following measures have been taken for efficient Energy Management System of the Power Plants:

- Co-ordination meeting and monthly Operation Review meeting (at plant level) are held for monitoring of various efficiency & energy conservation parameters, heat rate deviation analysis and remedial action plan thereof.
- O & M Audit including Performance Evaluation Test and Fuel Management of DVC TPSs has been carried out by NTPC Consultancy wing as per the directives of MoP, Govt. of India for performance improvement of energy consumption. 81% of the recommendations made by the said Consultant has been implemented in DVC TPSs. Rest 9% of the recommendations will be undertaken in Long Term planning & 10% in short term planning.
- Introduction of energy efficient equipment like installation of Variable Frequency Drive (VFD) is under progress. Commissioning of VFD at Seal Air Fans of Mejia TPS U#1 has been completed, in U#3 under commissioning and in U#2 under process.
- Energy efficient fan blade assembly procurement is under progress for Cooling Tower fans of Mejia TPS Unit #3. Part of materials received at site and commissioning activity will be taken up shortly.
- Timely replacement & servicing of BFP recirculation valves is carried out to save energy.
- Analysis of different efficiency parameters like Boiler Efficiency, Turbine cycle Heat Rate, HP Heater performance etc, are regularly done and deficit areas are addressed accordingly.
- Measures like combustion optimization, improvement of condenser vacuum, reduction of unburnt carbon, reduction of air leakage from ducts & expansion joints are being taken through improved O&M practices to optimize system efficiency and Aux. Power Consumption.
- Under National Mission of Enhanced Energy Efficiency (NMEEE), Perform, Achieve and Trade (PAT) has been implemented in DVC. In PAT Cycle-I, DVC achieved

Energy Saving Certificate (ESCerts) of 169051 nos. for its Durgapur TPS, Mejia TPS, Bokaro 'B' TPS & Chandrapura TPS for performing better than the BEE target.

- DVC has replaced all existing tube lights /CFL with LED at different office buildings in different field formations of West Bengal in line with national LED program. Retrofitting of tube lights/CFL in different office buildings in Jharkhand area is under way and is expected to be completed by June, 2019.
- Energy Audit at DVC HQ & other office buildings of DVC projects in West Bengal and Jharkhand has been completed.
- Energy Audit has been carried out in all seven thermal power stations of DVC by External Agencies. Implementation of recommendations are in progress.

RENOVATION AND MODERNIZATION (R&M) OF POWER STATIONS:

- DVC has floated EOI on 14.12.18 from potential vendors for R&M of DTPS U#4 & BTPS 'B' U#3 asking proposal to bring down Heat Rate with life extension of 15 years or more including compliance of new environmental norms. EOI opened on 05.03.19. Technical evaluation is under progress.
- BHEL has been entrusted with Up gradation of C&I system of Mejia TPS U#3 (210 MW) and the same has been taken up during ongoing overhauling of unit.
- Digital Processing Unit (DPU) module of C&I control system of Mejia U#4 along with its operating system has been upgraded to latest DPU & operating system by BHEL in January 2019.
- M/s MECON was engaged as a consultant for RLA study, preparation of DPR, Technical specification etc. for Panchet Hydel Station Unit#1. RLA study has been completed. DPR has been submitted by M/s MECON and is being reviewed by DVC.
- M/s MECON has been engaged as Consultant for RLA Study, Preparation of DPR & Technical Specification for R&M/RM&U work of Units # 1 & 3 of Maithon Hydel station.

POLLUTION CONTROL MEASURES & COMPLIANCE OF NEW ENVIRONMENTAL NORMS:

- Installation of Flue Gas Desulphurization (FGD) systems at 9 DVC thermal power units (500 MW & above): – Tender floated for engagement of EPC vendor for implementation of FGD scheme. Evaluation of Bid has recently been completed. Order will be placed after approval of DVC Board.
- Abatement of NOx at 9 DVC thermal power units (500 MW & above): – Tender floated in October 2018 for engagement of EPC vendor. Evaluation of Bid has been completed. Order will be placed after approval of DVC Board.
- ESP augmentation of Mejia Unit # 1 to 4 (4X210 MW): -- NTPC was engaged as consultant for preparation of DPR, technical specification etc. NTPC has submitted FR & DPR. Preparation of Technical specification is under way.
- DVC is putting more emphasis on utilization of Dry Fly Ash (DFA). DFA is sold to cement, brick and block manufacturers etc. Pond ash from DVC is utilized for filling of abandoned mines, low lying areas, construction of roads etc. in compliance of guidelines issued by MOEF & CC from time to time. DVC achieved Highest ever utilization of 33.14 LMT Dry Fly Ash in FY 2018-19 generating a revenue of Rs. 17.61 Crore. Ash Utilization by DVC in FY 2018-19 is 69.81 % which is much higher compared to many utilities.

MINING ACTIVITIES:

Bermo Mine:

Mining activity in Bermo Mine started in 1951. On expiry of Mining Lease in 2016, mining activity has been temporarily closed. DVC is in the process of obtaining renewal of Mining Lease from the concerned State Government with enhanced peak annual production capacity of 2.62 million tonnes.

Khagra Joydev Coal Mine:

Ministry of Coal, GOI allotted Khagra Joydev coal mine to DVC for its Mejia TPS Unit # 7 & 8. This coal block has a mineable reserve of 103 million tonne with peak annual coal production capacity of 3 million tonnes. Most of the statutory clearances have been received for the said mine. Process for acquisition of land is underway. M/s Khagra Joydev Resources Pvt Ltd., a Consortium of GDCL-AMPL-GCL, has been appointed as the Mine Developer cum Operator for undertaking pre-mining and mining activities of the Khagra Joydev Coal Block. Mining Operation is expected to commence in 2019-20.

Tubed Coal Mine:

Ministry of Coal, GOI also allotted Tubed Coal Block to DVC for the end use of coal in its Mejia TPS Unit # 7&8 & Chandrapura TPS Unit #8. It has a mineable reserve of 130 million tonne with peak annual coal production capacity of 6 million tonnes. Acquisition of land within coal block area has been notified by Govt. of India and vested to DVC. Statutory Clearances viz. Environmental Clearance, Forest Clearance etc. are in the process of obtaining approval from concerned State/ Central Government authorities. M/s Develecto Mining Ltd, a Consortium of SICAL-AMPL-GCL, has been appointed as the Mine Developer cum Operator. Mining Operation is expected to commence in 2019-20.

NON-POWER ACTIVITIES OF DVC:

Flood Control & Developmental activities in Water Resources Management:

Introduction:

Out of seven storage reservoirs originally planned in the Damodar Basin, construction of multi-purpose Dams at Tilaiya (1953), Konar (1955), Maithon (1957) and Panchet (1959) was completed in first stage. But designed storage levels could not be achieved due to constraints in acquiring required land for Maithon and Panchet reservoirs from the respective State Governments (Govt. of Jharkhand & West Bengal). In the first-phase, total flood reserve capacity planned was 1.51 million acre feet. But due to non-acquisition of land, flood reserve capacity achieved was only 1.047 million acre feet, which has further reduced to 0.95 million acre feet due to progressive siltation as per the latest capacity survey reports. However, even with partial implementation of the scheme, DVC over the years, has been able to fulfill its primary objective of flood control in the lower valley to a great extent. Further, by judicious operation of reservoirs, all the committed requirements in Damodar Valley area like irrigation, municipal & industrial water supply are fully met, thus achieving efficient water resources management.

Water Resources Management activities by DVC during the year 2018-19 are as under:

Flood Control:

In 2018-19, South – West monsoon had its onset over the entire Damodar Valley area on 16.06.2018 and the same withdrew from the valley on 05.10.2018. Monthly sub-catchment wise departure/deviation (%) from normal rainfall for the entire monsoon period of 2018 (June, 2018 to Oct, 2018) was as follows:

Name of sub- catchment	Jun-18 (%)	Jul-18 (%)	Aug-18 (%)	Sep-18 (%)	Oct-18 (%)	From Jun-18 to Oct-18 (%)
Barakar West	-11.3	-19.6	-28.6	-32.3	-51.2	-27.8
Barakar East	-4.9	+1.1	-20.3	-46.9	-52.1	-24.4
Damodar West	-7.8	-18.2	-21.4	-37.6	-53.2	-25.4
Damodar East	+3.4	+2.2	-24.6	-35.6	-50.6	-21.7
Lower Valley West	-17.5	+9.9	-23.5	-19.8	-49.5	-15.6
Lower Valley South	-15.6	+8.2	-21.2	-19.2	-47.6	-14.6

Therefore, there was a deficit of rainfall during the monsoon in 2018 and the reservoirs level at Maithon & Panchet Dam at the end of monsoon (01.11.2018) were R.L. 468.8 ft. & 406.3 ft. respectively which were below the conservation level. No major flood release was required during the monsoon period.

Irrigation water supply:

Operation and maintenance of Durgapur Barrage and Irrigation System was transferred to Govt. of West Bengal in the year 1964 on agency basis. DVC releases water for irrigation from Maithon & Panchet reservoirs as per the advice of Member Secretary, Damodar Valley Reservoir Regulation Committee (DVRRC) based on the indents placed by Govt. of West Bengal for Kharif and Rabi cultivation in the Lower Valley. Though there is no allocation for Boro cultivation in the Regulation Manual for Damodar Valley Reservoirs, surplus water, if any, available in the reservoirs as on 1st November, is allocated for Boro cultivation after taking into account all the committed requirements during the dry season.

Year	Kharif		Rabi		Boro	
	Water Allocated (lac Acre ft.)	Area Irrigated (lac acre)	Water Allocated (Th. Acft.)	Area Irrigated (Th. acre)	Water Allocated (lac acre ft.)	Area Irrigated (lac acre)
2018-19	10.82	8.26	Nil*	N.A.	Nil**	N.A.

* Due to high deficit in rainfall during monsoon-2018 and as per the request of Govt. of West Bengal, water earmarked for the Rabi quota was supplied for Kharif irrigation in order to save Kharif crops.

** No surplus water was available for Boro irrigation.

Municipal & Industrial (M&I) water supply:

DVC at present supplies water to about 131 agencies (in State of Jharkhand and West Bengal) for municipal and industrial purposes. Total allocated quantity for M&I uses in Jharkhand is 718 MCM/year (435 MGD) and that in West Bengal is 690 MCM/year (415.4 MGD). During the year under review, around 365 MCM & 100 MCM of water were drawn by the consumers in West Bengal & Jharkhand respectively.

Water Investigation and Developmental initiatives:

Status of a few projects taken up by DVC as a part of developmental activities in water resources sector are tabulated below:

Sl.	Name of the Project	Status
1.	Dam Rehabilitation & Improvement Project (DRIP)	Konar, Maithon & Panchet Dams have been included under DRIP. Rehabilitation works under Civil and Hydro-mechanical package of all the three Dams are under progress. Progress of civil work at Konar, Maithon & Panchet are 90%, 55% & 70% respectively. The project is scheduled to be completed in June, 2020.
2.	National Hydrology Project (NHP)	DVC has been included in the National Hydrology Project which is grant-in-aid project for an amount of Rs. 50 crore funded by World Bank, under the aegis of MoWR. Memorandum of Agreement between MoWR, RD&GR and DVC was signed on 04.11.2016. Annual Work Plan for FY 2018-19 & 2019-20 has been approved by MoWR. Work as per the approved Annual Work Plan is under progress. A few major works under progress in NHP are: (i) Construction of Data Centre (ii) Real Time Data Acquisition System (iii) Application of GIS Software (iv) Sedimentation Survey for the DVC reservoirs
3.	Construction of Balpahari Dam over Barakar river in Damodar Valley area	In 134th DVRRC meeting held on 12.05.2016, Chairman, DVRRC requested DVC for multi-reservoir simulation study of reservoirs in Damodar-Barakar Basin including the proposed Balpahari reservoir. The study was completed by DVC in April, 2017 in consultation with Basin Planning and Management Organization (BPMO), CWC, New Delhi and draft report of the study was submitted to all stakeholders (CWC, GoJ & GoWB) in July, 2017 for their comments. In view of certain observations made by DVRRC on the above report during its 137th Meeting held on 15.12.2017, a follow-up meeting of stakeholders was arranged on 30.12.2017 to finalize the demand data in respect of Damodar Valley river system. Comments of DVC were forwarded to DVRRC in Jan-2018. As intimated by Member Secretary, DVRRC in the 140th DVRRC meeting held on 05.02.2019, comments of Govt. of West Bengal were received in Nov-2018. However, it was decided that comments of GoWB needed review and as such, GoWB was requested to review their present water demands and submit the finalized data to DVRRC by Mar-2019. Subsequently, revised simulation study will be carried out by DVC upon receipt of the finalized demand data from DVRRC. However, construction of the proposed Balpahari Dam may be considered only if technical/financial/administrative aspects of all the stakeholders are taken care and firmed up.

4.	Implementation of guide curves for unified control of reservoirs in Damodar - Barakar basin including Tenughat Dam.	Modified Guide Curves-2016 developed by DVC for the Damodar Valley reservoirs including the new Guide Curve for Tenughat Reservoir of the GoJ have been accepted by DVRRC in its 134th meeting. As decided in the 135th DVRRC Meeting and as per direction of MoP, GoI, the proposal for integrated operation of valley reservoirs including Tenughat was forwarded by DVC to MoWR, RD&GR, GoI in Sep-2017. The matter is under examination in MoWR, GoI.
5.	Construction of Rim Embankment around Maithon reservoir from RL. 495 ft. to 500 ft. for flood storage capacity augmentation.	CWC, NEIC, Shillong was entrusted to carry out "Feasibility Studies for proposed Rim Embankment around Maithon reservoir". A preliminary report as "Pre-Feasibility Report" has been submitted by CWC in Nov-2018. The report has been reviewed by DVC through a presentation by CWC at Maithon on 08-03-2019 and subsequent discussion with CWC authorities at Shillong on 11th & 12th March, 2019. As per observation of DVC, the scheme is not technically and techno-economically acceptable to DVC. Clarification in this regard has been sought by DVC and will be furnished by CWC after some more studies.

ECO-CONSERVATION, AFFORESTATION & SOIL CONSERVATION:

Like previous Year, DVC continued its activities in the field of "In–Situ Soil & Water conservation" in the valley area of "Damodar Barakar" on micro level during F.Y. 2018-19. Besides, certain stipulated terms and conditions laid down in the environmental clearance issued by MoEF, Govt. of India for different Power Projects of DVC also complied by continuing the eco-conservation works so as to facilitate healthy environment in the surrounding area of different Power Stations. Activities like plantation, orchards, herbal plantations, avenue plantation, plantation in ash dumped area in the places of abandoned mines, creation & maintenance of grass land etc were implemented during this ongoing financial year 2018-19. "Pisciculture" and its allied activities were also carried out by this department in the major reservoir of DVC through its Aquatic Resource wings at Maithon as well as in different power project as a CSR activity. Main emphasis were given during the year 2018-19, as follows:

1. Renovation of old water bodies in respect of soil & water conservation in six districts of Jharkhand and one district of West Bengal.

2. Construction of new rain water harvesting structures in the catchment area with a view to enhance micro irrigation potential and bringing more area under multiple cropping system along with augmentation of ground water recharge in the catchment area & prevention of soil surface erosion.

3. Restocking of degraded Forest area in the catchment area of Konar & Tilaya.

4 Nine (9) no. of training programmes were conducted for Government Officers/Staffs/ Professionals /NGOs as per the requirement to handle the schemes under the guide lines for National Mission For Sustenance of Agriculture besides two trainings for Agricultural Engineering students of B.Tech. & M.Tech in the field of integrated Watershed Management. Training Programmes on Pisciculture were organized to motivate the Project affected people to adopt it as a livelihood measure.

5 Multi-layer Green development works in the power projects as per guideline of Ministry of Environment & Forest, GoI, New Delhi includes Avenue plantation, Ash pond Plantation & Landscaping works. Special attention was given to erect vegetative barrier around the proposed ash pond area of KTPP in order to protect adjacent habitation from air pollution.

6 Development of Pisciculture/Aquatic Resource around the reservoir area as well as in the surrounding SIP villages of different power project of DVC through Spawn production, release of fingerlings, Distribution of Spawn to the project affected people, training on reservoir and ornamental fisheries and maintenance of hatcheries at Maithon and MTPS as CSR activities.

7 Soil Testing & fertilizer recommendation and issue of soil health card to the farmers of the catchment area as advisory services.

8 Hydrological monitoring system continued with data collection as to find the quantum of soil erosion in the small streams.

9 Preservation of Natural Resources at Tilaiya and Konar area including maintenance of deer park at Maithon and CTPS under biodiversity activities of the Corporation.

Areas of Operation:-

Jharkhand	Hazaribagh, Chatra, Giridih, Dhanbad, Bokaro, Jamtara, Koderma, Deoghar districts
West Bengal	Purulia district

The detail of achievements during 2018-19 are:

Sl. No.	Parameter	Unit	Achievement during the Financial year 2018-19
A	Soil Conservation		
1	Renovation of Pond	Nos.	120
	a) No. of people benefited through pond renovation (approx)	Nos.	1200
	b) Hectare of land cultivated through pond renovation(approx)	Hectare	960
2	Constructing of new rain water harvesting structures	No. of water bodies	35
	a) No. of people benefited through pond renovation (approx)	Nos.	350
	b) Hectare of land cultivated through pond renovation(approx)	Hectare	280
3	Soil Conservation Training		
	a) No. of training programmes	Nos.	13
	b) No. of Trainees	Nos.	355
4	Eco Development works in the power projects as per Guidelines of Ministry of Environment & Forest, GoI		
	New Creation green Belt at KTPP	Area in Acre	50
	Maintenance of other greenery works including landscaping and beautification work in all the project of DVC both at Lower & Upper Valley	Area in Sq. Mt	9.8 lakhs
5	Advisory Services through Soil Laboratory		
	No. of Soil testing and fertilizers recommendation.	Nos.	1720
6	Afforestation in DVC catchment area		
	Creation Work	Area in Acre	150
	Advance work	Area in Acre	50
7	Hydrological & Silt Monitoring of selected watersheds	No. of stations	08

Sl. No.	Parameter	Unit	Achievement during the Financial year 2018-19
B	Fisheries (Pisciculture Activities undertaken by Aquatic Resource, DVC, Maithon)		
1	Spawn production at Maithon & MTPS	No. in lakh	1032.5
2	Fingerlings production	No. in lakh	35.55
3	Pisciculture in water bodies	Nos.	20
4	Training on Management of Reservoir Fisheries, scientific Pisci-culture in Ponds/Tanks	No. of beneficiaries	113
5	Distribution of spawn/fingerlings to the beneficiaries	No. of beneficiaries benefited	1524

CORPORATE SOCIAL RESPONSIBILITY OF DVC:

Damodar Valley Corporation is mandated to address the issues of social and economic development of the people adversely affected for construction of its plants.

To mitigate the suffering of the people and to reduce the gap between the industrial workers and the villagers residing around its major plants, DVC launched its CSR programme during the year 1981-82. The primary objective of Corporate Social Responsibility (CSR) is socio-economic upliftment of the community residing within 10 KM radius of its major projects. CSR wing of DVC presently operates in 629 villages (West Bengal: 297 villages + Jharkhand: 332 villages) covering 7 districts viz. Bankura, Purulia and Burdwan in West Bengal and Dhanbad, Bokaro, Koderma, Hazaribag Districts of Jharkhand with 4.7 lakhs Population.

The above programme is mainly divided into two types of activities. One, which addresses the issues of social & economic development of the rural masses. These activities are sustainable and continuous in nature. Under this activity different areas which are covered includes;

➢	**Promotion of Primary and Non Formal Education.** (Augmenting school infrastructure and addressing the health & hygiene issues of school children)	➢	**Primary Health, Health awareness & Family Welfare.** (Immunization programme, Awareness camps on various water and vector borne & communicable diseases and Family welfare and Eye operation camps
➢	**Vocational Training and Self-Employment** (Imparting scientific training to Rural youth on Computer operation, Plumbing, Electrical wiring etc.)	➢	**Development of Agricultural & Non-Farming Activities** (Scientific training is provided on agriculture and allied activities).
➢	**Sports, Entertainment and Cultural Activities.**	➢	**Social Forestry and Fisheries** (Distribution of seedlings, Farm Forestry and cage culture on fisheries.).
➢	**Rural Sanitation** (sanitation programme under "Swachh Bharat" mission, mass construction of Toilet in the rural area).		

Second, which is related to infrastructure development programme under which CSR takes up different activities for augmentation of rural infrastructure. Under this programme different rural infrastructures like construction of road, school building, community centre, health centres, irrigation structures, installation and renovation of tube wells and construction of drinking water wells, tube wells etc are being taken up.

Corporation had earmarked Rs. 603 Lakh for socio economic development programme and Rs. 1140 Lakh for infrastructure development programme for the financial year 2018-19. Out of the total fund allocated, an amount of Rs. 825 Lakh has been spent during this financial year, i.e. Rs 350 Lakh towards socio-economic development programme and 475 Lakh towards infrastructure development programme respectively.

E-GOVERNANCE/IT INITIATIVES:

- System has been developed to generate Short Term Open Access (STOA) and Bilateral Bills for DVC Power Consumers.
- Software application has been developed for leave management and employees claim under Employees Self Service (ESS).
- Deep Discovery Inspector and Deep Discovery Analyser have been installed to minimize the cyber threat.
- Tier-III Data Centre empanelled by Ministry of Electronics and Information Technology (MeitY) has been hired.
- Data connectivity to fifty-one locations of DVC have been extended through Optical Ground Wire (OPGW) Network of DVC.
- DVC is regularly providing the desired access to Jharkhand and West Bengal for on-line application and tracking of status for new connection under the ease of doing business.
- Implementation of Network Access Control (NAC) is planned in 2019-20.

Shri R. K Singh, Hon'ble Minister of State (IC), Power and New & Renewable Energy, GOI inaugurates Foundation Day Program of DVC at Science City, Kolkata on 7th July, 2018.

Unveiling of commemorative volume on 70 glorious years of DVC on 7th July 2018 by Shri R.K. Singh, Hon'ble Minister of State (IC), Power and New & Renewable Energy, GOI at Kolkata.

Sri P.K. Mukhopadhyay, Chairman, DVC receiving the Raj Bhasha Kirti Puraskar: 2017-18 from Hon'ble Vice President of India at New Delhi on 14th September 2018.

A Remote Control & Monitoring Room of different Power Plants of DVC inaugurated by Shri R. K. Singh, Hon'ble Minister of State (IC), Power and New & Renewable Energy, GOI at its H.Q. on 7th July 2018.

CHAPTER 29

BHAKRA BEAS MANAGEMENT BOARD (BBMB)

Bhakra Management Board (BMB) was constituted under Section 79 of the Punjab Re-Organization Act, 1966 for the administration, maintenance and operation of Bhakra Nangal Project with effect from Ist October, 1967. The Beas Project Works, on completion, were transferred by the Government of India from Beas Construction Board (BCB) to BMB as per Section 80 of the Act and Bhakra Management Board was renamed as Bhakra Beas Management Board (BBMB) with effect from 15.5.1976.

FUNCTIONS

Bhakra Beas Management Board is responsible for the administration, operation & maintenance of Bhakra Nangal Project, Beas Satluj Link Project & Beas Dam including Power Houses and a network of transmission lines & grid sub-stations. The functions of Bhakra Beas Management Board are:

- Administration, Operation & Maintenance of Bhakra-Beas Projects.
- The regulation of the supply of water from Bhakra-Beas Projects to the States of Punjab, Haryana and Rajasthan.
- The regulation of the supply of power generated at Bhakra-Beas Projects.
- Any other function as the Central Government may assign after consultation with the Governments of States of Haryana, Punjab & Rajasthan.
- The Govt. of India in the year 1999 has entrusted additional functions of providing & performing engineering and related technical consultancy services in field of Hydro Electric Projects & Irrigation Projects.

The works being managed by BBMB are broadly grouped as three large multipurpose projects viz. Bhakra Nangal Project, Beas Project Unit-I (BSL Project) and Beas Project Unit-II (Beas Dam).

The Bhakra Nangal project comprises the Bhakra Dam, Bhakra Left Bank & Bhakra Right Bank Power Houses, Nangal Dam, Nangal Hydel Channel, Ganguwal & Kotla Power Houses and associated transmission system. Bhakra Dam, the majestic monument across the river Satluj, is a high straight gravity concrete Dam rising 225.55 metres above the deepest foundation and spanning the gorge over 518.16 metre length at the top. Gobind Sagar Lake created by the Dam has 168.35 square kilometer area and a gross storage capacity of 9621 million cubic metres. The two power houses, one on the Left Bank and the other on the Right Bank, have a combined installed capacity of 1379 MW. The Ganguwal and Kotla Power Houses fed from Nangal Hydel Channel have an installed capacity of 153.73 MW. The Beas Project Unit – I (BSL Project) diverts Beas Water into the Satluj Basin, rushing from a height of 320 metres and generating power at Dehar Power House having an installed capacity of 990 MW. This project comprises a diversion dam at Pandoh, 13.1 Km long Pandoh-Baggi Tunnel, 11.8 Km long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 Km long Sundernagar-Satluj Tunnel, 125 metre High Surge Shaft and 990 MW Dehar Power House. The Beas Dam at Pong is earth-fill (earth core, gravel shell) dam 132.6 metre high with a gross storage capacity of 8579 million cubic metres. The 396 MW Pong Power House is located in the stilling basin downstream of penstock tunnels.

The total installed generating capacity of the BBMB Power Houses is 2918.73 MW as detailed below :-

Power House	Installed Capacity (No. of machines x Capacity of each in MW)		
Bhakra (Right Bank)	5x157	=	785
Bhakra (Left Bank)	3x126+2x108	=	594
Ganguwal	1x27.99+2x24.20	=	76.39
Kotla	1x28.94+2x24.20	=	77.34
Dehar	6x165	=	990
Pong	6x66	=	396

GENERATION AND TRANSMISSION SYSTEM:

The generation during 2017-18 was 10881 Million Units against the target of 9360 Million Units. The generation of BBMB Powerhouses has been more than the targets for the year by 16.25%. During 2018-19 the generation from BBMB Powerhouses has been 10190.26 Million Units against the target of 9425 Million Units i.e 8.12% higher than the target.

The Powerhouse wise plant availability during 2017-18 has been: Bhakra left Bank 99.99 % (excluding RMU), Bhakra Right Bank 99.98%, Ganguwal 97.22%, Kotla 98.48%, Dehar 99.76% and Pong 95.39%.

The Powerhouse wise plant availability for the year 2018-19 upto 31.03.2019 has been Bhakra Left Bank 99.43% (excluding RMU), Bhakra Right Bank 99.98%, Ganguwal 98.42%, Kotla 99.16%, Dehar 96.79% and Pong 94.27%. Overall plant availability is 97.95%.

The Power generation at BBMB Powerhouses is being evacuated through BBMB Power evacuation system running into 3704.71 Ckt.Km length of 400 kV, 220 kV, 132 kV and 66 kV transmission lines and 24 Sub-stations. The Bhakra Beas Management Board power evacuation system operates in an integrated manner in the Northern Grid with its transmission network spread over the States of Himachal Pradesh, Punjab, Haryana and Delhi. The system is interconnected with transmission system of PGCIL and the states of Punjab, Haryana, Himachal Pradesh, Jammu & Kashmir, Uttar Pradesh, Rajasthan, Chandigarh and Delhi. The availability of transmission system during the year 2017-18 has been 99.68%, whereas the Availability of transmission system during 2018-19 has been 99.69%.

IRRIGATION

At the time of partition of India, about 80% of the irrigated area of pre-partition Punjab went to Pakistan leaving India with very meagre irrigation resources. The mighty Bhakra-Nangal and Beas Projects changed the scenario and turned Northern India into Granary of the Nation. The Bhakra Nangal and Beas Projects have not only brought Green Revolution in the States of Punjab, Haryana and Rajasthan, but also White Revolution by way of record production of milk. The States of Punjab, Haryana and Rajasthan are being supplied about 28 million acre feet of water every year.

RENOVATION, MODERNISATION AND UPRATING (R,M&U)

R,M&U of old Power Houses not only gives new lease of life to the machines but is also a significant step towards meeting the aspirations of the nation by adding low cost green peaking power to the system.

BBMB has undertaken an ambitious R,M&U of its existing hydro generating unit. Through RM&U, BBMB has already added 329 MW of incremental capacity. Presently, R,M&U of 5 No. machines of Bhakra Left Bank Power House is under progress. All the five machines will be uprated from 108 MW to 126 MW each. Three Units have already been uprated from 108 to 126 MW and other two units will be uprated by April/ May, 2020, thus providing additional capacity of 36 MW (Total 365 MW). The contract stands awarded to the consortium led by M/s Sumitomos Corporation, Japan. Total cost of R,M&U works is 489.77 crore approx. (Inclusive of cost of equipment to be procured by BBMB i.e. Generator Transformers, Numerical protection schemes and exclusive of IDC, Bank/Finance/ Legal charges etc.).

The first unit (Power House Unit-2) was commissioned on 18th July, 2013 after successful R,M&U. Similarly, the second Unit (Power House Unit No.5) and the third Unit (Power House Unit No.4) has also been commissioned on 2nd October, 2013 and 05.08.2015, respectively. Based on the report of CPRI, Bangalore of Generator shaft of Unit 5, spare new Generator Shaft (as earlier ordered on M/s Andritz Hydro) alongwith the new spider rim and other related parts ordered on dated 14.10.2016 on M/s Andritz Hydro Gmbh, Austria have been replaced with existing components of Unit No. 5 of Bhakra Left Bank Power House.

The work for the replacement of shaft, spider, rim and other related parts alongwith various activities had been started on 21.10.2016 and put on commercial run on dated 15.06.2018. The Unit is running with output of 126 MW.

The shutdown on the next Power House Unit i.e. Unit No.3 for R M&U works has been taken in first week of April, 2019. However, work of Stator Assembly of Unit No.3 has already started on 22nd January, 2019 and shall be commissioned by November/December, 2019. The R,M&U works of the last 5th Unit (Power House Unit No.1) shall be based on commissioning of fourth unit (Power House Unit No.3). In case shutdown of this unit is taken in the month of September, 2019, the R,M&U works are anticipated to be completed by April/May, 2020.

Automation of 200kV Sub Station

BBMB has taken a significant step in automation of Substations in its Transmission System. Fully automated 220 kV Sub Station at Barnala with remote operation from 220 kV Sub Station at Sangrur (40 km from Barnala) has been commissioned recently at a cost of Rs. 1.7 Crore. The Sub Station is now unmanned with Control Room locked up and no staff is deployed in shift duty. The benefits include reduced O&M cost, increased system reliability, reduced downtime, remote monitoring of operations etc. Similar work for other Sub Station's located at HIssar, Charkhi Dadri Ballabgarh and Samaypur has been initiated.

Roof Top Solar Power Stations

BBMB has commissioned Grid connected Roof Top Solar projects of 435 kWp at 220 kV Substations of Jalandhar, Jamalpur, Narela, Delhi and office buildings at Chandigarh. Further, 1.5 MWp roof top solar PV plants are at different stages of execution at various project sites and substations of BBMB in addition to implementation of Ground Mounted and Floating Solar Power Plants at Nangal and Talwara.

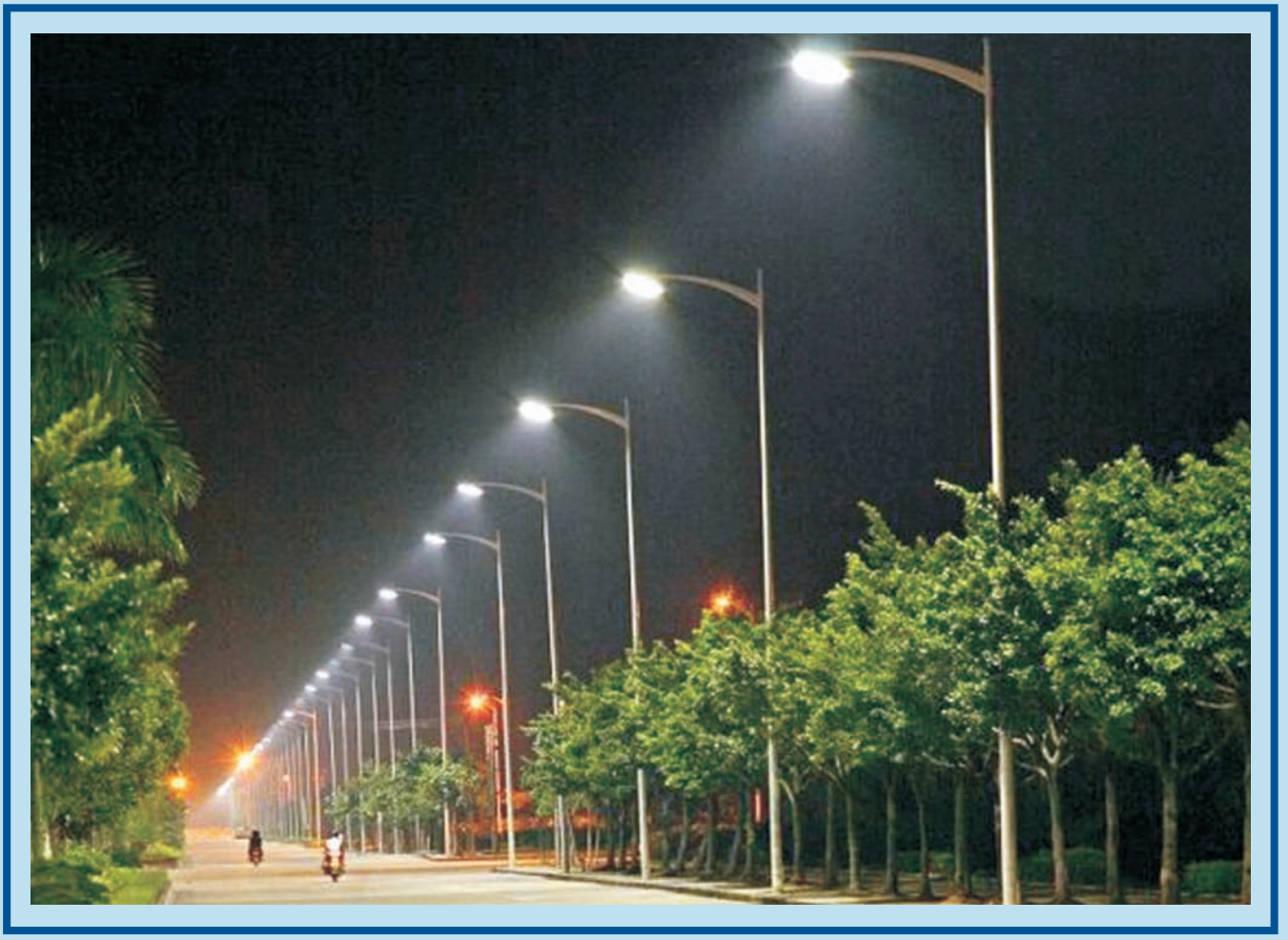
NATIONAL HYDROLOGY PROJECT

Bhakra Beas Management Board (BBMB) has developed Real Time Decision Support System (RTDSS) setup at the Earth Receiving Station (ERS) at Chandigarh for hourly reception of real time meteorological & hydro-meteorological data, inflow forecasting (i.e. short term 3 days, medium term 7 to 15 days and long term), reservoir operations & planning and flood forecasting for optimum utilization of Bhakra & Pong reservoirs and canal network.

Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India in association with World Bank has initiated National Hydrology Project (NHP) in India to carry forward the work & objectives of Hydrology Project Phase-II. To this effect, BBMB has been allocated Rs. 30.00 crore for strengthening and expansion of existing Data Acquisition system (DAS), development of alternate models and technology enhancement along with capacity building in the organisation to achieve better results.

BBMB successfully organized Ist International Conference on Sustainable Water Management on December 10-11, 2018 at Indian School of Business, Mohali under the aegis of National Hydrology Project, Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India. The Conference was inaugurated by Acharya Dev Vrat ji, Hon'ble Governor, Himachal Pradesh. The Conference saw huge participation of representatives from implementing Agencies of NHP, Central/State Govt. agencies, academia, industry, students & participants from abroad, spread over inaugural session, plenary session, 15 nos. technical sessions held simultaneously in three halls, industry session, valedictory session, exhibition, poster competition, cultural programme etc. Thought provoking discussions and presentations were held on various aspects of Sustainable Water Management i.e. river basin planning, conjunctive use of surface and ground water, climate change and adaptive measures, integrated water resources management, hydro-informatics, innovative irrigation practices, flood modeling, water and energy security, sediment management etc.

Bhakra Nangal Dam, Himachal Pradesh



50 W Cool White LED Road Lights

CHAPTER 30

BUREAU OF ENERGY EFFICIENCY (BEE)

The Government of India enacted the Energy Conservation Act (EC Act), 2001 and for implementing various provisions in the EC Act, Bureau of Energy Efficiency (BEE) was operationalised with effect from 1st March 2002. The EC Act provides a legal framework for energy efficiency initiatives in the country. The Act has mandatory and promotional initiatives which broadly relates to Designated Consumers, Standards & Labeling programme for equipment and appliances and Energy Conservation Building Codes (ECBC) for new commercial buildings and residential buildings. The Bureau is spearheading the task of improving the energy efficiency in various sectors of the economy through regulatory and promotional mechanism. Bureau of Energy Efficiency co-ordinates with designated consumers, designated agencies and other organizations recognizes, identifies and utilizes the existing resources and infrastructure, in performing the functions assigned to it under the EC Act.

Mission of BEE

The Mission of Bureau of Energy Efficiency (BEE) is to develop policy and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act (EC Act), 2001 with the primary objective of reducing energy intensity of the Indian economy. This will be achieved with active participation of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

Objectives and Strategies

The primary objective of BEE is to reduce energy intensity in the Indian economy. In order to translate the objectives into result-oriented action, the broad strategies of BEE include:

- To coordinate policies and programmes on efficient use of energy and its conservation with the involvement of stakeholders.
- To plan, manage and implement energy conservation programmes as envisaged in the EC Act.
- To assume leadership and provide policy framework and direction to national energy efficiency and conservation efforts and programmes.
- To demonstrate energy efficiency delivery mechanisms, as envisaged in the EC Act, through Private-Public Partnership (PPP).
- To establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at the national level.
- To leverage multi-lateral, bi-lateral and private sector support in implementation of programmes and projects on efficient use of energy and its conservation.
- To promote awareness of energy savings and energy conservation.

Functions of BEE

BEE co-ordinates with designated consumers, designated agencies and other organizations; recognizes, identifies and utilizes the existing resources and infrastructure, in performing the functions assigned to it under the EC Act. The EC Act provides for regulatory and promotional functions.

Regulatory functions

The major regulatory functions of BEE include:

- Develop minimum energy consumption standards and labeling for equipment and appliances.
- Develop specific energy conservation building codes (ECBC).
- Activities focusing on designated consumers:
  - Develop energy consumption norms.
  - Certify energy managers and energy auditors.
  - Accreditation of energy auditors.
  - Define the manner and periodicity of mandatory energy audits.
  - Develop reporting formats on energy consumption and action taken on the recommendations of the energy auditors.

Promotional functions

The major promotional functions of BEE include:

- Create awareness and disseminate information on energy efficiency and conservation.
- Arrange and organize training of personnel and specialists in the techniques for efficient use of energy and its conservation.
- Strengthen consultancy services.
- Promote research and development.

- Develop testing and certification procedures and promote testing facilities.
- Formulate and facilitate implementation of pilot projects and demonstration projects.
- Promote use of energy efficient processes, equipment, devices and systems.
- Take steps to encourage preferential treatment for use of energy efficient equipment or appliances.
- Promote innovative financing of energy efficiency projects.
- Give financial assistance to institutions for promoting efficient use of energy and its conservation.
- Prepare educational curriculum on efficient use of energy and its conservation.
- Implement international co-operation programmes relating to efficient use of energy and its conservation.

PROJECTS AND PROGRAMMES

Bureau of Energy Efficiency has already launched the following voluntary and mandatory Schemes for promoting Energy Efficiency in India, the details of which have been given in Chapter 11 relating to Energy Conservation:

1. Standards & Labeling Scheme
2. Energy Conservation Building Code (ECBC)
3. Assistance on ECBC to different projects
4. Energy Efficiency in Existing Buildings
5. Agricultural (Ag DSM) and Municipal (Mu DSM) Demand Side Management (DSM) Scheme
6. Strengthening Institutional Capacity of SDAs Scheme
7. Contribution to State Energy Conservation Fund (SECF) Scheme
8. National Energy Conservation Awards
9. Painting Competition on Energy Conservation
10. National Mission for Enhanced Energy Efficiency (NMEEE)
11. Student Capacity Building Programme.
12. Energy Efficiency in Small and Medium Enterprises (SMEs)

CHAPTER 31

CENTRAL POWER RESEARCH INSTITUTE (CPRI)

The Central Power Research Institute (CPRI) established by the Government of India in 1960 was re-organised into an Autonomous Society in 1978 to function as a National Power Research Organization and to serve as a National Testing and Certification Authority for the purpose of certification of rating and performance to ensure availability of equipment of adequate quality for the use under conditions prevalent in Indian Power Systems. The affairs of the Society are managed by Governing Council with Secretary to the Government of India, Ministry of Power as its President. The Governing Council has representation from various Ministries of Government of India, Power Utilities, Manufacturers, Academic Institutions etc.

The Institute has it's Head Office and major laboratories at Bangalore. The Institute has its Units at Bhopal, Hyderabad, Koradi-Nagpur, Noida, Kolkata & Guwahati. Establishment of new unit at Nashik is under progress.

The core activities of the Institute are :

- Research & Development
- Testing & Certification
- Consultancy
- Customised Training Programmes
- Vendor Analysis
- Third Party Inspection Services

Accreditations:

- Accredited as per ISO/IEC 17025:2005
- Member of Short Circuit Testing Liaison (STL) Group
- Corporate Member in DLMS UA (Device Language Message Specification User Association) and UCA IUG (Utility Communication Architecture International User Group)
- ISO 9001:2008 Certification for Research and Consultancy activities
- Accredited by Intertek-ASTA, UK
- Accredited by INMETRO, Brazil for Distribution Transformers
- Association with Underwriters Laboratories (UL) for testing of LV equipment

Important Events:

1. Swachhata Pakwada was observed in CPRI, Bangalore from 16th to 31st May 2018. The following activities were carried out on this occasion:

a) Cleanliness Drive in and around office campus including staff colony of CPRI.

b) Mass Pledge by Employees

c) Awareness campaign in the staff colony & vicinity was done

d) Segregation of scrap in designated yards.

2. Shri V.S. Nandakumar, Director General-CPRI and Mr. M.K. Wadhwani, Additional Director STDS-CPRI, Bhopal, attended 44th Management Committee Meeting of STL, held at KEMA Laboratories, ZKU, Prague, Czech Republic, on 14th & 15th May 2018

3. Shri B.A Sawale, Additional Director, STDS-CPRI, Bhopal attended IEC TC 13/WG11 meeting held at Rigi, Switzerland, from 23rd to 25th May 2018

4. Director General-CPRI attended the review meeting on "Clean Cooking", chaired by the Hon'ble Minister of State (I/c.) for Power & NRE, held at MNRE, New Delhi, on 27th July 2018.

5. Shri Vivek Kumar Dewangan, IAS, Joint Secretary & Financial Adviser, Ministry of Power, New Delhi took a review meeting of CPRI, with Director General-CPRI and other senior officers of CPRI, at CPRI, Bangalore, on 15th July 2018. The meeting was followed with a visit to some Laboratories.

6. The 82nd Standing Committee Meeting was held at CPRI, Bangalore, on 1st October 2018. The Grid Tied Inverter and SPV Module Test facility at Energy Efficiency & Renewable Energy Division, CPRI, Bangalore was inaugurated by Shri Sanjiv Nandan Sahai, IAS, Additional Secretary, Ministry of Power in the presence of Shri Vivek Kumar Dewangan, IAS, Joint Secretary & Financial

Adviser, Ministry of Power and Shri Raj Pal, IES, Economic Adviser, Ministry of Power and Director General-CPRI, on 1st October 2018.

7. CPRI, Bangalore observed "Vigilance Awareness Week-2018" from 29th October to 3rd November 2018. A pledge was taken by all the employees of the Institute on 29th October 2018. In this connection, an essay competition on the subject "Eradicate Corruption-Build a New India" was held for the interested employees on 1st November 2018. The concluding function was organized on 2nd November 2018.

8. CPRI, Bangalore observed 'Rashtriya Ekta Diwas" (National Unity Day) to commemorate the birth anniversary of Sardar Vallabhbhai Patel, on 31st October 2018.

9. Shri V.S. Nandakumar, Director General-CPRI and Shri S. Sudhakara Reddy, Additional Director CPRI, Bangalore participated in the 66th Short Circuit Testing Liaison (STL) Technical Committee Meeting held in CESI at Milan, Italy, on 13th & 14th November 2018.

10. Secretary (Power) reviewed the activities of CPRI at a meeting held on 27th November 2018 at Bangalore, which was attended by senior officers of CPRI.

11. LED lighting test facility was inaugurated at CPRI, Bangalore by Shri Ajay Kumar Bhalla, IAS, Secretary (Power) in the presence of Shri Sanjiv Nandan Sahai, IAS, Additional Secretary, MoP, Shri Vivek Kumar Dewangan, IAS, Joint Secretary & FA, MoP, Shri Raj Pal, IES, Economic Adviser, MoP, Shri Abhay Bakre, Director General, BEE and DG-CPRI, on 27th November 2018.

12. On-the-spot study visit of Parliamentary Standing Committee on Energy consisting of Dr. Kambhampati Haribabu-Chairperson and Hon'ble Members from Lok Sabha & Rajya Sabha on the subject of 'Contribution of CPRI in Development of Power Sector', was held at CPRI, Bangalore, on 23rd January 2019.

13. Shri R K Singh, Union Minister of State (IC) for Power and New & Renewable Energy, Government of India laid the foundation stone of new unit, Regional Testing Laboratory of Central Power Research Institute (CPRI) at Nashik, Maharashtra, on 30th January 2019. The occasion was graced by Shri Chandrashekhar Krishnarao Bawankule, Minister for Energy, New & Renewable Energy and State Excise, Government of Maharashtra, Shri Hemant Tukaram Godse, Member of Parliament (Lok Sabha), Nashik Constituency and Shri Raj Pal, IES, Economic Adviser, Ministry of Power, New Delhi. Director General-CPRI and other senior officers of CPRI were also present on the occasion.

14. Annual Customer Meet- 2018:

The Institute organised the Annual Customer Meet-2018, at CPRI, Bangalore, on 24th August 2018. About 70 Senior Representatives from Utilities and Industries across the country participated in the Meet.

15. State Level Painting Competition on Energy Conservation -2018:

The State Level Painting Competition 2018 on Energy Conservation was held in the premises of Centre for Collaborative and Advanced Research (CCAR), CPRI, Bangalore, on 14th November 2018.

Important Consultancy Activities:

- Metallurgical Analysis of Boiler Tubes (LT-279) for M/s. NTPC-Sail Power Co. Ltd., CPP-II, Durgapur Steel Plant, Durgapur
- Condition Monitoring/ Diagnostic testing on Power Transformers & Lighting Arresters for M/s. NPCIL, Tarapur Atomic Power Station 1&2, Tarapur, BOISAR, Maharashtra
- RLA inspection of turbine and Generator shaft for KSEB, Sabarigiri Hydro plant, Unit #6, Sabarigiri
- Energy audit works for Thermal Power Plant M/s. GMR, Warora, Nagpur, Maharashtra
- Evaluation of performance testing of 2x195 MW cooling towers for Kanti Bijle Utpadan Nigam Ltd. (KBUNL), Muzaffarpur Thermal Power Plant, Kanti, Muzaffarpur
- Protection Audit of 765/400/220 kV, 765/400 kV, 400/220 kV substations for 765/400/220 kV Aurangabad substation and 765/400 kV Padghe substation, for M/s PGCIL, WR-I
- Corrosion mapping of water wall tubes Unit-7, 500mw Boiler for NTPC, Ramagondam

Important Conferences/Seminars/ Workshops organized:

- **National Conference on "Latest Trends in Switchgear & Control Gear – Smart Technologies",**

  National Conference on "Latest Trends in Switchgear & Control Gear – Smart Technologies", held at Hotel Noor-Us-Sabha Palace, Bhopal, on 23rd & 24th February 2018

- **Training program on "Awareness of Cyber Security for Power Utility Engineers"**

  Training program on "Awareness of Cyber Security for Power Utility Engineers", held at RTL-CPRI, Noida, on 13th February 2018

- **Training programme on "Plant optimization"**

  Training programme conducted on "Plant optimization" for M/s. Astone Energy Pvt. Ltd. at ZPC, HWANGE TPS, Zimbabwe by CPRI officers at ZPC, HWANGE TPS, Zimbabwe, from 18th May to 18th June, 2018, 21st May, 2018 to 1st June, 2018 and from 4th June, 2018 to 15th June, 2018

- **National Seminar on "Developments and Wrecks in Overhead Transmission line Components and Accessories"**

  National Seminar on "Developments and Wrecks in Overhead Transmission line Components and Accessories" held at CPRI, Bangalore, on 12th October 2018

- **Two days National Conference on "Switchgear and Controlgear"**

  Two days National Conference on "Switchgear and Controlgear" was organised at CPRI, Bangalore, on 6th & 7th December 2018, by High Power Laboratory, CPRI, Bangalore

- **Two days National Conference on "Recent Trends in Overhead Transmission line towers & Its accessories"**

  Two days National Conference on "Recent Trends in Overhead Transmission line towers & Its accessories" was organised at CPRI, Bangalore, on 20th & 21st December 2018, by Mechanical Engineering Division, CPRI, Bangalore

- **International Conference on "High Voltage Engineering and Technology (ICHVET- 2019)"**

  UHVRL, CPRI, Hyderabad, in technical co-sponsorship with IEEE, Hyderabad Section, organised International Conference on "High Voltage Engineering and Technology (ICHVET- 2019)", at Hotel The Manohar, Old Begumpet Road, Hyderabad, on 7th & 8th February 2019.

- **10th International Conference on "Power Cable Technology, CABLETECH -2019"**

  Cables & Diagnostics Division, CPRI, Bengaluru organized 10th International Conference on "Power Cable Technology, CABLETECH -2019", at CPRI, Bengaluru, on 27th & 28th February 2019.

Participation in Exhibitions

ELECRAMA 2018:- CPRI participated in ELECRAMA 2018, held

at Knowledge Park II, Greater NOIDA, from 10th to 14th March 2018. Honourable Vice-president of India Sri. Venkaiah Naidu inaugurated ELECRAMA 2018 and Sri Suresh Prabhu, Union Minister of Commerce and Industry addressed the Inaugural gathering. CPRI stamped its presence by setting up a stall and showcased CPRI services at the Exhibition.

India Sourcing Fair, Russia:- CPRI participated in the India Sourcing Fair, a 3 day event, held at St. Petersburg, Russia, from 20th to 22nd March 2018. The Power Pavilion, Ministry of Power, Government of India showcased India's Power Potential at the three day India Sourcing Fair -2018, held at St Petersburg, Russia from 20th to 22nd March, 2018.

INDIAN TECHNOLOGY CONGRESS- 2018: CPRI participated in Indian Technology Congress (ITC)- 2018 was held in NIMHANS Convention Centre, Bangalore, on 5th and 6th September 2018 with the theme "Technology First: Making India Innovate, Excel Globally and Prosper".

PowerEx Asia, Thailand: Central Power Research Institute (CPRI) participated in PowerEx Asia 2018 Exhibition organized at Impact exhibition centre, Bangkok, Thailand, from 6th to 8th September 2018. CPRI officers were deputed for manning the stall. CPRI stamped it's presence by setting up a Stall and promoted CPRI services at the Exhibition.

Vibrant Gujarat Trade Show

Central Power Research Institute (CPRI) participated in Vibrant Gujarat Global Trade Show – 2019, organized at The Exhibition Centre, Gandhinagar, Gujarat from 18th to 22nd January 2019, under the integrated power pavilion.

Research & Development (R&D) related activities:

CPRI is the Coordinating Nodal Agency for selection, initiation, execution, review of Research and Development schemes in India under Ministry of Power (MoP). CPRI has been entrusted with the responsibility of administering the R&D Schemes of MoP, as detailed below:

i. R&D Under National Perspective Plan (NPP) Scheme

   a. Projects by IITs, IISc., NITs, Industries & CPRI

   b. Project under Uchhatar Avishkar Yojana-I (UAY-I)

   c. Project under Impacting Research Innovation and Technology-I (IMPRINT-I)

ii. Research Scheme on Power (RSoP)

iii. In-house Research & Development Scheme (IHRD)

Sponsored Projects by other Ministry/ Department/ Institutions/Organizations etc. are also taken up by CPRI officials.

Tests conducted for Overseas Customers

- Short circuit test, Impulse test & Temperature rise test conducted on (a) 10kVA, 6.35/0.240 kV Single phase transformer (b) 100kVA, 6.35/0.240 kV Single phase transformer (c)100kVA, 6.35/0.240 kV single phase transformer for M/s. Confidence Electric Ltd., Dhaka-1215, Bangladesh, at STDS-CPRI, Bhopal, on 12th April 2018.

- Temperature rise test on 20/28 MVA, 33/11.5 kV Power Transformer for M/s. Energypac Engineering Ltd., Dhaka, Bangladesh conducted at STDS-CPRI, Bhopal, on 26th & 27th April 2018.

- Ability to withstand the dynamic effects of short circuit test & Temperature-rise tests carried out on 160kVA 22/0.400kV & 160kVA 33/0.400kV Three Phase Distribution Transformers for M/s. Precise Electric Manufacturing Co. Ltd., Thailand, at Short Circuit Laboratory, CPRI, Bangalore, from 9th to 16th May 2018.

- Ability to withstand the dynamic effects of short circuit test carried out on 200kVA 11/0.415kV & 250kVA 11/0.415kV Three Phase Distribution Transformers of M/s. Electropac Engineering Ltd., Dhaka, Bangladesh, on 19th & 20th February 2019.

Visit of overseas Team to CPRI

- Mr. Mohammed O. Bahamdan, Chief Strategy and Business Development Officer, Mr. Nasser Alqahtani, Industrial Laboratories Manager, Mr. Hamad Alfayez, Consultant of M/s. GCC Electrical Equipment Testing Laboratory and Mr. Fahad Saleh Al-Ismail, Consultant, Prime Energy for Power Engineering Services, Dammam, Saudi Arabia, visited CPRI, Bangalore, from 2nd to 6th August 2018.

- Mr. Andrey Shornikov and Mr. Dmitriy Orekhov of Russian Citizens and Dr. Ashok Singh, Chief of India

Operations Massa LLC., Russia and Mr. Ramappa and Mr. Anup of M/s. Mehru Electricals, Bhiwadi, India visited CPRI, Bangalore on 13th August 2018.

Other important projects under implementation:

- ✓ Electromagnetic Interference (EMI)/Electromagnetic Compatibility (EMC) Test Facility-CPRI, Bangalore
- ✓ Motor Test facility (55 kVA) at CPRI, Bangalore
- ✓ Upgradation of High Power Laboratory from 2500 MVA to 7500 MVA at CPRI, Bangalore
- ✓ On-line Short Circuit Test Facility (350 MVA) at UHVRL, Hyderabad
- ✓ Modern Tower Test Facility at UHVRL – CPRI, Hyderabad
- ✓ Insulating Oil Test Facility at UHVRL – CPRI, Hyderabad
- ✓ Regional Testing Lab. at Nashik, Maharashtra, Comprising of test facility for Transformer, Energy Meter and Insulating Oil
- ✓ Temperature Rise Test facility (40 kA) at CPRI, Bangalore
- ✓ Smart Grid Research Laboratory at CPRI, Bangalore
- ✓ Relocation of Thermal Research Centre-CPRI, Koradi-Nagpur

NPTI (Power System Training Institute), Bengaluru

CHAPTER 32

NATIONAL POWER TRAINING INSTITUTE (NPTI)

National Power Training Institute (NPTI), an ISO 9001 & ISO 14001 organization under Ministry of Power, Govt. of India is a National Apex body for Training and Human Resources Development in Power Sector with its Corporate Office at Faridabad. NPTI had been providing its dedicated service for more than five decades. NPTI has trained over 3,37,000 Power Professionals in regular Programs over the last 5 decades. NPTI is the world's leading integrated power training institute. NPTI is the only institute of its kind with a wide geographical spread and covering a wide gamut of training programs in Power Sector. NPTI's committed faculty is providing excellent training in the Power Sector, which is the most important sector among various infrastructure sectors. A number of training programs for national as-well-as transnational customers have been conducted. These programs have benefited the executives from different organizations. Training provided by NPTI on Generation Simulators has improved Plant Load Factor of Generating Units, has increased the availability of Transmission & Distribution Systems and has decreased Aggregate Technical & Commercial Losses. Thus the training provided by NPTI provides competent human resources for the power sector.

NPTI operates on an all India basis with manpower strength of 224 including 88 officers through its nine Institutes in different zones of the country as per details below:

A. Northern Region

1. NPTI Corporate Office, Faridabad
2. NPTI (Northern Region), Badarpur, New Delhi
3. NPTI (Hydro Power Training Centre), Nangal

B. Southern Region

4. NPTI (Power System Training Institute), Bengaluru
5. NPTI (Hot Line Training Centre), Bengaluru
6. NPTI (Southern Region), Neyveli

C. Eastern & North Eastern Region

7. NPTI (Eastern Region), Durgapur
8. NPTI (North Eastern Region), Guwahati

D. Western Region

9. NPTI (Western Region), Nagpur

Two (2) new Institutes are under construction at Shivpuri, Madhya Pradesh & Alappuzha, Kerala.

Manpower Training and Academic Programs

NPTI conducts the following industry interfaced academic programs with the objective to create a pool of committed and competent professionals equipped with appropriate technical skills to steer the Indian Power Sector:

- One Year Post Graduate Diploma Course (PGDC) in Power Plant Engineering
- One Year Post Graduate Diploma Course (PGDC) in Power System Operation
- One Year Post Graduate Diploma Course (PGDC) in Renewable Energy & Grid Interface Technologies
- One Year Post Graduate Diploma Course (PGDC) in Smart Grid Technologies
- One Year Post Diploma Course (PDC) in Thermal Power Plant Engineering
- One Year Post Graduate Diploma Course (PGDC) in Sub-Transmission & Distribution Systems
- One Year Graduate Engineer Course in Thermal
- Nine Months Post Graduate Diploma Course (PGDC) in Hydro Power Plant Engg.
- Six Months Post Graduate Diploma Course (PGDC) in Transmission and Distribution Systems
- Six Months Post Diploma Course (PDC) in Hydro Power Plant Engineering
- Simulator Training Programs in Thermal, CCGT, Hydro & Load Despatch

In addition to the above, several long-term, medium-term and short-term training programs in the areas of Thermal, Hydro, Transmission & Distribution, Management and Regulatory affairs etc. are being conducted in the various Institutes of

NPTI. Customized training programs for various Power Utilities are also organized round the year. NPTI also conducts various training programs to ensure availability of properly trained personnel covering the syllabus as per Indian Electricity Rules.

NPTI has started collaborative programs with various utilities, academic institutions in order to facilitate training in upcoming new areas of power sectors both in terms of technology development and Human Resource Capacity Building addition/upgradation to meet the National Mission of Govt. of India and also to ensure efficient operation of Transmission, Distribution and Generating Plants(Conventional and Non-conventional).

NPTI has also been catering to the Training Needs of Power Sector Organizations and Process Industries such as Steel, Cement, Aluminum, Fertilizers, Refineries viz., ACC, AEC, APGENCO, BBMB, BHEL, BSES, CEA, CESC, DPL, DVC, ECIL, FACT, GAIL, HINDALCO, HPGCL, IFFCO, IOCL, IREDA, KPCL, KRIBHCO, MPPGCL, NALCO, NEEPCO, NFL, NHPC, NLC, JUVNL, NTPC, OHPC, OPGCL, POWERGRID, RRVUNL, SAIL, THDC, UPRVUN etc.

Power Training Simulators

NPTI has a 500 MW Thermal Power Plant Training Simulator at Faridabad Institute and 210 MW Thermal Power Plant Training Simulator at Nagpur Institute for imparting specialized skills to operation personnel across the country. A 430 MW (2x143 MW Gas Turbines and 1x144 MW Steam Turbine) Full Scope Combined Cycle Gas Turbine Replica Simulator commissioned at NPTI Corporate Office, Faridabad is utilised for training CCGT operation personnel. A High-fidelity Load Dispatch Operator Training Simulator replicating the National Grid is also being used to impart training to System Operators at PSTI, Bengaluru. Training is also imparted to Hydro Operation Personnel on the 250 MW Hydro Simulator commissioned at HPTC, Nangal.

Six (6) Multi-functional training Simulators are being established shortly replicating the real-time operation of 210 MW, 500 MW & 9F GE Combined Cycle Power Plant, 250 MW Hydro, SCADA & Smart Grid together with Smart Power Flow Controllers in an Integrated framework of System comprising Thermal, Hydro, Gas along with Renewables.

A 800MW Supercritical Thermal Simulator has also been commissioned in NPTI, Corporate Office, Faridabad.

Hot Line Training Centre

A facility has been created at NPTI's Hot Line Training Centre, Bengaluru for Live Line Maintenance of Transmission Lines upto 400 kV (first of its kind in Asia) which enables trained personnel to attend to maintenance requirements without power interruptions. Facilities for water washing of sub-station equipments are also available. This institute is one of its kind in the Asian sub continent.

Placement

Students of Post Graduate Diploma Course and Post Diploma Courses are finding placement in reputed companies like Adani, Arcelor Mittal, Amara Raja, Andritz Hydro, Alstom, A2Z Group, Balco, Bhushan Steel, Bajaj Energy, BSES, C&O Group, CLP, Cyan, Emerson, Essar, JSW, Jindal , KVK, Kamachi Power, Kalkitech, L&T, TATA etc.

Achievements during 2018-19

NPTI provided training to 22,850 trainees for a total trainee-week of 65,395 till 31.03.2019

Induction Training

NPTI has been providing induction training to fresh Graduate Engineers/Executives from various Power Sector Organizations: Central Electricity Authority, JBVNL, Power Transmission Corporation of Uttarakhand Ltd., Rajasthan Rajya Vidyut Utpadan Nigam Ltd., Dakshin Haryana Bijli Vitran Nigam Ltd., UP Rajya Vidyut Utpadan Nigam Ltd., Chhattisgarh State Power Generation Corporation Ltd., Bokaro Power Supply Corporation Ltd., Avantha Power & Infrastructure Ltd., Tata Power Company Ltd., LANCO Power, GMR Energy Ltd., Lanco Infratech Ltd., Lanco Vidarbha Thermal Power Ltd., & Udupi Power Corporation Ltd., Sterlite Grid Ltd., CLP (I) Pvt. Ltd., L&T Power Ltd., Torrent Power Ltd. etc.

Other Important Activities

System Operator Certification Examination

NPTI's Power System Training Institute (PSTI) has been conducting Certification of Power System Operators since 2011. Training Courses at NPTI, Corporate Office, Faridabad and Power System Training Institute (PSTI), Bengaluru equip the System operators with necessary inputs to take up the System Operation Certification Exam.

Basic Level On-Line System Operator Certification exams are being conducted since November 2011 every year at various

centres across the country. A total of 1195 System Operators were certified against for the Basic Level Certification Examinations. Specialist courses on 'Regulatory Framework in Power Sector', 'Power System Reliability', 'Renewable Energy Sources and Grid Integration', 'Power System Logistics' and 'Power Market Specialist' are being conducted both at Corporate Office, Faridabad and PSTI, Bengaluru. Examinations on all the specialist level subjects are being conducted. On-Line examinations for Specialist Level Certification have been conducted. As many as 338 System Operators were certified

Consultancy Services

NPTI is providing Project Management Agency (PMA) services for DDUGJY & IPDS Project Works for NESCO & WESCO Utility areas of OPTCL, Odisha & IPDS PMA works for Assam Power Distribution Company Ltd., Assam.

Recently, NPTI has been awarded the TPIA works under Saubhagya Scheme by U.P. Power Corporation.

Major Training Activities

- Third batch of Assistant Directors of CEA is undergoing Induction Training.
- The 2nd batch of Engineers from ADDC have undergone training on "Electrical Protection System"
- Urja Sarthi 2.0 for BSES Rajdhani Power Limited Lineman Training is in Progress also Uttam Urja Sarthi EHV Lineman Training is being conducted.
- Four weeks Familiarization program on cold line Activities for personnel of M/s. Transrail Company from TOGO and BENIN of East Africa.
- Online Renewable Energy Management Centres (REMC) training for System Operators (SLDCs/ RLDCs/ NLDC/ RPCs) on "RE Grid Integration". Commenced on 15th November 2018.
- Induction Training in Power System for Engineers from Power Transmission Corporation of Uttarakhand Ltd (PTCUL).
- Induction Training Program for Jr. Lineman/Fitter and Switch Board Operator of JBVNL, JUSNL & JUVNL.
- Induction Training Program for PGCIL, Kanti Bijlee Utpadan Nigam Ltd., Bharatiya Rail Bijlee Company Ltd., Nabinagar Power Generation Company Pvt. Ltd.
- Refresher training Programs for WBSETCL.
- Various training programs under Suryamitra and Varunmitra are being conducted.
- One day Stake Holder Meet of Power Sector was conducted at Faridabad & Bhubaneswar.
- Two Days National Workshop on "Smart Power Flow Controller for Smarter Grid Applications".
- Two days National Workshop on Large Renewable Energy Grid Integration Challenges and Operational Strategies was conducted at NPTI, Faridabad.
- Two days National Workshop on Regulatory Framework in Electricity Industry in India- Challenges, Governance & Future Roadmap was conducted at Ranchi.
- One Day National Conference on "Smart Distribution Infrastructure-An Efficient & Reliable Technology for Asset Management" was conducted at Kolkata.
- Three days National Workshop on "Recent Trends in Power System Protection' conducted in association with PRDC at PSTI, Bengaluru.
- Functional Training on Project Mgmt. & Engg. Design of Lines & Towers" for Senior Engineers of Maharashtra State Transmission Corporation Ltd.

E-Learning Programs

NPTI is conducting On-Line Certification program on Solar Energy Technology: Fundamental & Applications and E- Mobility and Charging Infrastructre

MoUs

NPTI has signed MoUs with AMU, NIT-Jaipur for training and capacity building activities.

Vision Ahead

- To enhance existing skill sets in upcoming technologies to prepare efficient manpower and maximize employment opportunities.
- To align the programs with the Ministry of Power's objectives and emerging National Electricity Plan for 2017-22 & 2022-27.
- To bring about complete awareness to personnel in the

power sector about MoP initiatives such as DDUGJY, IPDS, UDAY, 24x7 Power for All etc.

- To conduct Skill development Programs in all areas of Generation, Transmission, Distribution, Equipment Manufacturing and Power Trading including Renewable Energy Sources, to achieve the Ministry of Power's target of training and skill development of Manpower.
- To support Country's Smart City Program, Rural development through Training Programs on Smart Grid, Decentralized Generation & Distribution, Demand Side Management (DSM), Peak Load Management with upcoming Electric Vehicle Charging Stations, etc.
- To conduct Programs on Policy & Regulatory Framework, Commercial Aspects, Energy Conservation and Energy Efficiency, Power Markets, Availability Based Tariff & Concept of Deviation Settlement Mechanism, Open Access in Power Sector etc.

Visit of Dignitaries from Ministry of Power on 28-June-2018 at NPTI Corporate Office, Faridabad

CHAPTER 33

PUBLIC GRIEVANCES

Ministry of Power

Public Grievance (PG) Cell of the Ministry is entrusted with the responsibility of redressal of public grievances. In pursuance of this, a link of CPGRAM/PG online portal of Department of Administrative Reforms & Public Grievances (DAR&PG) has been provided on the website of Ministry of Power. All grievance petitions received in the Ministry are examined and forwarded to the concerned Divisions/Organisations for their redressal. As per the guidelines of DAR&PG, the grievances are normally to be redressed within a month.

In compliance of 'Minimum Government - Maximum Governance' and to ensure effective and timely resolution of Public Grievances, time limit for action on the part of nodal cell in the Ministry has been reduced to 10-15 days from 30-60 days in Citizen's/Clients' Charter (CCC) of the Ministry.

Grievance redressal is included as one of the main objectives of Pro-Active Governance and Timely implementation (PRAGATI), an information technology enabled grievance redressal platform launched by the Hon'ble PM. Grievances pending for more than a month are regularly reviewed/monitored at the level of Joint Secretary (Admin/Grievances) through regular meetings with Divisional Heads of the Ministry as well as Director (Grievances) of the organizations under the control of the Ministry.

The Ministry has also given special focus on analyzing the root causes of citizens' grievances and to address these through systemic changes. For example, the organizations are expected to categorize the nature of the grievance, i.e. wages, pension, arrears of delay in compensation for land acquired or recruitment or transfer, for effective and timely disposal. This will help in focusing on quality of disposal and redressal of public grievances in a time bound manner.

During the year 2018-19, 4374 online Grievance petitions have been disposed of out of 4641 petitions received and brought forward from previous year. The disposal rate for the year 2018-19 is 94.2%.

CEA

The Authority has well qualified and dedicated personnel to look after various services and functional activities. The clients can expect prompt response including the details of any formalities required to be fulfilled by them. A Grievance Redressal system headed by a Chief Engineer, designated as Grievance Officer, is functional in CEA. In case of non-fulfillment of any service commitment, the clients can approach Grievance Officer and / or Secretary, CEA at 2nd Floor, Sewa Bhawan, R.K. Puram, New Delhi-110066.

During the year 2018-19, 165 online Grievance petitions have been disposed of out of 176 petitions received and brought forward from previous year. The disposal rate for the year 2018-19 is 93.75%.

PAO

Sh. C. Maheshwaran, Controller of Accounts has been designated as Nodal Officer/Grievance Officer in r/o O/o Chief Controller of Accounts, M/o Power, New Delhi.

NTPC

NTPC has a public grievance redressal mechanism in place for dealing with grievances of public at large. Grievance officers have also been appointed in all Projects/Regional Offices.

Department of Administrative Reforms & Public Grievances have also launched a special Public Grievance (PG) portal for handling public grievances in efficient and time bound manner. NTPC is reviewing grievances received through the PG Portal of the Government of India for resolving the same in time bound manner.

NHPC

A Grievance Policy & Procedures has come into existence in NHPC in the year 1979.

The Grievance Policy & Procedure of NHPC provides for constitution of a Grievance Redressal Authority for the redressal of grievances of the employees.

Grievance Redressal Authority also functions as Public Grievances Redressal Machinery.

Public grievances are monitored through web portal on "Centralized Public Grievance Redressal & Monitoring System" linked with MoP.

On disposal of grievance by NHPC, intimation is sent to the concerned individual & Ministry of Power and status thereof is updated in the system.

POWERGRID

In POWERGRID, the grievances of the citizens on any

issue pertaining to POWERGRID are promptly considered for redressal within the broad parameters of guidelines enumerated by Govt. of India. POWERGRID has designated nodal officers at corporate & Regional offices for systematic & prompt redressal of the grievances of the citizens within stipulated time frames. The issues of public grievances generally pertain to land/ crop compensation for line/ tower construction done by POWERGRID. The grievances are referred to POWERGRID via Ministry of Power, Presidents Secretariat, DARPG, etc. from "PG portal" developed by Dept. of Administrative Reforms & Public Grievances @pgportal.gov.in. This is a Govt. of India Portal aimed at providing the citizens with a platform for redressal of their grievances.

PFC

PFC has a Grievance Redressal System for dealing with grievances of the public at large. The systems are duly notified and the Nodal Officers ensure quick redressal of grievances within the permissible time frame. PFC has also notified Citizen's Charter to ensure transparency in its work activities. The Charter is available on the website of PFC to facilitate easy access.

REC

A Public Grievance Cell has been set up in REC Limited for the purposes of redressing grievances pertaining to rural electrification received from the public. The grievances are redressed in a time bound manner. The Grievance Cell handles Centralized Public Grievance Redress and Monitoring System (CPGRAMS) portal – the platform for citizens for lodging their grievances. The CPGRAMS portal is developed and maintained by the Department of Administrative Reforms & Public Grievances (DARPG), Government of India.

The Public Grievance Cell is headed by the Executive Director (PMD-I & Public Grievance Cell). The contact details are mentioned below:

The Executive Director (PMD-I & Public Grievance Cell)

REC Limited (Formerly Rural Electrification Corporation Limited)

Core-4, Scope Complex, 7, Lodhi Road,

New Delhi – 110003

Contact No. - 011-24362215

Fax No. - 011-24360227

Email - boshcoordination@gmail.com

The contact details of the Executive Director (PMD-I & Public Grievance Cell) are placed on the website www.ddugjy.gov.in.

A summary of the grievances handled in the financial year 2018-19 is given below:

Sl. No	Particulars	Nos.
1	Grievances received from public upto 31.03.2019	282
2	Grievances taken up with States/Dis-coms& disposed up to 31.03.2019.	259
3	Grievances in the process of redressal by States/Power Utilities as on 01.04.2019	23

24X7 CONTROL CENTRE FOR SAUBHAGYA

States have declared saturation of household electrification. To facilitate any left out un-electrified Household in the Country, a 24x7 Control Centre with Toll Free No. 1800-121-5555 has been established in REC Limited.

Citizens for electrification of their houses in any part of the country may inform the Control Centre on the Toll Free Number 1800-121-5555 furnishing their particulars. The details of the Un-electrified Household is being taken up with respective State/Power DISCOM for providing electricity connection at the earliest.

Apart from household electrification, any grievance related to electricity is also being taken up with respective State/Power Discoms for speedy and timely redressal through the 24X7 Control Centre.

NEEPCO

DURING THE YEAR 2018 - 19

1. Total number of grievances received (Till 31st Mar'19) : 34 (thirty four)
2. Total number of grievances redressed : 33 (thirty three)

The grievances received are redressed and disposed of within a few days of receipt. Furthermore, a separate Independent Employee Cell has been established in NEEPCO for looking into the grievances of employees due to transfers and promotions based on the recommendations of the Department of Administrative Reforms & Public Grievances (DAR&PG), Ministry of Power, Government of India.

SJVNL

The organization has a designated Public Grievance Officer at its Corporate Center. During the FY year 2018-19, twelve grievances were received. These grievances pertained to service matters of the in-service/ retired employees and resettlement & rehabilitation aspects of project affected people. Out of these, 10 grievances were redressed and disposed of. Resolution of two cases under process.

THDC

The system of public grievance redressal mechanism is fully established and well maintained by THDC India Limited. The website of Corporation contains all details like designation, address, phone, email etc. of Director (Public Grievance) as well as Public Grievance Redressal Officers of each project / unit nominated by the management.

THDCIL ensure proper and time bound redressal of public grievances lodged on the website of Centralized Public Grievance Redress and Monitoring System (CPGRAMS) which are being forwarded through PG Portal to the dedicated window of THDCIL. These grievances are forwarded from PMO, President Secretariat, Deptt. of Administrative Reforms and Public Grievances (DARPG), Ministry of Power etc. Apart from CPGRAMS portal of DARPG, THDCIL has also its own online system, through which citizens can lodge their online complaints / grievances.

THDC India Limited received 20 public grievances during the year 2018 and all were replied. 04 pending grievances received in the year 2017 were also replied in year 2018. Thus, 24 grievances were replied in the year 2018 and no grievance remained pending of 2017 & 2018. For the period from January to March-19, THDCIL received 03 grievances, out of which 02 were replied and 01 is pending as on 31.03.19.

DVC

DVC has a formal laid out grievance redressal mechanism. DVC has developed an organizational framework in line with the guidelines of Govt. of India to ensure fast disposal of grievances. There is effective internal grievance machinery for its employees at all DVC establishments.

DVC receives the public grievance either directly from grievance petitioners or through Centralized Public Grievance Redress and Monitoring System (CPGRAM)/PG Portal forwarded by DARPG, MOP, DOPPW and President Secretariat. Public Grievance Officer, DVC goes through the representations and comes to a prima facie opinion regarding the gravity of the matter involved and send it to the concerned department for its reply/redressal in a time bound manner. The reply so received in regard to the grievance petition is considered and placed before the appropriate authority for final disposal. In this year 158 cases were disposed till March, 2019.

BBMB

BBMB has devised a proper procedure for redressal of Grievances of the employees. SE/HQs for the Administration of all Chief Engineers of BBMB, Dy.CAO, Nangal for the Administration of FA & CAO, BBMB and Director/HRD for Board Sectt., BBMB Chandigarh are acting as Grievance Officers to listen and redress the grievances of employees/public, Special Secretary, BBMB is acting as Director/Grievances for BBMB as a whole. The said Grievance officers have earmarked first Wednesday of every month to meet the aggrieved employees/ public. Notice has also been displayed in the office of every Grievance officer.

BEE

There is no separate Grievance Redressal Cell in Bureau of Energy Efficiency. Grievances, if any, are being dealt by the Administration Section of BEE.

CPRI

Central Power Research Institute has a separate cell for redressing the staff and public grievances. The Grievance Redressal Mechanism is part and parcel of the machinery of CPRI administration. The role of Public and Staff Grievance cell is primarily to assist the management in redressing the Staff and Public grievance petitions. The grievance received by the cell are forwarded to the concerned section/division who are dealing with substantive function linked with the grievance for redressal under intimation to the complainant. The complaints are either received in person, by post, Fax, e-media or through online CPGRAMS portal. CPRI web portal has direct link to CPGRAMS portal www.CPGRAMS.IN. The CPGRAMS offers

to the staff and public the facility of lodging online grievances, on-line reminders and online view of current status of the grievances. The guideline indeed is that the CPRI deal with every grievance in a fair, objective and just manner. The monitoring of grievances received and disposed of by CPRI under Public & Staff Grievances cell is on a regular basis.

During the year 2018-19 CPRI has redressed several grievance petitions including 23 online grievance petitions both from the staff and general public on matters related to pension, recruitment and promotion policies, medical and staff welfare measures. Suggestions, comments made by the general public have been appreciated and replied.

The following are the details of applications received from January 2018 to March 2019:

Grievance Source	B/F Balance	Receipt During the Period	Total Receipts	Cases Disposed of During the Period	Closing Balance as on 31/03/19	Yet to Assess
Local/Internet	3	8	11	10	1	0
Pension	0	4	4	3	1	0
PMO	1	9	10	10	0	0
Total	4	21	25	23	2	0

NPTI

To redress the grievances, in accordance with the instructions of Deptt. of Administrative Reforms & Public Grievances, Dr. Manju Mam, Director (CAMPS), Corporate Office is functioning as Chief Grievance Officer and Shri N.R. Halder, Dy. Director as Dy. Chief Grievance Officer of NPTI Corporate Office and its Institutes. Apart from this, Grievance Officers are designated at all the Regional Institutes of NPTI. During the period of 1st April, 2018 to 31st March, 2019 as many as 29 cases relating to service matters and other issues were reported out of which all have been disposed-off. Grievance Redressal Mechanism has been uploaded on NPTI website.

CHAPTER 34

RIGHT TO INFORMATION ACT, 2005

Ministry of Power

Under the RTI Act, 2005, the Ministry of Power has designated Under Secretaries/Section Officers as CPIOs and Directors/ Deputy Secretaries as First Appellate Authorities. RTI applications/appeals are received manually as well as online in the Ministry. The Ministry and its organizations/PSUs are linked with 'RTI MIS' online portal of DoPT for processing of RTI applications/First Appeals. It has not only reduced the time period to provide the information but has increased the transparency in dealing with RTI applications and appeals. More than 1600 valid RTI applications and approximately 85 Appeals have been received in the Ministry during the financial year 2018-19 till March, 2019 have been forwarded/ transferred to concerned Divisions/Organizations of the Ministry for further action. The Annual Returns (2017-18) as required u/s 25(3) of the RTI Act, 2005 have been filed on CIC website. As required under Section 4(1) (b) of the RTI Act, 2005, proactive/suo moto disclosures are uploaded on the RTI portal of the Ministry by the concerned divisions of the Ministry. Further, the audit of 'suo motu/proactive disclosure' of the Ministry is under process by Indian Institute of Public Administration, I.P. Estate. New Delhi.

CEA

STATUS OF RTI APPLICATIONS FOR THE PERIOD 01.04.2018 TO 31.03.2019 in CEA.

Requests / Appeals	Transferred cases received from MoP/ other Public Authorities	Total Fresh application received	Cases transferred to other Public Authorities	Total Requests/ Appeals accepted
Requests	345	207	3	508
Appeals	0	64	2	62

PAO

Six cases of RTI were received and all were replied, during the period from 1.12.2017 to 31.12.2018. Sh. Raj Kumar Arora, Sr. Accounts Officer and Ms. V. Chitra, Sr. Accounts Officer have been designated as Public Information Officers for Delhi and Bangalore office and Sh. C. Maheshwaran, Controller of Accounts designated as Appellate Authority for any RTI matters.

NTPC

NTPC Limited has implemented RTI Act, 2005 in true spirit since its inception. In order to implement the same effectively, NTPC has a RTI Cell at Corporate Centre, headed by the Central Public Information Officer (CPIO). Assistant Public Information Officers (APIOs) have also been appointed at all projects/ stations/ offices of NTPC. There is an Appellate Authority who independently disposes off the appeals.

In compliance with Section 4 of the RTI Act, RTI manual is updated on NTPC website annually. From FY 2015-16 NTPC has also started accepting online RTI applications and First Appeals through Online RTI Portal of DoPT.

During the year 2018-19 (till 31st March 2019), 1,515 applications were received under the RTI Act, out of which 1,558 (inclusive of those submitted earlier than Apr'18) have been replied.

NHPC

In compliance with the provisions of the Right to Information Act, 2005, NHPC Limited provided various documents/records on its website during the year.

To enable nationwide access to information, NHPC has designated a Central Public Information Officer(CPIO), an Appellate Authority, Transparency Officer at Corporate Office level and Assistant Public Information Officers at each of the Power Stations/Projects/Regional Offices/units.

During 2018-19 (up to 31.03.2019), 519 nos. applications, 65 nos. 1st stage appeals and 5 nos. of 2nd stage appeals were received under RTI Act, out of which 517 nos. applications, 64 nos. 1st stage appeals and 5 nos. of 2nd stage appeals have already been replied and disposed off respectively.

NHPC has already been linked with DoPT RTI online portal from 01st January, 2016 & thereby accepting online applications since then.

POWERGRID

POWERGRID, a Government of India Enterprise, has taken concrete actions to provide information to the citizens of the country in accordance with the RTI Act 2005. Public Information Officers and Appellate Authorities have been designated at Corporate Centre and Regional Head Quarters and other offices under the provisions of the RTI Act, 2005. As part of compliance of information in line with Section 4(1)(b) is also available on POWERGRID website.

Further, for effective processing, monitoring and management of RTI's and Appeals, web based online RTI portal has been developed in POWERGRID. The RTI portal is expected to facilitate timely reply of RTI/Appeal to applicants by real time monitoring of all RTI's/ Appeals. Also the portal facilitates in generation of various RTI reports as per requirement of CIC, Vigilance & internal consumption and also to analyze measures of system / processes improvements as and when required. The Knowledge bank facility in the RTI web portal facilitates all concerned to access / share important information, replies and latest RTI circulars and guidelines.

PFC

PFC has implemented the Right to Information Act, 2005 to provide information to the citizens of India and also to maintain accountability and transparency in the working of the company. The Company has designated a Public Information Officer (PIO) and Appellate Authority at its registered office for effective implementation of the RTI Act. The relevant information/ disclosures are also made available on the official website (www.pfcindia.com) of the company. During the FY 2018-19 all 103 applications received under the RTI Act, were duly processed and replied to. PFC has also complied with the directions of Central Information Commission (CIC) regarding filing of online Quarterly Returns for the FY 2018-19 (Upto March, 2019).

Further, in order to strengthen compliance of the provisions of disclosures as contained in Section 4 of the RTI Act, 2005, PFC has placed the requisite information on the website of the company.

Besides the above, PFC is also linked with the online RTI Portal of Govt. of India, Department of Personnel & Training.

REC

An independent RTI Cell has been set up in REC for implementation of RTI Act, 2005 and coordinating the work relating to receipt of applications and furnishing information thereto. The RTI Cell also coordinate with the work relating to First Appeal and Second Appeal filed before the First Appellate Authority and Central Information Commission and take steps towards disposal of appeals.

RTI Handbook (both in English and Hindi) has been placed on REC website. The status of RTI Applications & Appeals for the year 2018-19 is given below:

Sl. No.	Particulars	(Nos.) (01.04.2018 to 31.03.2019)
1.	Applications received	553
2.	Applications disposed off	530
3.	First Appeals received by Appellate Authority, REC	33
4.	First Appeals disposed off by Appellate Authority, REC	31
5.	Second Appeals received from CIC	01
6.	Second Appeals disposed off by CIC	01

The details of Departmental Appellate Authority/Public Information Officer are as below:

Sl. No.	Particulars		Address
1.	Departmental Appellate Authority	Shri Ashok Awasthi, Executive Director (Admn./Gen.)	REC Limited (Formerly Rural Electrification Corporation Limited), SCOPE Complex, 7 Lodhi Road, New Delhi-110003. Phone: 011-24368594 (O) Fax No.41757033.
2.	Public Information Officer of REC	ShriShavinderLalBatta, General Manager (Law)	REC Limited (Formerly Rural Electrification Corporation Limited), SCOPE Complex, 7 Lodhi Road, New Delhi-110003. Phone: 011-24368594 (O) Fax No.41757033.

NEEPCO

NEEPCO has implemented the Right to Information Act, 2005 in the true earnestness keeping in conformity with the spirit of the Act to promote transparency and efficiency in its day to day activities and public dealings. A number of officials of the Corporation have been assigned the job of CPIO/PIO/APIO.

The Corporation publishes in its official website, all relevant information under provisions of Section 4 (1) (b) of the RTI Act, 2005.

The Corporation also has been linked to the online system namely RTI Request & Appeal Management Information Systems, "RTIMIS" Portal. Through this portal, on-line RTI Applications to the Corporation are directly marked to the designated Nodal Officer, RTI, who forwards the same to the respective CPIOs of NEEPCO. All the informations regarding processing of the application, soft copy of application, period of pendency, final disposal of the cases etc. are stored online in the CPIO's account.

The RTI applications handled by the Corporation during the current Financial Year 2018-19 (i.e. from 01.04.2018 till 31.03.2019) are as shown hereunder:

1. Number of applications replied : 88
2. Application Fees received : Rs. 780.00
3. Additional Fees received : Rs. 1056.00
4. Number of appeals with First Appellate authority : 8

Satisfactory dissemination of information as sought by the RTI activist is evident from the above details and the Corporation takes a pledge to make the system more efficient in the coming days.

SJVNL

SJVN has complied with all statutory returns and guidelines on the Right to Information Act, 2005. The Various details as required under the Act are hosted on web site www.sjvn.nic.in. In addition to these, various other documents such as the Annual Reports, Delegation of Powers & Code of Conduct etc. are also available on the website.

In order to make the RTI application disposal system more efficient, besides the designated Public Information Officer at the Corporate Head Quarters, other senior Officers at project sites are also designated as Public Information officers. The details of same is available on SJVN website.

THDC

The Company has taken concrete action to provide information to the Citizens of the Country by online linking of RTI application, appeals & reply with "RTIMIS Portal" to comply with Right to Information Act-2005. Nodal Officer (NO) / First Appellate Authority (FAA) / Central Information Officer (CPIO) / all Public Information Officer (PIO) and Assistant Public Information Officer (APIO) are linked to this portal for receiving application and providing information online.

During the year 2018-19, total 136 (One hundred and thirty six) applications were received from Citizens across the Country seeking information of various nature. The information was made available to them in time as per the provision of the RTI Act-2005.

Regarding appeals, during the year 2018-19, twelve (12) appeals have been received by the First Appellate Authority and after examination all the appeals have been disposed off by the Appellate Authority timely.

Besides, during the year 2018-19, two (02) appeals have been filed before Central Information Commission (CIC), New Delhi and same were disposed off by the Commission.

DVC

In order to strengthen the system of RTI implementation in DVC, a RTI Cell has since been set up in Secretariat Department, DVC, HQ, Kolkata. The RTI Cell acts as a nodal point for all RTI implementation issues within DVC, HQ as well as in the field formations of DVC, headed by CPIO, DVC, HQ as a Nodal Officer (RTI) with one designated Appellate Authority in DVC, Kolkata and ten Central Public Information Officers (CPIOs) at field level of its major projects.

RTI application status during the period w.e.f. 01.04.2018 to 31.03.2019 of DVC Head Quarter & 10 no. Field Projects are as under:

Sl. No.	Name of the Project	RTI application Received (no.)	RTI application Rejected (no.)	RTI application Dispose of (no.)
1.	Head Quarter	328	12	316
2.	Field Projects	152	32	120
3.	Total	480	44	436

The following salient points are worth mentioning:

1. DVC has been aligned with the online RTI MIS portal network activated by DoPT w.e.f. 08/07/2016, a universal access point for submitting RTI requests through internet.

2. DVC has given special emphasis on

i) Suo moto disclosures of information in public domain in its website www.dvc.gov.in, Link: RTI on a proactive basis time to time at regular intervals to uphold transparency and to easy access to the public.

BBMB

The necessary infrastructure has been provided for Operationalization of the Act. BBMB designated nine Assistant Public Information Officers (APIOs) and eight Public Information Officers (PIOs) at different locations. In line with requirements of the Act and eight Appellate Authorities have also been designated. The official Website of BBMB (www.bbmb.qov.in) depicts official designations, addresses and phone nos. of these officers. Comprehensive details regarding the procedure in respect of applying for information have been given on the website. The information regarding 17 No. manuals which have been prepared as per provisions of Section 4(1)(D) of the RTI Act, (Pro-active disclosure) is also available on the website. The information is regularly updated from time to time as per provisions of the RTI Act. The quantum of applications received under the Act appeals made & other related details are given below:-

Sr. No	No. of requests received	No. of decisions	Decision where applications for information rejected														Number of cases where disciplinary action was taken against any officer in respect of administration of this Act.	Amount of Charges collected (Rs.)
				No. of times various provisions were invoked														
				Sec. 8 (1)										Other Section				
				a	b	c	d	e	f	g	h	i	j	9	11	24	Other	
1	477	477	Nil	Nil										Nil				Nil	13589/-

BEE

In compliance with the Right to Information Act, 2005, BEE has uploaded the Proactive Disclosures under section 4(1)(b) of RTI Act, 2005 on BEE's website. All the applications received are attended to and the information furnished to the applicants as per the provisions of the Act.

CPRI

CPRI has an organized RTI application response system having one CPIO, one APIO and one Appellant Authority, registered under Min. of Power as well as RTI website.

CPRI has updated its website with all the details of officers & office as per the guidelines of RTI Act 2005 under section with suomoto disclosure. This website is updated on daily basis.

The following is the data of applications received and replies sent under the act during the period from 1st January 2018 to 31st March 2019:-

No. of Applications received	Directly received applications	Applications forwarded by MOP	Applications forwarded by others	Applications transferred to other departments	Applications Rejected under the various clauses of Section-8 RTI
109	89	18	2	3	11

All the applications received are replied within the specified period.

NPTI

Under the Right to Information Act, Public Information Officer and Asstt. Public Information Officers have been appointed for Corporate Office and the Institutes of NPTI respectively. During the period of 1st April 2018 to 31st March, 2019 as many as 71 requests were received for providing information etc. out of which all requests have been settled, as per rules.

CHAPTER 35.1

IMPLEMENTATION OF OFFICIAL LANGUAGE

Ministry of Power

Ministry of Power, its attached office and Public Sector Undertakings, Autonomous Bodies, Board and Institutions under the administrative control of the Ministry of Power continued their efforts in ensuring effective implementation of the Official Language policy of the Government and promoting the progressive use of Hindi in day-to-day activities of the Ministry/Offices.

The Ministry ensured compliance of the Official Language Act, 1963 and the Official Language Rules, 1976 in the Ministry and offices under its administrative control.

In compliance with the Official Language Policy, Hindi fortnight was organised from 04st Sept. 2018 to 18th Sept. 2018. During this period, Noting & Drafting Competition, Poetry Competition, Debate Competition, Hindi Typing Competition, Hindi Stenography Competition, Hindi Dictation Competition, Hindi Prashna Manch and Competition for doing original work in Hindi by officers and employees were organised for the officers and employees of the Ministry. Officers and staff of the Ministry participated in these competitions with great enthusiasm. Winners were given certificates and cash prizes. To review the progressive use of Hindi in the attached offices, Board, Organisations and Public Sector Undertaking, under the administrative control of the Ministry, 14 offices viz. BBMB Headquarters, Chandigarh, POWERGRID-Gurugram, REC Headquarters, New Delhi, NPTI Faridabad, NHPC Limited, Faridabad, PFC Limited Headquarter, New Delhi, Central Electricity Regulatory Commission, New Delhi, BEE, New Delhi, DVC Headquarters, Kolkata, Neepco Headquarters, Shillong, POSOCO Headquarters, New Delhi, NTPC Headquarters, New Delhi, CEA, New Delhi and CPRI Headquarters, Bangalore were inspected.

During the year under review; 18 cities viz. Koldam Hydroelectric Power Project, NTPC, Bilaspur, THDC India Limited, Kaushambi (Ghaziabad), Central Electricity Regulatory Commission, New Delhi, THDC India Limited, Tehri, National Power Training Institute (NPTI), Badarpur, New Delhi, Powergrid Corporation of India Limited, Dadri, Uttar Pradesh, Powergrid Corporation of India Limited, Hyderabad, National Thermal Power Corporation, Simhadri, Visakhapatnam, Executive Engineer, Bhakra Beas Management Board, Delhi, NTPC, Chennai, Powergrid, Madurai, NTPC Limited, Bongaigaon, Assam, North-Eastern Electric Power Corporation Limited (NEEPC0), Agartala, National power Training Institute Headquarters, Faridabad, Powergrid Corporation of India Limited, Liasion Office, Mumbai, NTPC, Gandhar Gas Field, Bharuch, NTPC Ltd., Barh Super Thermal Power Station, Patna, Powergrid Corporation of India Limited, Eastern Region Office, Patna were inspected by the Committee of Parliament on Official Language. Officers of the Ministry also participated in the inspection meetings of the Committee of Parliament on Official Language. During the year, 03 Offices have been notified under the Rule 10(4) of the Official Language Rules, 1976.

Meeting of Hindi Salahkar Samiti of Ministry of Power was organised on 11th April, 2018 under the Chairmanship of the Hon'ble Minister of State for Power and New and Renewable Energy (Independent Charge).

Three Electronic Display Boards depicting "Aaj ka Shabd" in Hindi and English was installed in the Ministry of Power to enrich Hindi vocabulary of the officials of the Ministry. The Board also portrays the thought of the Day in Hindi for motivating the employees in their day-to-day life and to attain inspiration.

Quarterly Meetings of the Official Language Implementation Committee of the Ministry of Power were organised regularly. Action was taken on important decisions taken in these meetings. Hindi workshops were organised for motivating the officers and employees for doing their official work in Hindi. 'Glossary of Administrative Terms' published by Commission for Scientific & Technical Terminology were distributed among the officers and employees of the Ministry.

CEA

1. OFFICIAL LANGUAGE POLICY AND ACHIEVEMENTS

Erstwhile CEA was notified in the official Gazette of the Govt. of India in pursuance of sub-rule 4 of rule 10 of the Official Language Rules 1976 and work to be done in Hindi by the officials having proficiency in Hindi under the sub rule 4 of 8.

The targets assigned by the Rajbhasha cell of Ministry of Home Affairs for the year 2018-19 for implementation of the official language policy were achieved.

Following activities were carried out during the year.

i. During the year all the work in 33 specified divisions/ sections with Administration and Accounts Sections such as noting, drafting, issue of office orders, letters etc were carried out in Rajbhasa Hindi.

Efforts were also made to carry out maximum work in Hindi in all divisions/sections CEA.

ii. All the letters received in Hindi were replied in Hindi only. Thus the Rule 5 of Official Language Act was implemented.

During the financial year 2018-19 average Hindi correspondences was 95% approximately. Quarterly percentage of Hindi correspondence during the year was as follows-

	Letters sent in Hindi	% of Hindi letters
1st Quarter	19845	94
2nd Quarter	20923	93
3rd Quarter	17563	96.3
4th Quarter	17860	94.8

2. Quarterly Meetings of Official Language Implementation Committee

During the year following three meetings of Official Language Implementation Committee were held:

- 1st meeting - 04 May, 2018
- 2nd meeting - 09 Aug, 2018
- 3rd meeting - 26 Nov, 2018
- 4th meeting - 19 Feb, 2019

During these meetings action were taken for strict implementation of official language policy.

3. Issuance of Reports in bilingual form

During the year, following reports were issued in bilingual form.

1. Out come Budget.

2. Annual Report

4. Implementation of Hindi Promotion Schemes

In accordance with the Home Ministry / Official Language Department Office Memorandum No.-11/12013/3/87-o.l. (K-2) dated-16.12.1988 and 06.03.1998, the incentive scheme for doing work in Hindi was implemented.

In accordance with the recommendation of Selection committee following officers /employees were awarded:

1. Sh. R.P Singh, DD, PCD (Hindi Dictation)
2. Sh. Digambar Singh, SSA, Adm.-II
3. Sh. Pankaj Kumar, steno, Adm-II
4. Sh. Lokesh Kumar Meena, AD
5. Sh. Ram Babu, SSA, FM
6. Sh. Ram Avtar, Sr. Sec. Assist,
7. Sh. Prateek Srivastav, AD, PCD
8. Sh. Rajeev Kumar Mittal, DD,TPPD
9. Sh. Satyandra Kumar Dottan, DD, PSPA-II
10. Smt. Suman Bala, DD,TPM-I
11. Smt. Poonam Kumari, ASO,Vigilance

5. Hindi Week Celebrations

Hindi Fortnight was organized in the Central Electricity Authority from 4.9.2018 to 18.9.2018. On 4.9.2018, Hindi Fortnight was inaugurated by lightening the lamp and Ganpati Vandana under the Chairmanship of Chairman, Central Electricity Authority. There were many officers / employees present in the Authority including all the Members, Secretary and Chief Engineers. On this occasion, a cultural programme including poetry and workshop on 'Hindi Literature and Indian Nationalism' was also organized in which, Lectures and poems were read by a guest lecturer, Dr. Anand Bardhan, Associate Professor, Delhi Research and Management Institute, 18- A, Satsanga Vihar Marg, Qutub Institutional Area, New Delhi-67.

During the Hindi fortnight, four competitions were organized successfully name, Hindi essay writing, Hindi notation and drafting, Hindi Article writing and general language competition of Official Language Rules / Act and Hindi Language / Literature respectively.

6. Conducting Hindi Workshop

This office is regularly conducting workshops for propagation of Official Language Policy. In order to minimize the difficulties faced by CEA officers working in CEA complex and to increase use of Hindi in the office, a series of workshops on regular basis were held during the year and a total of four such workshops were held.

7. Purchase of Hindi Books/publication

This office has a library. Hindi Books are procured regularly in the library during each financial year. Hindi News papers & Hindi magazines too are regularly purchased in the library.

8. Facility to work in bilingual on PC

This office is regularly procuring/ updating PC software so that the officers/officials can work in Hindi/ bilingual form. At present this office has facility to work in Bilingual Microsoft office software.

9. Publication of in-house magazine

In the Hindi Advisory Committee held on 11.04.2018, 'Sanjivani', a social novel of Ms. Usha Verma, Assist. Director (OL), CEA was released by Hon'ble Shri R.K. Singh, Minister of State (IC, Power and New & Renewable Energy).

PAO

All the communication received in Hindi are entertained and replied.

NTPC

Several initiatives were taken for the progressive use of Hindi in day to day official work and implementation of Official Language Policy of the Union in NTPC. The compliance of Official Language policy in its's projects and regional headquarters was inspected and need based suggestions were given to the respective Heads of offices in this regard.

Quarterly meetings of Official Language Implementation Committee (OLIC) were held), in which extensive discussions took place on the use of Hindi and the ways and means to bring about further improvements. Similar OLIC meetings were held at regular intervals in stations/ projects/ offices.

Hindi Divas was celebrated on 14th September 2018 and Hindi Fortnight was organized from 01-15 September, 2018 at Corporate Centre as well as regional headquarters and projects/stations to create awareness among the employees, associates and their family members through various competitions/programs. "Vidyut Swar" NTPC's biannual Hindi magazine was published to promote creative writing in Hindi. Annual conference of Hindi Officers was held in 06-07 October, 2018 to review the progress of Rajbhasha in NTPC and to chalk out action plan for 2018-19.

Employees were motivated to use of Hindi in official work by Hindi workshops, Unicode Hindi Computer Training, Kavi Sammelan, Hindi Drama and Hindi incentive schemes. Hindi webpage was updated with important information of Rajbhasha for employees.

The second sub-committee of Parliament on Official Language had inspected its regional headquarters Secunderabad, Patna and Singrauli, Badarpur and Faridabad stations; reviewed the progress of Rajbhasha implementation and appreciated its efforts.

NHPC

The Provisions of the Official Language Act and Rules were strictly complied with during the year in the Corporation. Efforts were made to improve the progressive use of Official Language in accordance with the policy of Government of India.

Quarterly meetings of the OLIC & half yearly meetings of TOLIC (O), Faridabad were organized regularly in the Corporate Office in which progressive use of Official Language was reviewed by the Chairman and Managing Director in the presence of Directors. During the review period, many programmes like Hindi Kavya Sangoshthi, Technical Seminar on Hindi in Digital Bharat, Hindi Fortnight, Hindi Competitions, Hindi Pustak Pathan Saptah, Hindi Kavi Sammelan, Akhil Bhartiya Rajbhasha Sammelan, Hindi Language and Hindi Typing Training programmes along with Hindi workshops and Departmental Computer workshops were organised in the corporation for the propagation of Official Language Hindi. In addition, Rajbhasha magazines titled 'Rajbhasha Jyoti' and 'Nagar Saurabh' were also published.

Attractive incentive schemes for employees have been implemented as per the government guidelines for the promotion of Hindi by contributing article/write-ups in Rajbhasha magazines, encouraging reading Hindi books and writing noting and drafting in Hindi etc.

The Sub Committee of Draft and Evidence of Parliament on Official Language held Rajbhasha Inspection Meeting of our Corporate Office and other Nine Offices under TOLIC (O) Faridabad at Delhi on 8th December, 2018. The Committee appreciated the efforts made by our office in the progressive use of Hindi. Inspections were carried out at Power Stations/ Projects/Regional Offices and in various departments of the Corporate Office by our Senior Executives as well.

In addition, Our TOLIC (O) Faridabad received "Second Prize" in region "A" for outstanding work in the field of Rajbhasha implementation for the year 2017-18 from Ministry of Home Affairs. This award was received by General Manager (Rajbhasha) from Sh. Kiren Rijiju, Union Minister of State for Home Affairs, Govt. of India on 19 November, 2018 at Chandigarh in a function organised by Ministry of Home Affairs.

Our Tolic (O) Faridabdad receive "Second Prize" in region 'A' for outstanding work in the field of Rajbhasha Implementation by the Ministry of Home Affairs for the year 2017-18 .This award was received from Hon'ble Union Minister of State for Home Affairs, Sh. Kiren Rijiju by General Manager (Rajbhasha) NHPC in the function organised on 19 November, 2018 at Chandigarh.

POWERGRID

Being a flagship Govt. company POWERGRID is sensitive towards its responsibilities, heritage, social and cultural values.

In pursuance of Govt. of India's Rajbhasha policy to promote Indian languages and Rajbhasha "Hindi", POWERGRID has made all round efforts to integrate and promote use of Hindi in its works at all levels. POWERGRID has proved its commitment to ensure the implementation of Rajbhasha policy and to achieve the goal as laid out in the Rajbhasha Annual Target given by Department of Official Language.

To ensure the increased use of Official language, various activities such as Annuvad Abhayaas Karyakram, Workshops, Trainings, motivational programmes are organized at every unit of POWERGRID. Computer trainings are being imparted to enhance the working knowledge in Hindi on computers. Hindi classes are also being organized for non-Hindi speaking employees through Hindi Teaching Scheme. Lectures on heritage, social and cultural concerns are also being delivered by eminent scholars on regular basis to change the mindset of the employees for working in Hindi increasingly.

Various activities are undertaken to publicize Hindi. Every year, Akhil Bhartiya Rajbhasha Sammelans and technical conferences in Hindi, Kavi Sammelans (Poetry sessions), Plays, publication of Hindi Magazine 'GRID DARPAN', publication of monthly articles in Hindi via emails are most prominent among these. Also various competitions throughout the year with special emphasis during Hindi Pakhwada, Vigilance Awareness Week, Swachchhta Pakhwada etc along with departmental meetings as well as OLIC meetings are also being conducted. POWERGRID has established one of the best Hindi libraries among Public Sector where popular/literary Magazines and News Papers have been made available for the employees.

Attractive incentive schemes for employees working in Hindi have been implemented as per the government guidelines. Also various award and reward schemes have been introduced to encourage employees to actively participate in promotion of Hindi, by giving articles/write-ups for in-house magazines, reading library books etc.

The effort made by POWERGRID has been applauded in several forums during the year 2018-19. Various awards were given by Town Official Language Implementation Committee (TOLIC) and Rajbhasha Vibhag, Ministry of Home Affairs, Govt. of India regarding best Implementation of Official Language. First prize from TOLIC, Vadodara, to POWERGRID Vadodara office, First from TOLIC Kolkata, First from TOLIC, Delhi, Second from TOLIC Bangalore, Third prizes from TOLIC, Secunderabad and different prizes to Ghaziabad, Mapusa, Durgapur, Thrissur, Arsur, Madurai, Tiruchirappalli POWERGRID offices are amongst a few to name. Besides, POWERGRID's efforts were also applauded during various inspections and discussions done by Hon'ble Committee of Parliament on Official Language on different occasions.

PFC

It is a matter of great pride that PFC has been awarded the First Prize in Public Sector Category in Region 'A' of 'Rajbhasha Kirti Puraskar' for the year 2017-18 by Rajbhasha Vibhag, Ministry of Home Affairs for its concerted efforts made in implementation of Official Language Policy. CMD, PFC received the prestigious award from Hon'ble Vice President of India, Sh. M. Venkaiah Naidu.

Hindi Advisory Committee meeting was held on 11th April, 2018 under the Chairmanship of Hon'ble Minister of State (I/C) Power, Shri R. K. Singh. The entire Co-ordination work was given to PFC by MoP, which was successfully accomplished. PFC's Quarterly Magazine 'Urja Deepti' and a book 'App Deepo Bhav' written by a PFC employee were also released in the said meeting by the Hon'ble Minister.

Meetings of the Official Language Implementation Committee (OLIC) were organised in each quarter under the chairmanship of CMD, PFC. Departmental Hindi meetings were also organized at the unit level. On 11th May, 2018 one Sangoshthi was organized. The Topic of Sangoshthi was 'Jeevan Shaily Se Utpann Rogon se Bachao Mein Yoga Ki Bhumika' in which 43 Employees participated. Classes of Yogabhyas with instructions in Hindi were also organized for several month since organized Yoga Day in June 2018. On the occasion of PFC Foundation day on 16th July, 2018, a KaviSammelan was organized wherein renowned poets recited their poems.

Hindi Day and Hindi Month were celebrated on 14th September and from 14th September to 13th October, 2018 respectively to create a Hindi oriented environment in the Corporation. During the Hindi Month, apart from other activities, various competitions, like 'VartaniShodhan', 'Kahani Buno', 'Kavya Path' and 'Chalti Ka Naam Gadi' were organized. In all, 149 employees participated in the competitions. During the 'Vigilance Awareness Week', three competitions were organised in Hindi also. Under various Rajbhasha Incentive Schemes for the year 2017-18, 165 employees were awarded.

07 Hindi workshops were organized for 144 executives (upto the level of Executive Director) to improve their efficiency in doing their day to day official work in Hindi. One Hindi 'Kanthasth' Prashikshan Karyashala was also organized in

which 39 employees participated. Internal inspections in the form of personal contact programme were conducted, with a view to discuss and find out the areas for improvement to work in Hindi by respective units and guided them accordingly. Inspection of RO (South), Chennai, PFC was done by the officials of Ministry of Power who appreciated the work done in Hindi in PFC.

Annual Programme for the year 2018-19 was circulated amongst all the employees and the same was discussed in the Official Language Implementation Committee Meeting held on 28.06.2018.Annual Report of the Corporation was published in bilingual form. Two issues including 'Yog Evam Rajbhasha Visheshank' of Corporation's house magazine 'Urja Deepti' were also published. MoU for the year 2018-19 was signed in bilingual form by Secretary, MoP and CMD, PFC.

Two Hindi Books namely 'Prem Chand Ki 51 Shreshth Kahaniya' and 'Bhartiya Veeranganao Ki Gaatha' were also distributed to all employees. A two days 'Rajbhasha Sammelan' was organize in the month of September, 2018 in which 28 Executives from DGM to ED level had participated. CMD, PFC and other Directors were also present.

On the eve of Samapan Samaroh of 'Hindi Mah', a Cultural Programme was organized on 12 October, 2018 in which Employees of PFC presented a Cultural Programme inclusive of Dance, Songs, Kavya Path and Natika etc.. The Programme was highly appreciated by all.

All these efforts were motivational tools in creating possibilities of better and progressive use of Hindi in the Corporation.

REC

Progress achieved during the current financial year 2018-19:

To uphold the Official Language Policy of the Government our company consistently strived to meet the targets given in the annual programme 2018-19 issued by the Department of Official Language, Ministry of Home Affairs, Govt. of India during the year under review.

Official Language Implementation Committees (s) are constituted in REC offices to ensure the effective implementation of Official Language in compliance with the Official Language Act, 1963 and Official Language Rules, 1976. Hindi Workshops were organised in all REC offices to give hands-on exposure to participants in various facets of use of Hindi.

Hindi Fortnight was organized in Corporate Office from 15.09.2018 to 28.09.2018, where various competitions wereorganized. The participation of employees in all the events/competitions was encouraging and cash prizes were also awarded to winners in different categories to encourage larger participation as also to motivate employees to increase use of Hindi in their day to day working. A member of Hindi Advisory Committee and officials of Hindi Division of Ministry of Power were also invited to REC Corporate Office on this auspicious occasion. Hindi Fortnight was also organized on the said dates in all Regional/State offices of the company/ RECIPMT.

A two-day All India Conference on Rajbhasha was organized at Shillong during 26-18 November 2018 for the Nodal Hindi Officers.

Internal inspections of different divisions and ROs/SOs were carried out to assess the progressive use of Hindi in official work. A team of officials of Ministry of Power also reviewed the status of Official Language implementation in Regional Offices of Chennai, Panchkula, Kolkata and Shillong. These inspections have inculcated a spirit of awareness among the employees to do more work in Hindi.

REC has been publishing Hindi Journal *'Urjayan'* containing interesting and useful articles as well as literary writings of the employees. In order to motivate Hindi write ups, articles, poems etc. for the magazine, the Company has a policy to award cash incentives to the participants. Apart from this, a bilingual internal newsletter *'Watts up'* is also being published.

NEEPCO

The Corporation is making all out efforts to implement effectively the Official Language Policy of the Government of India at its Corporate Office as well as Plant/Projects and other offices. Efforts were made to issue papers referred to in Section 3 (3) of the Official Language Act in bilingual. Employees posted at different offices/Projects were nominated for Hindi **Prabodh, Praveen & Pragya** training courses. Cash Awards were given to the employees for passing Hindi examinations as per eligibility. To facilitate the employees for doing their official work in Hindi, **27 (Twenty Seven)** Hindi workshops were organized and **501** officers & employees were trained in the workshops. Training materials were provided to the employees during the Workshop. In the House Journal - **'NEEPCO NEWS'** valuable information relating to use of Hindi were provided. A monthly newsletter **"NEEPCO NEWS FLASH"** is published regularly in bilingual i.e. in Hindi & English. NEEPCO website is also available in Hindi. Key words

in Hindi with English equivalent were displayed everyday on the **Digital Board** under the programme **"Today's Word"** in order to enrich the Hindi vocabulary of the employees.

Rajbhasha (Hindi) Pakhwara was observed and **"Hindi Divas"** was celebrated at the Corporate office as well as in the Plants/Projects and other offices of the Corporation to create awareness and to encourage the employees for doing their official works in Hindi. Various competitions were conducted in Hindi and attractive prizes were awarded to the participants. Hindi patrika**"NEEPCO JYOTI", "Ratandeep", "Panyor Pravah", "Aalok Jyoti", "Aarohi", "Kopili Darpan", "NEEPCO Tarang" & "Pragati aur Prayash" were published respectively from HQ, Co-ordination office NEW DELHI, RHEP, TGBP, AGBPP, KHEP, Guwahati & AGTCCPP.** An exhibition was also organized at Corporate office where the achievements made in the use of Official Language Hindi in the Corporation were displayed. Under Incentive Scheme, number of officers/employees were awarded Cash Award for writing noting/drafting in Hindi.

NEEPCO **OLIC meetings** are organized regularly. In the meeting review was made on the Implementation work of Rajbahasha and valuable suggestions were provided for its effective implementation.

The Corporation was awarded **Second Prize** by Town Official Language Implementation Committee **(TOLIC),** Shillong consecutive since two years for commendable works done in the Implementation of official Language Policy.

SJVNL

In order to ensure the implementation of the Official Language Policy of the Govt. of India, all possible efforts have been made by the company to achieve the targets as specified by the Department of Official Language.

Under section 3.3(i) of Official Language Act cent percent documents were issued bilingually & all the letters received in Hindi were replied to in Hindi. Company's website is already in bilingual form and it is updated from time to time. To encourage executives and non-executives to do their entire work in Hindi, number of incentive schemes are under implementation.

During the year Hindi workshops/seminars, Hindi competitions in Schools & Colleges, Kavi Sammelan, Meeting of TOLIC were organized as usual.

Govt. of India , Ministry of Home Affairs, Department of Official Language has awarded Rajbhasha Kirti Purskar (Third prize) in PSU category to SJVN for its outstanding performance in implementation of Official Language during the year 2017-18.

THDC

THDC India Limited has made consistent efforts to enhance the progressive use of Hindi in day-to-day official working as per guidelines of the Official Language Policy of Government of India. During the reporting period, quarterly meetings of the Official Language Implementation Committees in Corporate Office, Rishikesh and Subordinate Units/Offices were held at regular interval under the Chairmanship of Office Head. In order to motivate officers and employees, Hindi workshops and 07 nos. Hindi competitions were also conducted in each quarter in the Corporate Office as well as in Units / Offices.

Hindi Month was celebrated from 01- 28 September-2018 in the Corporate Office, Rishikesh and Hindi Day was celebrated on 14th September-2018. During Hindi Month, various competitions were organized for the employees. The valedictory functions of Hindi month was organized on 28th September-2018. The program was chaired by Shri G.K. Faralia, Hon'ble Member of Hindi Advisory Committee, Ministry of Power, Govt. of India. Prizes were distributed to winning participants of the competitions. In addition, employees were also awarded under various incentive schemes undertaken by Official Language Deptt. Hindi Pakhwada / Hindi Week / Hindi Day Programmes were conducted as per number of manpower in the Units / Offices in the same manner as Hindi month was organized by the Corporate Office.

To propagate Hindi language by the way of jocosity, "Kavi Sammelans" were organised in Koteshwar and Tehri units on 25th Apr-2018 & 28th Jul-2018 respectively. In addition, "Kavi Sammelans" were also organized on the occasion of 150th Birth Anniversary of Mahatma Gandhi at Corporate Office, Rishikesh and Unit Office, Tehri on 31st October-2018 & 30th October-2018 respectively. Poets were invited from different locations of the country in the Kavi Sammelans. They filled new zeal and enthusiasm among the officers and employees with their poems of Hasya, Veer and Shringar Ras.

With the objective to increase Hindi readers, Hindi House Journal 'THDC Pehal' is being published continuously with 03 editions every year with interesting and knowledge enhancing material. In order to facilitate bilingual functioning, Hindi software / fonts have been installed in all the computers / laptops of the Corporation and the contents are also being displayed bilingual on the website of the Corporation. Rajbhasha Head is provided on Hindi page of Official website

of the Corporation, wherein information related to Official language is uploaded.

The documents related to Section 3(3) have been issued bilingual in the Corporation and also recorded to increase the percentage of correspondences in Hindi. In order to inspect the progress of Hindi implementation, all offices / units of the Corporation have been inspected by the officials of Hindi section from time to time. Official language inspections of NCR Office, Kaushambi and Unit Office, Tehri were also conducted by the Second Sub-Committee of Parliamentary Official Language Committee on 15th May-2018 & 9th June-2018 respectively. The committee appreciated the implementation of the official language in the Corporation and also suggested its valuable suggestions.

Corporate Office, Rishikesh and Unit office, Tehri of the Corporation are discharging the responsibility of Chairmanship of Town Official Language Implementation Committee (TOLIC) Haridwar & TOLIC Tehri. Various activities / programs of TOLIC were organized at regular intervals during the year such as half yearly meetings, Hindi Coordinator's Seminars, Hindi Competitions and Hindi Workshops. All activities and programs have been uploaded on the website of Town Official Language Implementation Committee, prepared by the Department of Official Language. Corporate Office, Rishikesh was conferred the first prize for the year 2018-19 under the Rajbhasha Vajyanti Scheme of TOLIC. This award was received in 27th Half yearly meeting of TOLIC held on 24.01.19 at IIT, Roorkee. Number of Officers and Employees were awarded by TOLIC for their best performance in the several competitions conducted under aegis of TOLIC.

DVC

The Official Language Cell of DVC is devoted towards the implementation of different Official Language programmes keeping in view the directives received from the Department of Official Language, Ministry of Home Affairs and Ministry of Power, Government of India for the progressive use of Hindi in the official work of the Corporation.

DVC has established training centre for imparting Hindi knowledge among the employees which is being run at Headquarters as well as in field formations in collaboration with Hindi Teaching Scheme, Govt. of India. 17 employees qualified for Praveen and Pragya examinations at Headquarters during the period under review. Some of the employees have also acquired knowledge in Hindi through correspondence course. Out of total 571 employees (engaged in secretarial work) 530 empoyees have acquired working knowledge of Hindi thereby achieving the target of 80% Hindi trained employees set by Official Language Department, Govt. of India. Beside this, 16 employees have been nominated in the session January-May, 2019.

It is reasonable to mention that DVC has been notified under Section 10(4) of Official Language Rule, 1976 for disposing its all official work in Hindi vide Gazette of India Notification No.11014/4/2010-Hindi Dated – 12.03.2012. As a result of regular training in Hindi, there has been a remarkable increase in implementation of section 3(3) of Official Language Act and Rule 5 of the Official Language Rules in DVC.

Separate workshops were organised for officers and staff to develop their working knowledge required for implementation of official language policy. In these workshops, participants went through the routine exercises for day to day official work in official language.

Apart from this, 08 (eight) special Official language workshops regarding the use of Unicode on Computers were organised in which 252 employees took part.

Hindi Diwas/Pakhwara was also celebrated during the year 2018 in which several competitions related to official language like Extempore, Amplification, Hindi Noting & Drafting, Hindi Typing, Recitation & Antyakshri were organised to inspire employees for executing their official works in Hindi. A large number of non-Hindi and Hindi speaking employees participated in these competitions and successful participants were given prizes. During the Pakhwara, a speech from the desk of the Chairman was distributed to inspire the employees of the Corporation to dispose of their maximum work in Hindi. Being a cultural programme, a music programme was also organised by playback singer Smt. Arti Mukherjee during the occassion. A Wall Hoarding bearing a quotation in Hindi was inaugurated by the Chairman, DVC as usual.

During the period under review, DVC received "Rajbhasha Kirti" Puraskar (Second Prize) for its excellent performance in Official Language activities in the entire 'C' region. The Chairman, DVC received the award from the Hon'ble Vice President of India on 14.09.2018 in Vigyan Bhawan, New Delhi. Apart from above achievement, Bokaro Thermal Power Station, DVC received 2nd Prize in eastern region covering the states of West Bengal, Odisha, Bihar, Jharkhand and Andaman & Nicobar Islands for execellent implementation of Official Language Policies of GoI. The award was handed over to DVC by Hon'ble Union Minister of State for Home Affairs Shri Kiran Rijiju on 10.03.2018 at Gyan Bhawan, Patna.

The Corporation is ushering towards meeting new benchmarks in implementing Official Language in DVC by purchasing Hindi Books, organizing Quarterly Meeting, participaitig in TOLIC meeting, making scheduled inspections in different units, implementing incentive schemes in line with directives received from Official Language Department, GoI publishing House magazine "DVC Pravah" and providing training on Voice Typing.

BBMB

Special efforts are made by BBMB for implementation of Official Language Policy of the Union. All the documents under section 3(3) of the Official Language Act are issued bilingually and letters received in Hindi or signed in Hindi are invariably replied in Hindi. Also, Efforts are made to reply English letters, in Hindi. At present about 97% correspondence of Board Secretariate with region 'A' offices, 98% with region 'B' offices and 100% correspondence with region 'C' is being done in Hindi. All the information in BBMB website is available bilingually.

Official Language Implementation Committees have been constituted in the Board Secretariate and its subordinate offices and their quarterly meetings are regularly held, in which reports in respect of progressive use of Hindi are reviewed. In Board Secretariate, about 87% notings are being done in Hindi. Hindi workshops are organized in every quarter and subordinate offices are regular inspected by the Board Secretariate against the target fixed by the Government of India.

Bilingual working facilities are provided on all the computers. Training in Hindi shorthand/typing has been imparted to all steno typists/clerks.

Hindi Library has been set up in the Board Secretariat. During this year total books amounting to Rs 4,350/- have been purchased and whole amount is spent on Hindi books only.

Hindi fortnight was organized in all the offices in the month of September, 2018 during which various Hindi competitions were organised in order to create awareness amongst the employees to work in Hindi. Moreover, 40 employees doing considerable work in Hindi during the year are encouraged with cash awards also. A "Hasya Kavi Sammelan" was organized along with the prize distribution ceremony on 2nd November, 2018.

All magazines/journals of BBMB are published bilingually. July-September issue of the magazine is published as "Rajbhasha Visheshank". Some compilations to facilitate the use of Hindi, viz. Administrative Notings, 'Taqniki Shabdavali' and 'Rajbhasha Shayak Pustak' have been published and distributed to all the offices. For the year 2017-18, BBMB has been awarded Rajbhasha Kirti Puruskar (Second) for excellent performance in Implementation of Official Language Policy of the Government by Govt. of India, Ministry of Home Affairs, Department of Official Language on dated 14.09.2018. Besides three subordinate offices of BBMB also got First, Second and Third Prizes for Implementation of Official Language Hindi during 2017-18. . BBMB's house journal 'BBMB Samachar' bagged First Prize for the year 2017-18 from Town Official Language Implementation Committee, Chandigarh.

BEE

Hindi Pakhwara was organized in BEE during 14-28 September 2018. During the Pakhwara, seven competitions namely, Essay competition, Noting & Drafting competition, Dictation for officers & staff, Hindi Dictation competition for Class-IV employees and competition in General Knowledge regarding use of official language Hindi, Hindi Poem Recitation and Slogan competition on energy efficiency were organized. Eight prizes viz. first prize, second prize, third prize and Five consolation prizes were given to the winners of the competitions. Certificates and prizes were given on the closing ceremony of Hindi Pakhwara by Director General (BEE).

Hindi workshops were held on 26th June, 2018, 27th September, 2018, 26th December, 2018 and 19th February, 2019 each for two hours with participation of 22, 15, 18 and 12 participants respectively. Deep knowledge and experiences of the Expert Guest Speakers who not only shared their views and knowledge but also helped to solve the problems being faced by the participants in doing their day to day official work in Hindi as per the requirement of the Official Language Act. Participation in these workshops had helped enormously in increasing the use of Hindi in the official work. After participating in these workshops employees had started typing notes through Unicode in Hindi in the files. No. of letters sent to 'A' & 'B' regions in Hindi are increasing in each quarter. Besides this, Quarterly meetings to review the progressive use of Hindi were held regularly under the Chairmanship of Director General (BEE).

The second issue of in-house magazine "BachatkeSitare" of BEE was published in November, 2018, whose copies were provided to all the officers and staff of Bureau. In addition, copies of the magazine were also sent to all the Ministries and State Designated Agencies.

CPRI

Remarkable achievements of the Institute in the field of Official Language Implementation

1. Seminars and Workshops :

a) The official Language of the Union- A Constitutional perspective :

A Hindi workshop on "The official Language of the Union- A Constitutional perspective" was organized for the Additional Directors, Joint Directors and all Senior Officers of the Institute on 13th April 2018 at CPRI, Bengaluru. The faculty for the workshop was Dr. H.S. Rana, Principal Director, Institute of Public Administration, Bangalore. Around 60 senior level officers participated in this workshop.

b) Table Workshops :

Information & Publicity Division, Security, Purchase Division, Electrical Appliances Technology Division, Heat Run Test Lab, Short Circuit Lab. of CPRI, Bengaluru were inspected regarding O.L. Implementation and a follow up table workshop was conducted to guide the employees regarding use of Hindi in official work & presentation of statistical data of Hindi correspondence, and ensuring that Name plates, Name boards, Sign Boards, Stamps, Visiting Cards were in Hindi. As a result of this, Electrical Appliances Technology Division went for printing the second lot of files in which all the matter in the Cover page were printed in bilingual. Now bilingual file covers are being used by the Lab.

2. Hindi Month and Hindi Divas :

The Hindi Month was observed from 27th August 2018 to 25th September 2018. Various competitions such as Quiz, Anthakshari, Vocabulary and Spellings, Crossword Puzzle, General Knowledge (Written), Song, Humorous Conversation, Technical Article Completions were organized as a part of the Hindi Month celebration. Hindi Divas was celebrated on 27th September 2018. Smt. Jahanzeb Akhtar, Principal Commissioner of Income Tax, Ministry of Finance, Govt. of India was invited as the Chief Guest of the function. Prizes were distributed to the winners of various competitions organized during the Hindi Month. A cultural programme was presented on this occasion by the In-house talent of CPRI which was appreciated by one and all.

3. Official Language Inspections:

Officers of (OL,MOP) along with Personal Assistant inspected the CPRI, Bengaluru, on 29th November 2018 to assess the status of Hindi Implementation as per the Official Language Policy of the Union.

4. Publications:

a. Annual Report - The Annual Report of the Institute for the year 2017-18 is published in bilingual.

b. CPRI News - The four issues of the quarterly magazine of the Institute "CPRI News" have been brought out in bilingual,

c. Rajbhasha Samachar : The 5th edition of Rajbhasha Samachar which gives a report of the remarkable achievements of the Institute in the field of official language implementation during the year 2017 – 18 was brought out.

d. STDS Darpan - The 19th edition of the In-house magazine "STDS Darpan" of the Institute's Bhopal Unit was published.

5. Noting and Drafting in Hindi

Under incentive schemes, Noting and Drafting competition is in vogue in the Institute, for which Cash award will be given on the occasion of the Hindi Divas celebration.

6. Annual Technical Article Competition

To promote Hindi writing in Technical field, the Institute is organizing an Annual Technical Article Competition for the past 23 years for the Scientists of all Central Govt. Organizations. The best three articles were awarded prizes on Hindi Divas celebration, held on 27th September 2018 at CPRI, Bangalore.

7. Web Site :

The web site of the Institute is available in Bilingual and is updated from time to time.

8. TOLIC Activities:

CPRI has been awarded First Prize for the outstanding performance in the Implementation of Official Language during the year 2017-18. The award was received by Shri B. Sridhar, Chief Administrative Officer, CPRI during TOLIC meeting held on 4th January 2019, at Bangalore G.P.O.

NPTI

- NPTI and its Training Institutes are implementing the various provisions of the official language policy of the Government. Progressive usage of Hindi in Official work is being used.
- In compliance with the constitutional and statutory requirements, all documents required to be issued bilingually are being adhered to. Similarly communications received in Hindi are replied in Hindi.
- Meetings of Official Language Implementation Committee at NPTI Corporate Office and Training Institutes are convened regularly.
- Cash Award Scheme such as Incentive Scheme for original noting/drafting in Hindi has been implemented. During the year under report 10 officers/Staff of NPTI Corporate Office and its Institutes have been awarded under this scheme.
- In order to assess the progressive use of Hindi at NPTI Corporate Office and its Institutes, periodic inspections are carried out.
- In compliance with the Official Language Policy, a "Hindi Pakhwada" was celebrated in NPTI Corporate Office and its Institutes from 1-14 September, 2018. In order to step up the use of Hindi in official work, competitions in Hindi Essay writing, Hindi debate, Hindi Poetry, Hindi noting and drafting etc. were organized. Officers/ employees took part in the competitions and winners were conferred with certificates/cash awards.
- In order to create a conducive and inspiring atmosphere for the implementation of the Official Language Policy "Hindi Workshops" were organized at NPTI Corporate Office and its institutes.
- Since last three years, during the Hindi Week programs for children and women of NPTI staff are also being organized.

CHAPTER 35.2

VIGILANCE ACTIVITIES / DISCIPLINARY CASES

Ministry of Power

1. Vigilance wing of Ministry of Power deals with the complaint against officers/officials of the Ministry of Power and Board level officers of the PSUs and other offices under administrative control of the Ministry. All the complaints received in the section are registered in the Ministry/Section through E-office system. After examining the complaints relating to Board level officers of PSUs, reports are submitted to CVC /PMO/ Cabinet Secretariat /DOPT, as the case may be. Further, complaints received from CVC under CVC Act/PIDPI are also handled on priority basis to report to CVC within the specified period. Pending complaint cases are monitored on regular basis.

2. The "Vigilance Awareness Week 2018" was observed in Ministry of Power between 29th October 2018 to 3rd November, 2018. This year the theme of Vigilance Awareness Week was "Eradicate Corruption-Build a New India".

   The Vigilance Awareness Week was celebrated with full earnest zeal and great enthusiasm. During observance of Vigilance Awareness Week, the employee of the Ministry, their family members including children also participated in various programes held at the premises of the Shram Shakti Bhawan, New Delhi. On this occasion, a pledge to maintain integrity and transparency in all spheres of work was administered to the Officers and Staff of the Ministry by Secretary (Power), Shri Ajay Kumar Bhalla on Monday, the 29th October 2018.

   Essay & Debate Competition for the employee and Painting Competition for the children of employee of the Ministry were organized on 30th and 31st October 2018 respectively . The topic for Essay was "Corruption-A threat to Democracy" and the topic of Debate was "Corruption is the biggest evil in our society". Painting Competition for the children of employee of the Ministry were organized on 2nd November 2018. The topic for painting competition was "Fight against Corruption". Further a Nukkad Natak on vigilance theme was also organized on 2nd November, 2018. Prizes were awarded to the best five participants in each category separately. The awardees were facilitated with certificate/prize in a programme held on 05/12/2018, where Secretary, Ministry of Power distributed the prizes to the winners.

3. In the scenario of constant security threats to assets of Power Sector units under Ministry of Power, the compliance to the security instructions/advisories received from various agencies from time to time were also ensured through appropriate communication with the concerned authorities. The possible threat of Mobile phone in vital installation areas was examined in a meeting taken with all CVOs/security officers of PSUs of Power Sector on 07.03.2018. Subsequently Committee under the Chairmanship of CVO, NTPC was formed with a view to do the detailed threat perception analysis of installations under Power Sector in all the three categories i.e. Thermal, Hydro and Transmission. The reports of the Committee has been received and the recommendations are being shared with all the stakeholders.

CEA

The Vigilance Division, headed by Chief Vigilance Officer (CVO) deals with various facets of vigilance mechanism and functions for carrying out investigations into complaints, suggesting corrective measures for improving the control system, compliance of laid down procedures and also for carrying out preventive vigilance exercises.

2. As part of preventive vigilance, the Vigilance Division facilitates in ensuring job rotation in sensitive posts. The Vigilance Division has also taken steps to ensure that website of CEA plays an important role in increasing transparency in its functions. Vigilance Awareness Week-2018 was observed in Central Electricity Authority and its Subordinate Offices from 29.10.2018 to 03.11.2018. The Vigilance Awareness Week was celebrated to highlight the theme "Eradicate Corruption – Build a New India".

3. Complaints other than anonymous/pseudonymous were taken up for investigation promptly and after completion of investigations, reports submitted to the prescribed competent authority. As on 31.03.2019, one disciplinary case against a Data Entry Operator (retired),

CEA is under process and is to be forwarded to Ministry of Power shortly for onward transmission to the Union Public Service Commission for seeking advice of the Commission as per Rule 9 of the Central Civil Services (Pension) Rules, 1972. Prescribed periodical returns were sent to Ministry of Power and Central Vigilance Commission in time.

PAO

One Vigilance or disciplinary case is pending or contemplated against a Sr. Accounts Officer.

NTPC

NTPC has a Vigilance Department headed by Chief Vigilance Officer of the rank of Joint Secretary, GOI, who is a nominee of the Central Vigilance Commission. Vigilance set up in NTPC comprises of Vigilance Executives (VEs) in Corporate Centres and Projects. In Projects, the VEs report to the Project Head in administrative matters but in functional matters, they report to Chief Vigilance Officer. The Corporate Vigilance consists of 04 Cells, namely, Investigation & Processing Cell, Departmental Proceedings Cell, Technical Examination Cell and MIS Cell. These Cells deal with various facets of vigilance mechanism. The vigilance works of each Region namely ER-I, ER-II, WR-I, WR-II, NR, DBF, SR and Hydro Region have been separately assigned to one Vigilance Executive of AGM Rank for speedier disposal of vigilance cases.

Integrity Pact has been implemented in NTPC since 2009. Presently tenders having estimated value of Rs.10 Crore (excluding taxes and duties) and above are covered under the Integrity Pact. As per the provisions of Section 619(3) of the Companies Act, 1956, Fraud Prevention Policy has been implemented in NTPC and suspected fraud cases, referred by the Nodal Officers to Vigilance Department are investigated immediately to avoid/ stop fraudulent behaviors as defined in "Fraud Prevention Policy". Whistle Blower Policy has also been in place at NTPC as per SEBI guideline to strengthen a culture of transparency and trust in the organization, providing employees with a framework/ procedure for responsible and secure reporting of improper activities (whistle blowing) within the company and to protect employees wishing to raise a concern about improper activity/serious irregularities within the Company. A complaint handling policy is also in place which is designed to provide guidance on the manner in which NTPC receives and handles complaints against its employees, suppliers / contractors etc.

Vigilance work during 2018-19

Regarding Investigation of Complaints, during the year 2018-19, a total 110 complaints were investigated & out of these 58 complaints have been finalized while the remaining 52 are under various stages of investigation. Appropriate disciplinary action has also been initiated out of investigation process against the involved employees along with system improvements, wherever found necessary. 170 Surprise Checks were conducted during the period and recovery of Rupees 2,86,17,617.00 was effected against various discrepancies detected during investigation. During the last year a total of 37 Preventive Vigilance Workshops were conducted at various projects/ places in which 1143 employees participated.

Vigilance Awareness Week-2018

Vigilance Awareness Week-2018 was observed in NTPC, its Subsidiaries & Joint Venture companies from 29th October to 3rd November 2018. The observance of the Vigilance Awareness Week commenced with the Integrity Pledge taken by employees across the country at 11:00 am on 29th October' 2018 steered by the respective heads of Projects/ Stations/Regions/Offices & Corporate Centre. The beginning of Vigilance Awareness Week became a special event for NTPC as Hon'ble Central Vigilance Commissioner addressed its employees on 29.10.18. During his address, he spoke about the need for promoting Transparency, Accountability and Integrity in public life and exhorted the NTPC team to become a 'Model PSU. '

The events & activities across NTPC were organised focusing on the theme of VAW-2018 "Eradicate Corruption - Build a New India". To ensure wider participation of students & citizens, events & activities were organized at Schools and Colleges and Gram Sabhas in the rural areas' & seminars in the urban areas were organized in the vicinity of our Stations/ Projects/Offices/ Corporate Centre. Special focus was given to the cities assigned to NTPC for outreach activities namely New Delhi, Varanasi, Farakka, Korba & Talcher. For general awareness, the FM Radio medium was also used to air the CVC message against corruption at New Delhi, Patna, Hyderabad & Visakhapatnam.

The Activities during VAW-2018 were organized across India covering 20 states involving more than 35000 students & 40000 citizens besides employees of NTPC, its Subsidiaries & Joint Ventures.

With the collective efforts of Team NTPC, main thrust was given to outreach activities. Total 243 schools and 102 colleges were reached out during the week. Besides holding debates and essay competitions in these educational institutions, around 30 Integrity Clubs were made functional. 67 Gram Sabhas were organised with almost 10000 plus participants. 54 workshops/ seminars were conducted with 4500 plus participants. 22400 citizens including employees took the e-pledge, while around 20000 plus citizens were motivated for taking oral pledge.

Wide publicity to these events was given across cities near NTPC establishments viz. Delhi, NCR, Lucknow, Patna, Varanasi, Dehradun, Raipur, Mumbai, Bhubaneswar, Hyderabad and Ranchi, through newspaper advertisements, distribution of pamphlets etc.

System improvement measures undertaken during 2018-19

- Major System improvement initiative with regard to security issues at NTPC Coal Mines was taken up by Corporate Vigilance to ensure no pilferage / theft of coal from NTPC Mines. In this regard the recommendations of the cross functional committee have been approved by CVO and CMD and the same have been put in place from April 2018.
- Uniform guidelines for DGR sponsored security contracts operated at NTPC units have been finalized and issued for implementation in November 2018.
- On recommendations of Vigilance department, Corporate contracts has issued a circular modifying the guidelines for Evaluation of bids relating to abnormally high and low quoted rates by the Agencies.
- Various system improvement measures have also been suggested by Vigilance relating to TA claims by employees like Hotel Booking through Travel SBT, Standardization of Hotels in B – Class cities , payment of Hotel Bills through Online Mode etc. A system of issuing SBI travel card to executives for payment of hotel bills has already been implemented in this regard.
- A monthly publication of Vigilance in house e-flyer named "VIGdom" has been introduced from November 2018 for sharing vigilance related learnings/knowledge with employees.

NHPC

The Vigilance wing at NHPC is headed by Chief Vigilance Officer (CVO), appointed by the Ministry of Power and supported by Deputy CVO of the level of General Manager/Chief General Manager from NHPC and other Vigilance officers both at Corporate Office and at project / unit level as per structure defined by Central Vigilance Commission (CVC).

NHPC's Vigilance Division at Corporate Office has been granted ISO 9001: 2015 certification for implementation of Quality Management System by M/s BIS (Bureau of Indian Standard). All the procedures have been documented and system of monitoring of Vigilance complaints and disciplinary cases has been implemented to avoid delays.

The Corporate Vigilance in association with the Vigilance of the Units (Project Vigilance Officers – PVOs) makes continuous effort in identifying and suggesting improvements in the systems and procedures prevalent in the Corporation. The requirements of systemic improvements are addressed by issuing Circulars on anomalies noticed during regular & surprise inspections and examinations of other reports carried out by the Vigilance Officers.

Planned and surprise inspections are being conducted by the Vigilance Department at regular intervals. Actionable points identified by the Project Vigilance Officers are intimated to concerned Heads of Projects/Power Stations/Regional Offices/Units from time to time for implementing necessary corrections. In addition to above, intensive examinations of works are carried out by Chief Technical Examiner (CTE) of the CVC time to time. Intensive examinations of works, on CTE's pattern, at Projects and Power Stations are also carried out by Vigilance Division.

NHPC has adopted various measures of leveraging of technology in day-to-day working particularly those involving financial transactions/matters. In NHPC, there is an electronic system of filling and submission of application forms by employees. All payments to vendors, contractors and employees are made through electronic system. Updation of online vigilance status in respect of senior Executives of NHPC (E-8 and above including Board Level Executives) is being done in the web portal developed by Department of Personnel & Training..

As a part of transparent procurement system and in compliance with guidelines issued by CVC, NHPC has opted

e-procurement solution across the organisation, since 2012. Presently, the works / supply having estimated cost of Rs. 2.0 lacs or more are tendered through e-procurement system. E-Reverse auction is another important tool which has been adopted by NHPC in its corporate office w.e.f. April 2016 for tenders with estimated cost more than Rs. 5 crores for Electro Mechanical (E&M) / Hydro Mechanical (HM) contracts, Solar, Wind Projects and procurement of goods, where procurement is not of urgent nature.

Further, Integrity pact has been implemented successfully for all the procurement works of the value of Rs. 100 lacs and more, for procurement of goods of the value of Rs. 7 lacs or more and for procurement of services of the value of Rs. 15 lacs and more as per guidelines of CVC.

POWERGRID

The POWERGRID Vigilance Department is headed by Chief Vigilance Officer of the rank of Joint Secretary, who functions as the extended arm of the Central Vigilance Commission in order to assist the management in the matter of vigilance functioning. CVO, POWERGRID in turn, is assisted by Deputy CVO of the rank of ED, sixteen executives at the Corporate Centre and thirty four executives at the Regional level. The Vigilance Department at Corporate Centre of POWERGRID has been divided into three wings, i.e. the Investigation Wing, Vigilance & Disciplinary Proceedings Wing and Technical Wing.

In today's world, good Governance plays a very significant role in determining the success of an organization. Taking cue from it in day to day management, emphasis has been laid upon factors like Transparency, Integrity, Accountability, Fairness, Equity and adherence to Rules, Regulations and laws of the land. POWERGRID has striven to inculcate these facets in its day to day functioning.

The Vigilance Department of POWERGRID, in tandem with management, has always endeavored to improve Vigilance Administration in the organization as per the directives of the Central Vigilance Commission and Ministry of Power regarding leveraging of technology from time to time. As part of this, e-payments, e-procurement, e-reverse auction, e-billing, as also sub-vendor registration and uploading of evaluation criterion on the website, online inspection system, Vigilance Inspection Management System, Online Property Return System, as well as Document Tracking System have been inculcated within the organization. Besides this, POWERGRID has also formulated the Whistle Blower Policy and Fraud Prevention Policy.

The organization has also adopted the Integrity Pact since 2009 in which tenders having estimated value of above ₹ 1 crore are covered. Packages having estimated cost above ₹ 1 Crore are covered under the IP program and Independent External Monitors are nominated for packages having estimated cost above ₹ 100 Crore.

POWERGRID Vigilance performs various Vigilance Functions such as Preventive, Predictive, Pro-active, Participative, Detective and Punitive Vigilance. However, the prime Focus of Vigilance Department is on Preventive and Predictive vigilance and suggesting System Improvements to the management in various spheres.

As an important tool of Preventive Vigilance, Inspections are conducted by the Department at various locations though out the year. During the relevant period, 47 Surprise inspections and 59 CTE Type inspections and 39 Process-on-line inspections were conducted by Vigilance Department.

In Process Online inspections, critical areas of the Projects/ Schemes are inspected and checked at the initial stage of execution and any shortcomings observed thereon are referred to the site for immediate corrective measures. Surprise inspections are conducted primarily based on Source Information. CTE type Inspections are conducted in consonance with the format of inspections of Chief Technical Examiner, CVC. CTE Type inspections cover both Pre- award as well as Post-award activities of the selected work projects. Pursuant to Vigilance inspections and its observations and recommendations to the management, System Improvements are taken up. Continuous improvement in Systems and Procedures has always remained one of the hallmarks of the Company.

During the relevant period, 41 complaints were received from different sources and taken up for verification/investigation. Further, during the relevant period, 14 Departmental proceedings were initiated. As part of Capacity Building, Workshops on Preventive Vigilance, Ethics and the RTI Act are conducted at the Corporate Centre as well as in the Regions for the non-vigilance officials. During the period Jan'18 to Dec 2018, 23 Preventive workshops were conducted for non-vigilance executives.

The Transfer Policy for the executives is in place and transfer/ rotation is being done by the Management of POWERGRID regularly. Besides this, from time to time Vigilance Department is pursuing with the management to transfer the personnel which are working on sensitive posts and also those officials, which are in Agreed List and ODI List.

In order to spread awareness towards company's rules and procedures, property returns and other issues relevant to Preventive Vigilance, bulk SMS and e-mail are regularly sent to all the employees of the corporation time to time.

The vigilance work of the organization is being reviewed internally by the Board of Directors and externally by CVC and Ministry of Power. The Board of Directors of POWERGRID had reviewed the work of Vigilance on 10.07. 2018.

As per the Directive of the Central Vigilance Commission, this year also the Vigilance Awareness Week was organized in POWERGRID from 29th October to 3rd November 2018 in line with the theme for this year "Eradicate Corruption – Build a New India". In line with the directives of CVC POWERGRID is observing Vigilance awareness week with full vigor. Though the Vigilance Awareness Week was scheduled during 29.10.18. to 03.11.2018, but VAW celebrations in the company started from the 22nd of October 2018. POWERGRID is located in more than 350 locations across the country and has footprints in more than 20 countries. Different activities were undertaken at all the establishments of POWERGRID.

- Integrity Pledge was conducted across all offices of POWERGRID and it has been extended to all the stake holders. A total of around 40000 employees and citizens took the Integrity Pledge.
- We have organized a number of activities in more than 350 schools and colleges where the number of students involved is more than 40000.
- Walkathon has been conducted in around 200 establishments wherein all the employees along with their families have participated.
- Nukkad Natak has been organized in prominent places involving more than 20000 people.
- Seminars/Workshops have been conducted wherein eminent personalities have been invited for a talk in line with the theme of VAW.
- Gram Sabhas have been conducted touching more than 15000 villagers of our country.
- We have connected to more than 90,000 students of the schools, mostly govt. schools where in, we have distributed school edition of the newspaper specially designed with the message of CVC.

Journal of Vigilance department of POWERGRID (CANDOUR) was released this year also during the closing ceremony of Vigilance Awareness Week at its Corporate Centre. In line with Go Green Initiative of the Company, it was released in digital form (e-CANDOUR). Sh. Pratyush Sinha graced the closing ceremony of the VAW 2018.

Systems Improvement made-

I. Issuing dispatch instructions after ensuring the OSM insurance cover and indemnity bond: - It has been observed that, there are many instances where the dispatch instructions in respect of owner/employer supplied materials are being issued to supplier by Project Manager or issuing authority (PESM) without ensuring the OSM insurance cover and indemnity bond. A circular 6/2018 Ref no. CC/P&S/06 /DI dated 28/02/18 issued by CC-CS in this regard.

II. During inspection of pile foundation work, it was found that there were some ambiguities in SFQP of pile foundation work in transmission line. Due to these contradictions there are possibilities of error/ irregularities in implementation of SFQP at site.

III. Exclusion of WAR clause as extension cover in Transit Insurance policy for indigenous equipment. Deletion of "NIL Deductibles clause under Insurance Requirements".

IV. Methodology for fixing hiring charges for POWERGRID owned Testing Instruments/ T&Ps.

V. Release of Interest Bearing Initial Advance after the stipulated period.

VI. It has been advised and approved that e-RA shall not be conducted in packages for "Implementation of FQP through third party." A Circular 20/2018 Ref no CC/ P&S/06/e-RA dated 26/06/2018 has been issued by CC-CS for this.

VII. During the presentation by ESMD department on "Guidelines for Crop/Tree compensation" held at 8th floor on date 04.04.2018.CVO has advised to frame an uniform Notice format for crop & trees and circulate to all regions in order to have a unique format all over POWERGRID.

PFC

During the financial year 2018-19 the Vigilance Unit has taken the following measures on preventive vigilance.

1. Achievements:

a. Inspection (surprise and periodic) of different units of the corporation were carried out.

b. Use of Information technology as an effective tool for providing on-line services to all the stakeholders and to enhance organizational efficiency Vigilance Unit established an online key job responsibility system.

c. A number of comprehensive manuals/policies on different areas of company's activities were reviewed.

d. Further, the detailed investigation was carried out in thirteen cases of registered complaints.

2. Review:

The performance of Vigilance Unit was reviewed by the Central Vigilance Commission, Ministry of Power, Board of Directors and CMD of PFC in addition to regular reviews undertaken by the CVO, PFC as per prescribed norms.

3. Vigilance Awareness Week:

a. In accordance with CVC directives, Power Finance Corporation Limited observed Vigilance Awareness Week from 29.10.2018 to 03.11.2018.The activities that were organized during the week were aimed to sensitizing the employees of the Corporation about efficiency and objectivity in governance. On the occasion E-pamphlets and Resolution of the Government of India on PIDPI guidelines relating to whistle blower mechanism were sent through the e-mail to the employees of the Corporation. The banners showing observance of the Vigilance Awareness Week were displayed at the prime locations in and outside the office premises. Further, theme of Vigilance Awareness Week -2018 – i.e, "Eradicate Corruption – Build a New India" was also displayed on desktops of all the employees of the corporation. Publicity of the event was also done through social media such as facebook, twitter, Instagram, radio and newspapers including their online editions. Vigilance Unit also provided link on intranet and PFC website to take e-Pledge on Integrity and 271 employees took e-pledge on integrity.

b. Slogan writing Competition, Essay Writing Competition, Pictoral Theme representation Competition were organised on the subjects related to Vigilance. These competitions were open to all regular employees of this Corporation including those posted in the regional offices. The aim of these competitions was to stimulate the creativity, imagination and originality of the employees to enable them to come out with innovative ideas about dealing with Good Governance. A one day workshop on the topic related to theme of Vigilance awareness week-2018 was also organised by the Corporation with eminent personality for the benefit of employees, in which more than 37 employees participated. The Vigilance Awareness week 2018 was successfully concluded with distribution of prizes to the winners.

REC

Progress made during the financial year 2018-19:

REC constantly endeavoured to optimize probity and integrity among employees and to promote transparency, fairness and accountability in all operational areas. REC Vigilance Division mainly aims at "Preventive Vigilance" by reviewing of policies, rotation/transfers of employees holding sensitive posts, review of Audit Reports, review of projects/tenders/contracts awarded, inspections of Regional Offices, review of Annual Property Returns (APRs), etc. In this regard, following major activities have been carried out:

- In compliance with the instructions of CVC/MoP, the matter of rotational transfers from the identified sensitive posts is constantly being pursued.
- Prescribed periodical statistical returns were also sent to CVC and MOP on time.
- Regular review of Audit Reports- Internal, Statutory & CAG Audit Reports were done.
- Review of projects/tenders/contracts awarded and wherever deviations are observed, the matter is taken up with concerned divisions, which led to strengthening of appraisal system/guidelines.

- Field inspections of Regional Offices and scrutiny of APRs were done.
- The thrust on leveraging of technology was continued, with the result that information relating to loans, schemes, tenders, third party bills etc. are online.
- It was ensured that information/policies like tenders, requisite forms, status of loan applications/third party payments, Fair Practice Code, Prevention of Fraud Policy, CSR Guidelines, Whistle Blower Policy etc. are available on REC's website.
- Sh. P. V. Rao, Ex. IRS was appointed as Independent External Monitor (IEM) for REC & its Subsidiaries.
- Examination of Pay Fixation of REC Executives.
- Follow up for rectification in Recruitment Policy and Recruitments.
- Examination of loans awarded to Independent Power Producers (IPP) and contracts awarded by IT Division.

As per instructions of Ministry of Power, almost all tenders above Rs.2 lakh were processed through E-Procurement mode. E-Reverse Auction is also in process in cases where estimated value of procurement and quoted prices exceed certain parameters.

Observance of Vigilance Awareness Week:

REC Limited observed Vigilance Awareness Week from 29th October, 2018 to 3rd November, 2018. During the week, REC administered Integrity Pledge, conducted Paragraph Writing, Just a Minute, Painting and Poem Writing Competitions for employees and their family members and organized one day workshop on "ERP Audit and Data Analytics" on 01.11.2018 and another day workshop on "Contracts & Procurement" on 02.11.2018. Intra-School Paragraph Writing Competitions were organized at three Schools in Delhi on 30th October 2018 and all India level Inter School Poem Competition were also organised. Inter-College Debate Competition was also organized at Daulat Ram College, Delhi on 31st October 2018 wherein students of more than 30 colleges of Delhi participated and winning students were awarded prizes. Apart from this, activities were also organized at Regional Offices of REC all across India and subsidiaries of REC. Panel discussions /seminars were also organized at certain Regional Offices and RECIPMT, Hyderabad.

Innovative move

Integrity Club: REC under CSR has set up 29Integrity Clubs in various parts of country. REC also organized different activities for the students of REC Integrity Clubs set up all over India to encourage them to collectively participate in fight against corruption. The purpose of promoting Integrity Clubs in Schools by REC is to inculcate moral values into the minds of young children so that they grow up to become socially and morally responsible citizens of the country and also to develop them to collective fight against the menace of corruption in India. During the year, activities like logo designing competition, project competition on cleanliness in my neighborhood, poem writing competition, paragraph writing competition etc. among integrity club schools.

Magic Show: Vigilance Division organised Magic Show in 16 schools, 1 college and SCOPE Complex, Lodhi Road, New Delhi. Through this programme, message of Community Mobilization and uniting against Corruption in an innovative & interesting way was communicated and was appreciated by one and all.

Disciplinary Cases:

As on date, no disciplinary case/proceeding is pending in REC.

The performance of the Vigilance Division was reviewed periodically by the CVC, Board of Directors and CMD in addition to regular reviews undertaken by the CVO in accordance with the prescribed norms.

NEEPCO

During the period from 01/04/2018 to 31/03/2019, NEEPCO Vigilance Department adopted various Vigilance Mechanism under the directives and guidelines issued from the Central Vigilance Commission (CVC) from time to time. For exclusive and independent functioning of Vigilance department, NEEPCO ensured transparency, objectivity and quality in vigilance functioning. Complaints received from various sources other than anonymous/pseudonymous were taken up for prompt investigation and the same have been disposed off in accordance with the time frame prescribed by the CVC. As on 01/04/2018, 8 (Eight) complaints were pending and during the year 03 (Three) new complaints were added. Altogether 11 (Eleven) nos. complaints were under investigation during the year, out of which 07 (Seven) no. of complaints have been disposed of and remaining 04 (Four) nos. were pending for finalization as on 31.03.2019. Emphasis was given to the aspect

of preventive vigilance to streamline the rules and procedures and making all efforts to arrest the loopholes detected during investigation of various cases.

During this period 113 (One hundred thirteen) nos. of inspections have been conducted at different plants/projects by site vigilance officials as well as by vigilance officials of the HQ including CVO. Regarding improving vigilance administration by leveraging technology, implementation of e-procurement, e-payment, registering online vigilance complaints and uploading of Annual Immovable Property Returns (AIPRs) of Executives in the NEEPCO's Web site have been materialized.

Further, CTE/CVC has carried out intensive examination on two major works in respect of Tuirial HEP, Mizoram and Pare HEP, Arunachal Pradesh. The paras raised by the CTE have been attended from time to time and as a result of the CTE's inspection, so far an amount of Rs. 2,04,94,105/- only has already been recovered from the Contractor in Tuirial HEP.

Apart from suggesting various system improvement measures, the important CVC circulars and OMs issued during this period have also been circulated to all concerned to improve overall system in the Corporation.

790 (Seven hundred ninety) nos. of Annual Property Returns (APRs) of the employees have been scrutinized during the period from 01/04/2018 to 31/03/2019. Vigilance clearances required to the officials for various purposes like DPC, promotion regularization, foreign visit, out-side employment, retirement, resignation, release of terminal benefit etc. were given as and when sought for.

The CVO has attended various meetings during the period under report as convened by the Central Vigilance Commission (CVC) and the Ministry of Power (MoP) Govt. of India. The "Vigilance Awareness Week" was observed in the Corporation w.e.f. 29/10/2018 to 03/11/2018.

SJVNL

Vigilance Department of SJVN has been striving to bring about objectivity, fairness transparency and accountability in all matters with a view to promoting for better governance and corruption-free and healthy work culture. Various routine vigilance administrative matters / activities are being carried out in SJVN based on directives issued from time to time by the Ministry of Power and Central Vigilance Commission. The details of activities taken up during the year are as under:

Preventive Vigilance:

During the year. Vigilance Deptt. has conducted 35 periodic / surprise /CTE type inspections in different fields in different categories. The actionable points observed during the course of inspections were brought to the knowledge of the concerned officials and Management, wherever necessary, for suitable corrective measures. Further, the tenure of officers on sensitive posts is being continuously monitored. At the beginning of current financial year, 13 officials were occupying sensitive posts for more than 3 years and due to persistent intervention by Vigilance Deptt, 11 officials were transferred from these posts till date. However, due to inclusion of few more officers occupying sensitive posts for more than 3 years during, this number is 16 as on 31/03/2019. The Management shall look into transfer of these officials.

Systemic Improvements:

All payments are made digitally including, payments to contractors, etc. E-reverse auction (e-RA) has been introduced in SJVN. Also SJVN has already introduced e-tendering in all procurements valued at Rs.2 lakhs and above. Structured review meeting are regularly conducted by the CVO with CMD and the Board is informed of Vigilance activities on half-yearly basis.

Disposal of Complaints:

The complaints received in the Vigilance Department during the period from various sources were disposed-off after proper investigation within the prescribed time line. Apart from complaints received from other sources, 9 from MoP and 7 complaints were received from CVC which were processed as per their merit and within stipulated time frame.

Vigilance Clearance:

During the year, Annual Property Returns of 253 employees were scrutinized (up to 31/03/2019). Vigilance clearances were issued to 1771 employees of different level for various purposes like promotion, outside employment, retirement, NOC for official & private foreign visit, etc. Besides the above, online vigilance status of below board level employees have been uploaded both on DoPT and SJVN web portals as per requirement and the same are being updated periodically.

Disciplinary Cases:

Pursuant to CVC's second stage advice in a case, one officer has been imposed major penalty of "Reduction to a lower stage

in the time scale of pay for four years" and Minor Penalty of "censure" against three officers. In another case, three officers has been issued warning in line with CVC advice. Further, in a case, two officers have been exonerated; one officer has been issued warning and minor penalty of "censure" has been imposed to three officers as per the investigation report of Vigilance Deptt., in line with CVC advice and as decided by disciplinary authorities.

Vigilance Awareness Week:

As per the directive of Central Vigilance Commission, Vigilance Awareness week was observed w.e.f 29th October to 03rd November, 2018 in all units / centers of SJVN on the theme "Eradicate corruption — Build a New India". A lecture by CVO to sensitize the employees against corruption was delivered for employees of NJHPS, Jhakri. The programmes organized during VAW-2018 received wide coverage of media. In all, the activities encompassed 19 schools, 10 colleges, 9 districts and approximately 3600 students and school/college staff, besides SJVN's employees and their families.

THDC

Vigilance division has adopted Preventive and Pro-active approach to create incorruptibility in the functional areas. The strategy of preventive vigilance is drawn and implemented for an environment of integrity and to add values to the system for increasing transparency and accountability. The approach of preventive vigilance includes a combination of measures like the review of rules & policies, particularly concerning procurement and recruitment, awareness measures and focusing on specific functional areas. CTE Type /Regular Checks/Surprise Inspection have been conducted. Systems are being streamlined in consultation with respective department to bring transparency and curb possibilities of corruption. During the period, 46 Nos. of Surprise Inspection & 18 Nos of CTE Type Inspection were carried out. The time schedule laid down by the Central Vigilance Commission for conducting enquiries and investigation was by and large adhered to. Agreed list in consultation with CMD and SP (CBI) Dehra Dun for the year 2019 has been reviewed and finalized. List of Officers of Doubtful Integrity for the Year 2019 has also been finalized.

Status of Registered Complaints : (01.01.2018 to 31.03.2019)

Vigilance Department registered 14 complaints/cases for investigation. Out of these, 11 cases have been closed and enquiry is under progress in 03 cases.

Letter issued on Systemic Improvements : Vigilance Department issued 12 numbers of letters for Systemic Improvement relating to various cases during the financial year 2018-19.

Training in Vigilance Matters: During the F.Y 2018-19, Vigilance executives attended 08 Training Programmes pertaining to Vigilance Management & Preventive vigilance. Various Workshops / Seminars are being carried out by HRD deptt, THDCIL to create awareness amongst the employees regarding vigilance related matter.

Vigilance Awareness Week, 2018:- Vigilance Awareness Week-2018 was observed by THDC India Limited from 29.10.18 to 03.11.18 with the theme for this year specified by CVC "Eradicate Corruption-Build a New India". On the occasion, Vigilance department published a Booklet on Do's and Don'ts & Systemic Improvements, to create awareness amongst the officials. Posters / Banners on Anti -Corruption, Resolution of Govt. of India on PIDPI guidelines relating to whistle blower mechanism were published & distributed to entire offices of THDCIL for display.

DVC

Vigilance Department in Damodar Valley Corporation is functioning under the overall supervision and control of Chief Vigilance Officer with an aim to ensure transparency, objectivity, and quality in vigilance functioning. The details of various activities taken up during the period are furnished below:

1. **Inspection of works, services, contracts etc. and scrutiny of Audit Reports:**

   Total 43 **Surprise checks** and 65 **Periodic/Planned** inspections were carried out during this period. Actionable points emerged in course of inspections were brought to the notice of the concerned HODs/HOPs and other officials for suitable corrective and administrative actions.

   Scrutiny and examinations of **Audit Reports** (Internal) for the period 2016-2017 has been taken up.

2. **Disposal of Complaints:**

   Total 39 complaints have been received during the period, amongst which 28 nos. have been disposed

of and rest complaints are at the various stages of investigation.

3. Vigilance Clearance and Scrutiny of APR:

Vigilance clearances for various purposes viz Promotion/ Up gradation, resignation, outside employment/ deputation, retirement (voluntary /superannuation) and for obtaining NOC for official & private foreign visit etc were accorded to **1621 officials. Annual Property Returns (APR)** of around 1500 Officials were scrutinized.

4. Disciplinary Cases:

During this period Major Penalty Proceedings were initiated against 10(ten) officials of the Corporation. Further, on conclusion of departmental proceedings major penalty have been imposed upon 04 (four) officers.

5. Structured Meeting with Chairman:

As per mandated provisions quarterly structured meeting with Chairman / Board Members and other Senior Officials were held in regular intervals. Discussions were held on the Agenda note and minutes of the meetings issued for follow up action and implementation.

6. Meeting with the CBI officials:

Several meeting with the CBI officials were held on the issues having common interest. Agreed Lists for the year 2018 had been finalized in consultation with CBI.

7. Vigilance Awareness Week (VAW):

Vigilance Awareness Week (VAW)-2018 throughout Damodar Valley Corporation (DVC) was observed with effect from 29.10.2018 to 03.11.2018 with the theme "Eradicate Corruption - **Build a New India** (भ्रष्टाचार मिटाओ – नया भारत बनाओ)". As part of outreach activities nos of activities viz lectures/debates, slogan/ essay/ quiz/ painting competitions were carried out at different schools, colleges, and institutions of **Kolkata, Asansol & Hazaribag** city/town & other projects of DVC.

Two (2) Workshops were organized at DVC Hqrs on **"Public Procurement Principles and Effective Contract Management"** and **"Drafting of Charge Sheet, Conduct of Departmental Inquiry & Role of Inquiry/Presenting Officer"**. The said workshops were addressed by Sri Ramachandran Venkataramani, Ex-CTE, CVC and Sri Surjit Singh, Ex-Director, CVC & CDI.

8 Systemic Improvement:

On the advice of the vigilance deptt., various systemic improvement had taken place in the matter of works/ services/ purchase contracts, works awarded on nomination basis, receipt and processing of bills and prescribed timeline for release of payments to the contractors/suppliers/service providers, disposal of scraps & non-moving items, rotational transfer of officials holding sensitive posts, etc.

BBMB

The Vigilance Administration in Bhakra Beas Management Board comprises of a Chief Vigilance Officer (CVO). CVO SJVNL is holding Additional Charge of CVO, BBMB, Any complaint(s) received is got investigated by the VO and based on finding/ record appropriate action is recommended with the approval of CVO.

The Vigilance Organization in BBMB is doing earnest efforts to inculcate the following discipline among all the employees of BBMB as a measure of preventive vigilance :-

(i) To check and control the very tendency on one's part to delay the matters.

(ii) To record speaking orders in clear terms on the files giving merits of the orders.

(iii) To avoid decision being influenced by those who might have an axe to grind.

(iv) To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in saving to the exchequer.

(v) To be firm in conviction that integrity is to be safeguarded and any price paid in this regard is insignificant.

(vi) Identification and focus on sensitive posts, regular and surprise checks/inspection of such sports.

(vii) Identification of officials suspected of corruption and proper scrutiny of personnel who are posted in sensitive posts which involve public dealing establishment and purchase related work and ensure their rotation after every 3 years as per CVC guidelines.

(viii) To keep a watchful eye on all breeding places of corruption.

(ix) To expose without fear those involved in acts of self gratification.

(x) To take pride in humble living and acts of honesty.

(xi) To follow the rules, procedures, instructions, manuals, etc. meticulously.

(xii) To avoid drawing illogical and dubious inferences so as to derive undue benefits whenever an ambiguity in rules in encountered.

(xiii) Agreed list & list of doubtful integrity are prepared and it is ensured that officer/officials of doubtful integrity are not posted on sensitive posts.

(xiv) Expedite the inquiries, their follow-up action to get decision from parent States/State Electricity Boards.

(xv) Implementation of disciplinary actions without any delay wherever BBMB itself can take the same.

(xvi) Various advisory have been issued for system improvement in BBMB.

(xvii) Preventive circular for improving awareness as well as system improvement in working of BBMB were also taken up from time to time.

During the year 2018-19 (01/04/2018 to 31/03/2019), 20 complaints were received. 15 Nos. complaints have been disposed off and remaining 5 complaints are under investigation.

Besides above, Vigilance Awareness Week – 2018 was observed w.e.f. 29.10.2018 to 03.11.2018 in BBMB offices at Chandigarh as well as at Project Stations. An interactive session on "Eradicate Corruption-Build a New India" was also conducted on 01.11.2018 at Chandigarh and Nangal.

BEE

During the year 2018-19, there was no major complaint received and no disciplinary case initiated.

CPRI

'Vigilance Vision' of CPRI is preventive over punitive actions, to enforce meaningful, workable and objective systems/procedures, to develop trust and transparency in all transactions, to prevent financial or other losses due to any malpractices, to promote pride and self-esteem of the Organization and its employees and time bound action in all spheres of activities.

Several system Improvements have undertaken with IT usage and web enabled technologies like display of Status of booking of test dates is available in CPRI website. Technology communication with customers through emails, payment of test and consultancy fees through wire transfer, RTGS, e-tendering, posting of Formats for submission of research proposals, project reports in CPRI website. Transparency in all the technical, financial and administrative activities of CPRI is ensured.

NPTI

Vigilance Awareness week was observed at NPTI Corporate Office and all the institutes from 29th October to 3rd November, 2018 with the Theme: "Eradicate Corruption-Build a New India". During the week number of activities was organized starting from pledge taking to conducting workshop on vigilance awareness and organizing debate competition. In the pledge taking ceremony held on 29.10.2018 Prof. (Dr.) Rajendra Kumar Pandey Director General, NPTI administered the pledge to all the officers and staff of NPTI, Corporate Office, Faridabad and NPTI (PSTI), Bengaluru through Video Conferencing.

Tailoring Training Program for women under Skill Development activities by DVC.

CHAPTER 35.3

ACTIVITIES RELATING TO WOMEN EMPLOYEES

Ministry of Power

There are 48 women employees in the Ministry of Power. The representation of women employees at various levels in the Ministry of Power as on 31.03.2019 is indicated below :

Group	Total Employees (as on 31.03.2019)	No. of Women Employees	Percentage of overall staff strength
A	61	12	19.6
B	118	28	23.7
C	42	06	14.2
C(MTS)	57	02	3.5
Total	**278**	**48**	**17.2**

Employment of women in various grades in the Ministry of Power is dependent upon the nominations received from DOP&T and the recruiting agencies such as the Union Public Service Commission, Staff Selection Commission etc.

A Complaints Committee exists in the Ministry of Power to look into the complaints of sexual harassment made by the women employees of the Ministry. The Committee is currently chaired by Deputy Secretary Level Officer

Welfare of Minorities

The schemes, as recommended by the Government for the welfare of the Minorities from time to time, are implemented, from time to time.

CEA

Group	Total Employees as on 31.03.2019	No. of Women employees in position	Percentage of overall staff strength
A	370	52	14.05
B	140	40	28.57
C	233	27	11.58
TOTAL	743	119	16.01

PAO

Group	Total Employees as on 31/12/2018	Number of women employees	Percentage of overall staff strength
A	2	-	-
B	43	9	20.93
C	23	3	13.04
Total	68	12	17.64

NTPC

Group	Total Employees on 31st March 2019	Number Of Women employees	Percentage Of overall staff strength
A	12692	786	6.2
B	3805	285	7.5
C	3167	171	5.4
D	575	47	8.2
Total	**20239**	**1289**	**6.4**

NHPC

NHPC provides conducive working environment to all its female employees and strives to ensure gender equality at all levels. NHPC provides at par working conditions prevalent in the industry to female employees in respect of work, leisure health and hygiene. Further, our organization ensures that there is no hostile environment towards women at work place and no women employee has any grounds to believe that she is in a disadvantageous position regarding her employment. The various benefits and facilities provided to Women employees in NHPC Ltd are briefed as below:

I. Maternity Leave

Maternity Leave is granted to female employees for a period up to 180 days to take care of the new born and 45 days in case of miscarriage/ abortion.

II Child Care Leave (CCL) for Women Employees

Child care leave with pay maximum upto 730 days for women employees for taking care of upto two children upto the age of 18 years (no age limit in respect of child with minimum disability of 40 %) for rearing or to look after any of their needs like examination, sickness etc.

III. Special Child Care Leave on adoption of a child.

Special child care leave is granted to facilitate female employees with less than two surviving children up to a period of 180 days from the date of valid legal adoption, to take care of their legally adopted child up to one year of age.

IV. Conduct, Discipline & Appeal Rules.

NHPC Conduct, Discipline and Appeal Rules, includes rules prohibiting sexual harassment and provide for appropriate penalties against offender.

V. Complaints Committee for handling harassment related grievances of women employees.

In accordance with the Sexual Harassment at Workplace (Prevention, Prohibition and Redressal) Act, NHPC has a Complaints Committee for handling complaints / grievances of female employees concerning harassment at workplace at Corporate Office and at all its Projects/ Power Stations /Regional Offices and Units. The same is adequately publicized at all its units.

VI. Crèche Facility:

Crèche facility has been provided to employees at Corporate Office. The Crèche is having the facilities of storage, heating, cooking food for infants, nannies to take care of infants etc.

VII. Declaration of Parents/ Parents-in -Laws as dependents.

NHPC also provides the option to its female employees to declare her parents / Parents -in -Laws as dependents for availing Medical benefits.

VIII. WIPS Cell.

Women in Public Sector Forum (WIPS) have been constituted at Corporate Office to inspire and promote the integrated growth of women in NHPC and enhance their effectiveness in employment.

IX. Special Dispensation in Attendance:

Late coming beyond 9:30 a.m. to 10:00 a.m. is allowed four times in a month to all employees subject to compensation on the same day for corresponding period after 17:30 hrs, however, in respect of women employees sitting late in the evening is restricted upto 18.00 hours only for compensating the late coming in the morning.

X. Representation of women employees on selection board/ committee constituted for promotion/ recruitment of employees.

Representation of women in employment is as under:

Group	Total Employees as on 31.03.2019	Number of Women employees	Percentage of overall staff (Women employees) strength
A	2880	225	7.81
B	815	94	11.53
C	2166	194	8.96
D (Excluding Sweepers)	833	179	21.49
Sweepers	59	19	32.20
Total	**6753**	**711**	10.53

POWERGRID

As on March 31, 2019 there are 681 Women Employees working at different levels in the corporation. Details are given below:

Group	Total no. of Employees as on 31/03/2019	No. of Women Employees	Percentage of Staff Strength
A	4300	368	8.56
B	2072	162	7.82
C	2764	141	5.10
D	81	10	12.35
Total	**9217**	**681**	7.39

In view of the principle of gender equality as enshrined in the Indian Constitution, various steps have been adopted for positive discrimination in favor of women in POWERGRID ensuring their advancement in different spheres. Beside this, a complaint committee under the chairmanship of a woman executive has been set up, to ensure appropriate environment at work place for women. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013 has been brought to the notice of all concerned in Corporation for prevention of sexual harassment of working women. It is ensured that there is no discrimination against women on any count. In order to create awareness regarding female employees' rights, exclusive adequate training programs on women empowerment and development, including programs on gender sensitization are organized. The Corporation also encourages female employees to freely participate in all

activities like meetings, conferences/ seminars, exhibitions, competitions, training etc. which help in their integration. We have made all possible efforts so that a congenial atmosphere can be created to enable women employees to perform their duties with honor, dignity and without fear.

We have made efforts to ensure that adequate numbers of female are recruited whenever we resorted to such activities. Apart from giving employment, it is ensured adequate representation is given to female employees while nominating employees for external and internal training programs.

PFC

The Corporation has women in important and critical functional areas. Women representations have gone across hierarchical levels. The Company provides equal growth opportunities for the women in line with Govt. of India philosophy on the subject. The women are adequately represented, with 20.60% of the total work force.

Group	Total Employees (as on 31.03.2019)	Number of Women Employees	Percentage of overall staff strength
A	479	100	20.88
B	6	0	0.00
C	14	3	21.43
D	1	0	0.00
Total	**500**	**103**	**20.60**

PFC as part of its social responsibility makes all efforts to ensure compliance of the Directives and guidelines issued by the Government of India from time to time pertaining to the welfare of female employees. A committee to examine the cases related to sexual harassment is in place.

REC

Representation of Women in REC

The Company provides equal opportunities for employment of women and takes care of their safety and welfare while in employment. REC has in place gender neutral and women friendly practices and policies which supports equal opportunities and protection against exploitation of women employees at the work place. In line with the provisions of Sexual Harassment of Women at workplace (Prevention, Prohibition &Redressal) Act, 2013, an "Internal Complaints Committee' has been constituted in the Company for redressal of complaint (s) against sexual harassment of women employees. The committee is headed by a senior lady officer of the Company and includes representative from an NGO as one of its members. Anti-sexual harassment stance of the Company is also outlined in REC (Conduct, Discipline and Appeal) Rules.

REC has several leave policies matching the statutory provisions regarding Maternity Leave and also Child Care Leave for taking care of children during their growing up years. Safety and exploitation free environment is ensured by way of well documented policies regarding prevention of sexual harassment at work place. Equal opportunities are provided for the women employees in their career advancement. Women in the Corporation have reached the highest levels of Management positions. There is also a women cell functioning in the form of a self-help group of women. They meet periodically and organise get together and picnics which are financially supported by the Management.

Out of the total work force in the Company the representation of women is 16.02%.

Group	Total Employees as on 31.03.2019	Number of Women employees	Percentage of overall staff strength
A	346	55	15.90
B	75	16	21.33
C	9	0	0
D	57	7	12.28
TOTAL	**487**	**78**	**16.02**

NEEPCO

Representation of women is indicated in the format given below:

Group	Total Employees as on 31/03/19	Number of Women employees	Percentage of overall staff strength
A	697	62	16.82
B	620	123	
C	678	124	
D	56	36	
Total	**2051**	**345**	

SJVNL

Representation of women in staff strength is given below : -

Group	Total Employees as on 31.03.2019	Number of Women employees	Percentage of overall staff strength
Total	Total=1579 (1475 Direct Recruited (DR) & Absorbed and 104 Deputationist from GoHP)	160	10.13 % of total staff strength

- In pursuance to the Sexual harassment of Women at Workplace (Prevention, Prohibition & Redressal) Act 2013, Internal Complaint Committees have been constituted at Corporate Office as well as Project Sites.
- SJVN gives utmost importance to the empowerment and overall well being of its women employees. More than 90 % of women employees have been imparted training on Neuro-linguistic Programming, Leadership Development, health & Stress Management and Gender Senstivity etc. through Organizations of National repute like ASCI, IIMs, IMI, MDI etc.
- SJVN also encourages its women employees to participate in various Recreational, Cultural and Sports Events thereby resulting in enhanced cordial relationships.
- SJVN women employees have been extended the benefit of maternity leave, child care leave besides relaxation in office timings.

THDC

Representation of women in THDCIL is indicated in table below:

Group	Total Employees (as on 31.03.2019)	Number of Women Employees	Percentage of overall staff strength
Total	1891	116	6.13

Brief write up about the activities

THDC India Limited believes that Women Employees are equal partners in the growth of the Organization. Various activities for women employees have been organized in the Financial Year 2018-2019, which includes workshops and a specially designed training program for women. This year corporate welfare department has conducted work shop on "Health and Nutrition" by Dr. Surekha, Dean Academics, AIIMS, Rishikesh.

A Women Cell works for the welfare of the women employees. It constitutes women employees of different grades and meets periodically.

In order to ensure fitness of women employees of corporation, Corporate Welfare department is conducting daily Yoga programme at Officer Club & Community Centre. THDCIL has also conducted meditation workshop from 20 Feb to 27 Feb 2019 at Officer Club through reputed Trainers / Masters.

The "Women Cell" works for the welfare and redressal of grievances of women employees (if any). Apart from this, a number of sports and cultural activities are organized round the year explicitly for the women employees and spouse of employees like Badminton, Carom, Health & Wellness program etc. Women team of THDCIL emerged Winner of the ICPSU Badminton Tournament held under the aegis of Power Sports Control Board.

DVC

Women employees constitute about 6.66% as on 31.03.2019 of DVC work force. Measures for empowerment and development policy of gender sensitization are adopted.

Group	Total employees as on 31.03.2019	Number of women employees	Percentage of overall staff strength
Group A	2552	122	4.78
Group B	3772	240	6.36
Group 'C' & 'D'	1097	132	12.03
Total	**7421**	**494**	**6.66**

DVC, as a life time member of Women in Public Sector (WIPS) under aegis of Standing Conference of Public Enterprises (SCOPE) for the growth of women in public sector, has formed the WIPS cell as per guidelines of DOPE, Ministry of Heavy Industries and public enterprises, GOI.

In the last national meet of the WIPS, DVC has been awarded with recognition for active and overwhelming participation of its women employees amongst WIPS eastern region.

International Women's Day was celebrated in all the Projects of DVC on 08.03.2019.

DVC has constituted an internal complaints committee, at its all Administrative units, in line with "Sexual harassment of women at work place under prevention, prohibition and redressal Act, 2013".

BBMB

Representation of women in BBMB is indicated below:-

Group	Total Employees	Number of Women employees	Percentage of overall staff strength
A	497	46	9.26
B	995	152	15.28
C	3395	302	8.90
D	3528	418	11.85
Total	8415	918	10.91

BBMB celebrated International Women's Day to appreciate and respect women's role in society. Motivational speech about women empowerment and gender equality were delivered and attended by all women employees at Chandigarh. BBMB is committed to provide safe working environment to its women employees. Sexual harassment committees have been constituted at various levels to ensure redressal of grievances of women. For the welfare of women employees of BBMB, a Creche has been provided to look after the wards of women employees of BBMB.

BEE

Representation of women as on 31.03.2019 is given below:-

Group	Total Employee as on 31.03.2019	Number of Women Employees	Percentage of overall staff strength
A	13	02	15.38
B	09	04	44.44
C	01	-	-
D	--	-	-
Total	23	06	26.08

CPRI

The Women's Cell looks after:

- Welfare of the women employees of the organization
- Addresses the issues/ grievances concerning women employees and facilitates redressal of the same
- Manages the Creche in CPRI colony and provides necessary guidelines for its smooth functioning

The internal complaints committee of Womens Cell investigates (as per CPRI's Internal Policy for Prevention, Prohibition and Redressal of Sexual Harassment of Women at Workplace) reported cases if any in CPRI of commission of acts of sexual harassment of women and submits its report to the disciplinary authority recommending action to be taken against the accused employees. The womens cell also looks into any other complaints by Women employees in workplace.

The chairperson of womens cell also recommends to the management of CPRI the sponsoring of women employees to attend women related conferences and arrange talks pertaining to women related matters. One of the women officers was deputed to attend the Two days Workshop on 'The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013', organized by Institute of Public Administration, Bangalore, on 5th & 6th March 2018. Felicitations were arranged by the womens cell to superannuating women employees of the Institute during the year 2018.

There was no case of sexual harassment reported during the year 2018-19 (for the period from 1st January 2018 to 31st March 2019).

Number of Women Employees in the Institute as on March 2019

Group	Total Employees as on 31.03.2019	Number of Women employ-ees as on 31.03.2019	Percentage of overall staff strength
A	185	28	15.14
B	142	22	15.49
C	196	27	13.78
Total	**523**	**77**	**14.72**

NPTI

The Group-wise number of women employees is shown in the Table below:

Group	Total employees as on 31.03.2019	No. of women employees	Percentage of overall staff strength
Group 'A'	88	9	10.22
Group 'B'	35	18	51.42
Group 'C' (including MTS)	101	11	10.89
Total	**224**	**38**	**16.96**

Tuirial Hydro Power Project, Mizoram

CHAPTER 35.4

PERSONS WITH DISABILITIES (PwDs)

Ministry of Power

Ministry of Power provides reservation for the Persons with Disabilities in appointments in accordance with the instructions issued by Government from time to time. The implementation of the reservation policy for Persons with Disabilities in the Ministry and various organisations under its administrative control is monitored by Director (SC/ST) of the Ministry.

The representation of Persons with Disabilities in the Ministry as on 31.03.2019 is as under :

Group	Total Employees (as on 31.03.2019)	Persons with Disabilities Employees				Percentage of Persons with Disabilities employees
		VD	HD	OD	Total	
A	61	0	0	0	0	0.0
B	118	0	0	2	2	1.6
C	42	0	0	0	0	0.0
C **(MTS)**	**57**	**1**	**0**	**2**	**3**	**5.2**
Total	**278**	**1**	**0**	**4**	**5**	**1.7**

VD — Visually Disabled (Handicapped)

HD — Hearing Disabled (Handicapped)

OD — Orthopedically Disabled (Handicapped)

CEA

Group	Total Employees as on 31.03.2019	Physically Challenged Employees				Percentage of Physically Challenged
		VD	HD	OD	Total	
A	370	-	01	05	06	1.62
B	140	-	01	05	06	4.28
C	233	03	-	01	04	1.71
TOTAL	743	03	02	11	16	2.15

PAO

Representation of Persons with Disabled employees may be indicated in the format given below:-

Group	Total Employees as on 31/12/2018	Persons with Disabilities Employees				Percentage of Persons with Disabilities Employees
		VD	HD	OD	Total	
A	2	-	-	-	-	-
B	43	-	-	2	2	4.65
C	23	-	-	-	-	-
Total	68	-	-	2	2	2.94

NTPC

Group	Total Employees as on 31st March 2019	Physically Challenged employees				Percentage of Physically Challenged employees
		OH	VH	HH	Total	
A	12692	128	12	13	153	1.2
B	3805	47	6	12	65	1.7
C	3167	93	59	55	207	6.5
D	575	33	21	30	84	14.6
Total	**20239**	**301**	**98**	**109**	**509**	**2.5**

NHPC

Group	Total Employees as on 31.03.2019	Physically challenged employees				Percentage of physically challenged employees
		VD	HD	OD	Total	
A	2880	10	2	66	78	2.71
B	815	0	1	28	29	3.56
C	2166	0	1	7	8	0.37
D(Excluding Sweepers)	833	1	0	6	7	0.84
Sweepers	59	0	0	0	0	0
Total	6753	11	4	107	122	1.81

The reservation and relaxation is provided to Physically Challenged Employees in direct recruitments as per guidelines issued by DoPT / Ministry of Social Justice & Empowerment from time to time. In addition following welfare schemes and available for them:

Grant of Financial Assistance for vocational Training to those who get physically handicapped while in service.

Reimbursement of charges for purchase of hearing aid is allowed to the employees and their dependents and reimbursement of Cost of Artificial Limbs on case to case basis.

Restriction of age is not applicable in respect of physically/mentally retarded children for considering him/her as a dependent for medical claims/treatment.

Physically challenged employees and employees who have disabled child may be exempted from the rotational transfer subject to administrative constraints.

Lifetime medical facility to the mentally or physically totally invalid dependent children having 40% or more of one or more disabilities in respect of retired/deceased employees under NHPC Retired Employees' Health Scheme.

POWERGRID

As on March 31, 2019 there are 204 Physically Challenged Employees working at different levels in the corporation. Details are given below:

Group	Total Employees as on 31/03/2019	Physically Challenged Employees				Percentageof Personswith disabilities
		Visually Handicapped (VH)	Hearing Handicapped (HH)	Orthopaedic Handicapped (OH)	Total	
A	4300	5	20	64	89	2.07
B	2072			30	30	1.45
C	2764	7	13	63	83	3.00
D	81	1		1	2	2.47
Total	**9217**	**13**	**33**	**158**	**204**	2.21

Above data includes regular manpower in POWERGRID through en-masse transfer of employees by process of absorption from various constituent organizations during its formation as well as all recruitment carried out by POWERGRID.

POWERGRID believes in providing equal opportunities to all employees including disabled employees. As such, opportunities at work are provided without any prejudice to persons with disabilities (PwDs) because they are able to perform all jobs that are handled by their able bodies counterparts. As such, there is no discrimination in the allotment of work assignment.

The provisions of government directives relating to Persons with disabilities are complied with in the Corporation. The reservation and various relaxation and concession are allowed to them for recruitment and promotion as applicable. We have also made efforts to promote the welfare of persons with disabilities in providing facilities as applicable like residential accommodation, exemption from payment of professional tax, provision of medical equipment's/ general medical assistance as well as provision for special causal leave for specific requirements relating to disabilities of officials. These facilities are provided to them so that they can perform their duties efficiently. Besides this, arrangements have been made to ensure barrier free environment in POWERGRID and Audio system in the lifts of Corporation's buildings have been provided. The Liaison Officer has been nominated in each Region and Corporate Centre to look after the welfare of persons with disabilities. The reservation rosters are maintained for direct recruitment and promotion as applicable which are subject to scrutiny of Ministry of Power. The vacancies for persons with disabilities are notified as per reservation rosters maintained for each group of posts at the rate of 3% of number of vacancies. Reservation is also provided to persons with disabilities in promotion at the rate of 3% as per government directives.

PFC

Representation of PWD employees in PFC is given below:-

Group	Total Employees as on 31.03.2019	Persons with Disabilities (PWDs) Employees	Percentage of overall staff strength
A	479	13	2.71
B	6	0	0.00
C	14	0	0.00
D	1	1	100.00
Total	500	13	2.80

PFC as a part of its social responsibility makes all efforts to ensure compliance of the Directives and Guidelines issued by the Government of India from time to time pertaining to the welfare of Persons with disabilities. The steps taken include due

reservations and relaxation as applicable under the various directives for direct recruitment as well as for promotions. PFC provided the necessary provisions on all floors for facilitating easy access to persons with disabilities and names are engraved in Braille script for the comfort of visually disabled persons. A liaison officer has been appointed to look into matter of reservations.

REC

Representation of Physically Challenged Employees:

The Corporation has been following the laid down norms for employing the PhysicallyHandicapped employees in its totality and spirit.

Details of the number of Physically Challenged employees employed in the Company are as under:-

Group	Total Employees as on 31.03.2019	Persons with Disabilities Employees				Percentage of persons with disabilities employees
		OH	VH	HH	Total	
A	346	10	0	1	11	3.18
B	75	0	0	0	0	0
C	9	0	1	0	1	11.11
D	57	0	1	0	1	1.75
TOTAL	**487**	**10**	**2**	**1**	**13**	**2.67**

NEEPCO

Representation of Physically Challenged Employees is indicated in the format given below:

Group	Total Employees as on Total Employees as on 31/03/19	Physically Challenged Employees				Percentage of Physically challenged employees
		VH	HH	OH	Total	
A	697	4	3	5	12	2.39
B	620	4	3	5	12	
C	678	8	6	3	17	
D	56	0	2	6	8	
Total	**2051**	**16**	**14**	**19**	**49**	

SJVNL

Representation of Divyang Employees in staff strength is given below: -

Group	Total Employees as on 31.03.2019	Divyang Employees				Percentage of Divyang employees
		VH	HH	OH	Total	
Total	Total=1579 (1475 Direct Recruited (DR) & Absorbed and 104 Deputationist from GoHP)	8	7	17	32	2.17 (% of Direct Recruited (DR) & Absorbed i.e. 1475 employees)

The recruitment of Divyang Persons is done as per guidelines from Govt. of India. Proper category-wise Rosters are maintained and in case of backlog, Special Recruitment Drive is also resorted to. In addition to the reservation of Posts for SC/ST/OBC in direct recruitment, 4 % posts are reserved for Divyangs. Relaxations and concessions are also extended as per the guidelines of the Govt. of India. The candidates are exempted from payment of application fee. The Liaison Officer SC/ST also acts as Liaison Officer (Divyang).

THDC

Representation of Physically Challenged Employees in THDCIL is indicated in table below:

Group	Total Employees (as on 31.03.2019)	Person with Disabilities				Percentage of person with Disabilities
		VD (Visual Disabled)	HD Hearing Disabled)	OD (Orthopedically Disabled)	Total	
Total	**1891**	**05**	**07**	**21**	**33**	**1.74**

Brief write up about the activities

The company considers persons with Disability as one of the building blocks of the Organization and has always worked for the effective implementation of presidential directives issued from time to time for their welfare and representation in the Organization. For the implementation of United Nations Convention on the right of Persons with Disabilities (UNCRPD), the Corporation provides accessibility to different buildings for persons with disabilities under Section-46 of the persons with Disabilities (Equal Opportunities, protections of right and full participation) Act 1995. Apart from above, Persons with Disabilities are provided equal opportunity to participate in the Sports and Cultural activities and other competitions organized round the year. Liaison Officers have been nominated Unit wise to identify their problems and implementation of various welfare activities for them. The Company recruited 01 No. candidate from differently abled person (OH-category) in Group-A through open Advertisement.

DVC

Persons with Disabilities

Group	Total employees as on 31.03.2019	Persons with Disabilities Employees				Percentage of Persons with Disabilities Employees
		VD	HD	OD	Total	
Group A	2552	0	0	20	20	0.78
Group B	3772	03	1	25	29	0.77
Group 'C' & 'D'	1097	01	0	05	06	0.55
Total	**7421**	**04**	**1**	**50**	**55**	**0.74**

It has been ensured while allocating work, that physically Challenged employees, with due consideration, have minimum inconvenience in discharging their official responsibilities. The GOI provisions for challenged employees are complied with like special transport allowance.

BBMB

Representation of Physically Challenged Employees in BBMB is shown below:

Group	Total Employees	Physically Challenged Employees				Percentage of physically challenged employees
		VH	HH	OH	Total	
A	497	-	-	2	2	0.40
B	995	-	-	10	10	1.01
C	3395	2	-	34	36	1.06
D	3528	3	4	34	41	1.16
Total	**8415**	**5**	**4**	**80**	**89**	**1.06**

BBMB discharges its functions as laid down in Section 79(1) of the Punjab Reorganization Act, 1966 for which staff for the operation and maintenance of BBMB work is provided by partner States/SEBs on transfer basis. However, in the event of inability of partner States/SEBs to provide the requisite staff, BBMB resorts to direct recruitment and promotion in respect of Group-C & D employees only. BBMB Class-III & Class-IV Employees Regulations, 1994 & Class-I &Class-II officers Regulation, 2015 were approved by the Central Govt. As per old Regulation 11 of these Regulations, the members belonging to SC, ST, BC, Ex-servicemen, Physically handicapped persons and dependent of deceased employees in the service had the reservation and all other concessions as prescribed by Punjab Government from time to time. Now, the aforesaid Regulation 11 has been amended by Gazette Notification of Govt. of India dated May, 2017 vide which Central Govt. Reservation Policy is applicable in BBMB. Hence BBMB is following Central Govt. Reservation Policy since May, 2017 and accordingly due representation is given to PWD in direct recruitment as per the provisions prescribed in Central Govt. Reservation Policy

BEE

Representation of Physically Challenged Employees in BEE as on 31.03.2019 is as follows:-

Group	Total Employee as on 31.03.2019	Physically Challenged Employees				Percentage of Physically Challenged Employees
		VH	HH	OH	Total	
A	13	-	-	01	01	7.69
B	09	-	-	01	01	11.11
C	01	-	-	-	-	-
D	--	-	-	-	-	-
Total	**23**	**-**	**-**	**02**	**02**	**8.69**

CPRI

Smt. Sreedevi J, Joint Director, CPRI, Bangalore served as Liaison Officer for PWD category in CPRI during the year 2018-19 (for the period from 1st January 2018 to 31st March 2019)

Group	Total Employees as on 31.03.2019	Persons with Disabilities Employees				Percentage of Persons with Disabilities employees
		VD	HD	OD	Total	
A	185	-	1	5	6	3.24
B	142	1	-	2	3	2.11
C	196	1	2	3	6	3.06
Total	**523**	**2**	**3**	**10**	**15**	**2.87**

NPTI

The Group-wise number of physically challenged employees is given in the table below:

Group	Total Employees as on 31/03/2019	Physically challenged Employees				Percentage of physically challenged employees
		VD	HD	OD	Total	
Group 'A'	88	-	-	2	2	2.27
Group 'B'	35	-	-	1	1	2.85
Group 'C'(including MTS)	101	1	1	4	6	5.94
Total	**224**	**1**	**1**	**7**	**9**	**4.01**

CHAPTER 35.5

RECREATIONAL ACTIVITIES:

Ministry of Power

The Recreation club was constituted in Ministry of Power after a fair Election. The composition of elected Recreation Club Members were as under:

1.	Sh. Rajesh Kumar	President
2.	Shri I.J. Virmani	Vice President
3.	Shri Anil Kumar Sharma	General Secretary
4.	Shri Ravinder Tanwar	Sports Secretary
5.	Shri Naveen Saran	Cultural Secretary
6.	Shri Manoj Shaw	Treasurer
7.	Ms. Nishi Rani	Member
8.	Shri Y.S. Rawat	Member
9.	Shri Raman	Member
10.	Ms. Bhawna	Member

During the year (2018-2019), MOP Sports teams have participated in various inter CPSU/Inter Ministry Tournament and achieved distinction in following events:-

Name of Tournament	Place of Event	Name of Participants	Name of the Event	Position secured
Inter-CPSU Bridge Tournament organized by POSOCO under aegis of Power Sports Control Board	Bangalore	Players name Shri Anil Kumar Sharma Shri Mahender Pal. Singh Shri Ramesh Kumar Shri Joginder Kumar Shri Vijay Pal Singh Shri Babu Chand Prasad Shri I.J. Virmani, Manager	Team event	1st Position (Gold Medal).
All India Civil Services Inter-Ministry Wrestling Tournament	Delhi	Shri Rahul	Individual	1st position (Gold Medal)
Inter-CPSU Carrom Tournament Men/Women organized by NEEPCO under aegis of Power Sports Control Board	Shillong	Shri Paritosh Gupta Shri M.P. Chamoli Shri Rajesh Kumar Shri Paritosh Gupta Shri M.P. Chamoli Shri Kamal Kishore Shri Om Parkash Shri Ravinder Tanwar Shri A.K. Gupta	Carrom Doubles Carrom Team Event	1st Position (Men) 3rd Position (Men)
Inter-CPSU Athletic Tournament organized by BBMB under aegis of Power Sports Control Board	Nangal	Shri Rahul Naggar Ms. Jinny Bhardwaj	Short put High Jump	3rd Position 3rd Position
Inter-Ministry Badminton Tournament organized by CCSCSB	Delhi	Shri Suraj Pandey	Badminton	2nd Position

Besides securing top positions in the above tournaments the Ministry of Power Team had also participated in the following Sports tournaments under the aegis of Power Sports Control Board and CCSCSB

(i) Cricket (Played Semi Finals under CCSCSB)

(ii) Chess

(iii) Khabaddi

(iv) Volleyball

(v) Table Tennis

In addition to above the Recreation Club had also organized a Cultural Tour in the month of September during the Government Holidays for the employees and their family members to Rajasthan (Udaipur, Chittorgarh, Kumbalgarh Fort) w.e.f. 21st September to 23rd September, 2018. The tour enhanced the sense of responsibility, closeness & togetherness amongst the officers and employees in their inter-personal relations. The Cultural Tour was also appreciated by all participants.

CEA

The employees of CEA are actively participating in the recreation activities of Sports, Music & Dance and take part in the All India Civil Services, Inter-Ministry, Inter-CPSU Tournaments etc. For the year 2018-19, the sports team participated in some AICS/ inter-CPSU/Inter-Ministry Tournaments. The achievements are as under: -

1. Carom Team:

The CEA Carom team for men was participated in the Inter-CPSU Carom Tournament organized by NEEPCO from 4.12.2018 to 09.12.2018 at Shillong. The CEA Carom team has won the Runners-up Trophy in Doubles event, 1st position in Singles event. The team members name is given under:

1. Shri Manmohan Singh Rawat, Team Coach
2. Shri Chandra Shekhar, Chief Engg.
3. Shri Ajay Kumar Arya, Dy. Director
4. Shri Sumeet Kumar, Dy. Director
5. Shri Narayan Dutt, PPS
6. Shri Rajesh Kumar, Prof. Asstt.
7. Shri Ravindra M. Kundaikar, Driver

2. Volley Ball Team:

The CEA Volley ball team of CEA for men was participated in the Inter-Ministry VolleyballTournament 2018-19 organized by CCSCSB at Vinay Marg Sports Complex, New Delhi held in January, 2019. CEA team has won 3rd position in team championship. The name of team members are as under:

1. Anish, LDC----------(Captain)
2. Digember Singh, SSA--------(Manager-cum-Player)
3. Ramesh Kumar, SSA
4. Sunnyman, LDC
5. Mausam, LDC
6. Brahm Singh, LDC
7. Krishna Meena, Steno.

Shri Anish, LDC, CEA has represented the Central Secretariat Volleyball Team in the All India Civil Services Volleyball Tournament 2018-19(A National Status) held at Chandigarh from 25.02.2019 to 01.03.2019.

3 Athletics Team:

CEA Women Athletics Team has won the Bronze Medal in the 4x100 mtr. Relay Race in the CPSU Athletics Tournament 2019 held at BBMB, Nangal(Punjab). The team members are as under:

1. Smt. Usha Nayal, ASO
2. Smt. Sababjit Kaur, Head D'man
3. Smt. Deepika, MTS
4. Smt. Deepa Sharma, Steno.

4. Chess Team:

Shri Gurujit Medhi, DD, NERPC, Shillong has won the Bronze Medal in the CPSU Chess Tournament 2019 held at Nathpa Jhakri(HP). Manager: Shri Digember Singh, SSA.

5. Badminton

Shri Ashwani Kumar, ASO, Adm.(Coord.) Section, CEA has represented the Central Secretariat Badminton Team in the All India Civil Services Badminton Tournament 2018-19(A National Status) held at Pune from 14-20 February, 2019.

Shri Ashwani Kumar has also selected as Badminton Convener for Inter-Ministry Badminton Tournament 2017 to 2019 by Central Civil Services Cultural & Sports Board, DoPT, New Delhi.

NTPC

In almost all the projects of NTPC including Corporate Centre there are vibrant welfare bodies viz. Recreational Centres, Officer's Clubs and Mahila Samitis which carry out multifarious activities throughout the year.

As a part of their annual activities Mahila Samitis do welfare activities for needy & under privileged and also conduct various workshops / competitions-cake making, soft toys making, Madhubani painting, cooking etc.

NTPC conducted "Medha Pratiyogita" for Children of NTPC Employees across the country and also "Electron Quiz" for the student of leading professional Institute across the country.

Recreational Centres and Officers clubs are equipped with Billiards Room, Gymnasium, Library, Canteen, Card room, Chess room, Table tennis room, Badminton/Tennis court, swimming pools etc. Regular hobby classes viz. dance, art, taekwondo etc. are conducted by these bodies throughout the year. Apart

from these daily activities, Summer Camps for kids (Personality development, theatre workshop etc.), Departmental sports viz. Cricket, Volleyball, throw ball competition etc. are conducted regularly by these bodies.

Annual picnics, celebration of New Year, Holi, Diwali, and cultural programs are organized by these welfare bodies in respective projects.

National festivals, different cultural programs, Kavi Sammelans, theatre performance are organized at corporate centre as well as different NTPC projects annually with great enthusiasm.

At NTPC projects, parks and play grounds are maintained well for benefit of both young and old.

NHPC

To ensure a quality living for the employees, residential townships are existing in NHPC Corporate Office/Projects/ Power Stations. To further add value to the quality of life, well equipped Medical/ Health Centre, Recreation Centre and Community Centre with all the facilities are existing within the township.

Further, NHPC teams have been taking part in different disciplines in various tournaments and cultural meets organized by Power Sports Control Board (PSCB). In the FY 2018-19, NHPC participated in Inter Power Sector CPSU tournament organized under the aegis of PSCB which included Athletics, Carrara, Volleyball, Table Tennis, Cricket, Kabaddi, Chess, Bridge and Badminton. NHPC secured award winning positions in Athletics Chess 2nd position in Men's event & 3rd position in Women's event, Bridge- 3rd position and Badminton - 1st position in men's double / 2nd position in Men's team event & 3rd position in women's team event in Badminton, NHPC also successfully hosted the Inter CPSU Kabaddi Tournament in FY 2018-19 at Guwahati.

Recreational cultural and sports activities are being organized during different occasions for improving interpersonal relations and also to bring out the talent of employees and their family members. NHPC organized Vasant Mela 2019, an event which witnesses cultural assimilation and building of camaraderie amongst NHPC employees. Winners of various NHPC Awards Scheme (2018-19) under various categories as Best Power Station, Best Construction Project, Exemplary Commitment, Star of NHPC and Star student for Class X and Class XII were awarded during the NHPC Day 2018 celebration.

POWERGRID

POWERGRID strives to create employee-friendly workplaces mindful of the balance between work and personal lives where a diverse workforce can fully demonstrate their capabilities. As part of our efforts to create a corporate culture in which employees can work in the best of physical and mental health with the objectives of generating high productivity, high-quality output, new value creation as well as allowing diverse employees to work with enthusiasm.

POWERGRID has been working towards expanding programs that help employees to maintain the balance between work and personal life through the creation of programs providing benefits like POWERGRID Employee Welfare Association (PEWA), Mahila Samitis in substation, Regional Headquarters & Corporate Centre.

Cultural programmes and recreational activities are conducted periodically for promoting healthy community living like Kavi Sammelans, Nukkad Nataks, Plays etc and celebrating various occasions like Diwali get-together, Holi Milan, New Year, Raising Day, etc.

The Company has also been organizing Intra & Inter-Regional Sports Competitions for Kabaddi, Cricket, Volleyball, Chess, Badminton etc. and regularly participating in the Inter-PSU Sports Meet. It is pertinent to mention that our employee, Shri J. Mukherjee bagged 1st position in National Games under scheme of sports and games for persons with disabilities in Table Tennis conducted by Ministry of Youth Affairs and Sports. Further he also represented Indian Team in the International Paralympic Table Tennis Championship held at Amman (Jordon) and won Bronze Medal in Single events.

PFC

PFC is committed towards holistic personality development of its employees through facilities like Gymnasium, Library, Table Tennis and participation of employees in various sports, cultural and literary activities.

As a member of Power Sports Control Board, PFC has been organizing an Inter-CPSU Tournament every year for the employees of PSCB member organisations. Last year, PFC organized 23rd Inter-CPSU Badminton Tournament in Chennai under the aegis of PSCB. Employees of PFC exhibited an enthusiastic participation in various Inter-CPSU sports tournaments such as Cricket, Table Tennis, Carrom, Chess, etc. organized by the PSCB member organisations. The

participation in these sports results in a greater level of team spirit and fitness among the employees.

Employees also explore their love for writing, photography, etc. through active engagement with 'Urja Deepti' – a quarterly paper magazine of PFC. Entries selected for the magazine are also rewarded in the form of cash incentive to the employees to encourage them for frequent engagement with the recreational activities and promotion of the official language.

PFC also organised various activities such as Street Plays, Speech competitions, Slogan Writing competitions under Swachhta Pakhwadas, Swachhta Hi Seva Campaign and Communal Harmony Campaign during the year.

To ensure healthy lifestyle and strong team skills, PFC organized yoga talks and team building workshops during the year for its employees.

REC

REC believes in the principle that healthy and agile body and mind leads to increased and improved level of employee performance. It undertakes several initiatives for inculcating healthy living habits and providing periodical break from work to employees to relax the body and mind. At various locations it has set up well equipped Gymnasiums where the employees can work out and maintain their fitness levels. To inculcate the spirit of team work and physical fitness, employees are encouraged to take part in various sports events like Carrom, Chess, Cricket, Badminton, Table Tennis, Kabaddi organised in house and also by other CPSUs. They are also provided facilities of excursion trips/Picnics, where employees along with their spouse and children can go out to nearby locations which encourages team spirit and also offers relaxation. The expenses for the same are partly borne by the Company.

For enhancing the mental ability of the employees, the Company encourages them to take part in various quizzes, paper presentation and business simulations competitions / games conducted by reputed institutions.

During the financial year 2018-19, REC hosted Inter CPSU Table Tennis Tournament where 11CPSUs teams participated including the teams from MoP and CEA from January 22, 2019 to January 25, 2019 at Thyagaraj Stadium, New Delhi.

NEEPCO

In order to provide recreational facilities to the employees and their family members, NEEPCO Recreational Club has been established in all O & M Projects of the Corporation. Various events are held amongst the employees and their wards under the Cultural, Sports and Art etc. from time to time. Celebrations on Foundation Day of the Corporation and during other local festivals are held in these Projects under the aegis of the respective Recreation Club.

The Corporation being a member of the Power Sports Central Board participated in different Inter CPSU Tournaments such as Badminton, Table Tennis, Chess, Carrom, Bridge, Cricket etc. The NEEPCO Chess Team (Men) participated in the Inter CPSU Chess Tournament held during 12th to 14th December 2018 at Jhakri and emerged as the 'Winners' in the Open category and as well as the Team event.

The Corporation also hosts Inter CPSU Tournament in any of the above mentioned sports from time to time depending on the PSCB calendar agreed to by member organizations during the annual meeting of the Executive Committee of PSCB. During 2018-19 the Corporation had organized the 21st Inter CPSU Carrom Tournament during 4th to 8th December 2018 at Shillong which witnessed the participation of 9 (nine) Mens' Teams and 7 (seven) Womens' Teams. NEEPCO was the 1st Runner's Up and Second Runner's Up in the Men's Singles, 2nd Runner's Up in the Men's Doubles and emerged as 'Winners' in the Team Event. NEEPCO was also the Winner and Second Runner's Up in both the Women's Singles and Doubles and emerged as 'Winners' in the Team Event.

The Corporation also sponsors local Football Tournament/ Sporting events organized by different sporting bodies in the North Eastern Region.

The Corporation organizes Inter Project Cultural Competitions amongst different Projects/Plants of the company on the basis of competitions held in respective Projects/Plants to select winners to represent that particular Project/Plant.

The organization has established wellness centers with multi gym facility in all Projects/Plants of the Corporation. Medical Camps/Health Checkup, expert talks on health issues including holding of Yoga Camps are also organized in different Offices/ Projects/Plants.

SJVNL

Some of the severe health problems that we currently face include obesity, diabilities and cardiovascular disease. There has been increasing trend towards sedentary lifestyle which has been identified as a major contributor towards these alarming health as well as social problem.

To curb these disturbing trends, there is need to make physical

activity fun, safe and accessible by making opportunity readily available. Physical activity alone can reduce intra-abdominal visceral fat which is believed to be the most dangerous kind.

Key insights:

i. Sports and active recreation is a source of enjoyment for most participants particularly youth.

ii. Indoor as well outdoor recreation activities like carom, chess, table tennis, badminton, kabaddi, cricket, football, billiards & snooker are being organized through sports councils. Inter-departmental as well as Inter Project tournaments are being organized at facilities available at our Units/ Projects.

iii. Annual athletic meet is being hosted by Corporate Center, Shimla every year wherein employees actively participate.

iv. Gymnasium has been set up at project sites.

THDC

THDCIL believes in achieving Organizational Excellence through Human Resources and follows "People First" approach to leverage the potential of its employees in furtherance of its business plan and including every level employee to provide them with ample recreational opportunities. A large Nos. of recreational activities are being carried out throughout the year as per Sports / Welfare calendar. To list a few are -

- Shooting Camp
- Swimming Classes and Horse Riding
- Cultural Programme by THDC Mahila Mandal Dal
- Cultural programme during foundation Day
- Life Style Management/ Stress Management under health & wellness programme, in which conducted workshop on "Health and Nutrition" through AIIMS Rishikesh
- Diwali Mela
- Dusshera – Ravaan Dahan
- Sankshipta Ramleela
- One year Yoga Programme
- Blood Donation Camp
- Painting Competition
- International Yoga Day with cultural program based Yoga

There are various Clubs operating at THDCIL viz. THDC Officer Club, THDC Ladies Welfare Association, THDC Manoranjan Club, THDC Mahila Mandal Dal. These Clubs carry out various activities like Quiz Competition, Painting Competition, Cookery Competition and Sports activities etc. covering each and every employee of THDCIL.

At THDCIL, Parks / Playground have been developed with various equipments, viz.; Jhoola like swing, slides etc. for the benefit of employees / their wards. Gymnasium facility is available at Bhilangana Bhawan, THDC Officer's club and THDC Manoranjan club, which are being used by the employees & their families. Volley Ball court, Badminton court, (Indoor and Outdoor), Lawn Tennis Court, Kabbaddi / Volleyball Ground have been developed, wherein regular matches takes place. A Football ground in the colony has been developed for conducting football matches.

DVC

Like previous years, All Valley Sports in various disciplines were conducted in different projects. Most of the employees actively participate in sports with full interest. Employees & local people also participate in organization of the tournaments. Altogether, it brings a sense of team spirit, develops cooperation among them, helping good industrial atmosphere etc.

All Valley Cricket, Football, Badminton, Table Tennis, Athletics, Volleyball, Chess and Bridge tournaments were conducted.

DVC is also member of All India Electrical Sports Control Board (AIESCB) and Power Sports Control Board (PSCB). DVC teams participated in various tournaments organised by those Boards.

All the projects in DVC have Recreation Club/Station club for the employees in which cultural programme, social activities are a regular phenomenon.

BBMB

Various recreational facilities have been provided at BBMB projects & other stations for the welfare of employees. Well equipped Officers club and staff club have been provided at the project stations with facilities for indoor games as well as outdoor games. Facility of Open Air Gym and Indoor stadium has been provided to the resident of Nangal Township . Regular Intra-BBMB tournaments in respect of various sports are held from time to time and selected teams are even deputed to participate in inter-power utility tournaments. Other cultural programmes are also held in association with SPICMACAY

Moreover well-developed parks have been provided in BBMB colonies for relaxation and recreation.

The Awards won by BBMB during the year 2018-19 upto 31.03.2019:

1. Professional Awards:

- BBMB has been selected as the winner under the category "Best Hydro Power Generator" by IPPAI. The award ceremony was held on 24th November, 2018 at Belgundi, Belgaum, Karnataka.
- BBMB has been awarded for CBIP Award 2019 in the category of "Best Maintained Project (fully completed and functional for more than 10 years)".

  BBMB has also been awarded for CBIP Award 2019 in the category of "Best Performing Utility in Hydro Power Sector".

2. Hindi Awards:

- Bhakra Dam Administration has been awarded First Prize by the Official Language Department, Ministry of Home affairs, Govt. of India for doing maximum official work in Hindi in "B" region.
- Bhakra Beas Management Board was selected by the Department of Official Language for Second Prize in Boards'/Autonomous Bodies' category in region "B" under Rajbhasha Kirti Puraskar for the year 2017-18.The award was given by Hon'ble Vice President of India on 14th September, 2018, in a prize distribution function held in Vigyan Bhawan, New Delhi.
- For Implementation of Official Language in "B" region, BBMB has created history by winning first, second and third prizes in the category of subordinate offices. These awards have been won by the Chief Engineer, Bhakra Dam, Nangal, Chief Engineer, Transmission System, Chandigarh and Chief Engineer, System Operation, Chandigarh.

  The prizes were given by Sh. Kiren Rijiju, Hon'ble Minister of State for Home Affairs, Govt. of India, in a prize distribution function held at Chandigarh on 19.11.2018.

3. Painting Competition Award:

- BBMB has been awarded two National Prizes for "Best State Level Nodal Officer Category" and "Best UT Level Nodal Officer Category" for achieving highest percentage of students participation in painting competition on Energy Conservation by school children of the state of Haryana and UT, Chandigarh for the year 2018. These awards were presented by Hon'ble Smt. Sumitra Mahajan, Speaker of Lok Sabha, in the august presence of Sh. R.K. Singh, Hon'ble Minister of State (Independent Charge) for Power, New and Renewable Energy, Govt. of India, at a function held at Vigyan Bhawan, New Delhi on the National Energy Conservation Day on 14th Dec. 2018.

4. Sports Awards:

In addition to above categories, BBMB excelled equally well in **the field of Sports** and has won the following Prizes:

- BBMB won Volleyball Tournament organised by Damodar Valley Corporation at Malthon Township, Dhanbad.
- BBMB won Kabaddi Tournament organised by Power Grid Corporation of India Ltd. at Hyderabad.
- BBMB won Athletic Men & Women Tournament organised by BBMB at Nangal Township.
- In the meeting of Power Sports Control Board held at Delhi, BBMB has been awarded the best organiser award for conducting the Athletic Meet.
- BBMB Bridge team, in individual category, won Bronze Medal in Inter Central Power Sector undertaking Bridge Tournament held from 19th to 21st November, 2018 at Bangalore.
- BBMB's men team stood first in Inter Central Power Sector undertaking badminton tournament. This tournament was held from 28th to 30th November, 2018 in Chennai.
- BBMB Volleyball team won the Gold Medal in Inter Central Power Sector undertaking Volleyball tournament held from 19th to 21st December, 2018 at Rishikesh.
- BBMB attained runner up position in the 19th Inter CPSU Cricket Tournament organized by Power Grid Corporation of India at Gurgarm on 09.02.2019.

NPTI

Indoor and outdoor sports and games facilities such as Basketball, Volleyball, Badminton, Tennis, Table Tennis, Carroms etc., have been developed and students/trainees are encouraged to avail these facilities. State-of-the-art Gymnasium facilities are also available at NPTI institutes. Yoga classes are also conducted to keep the students physically and mentally fit.

CHAPTER 35.6

WELFARE OF SCHEDULED CASTES, SCHEDULED TRIBES AND OTHER BACKWARD CLASSES

Ministry of Power

An SC/ST Cell has been functioning in the Ministry since the early nineties under the direct control of the Director/DS (SC/ST), who is also the Liaison Officer for Scheduled Castes and Scheduled Tribes. SC/ST Cell assists the Liaison Officers for SCs/STs & OBCs. The Cell monitors the implementation of reservation policies of the Government of India in respect of Scheduled Castes, Scheduled Tribes, Other Backward Classes, Persons with Disabilities, Minority Community, Ex-Servicemen and Economically Weaker Section in the Ministry, as well as Autonomous Bodies/CPSUs under the administrative control of the Ministry of Power.

The total strength of employees and representation of Scheduled Castes, Scheduled Tribes and Other Backward Classes in the Ministry of Power as on 31.03.2019 is indicated below:

Group	Total number of Employees (as on 31.03.19)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
Group A	61	14	22.9	3	4.9	3	4.9
Group B	118	21	17.7	3	2.5	22	18.6
Group C	42	12	28.5	3	7.1	3	7.1
GroupC (MTS)	57	29	50.8	4	7.0	6	10.5
TOTAL	**278**	**76**	**27.34**	**13**	**4.6**	**34**	**12.2**

CEA

Group	Total Employees as on 31.03.2019	Representation of SC/ST/OBC					
		SCs	SCs%	STs	STs%	OBCs	OBCs%
A	370	60	16.21	22	5.94	34	9.18
B	140	30	21.42	11	7.85	26	18.57
C	233	60	25.75	09	3.86	38	16.30
TOTAL	**743**	**150**	**20.18**	**42**	**5.65**	**98**	**13.18**

PAO

Representation of SC/ST/OBC may be indicated in proforma given below:-

Group	Total Employees (as on 31/12/2018)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	2	1	50.00	-	-	-	-
B	43	5	11.62	2	4.65	1	2.32
C	23	3	13.04	2	8.69	3	13.04
Total	**68**	**9**	**13.23**	**4**	**5.88**	**4**	**5.88**

NTPC

Group	Total Employees (as on 31st March 2019)	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	12692	1776	14.0	703	5.5	2427	19.1
B	3805	641	16.8	360	9.5	380	10.0
C	3167	464	14.7	229	7.2	973	30.7
D	575	149	25.9	73	12.7	115	20.0
Total	**20239**	**3030**	**15.0**	**1365**	**6.7**	**3895**	**19.2**

NTPC awarded as the Best Performing Utility of the Country in Thermal Power Sector by CBIP on 4th January, 2019 at a function held in New Delhi. CMD NTPC Shri Gurdeep Singh received the award from Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy in presence of Secretary (Power), Director (HR) Shri Saptarshi Roy and Director (Commercial) Shri A. K. Gupta

Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy addressing Indian Power Sector on Power Plant Flexibility: Paving way for green grid at PMI, NTPC

Hon'ble Prime Minister and Hon'ble Minister of State (Independent Charge) for Power and New & Renewable Energy in foundation laying function of Patratu Super Thermal Power Project, Sindri Fertilizer Factory and AIIMS of Devghar, in Jharkhand

NHPC

Representation of SC/ST/OBCs as on 31.03.2019:

Group	Total Employees as on 31.03.2019	Representation					
		SCs	SCs%	STs	STs%	OBCs	OBCs%
A	2880	443	15.38	199	6.91	589	20.45
B	815	128	15.71	57	6.99	169	20.74
C	2166	218	10.06	103	4.76	119	5.49
D(Excluding Sweepers)	833	124	14.89	61	7.32	45	5.40
Sweepers	59	51	86.44	1	1.69	0	0
Total	**6753**	**964**	**14.25**	**421**	**6.23**	**922**	**13.65**

Welfare of SC/ST and Other Backward Classes:

NHPC is taking care of socio-economic developments of SC/ST/OBC and weaker category sections of the societies at various Projects/Power Station situated in remote areas of the Organization.

NHPC provides budget allocation for Schools and Colleges at various SC/ST/OBC populated locations of the NHPC Projects/ Power Stations. The Medical facilities are also being provided to all the weaker sections and SC/ST/OBC people where it is necessary. During natural calamities/ epidemic NHPC is helping in different ways and organizing medical camps also.

Scholarship to SC/ST students is provided under CSR. Conductance of training programme of SC/ST/OBC Employees for awareness of guidelines pertaining to ST/ST/OBC, etc on regular basis. Reservation and relaxation is provided to SCs/STs and OBCs in direct recruitment as per guidelines issued by G.O.I from time to time. Reservation & relaxation is also provided to SC/ ST in promotion as per G.O.I guidelines. The Organization holds periodical meetings with SC/ST Employees. A SC/ST Cell is set up for the Welfare of SCs/STs and OBCs. Separate Liaison Officers are there for SC/ST and OBC.

POWERGRID

Details are given below:

Group	Total Employees (as on 31.03.2019)	Representation					
		SC	SC%	ST	ST%	OBC	OBC%
A	4300	607	14.12	272	6.33	978	22.74
B	2072	281	13.56	180	8.69	413	19.93
C	2764	440	15.92	282	10.20	982	35.53
D	81	17	20.99	7	8.64	22	27.16
TOTAL	**9217**	**1345**	**14.59**	**741**	**8.04**	**2395**	**25.98**

Above data includes regular manpower in POWERGRID through en-masse transfer of employees by process of absorption from various constituent organizations during its formation as well as all recruitment carried out by POWERGRID.

POWERGRID is committed to implement the reservation policy in recruitment and promotion as per Govt. directives for fulfillment of reservation for Scheduled castes, Scheduled Tribes and Other Backward classes (NCL). To achieve prescribed percentage of reservation of such category in recruitment and ensure that reserved category are not deprived of reservation, various relaxations as admissible are provided to SCs, STs and OBCs(NCL) etc. in all recruitment in Corporation.

Besides providing employment, periodical training is also imparted for these categories of employees in order to empower them handling key responsibilities. Exclusive refresher and awareness programmes are organized for reserved category employees at Corporate Centre and Regional Offices to acquaint them with reservation policies, welfare guidelines, company

policy on recruitment, systems and processes etc. The awareness programmes exclusively for reserved category employees are conducted to acquaint them with provisions of reservation policy.

PFC

NO. OF EMPLOYEES AND THE NUMBER OF SC/ST/OBC EMPLOYEES AS ON March 31, 2019.

Group	Total Employees as on 31.03.2019	Persons with Disabilities (PWDs) Employees					
		SCs	SC%	STs	ST%	OBC	OBC%
A	479	83	17.33	28	5.85	81	16.91
B	6	01	16.67	1	16.67	0	0.00
C	14	3	21.43	1	7.14	3	21.43
D	1	0	0.00	0	0.00	0	0.00
Total	500	87	17.40	30	6.00	84	16.80

PFC as a part of its social responsibility makes all efforts to ensure compliance of the Directives and Guidelines issued by the Government of India from time to time pertaining to the welfare of SC/ ST/ OBC employees. The steps taken include due reservations and relaxation as applicable under the various directives for direct recruitment as well as for promotions. A separate Liaison officer has been appointed to look into the matter of reservations.

REC

Representation of SC/ST/013C as on 31.03.2019:

It is stated that REC strictly follows the prescribed reservation norms in regard to SC/ST/OBC as laid down by the Central Government. Details of the number of SC/ST/OBC employees employed in the company are as under-

Group	Total Employees (as on 31.03.2019)	Representation					
		No. of SC employees	% of total employees	No. of ST employees	% of total employees	No. of OBC employees	% of total employees
A	346	34	9.83	13	3.76	62	17.92
B	75	12	16.00	02	2.67	2	2.67
C	9	01	11.11	0	0	1	11.11
D	57	17	29.82	1	1.75	3	5.26
Total	**487**	**64**	**13.14**	**16**	**3.29**	**68**	**13.96**

NEEPCO

Representation of SC/ST/OBC is indicated in Performa given below:

Group	Total Employees as on 31/03/19	Representation							
		SCs	SC%	STs	ST%	OBC	OBC%	Minorities	Minorities%
A	697	85	12.2	135	19.37	140	20.09	106	15.21
B	620	27	4.35	203	32.74	106	17.10	138	22.26
C	678	50	7.37	335	49.41	111	16.37	211	31.12
D	56	0	0	51	91.07	3	5.36	38	67.86
Total	**2051**	**162**	**7.9**	**724**	**35.3**	**360**	**17.55**	**493**	**24.04**

SJVNL

Representation of SC/ST/OBC is given below: -

Group	Total Employees (as on 31.03.2019)	Representation (% w.r.t. DR & absorbed employees i.e. 1434)					
		SCs	SC %	STs	ST%	OBC	OBC%
Total	Total=1579 (1475 Direct Recruited (DR) & Absorbed and 104 Deputationist from GoHP)	306	20.75	97	6.58	184	12.47

Policy of Govt. of India regarding the reservation for SCs, STs and OBCs in recruitment is being followed in SJVN. As per the reservation policy of the Govt. of India, certain percentages of posts are reserved for SCs, ST and OBCs. In order to determine the number of Vacancies for SCs, STs and OBCs, in a particular recruitment, Reservation Rosters have been prescribed. Relaxations and concessions to SCs, STs and OBCs is also being given in SJVN as per the Govt. guidelines including quarter allotment in its township.

THDC

Representation of SC/ST/OBC in THDCIL is indicated in table below:-

Group	Total Employees (as on 31.03.2019	Representation					
		SC	SC%	ST	ST%	OBC	OBC%
Total	**1891**	**261**	**13.80**	**28**	**1.48**	**160**	**8.46**

Brief write up about the activities

Guidelines issued by Govt. of India from time to time on implementation of reservation policy, welfare, training, grievance redressal etc. are strictly followed. Liaison Officers are nominated unit wise to identify their problems and implementation of various welfare activities for them. Periodic meeting of Liaison Officers and SC/ST/OBC and minorities Welfare Association were held. A Grievance cell for SC/ST/OBC and minorities exists to redress their grievances. Efforts are made to arrange training programmes to equip them with upto date information on Reservation Policy and other services conditions. The Company recruited 05 Nos. candidates from SC category in Group-C. 06 Nos. candidates from SC Category, 03 Nos. candidates in ST category and 14 Nos. candidates from OBC category including 01 No. differently abled (OH-category) have been recruited in Group-A. The recruitment was made through open Advertisement.

MINORITIES WELFARE

POWERGRID being a Central Public Sector Enterprise is conscious of its obligations to promote welfare of minorities. The Government's directives on giving due considerations to minorities in recruitment are scrupulously followed in the Corporation. These instructions include association of one member belonging to minority community in Selection Boards/ Committees, advertisement for vacancies in language spoken by large number of people, circulation of vacancy in local language in local areas where the population of minority is concentrated etc., also, submission of Annual Reports regarding recruitment of Minorities prescribed by Government within time limit set for this purpose. The employees of the Corporation belong to different minority communities. Their integration into mainstream workforce is ensured by way of their participation in all business activities. There is no discrimination on account of their minority status. All employees are treated at par in terms of providing facilities like residential accommodation, promotion, training, transfer etc.

DVC

Group	Total No. of Employees as on 31.03.2019	Representation					
		SCs	SC%	ST	ST%	OBCs	OBC%
Group – A	2552	471	18.46	152	5.96	567	22.22
Group - B	3772	736	19.51	213	5.65	777	20.60
Group – C & D	1097	371	33.82	141	12.85	217	19.78
Total	**7421**	**1578**	**21.26**	**506**	**6.82**	**1561**	**21.03**

Special recognition has been granted to the Employees Depressed Class League (EDCL) which is body of SC/ST employees.

All types of support have been extended to EDCL by Corporation in arranging various programmes which are being undertaken by them and close to their social and cultural philosophy.

Employees from EDCL are representing in all the committees of the corporation constituted for welfare of the employees viz Housing Committee, JPCL etc.

Regular quarterly meeting of EDCL with DVC Management is conducted to address the issues and grievances of employees belong to SC/ST.

BBMB

Representation of SC/ST/OBC is indicated below:-

Group	Total Employees	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	497	0	0.00	3	0.60	31	6,24
B	995	198	19.90	3	0.30	100	10.05
C	3395	809	23.83	11	0.32	463	13.64
D	3528	1161	32.91	10	0.28	472	13.38
Total	**8415**	**2168**	**25.76**	**27**	**0.32**	**1066**	**12.67**

BBMB discharges its functions as laid down in Section 79(1) of the Punjab Reorganization Act, 1966 for which staff for the operation and maintenance of BBMB work is provided by partner States/SEBs on transfer basis. However, in the event of inability of partner States/SEBs to provide the requisite staff, BBMB resorts to direct recruitment and promotion in respect of Group-C & D employees only. BBMB Class-III & Class-IV Employees Regulations, 1994 & Class-I & Class-II officers Regulation, 2015 were approved by the Central Govt. As per old Regulation 11 of these Regulations, the members belonging to SC, ST, BC, Ex-servicemen, Physically handicapped persons and dependent of deceased employees in the service had the reservation and all other concessions as prescribed by Punjab Govt. from time to time. Now, the aforesaid Regulation 11 has been amended by Gazette Notification of Govt. of India dated May, 2017 vide which Central Govt. Reservation Policy is applicable in BBMB. Hence, BBMB is following Central Government Reservation Policy since May, 2017 and accordingly due representation concessions and reservations in service is provided to SC/ST/OBCs as prescribed in Central Government Reservation Policy.

For providing general welfare measures for Scheduled Castes employees, the instructions have been issued to all field offices requesting them to provide the following facilities, if so demanded by the Members of Scheduled Castes, on the occasion of Birthday of Dr. B. R. Ambedkar, Maharishi Balmiki Ji and Sri Guru Ravidass Ji.

i) Bus facilities for ShobhaYatra at token charges of Re.1 per Km.

ii) Auditorium for function on above occasions, free of charge.

iii) 50% concession on the rent of Community Centre hired for the marriage or daughters of BBMB Group-D employees belonging to SC/BC/ST categories.

iv) Concession of 50% in tuition fee for the second child of Group-D employee including SC/ST/BC)

Instructions have been issued to all HODs. that the Heads of organizations and senior officials should meet their SC/ST officers/staff once in month or particularly on occasions like Dr. B. R. Ambedkar jayanti, Maharishi Balmiki Jayanti etc.

BEE

Representation of SC/ST/OBC as on 31.03.2019 is as follows :-

Group	Total employee as on 31.03.2019	Representation					
		SCs	SC%	STs	ST%	OBC	OBC%
A	13	01	7.69%	-	-	-	-
B	09	-	-	-	-	-	-
C	01	-	-	-	-	-	-
D	--	-	-	-	-	-	-
Total	**23**	**01**	**4.34%**	**-**	**-**	**-**	**-**

CPRI

Smt. J Sreedevi, Joint Director and Shri D. Revanna, Joint Director, CPRI, Bangalore served as Liaison Officers for SC/ST and OBC categories respectively in CPRI, during the year 2018-19 (for the period from 1st January 2018 to 31st March 2019)

Representation of SCs/STs/OBCs as on 31st March 2019:

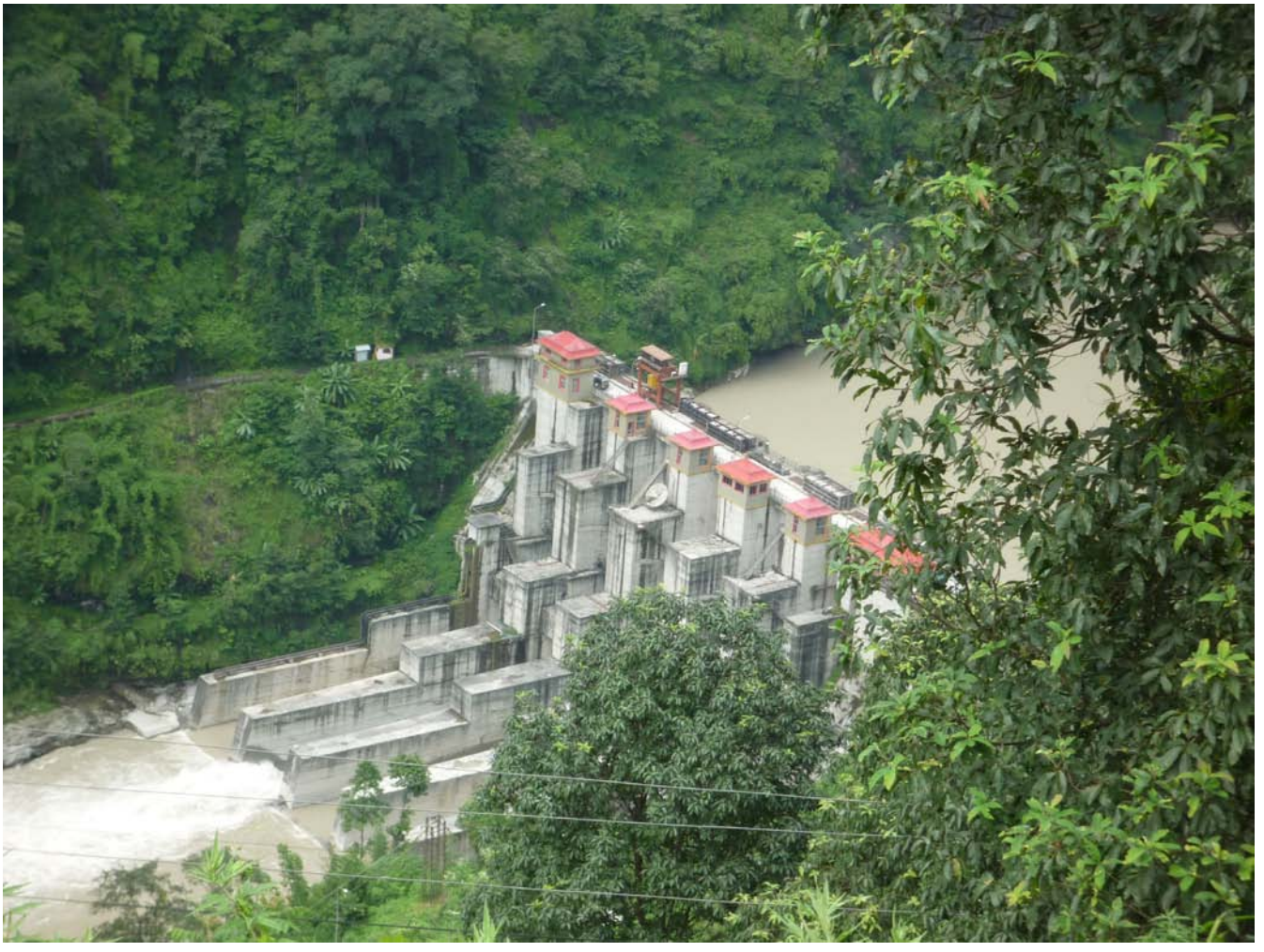
Group	Total Employees as on 31.03.2019	Representations							
		SCs	SC%	STs	ST%	OBCs	% of OBC	Minorities	% of Minorities
A	185	43	23.24	19	10.27	33	17.84	15	8.11
B	142	31	21.83	22	15.49	22	15.49	17	11.97
C	196	59	30.10	19	9.69	43	21.94	10	5.10
Total	**523**	**133**	**25.43**	**60**	**11.47**	**98**	**18.74**	**42**	**8.03**

- Dr. B.R.Ambedkar's 127th Birth Anniversary was celebrated at CPRI, Bangalore on 14th April 2018. An official function was organized to commemorate the Birth Anniversary of Dr. B.R.Ambedkar at CPRI, Bangalore, on 5th September 2018. Shri Hariram A, Progressive Thinker was the Chief Guest and the function was presided by Shri V.S. Nandakumar, Director General- CPRI.
- In this connection, the blood donation camp in association with M/s K.C. General Hospital, Malleshwaram, Bangalore was organized on 10th August 2018. Merit scholarships for the children of CPRI employees who have scored the highest marks in the X Standard and II PUC public examination in the categories of SC/ST & General including OBC were distributed.

NPTI

The Group-wise number of Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Castes (OBC) is given in the table below:

Group	Total Employees (as on 31/03/2019	No. of Employees					
		SC	SC%	ST	ST%	OBC	OBC%
Group 'A'	88	19	21.59	03	3.40	12	13.63
Group 'B'	35	06	17.14	02	5.71	03	8.57
Group 'C' (Including MTS)	101	35	34.65	11	10.89	14	13.86
Total	224	60	26.78	16	7.14	29	12.94



NHPC Hydro, Teesta V Dam

CHAPTER 36

E-GOVERNANCE /INFORMATION TECHNOLOGY (IT) INITIATIVES

Ministry of Power

1. Excellence in providing citizen-centric delivery through eGovernance

   Web Portals and Mobile Apps of Ministry of Power are available online in public domain facilitating citizen-centric delivery through eGovernance. Data related to power sector are available online and is accessible 24 x 7 using computers and mobile devices having internet connectivity. All portals and Mobile Apps facilitate dissemination of information regarding power sector for decision making, future planning, ease of doing business and ease of living.

- **Portals/mobile apps made available for e-enablement and information dissemination of various schemes/ projects of Ministry of Power as mentioned below :**

  - ✓ **DDUGJY** – Deen Dayal Upadhyaya Gram Jyoti Yojana- 100% electrification of every village in India. Portal has detail information on various work being done under the scheme.
  - ✓ **Saubhagya** - Pradhan Mantri Sahaj Bijli Har Ghar Yojana- To provide electricity to all household. Portal has detail information on various work done under the scheme.
  - ✓ **Vidyut Pravah** - Power demand met and price at Energy Exchange is available on national and State-wise.
  - ✓ **URJA MITRA** - Empowering citizens by real time information sharing on power outage information to urban/rural power consumers across India through SMS.
  - ✓ **Rural Feeder Monitoring Scheme** - To monitor the power supply in rural areas of the country. Data can be access on real time basis through web services. Linked to National Power Portal.
  - ✓ **"URJA" (Urban Jyoti Abhiyaan)** - Integrated Power Development Scheme (IPDS) for strengthening of sub-transmission and distribution network, metering of distribution transformers /feeders.
  - ✓ **Ujwal DISCOM** Assurance Yojana (UDAY) - **UDAY** provides for the financial turnaround and revival of Power Distribution companies (DISCOMs). Portal provides detail information on various parameters about the State/Discom.
  - ✓ Unnat Jyoti by Affordable LEDs for All **(UJALA)**- Helps customers to save more, while cutting down energy needs and emissions. Adoption for energy efficient products across public, private and residential facilities nationally.
  - ✓ **DEEP** E-Bidding Portal- Discovery of Efficient Electricity Price- "DEEP (Discovery of Efficient Electricity Price) e-Bidding & e-Reverse Auction portal" for procurement of short term/medium term (1-5 years) purchase of power by DISCOMs.
  - ✓ 'e-Trans' web platform for e-bidding and e-reverse auction for Tariff Based Competitive Bidding (TBCB) in transmission projects.
  - ✓ **'TARANG'** (Transmission App for Real Time Monitoring & Growth) Mobile App & Web Portal- For Real time Monitoring and Growth to monitor the progress of transmission system in the country.
  - ✓ **PRAAPTI** - Payment Ratification and Analysis in Power procurement for bringing Transparency in invoicing of generators.
  - ✓ **Ash Track**- Linking fly ash users and power plants for better ash utilisation.

2. National Power Portal (NPP)

- National Power Portal (https://npp.gov.in), is a unified system for Indian Power Sector to facilitate online data capture (daily, monthly, annually) from various generation, transmission and distribution utilities in the country. NPP also disseminates Information on capacity, demand, supply, consumption through various analyzed reports, graphs, statistics at all India, region and state level and for the central, state and private sector. Stakeholders of NPP includes Generation, Transmission and Distribution utilities in government as well as private sector, Apex Bodies, other government organizations and public users.
- The Portal has been conceptualized, designed and developed with the help of National Informatics Centre (NIC) using Open Source Technologies and is hosted on National Cloud of NIC. Central Electricity Authority is the Nodal agency for implementation of NPP.
- NPP is integrated with associated systems of CEA, PFC, REC and other major utilities and is serving as single authentic source of power sector information to apex

bodies, utilities for the purpose of analysis, planning, monitoring as well as for public users.

- The system is available 24x7 and ensures effective and timely collection of data. It standardizes data parameters and formats for seamless exchange of data between NPP and respective systems at utilities. It facilitates data collection at source, minimizes manual data entry and optimizes cost by maintaining common IT infrastructure.
- The NPP Dashboard provides visualization of analyzed information about the sector through GIS enabled navigation and chart windows on capacity, generation, transmission, distribution at national, state, DISCOM, town, feeder level and scheme based funding to states. The system also facilitates various types of statutory reports required to be published regularly. The Dashboard serves as a single point interface for all Power Sector Apps launched earlier by the Ministry such as TARANG, UJALA, VIDYUT PRAVAH, SAUBHAGYA, URJA, MERIT ORDER DESPATCH.

3. Social Media Activities

Ministry of Power is actively engaging with the citizens for disseminating the achievements and activities carried out by Ministry. Updated information on power sector are regularly posted on these social media platforms. Ministry has verified accounts on both Facebook and Twitter. Ministry's Facebook page has more than 95,961 followers & likes and similarly more than 2,01,000 followers on Twitter.

4. Cyber Security Measures

- Cyber Security measures and best practices as advised by CERT-In, NCIIPC and MHA adopted by Ministry of Power has prevented any kind of cyber attack on the website of this Ministry, inspite of widespread attempts made by cyber attackers on many Indian websites.
- Four Computer Emergency Response Teams (CERTs) namely CERT- Transmission, CERT-Distribution, CERT-Hydro and CERT-Thermal set up is actively monitoring and taking necessary steps to protect the power sector from any kind of cyber attacks. Cyber Security Mock Drills and Cyber Audit of IT infrastructure are also being carried out by the Sectoral CERTs in consultation with CERT-In.
- Ministry of Power coordinates the advisories/guidelines of CERT-In, NCIIPC, Ministry of Home Affairs and MeitY with respect to Cyber Security to States/UTs/Utilities in Power Sector and organizations under this Ministry for necessary compliance. Regular review meetings are also organized.
- Sectoral CERTs have already formulated/finalized model Cyber Crisis Management Plan (CCMP) for each sector like Generation, Transmission and Distribution. These CCMPs are at various stages of implementation. The States/UTs/Utilities have been advised to nominate Chief Information Security Officer (CISO). As requested by MeitY, Ministry of Power has issued advisory for setting up of Computer Security Incident Response Team (CSIRT) at State/Utility level. At the centre, Information Sharing and Analysis Centre (ISAC-Power) has been hosted on the website of CEA as the Information Resource pooling and sharing platform on cyber security in power sector.

5. Promotion of Digital Payments

- As part of Government of India's high priority for promotion of digital payment in the country amongst citizens, Ministry of Power has taken various steps for making payment of electricity bill by consumers across the country through digital means in coordination with States/UTs/DISCOMs in government and private sector. Most of the States/UTs/DISCOMs have on boarded Bharat Bill Payment System (BBPS) for digital payment facilitation. BHIM/UPI and Bharat QR Code for facilitating digital payment of electricity bill are also being promoted on high priority.
- As a result of congruent efforts, total digital transactions achieved by Ministry of Power in FY 2018-19 is 36.17 crore which is almost 50.7% higher than that achieved in 2017-18.
- During the special campaign initiated by PMO for promotion of digital payments in 100 smart cities across the country, approximately 42% of digital payment transactions have been recorded in power sector in these smart cities.

6. Implementation of e-Office

e-Office (http://powermin.eoffice.gov.in) is functional in this Ministry with an objective to facilitate paperless environment and electronic workflow. Ministry of Power was awarded Certificate of Appreciation in recognition of the commendable work done in implementation of Office on 14th March, 2018.

7. National Mission on Power Electronics Technology - (NaMPET-III)- Phase-III.

Government of India has approved National Mission on Power Electronics Technology-Phase-III (NaMPET-III) programme for a period of five years, with effect from 30.01.2019. Ministry of Power is a Member of the National Steering Committee for NaMPET-III. The project envisages Research & Development, deployment/demonstration and technology transfer for production/commercialization of Power Electronics Technology, being implemented through a network of Academic Institutes, R&D laboratories and Industries.

Total No. of eFiles processed : More than 17337

Drafts Created : More than 32900.

Senior Officers have been given VPN access to operate e-office outside NIC Network also. E-Office has also been implemented in organizations under Ministry - CEA, BBMB, BEE, PGCIL and CERC.

8. Smart India Hackathon (SIH)

Ministry of Power participated in the Smart India Hackathon (SIH-2018) and (SIH-2019) which is a software and hardware development competition organized by Ministry of Human Resources Development where problems are posed to technology students for innovative solutions. Cash Award were given to the winner by Ministry of Power.

9. Implementation and Maintenance of Web Portals and Web Based Applications.

- Ministry of Power Website, National Power Portal (NPP) and Mobile Apps developed for information dissemination in respect of power sector were nominated for Digital India Award and eGovernance Award. Ministry of Power website is bilingual and is ready for GIGW compliance.
- Support on updation of generic web portals and web based applications like e-Samiksha, VIP letter Monitoring System, ACC Vacancy Monitoring System, PRAGATI portal, Centralised Public Grievance Redressal System and Pensioners' Portal, Right to Information Act (RTI) Proactive disclosures and Annual Return System, Centralised Public Procurement Portal (CPPP) is being provided regularly.
- IT Division of the Ministry in coordination with National Informatics Centre (NIC) Cell, Ministry of Power implemented various Information & Communication Technology (ICT) enabled activities in the Ministry as mentioned below:
    - Design, Development & Implementation of e-Governance Projects and related training.
    - Design, Development & Hosting of Web sites
    - Maintenance and Implementation of Web Portals, Web Based Applications and Mobile Apps.
    - Presence on Social Media
    - Compliance of Cyber Security Guidelines
    - Maintenance of Local Area Network (LAN) and Internet Services
    - Video Conferencing

10. Support for maintenance and Hosting of Web Sites of Ministry and Associated Organizations

- Necessary support for hosting and updation of website of Ministry and organizations under this Ministry in NIC Data Centre.
- The websites thdc.co.in, forumofregulators.gov.in, aptel.gov.in have been migrated to "Meghraj", National Cloud of NIC.

11. Other Information Communication Technology (ICT) enabled activities

- Online Stationary Requisition System – 1638 intends were submitted during 2018-19.
- SPARROW (Smart Performance Appraisal Report Recording On Line Window) System & PRISM (Property & Resource Information System Management)

- CompDDO payroll package and migration to PFMS.
- e-Visitor System –Number of visitors entry for MoP in Shram Shakti Bhawan during the FY 2018-19 is 6484 as per the report from eVisitor Portal.
- Aadhar Enabled Biometric Attendance System (AEBAS) - The Attendance web portal is being updated regularly and required information is provided to Administration Division for monitoring the attendance of Ministry officials. Maintenance of Aadhar Enabled Biometric Attendance devices for officials in three Ministries of Bhawan is being ensured. Registered Devices (RD) services have been enabled in AEBAS devices as per guidelines of UIDAI.
- Jeevan Praman Portal - It facilitates retired officials to generate their Life certificates using Jeevan Praman portal based on Aadhar number authentication.

12. Maintenance of Local Area Network (LAN) and Internet Services

- Network Operation Centre (NOC) of Shram Shakti Bhawan is operational at NIC Cell, Ministry of Power which provides LAN/Internet facility to about 2500 clients covering all four ministries located in Shram Shakti Bhawan. Necessary support was provided to these clients for LAN and internet facility. LAN set up has been extended for Ministry of Skill Development and Entrepreneurship in Shram Shakti Bhawan.
- WiFi Access Points over NIC Network were installed and maintained to provide Wifi connectivity to Ministry officials for ease of work and enhancing efficiency.

13. Video Conferencing facility at Ministry

- Hon'ble Prime Minister interacted with beneficiaries of DDUGJY from remote locations using Video Conferencing facility. The facility is also being successfully used during Video Conferencing on PRAGATI chaired by Hon'ble Prime Minister.
- Hon'ble MOS (IC) for Power & NRE interacted with Media from remote locations from National Media Center on the occasion of four year achievements of Ministry of Power over Video Conferencing.
- The Video Conferencing facility available in the Ministry was extensively used by Hon'ble MOS (IC) for Power & NRE and senior officers of the Ministry to conduct various National and International meetings, and review of progress of various schemes/projects of Ministry of Power.

NTPC

NTPC has implemented Enterprise Resource Planning (ERP) application to integrate all its business functions to improve information availability, transparency and decision making. Process Integration data system has been developed to capture, display and analyse the plant performance parameters on real time basis. ERP has been upgraded to the latest version.

Non-ERP applications in other areas such as Engineering Drawings approval, Quality Control Management, Hospital Management, Guest House Management, Right to information and Security Control have been implemented.

NTPC plants and offices across India, are connected to Corporate Office and Data Centre through high speed MPLS (Multi-Protocol Label Switching) to facilitate seamless communication. The progress of ongoing projects and issues of the running power stations are discussed regularly over high definition Video Conferencing system at Project Monitoring Centre of Corporate Office. NTPC has its own mailing solution with main and backup systems.

A vendor portal was developed to facilitate vendors to get registered, bid and track their bill for payment without any physical interaction. The same is now available on a mobile App as well.

Security of digital assets of NTPC is top most priority and hence a 24x7 Security Operation Centre (SOC) was started. Round the clock monitoring of all external and internal data traffic is being monitored through SOC and latest threat management tools have been deployed to prevent any cyber-attack or data theft.

NTPC has its own Disaster Recovery Site. Both the data centre and disaster recovery centre are now ISO 27001 certified.

NTPC has initiated the process of switching to Paperless Office. All approvals and entire process from procurement to payment are envisaged to be paperless.

NHPC

NHPC makes use of information and communication technologies for the execution and management of projects and power stations. NHPC considers information technology to be a strategic tool to improve overall productivity and efficiency. NHPC has successfully implemented an Enterprise Resource Planning (ERP) software solution to help in managing optimum utilization of generating assets, accelerated development of construction projects thereby improving quality, productivity and profitability of the organization.

NHPC has very elaborate Information Technology and Communication infrastructure and all the sites are now

connected with the Corporate Office through multimode, fail-safe communications links using MPLS¬VPN/VSAT-Ku Band / Broadband technologies. A high speed wireless network (Wi-Fi) has also been installed at NHPC Corporate office. NHPC has presently co-located key servers at TIER-Ill Data Centres of BS.NL at Faridabad and National Informatics Centre Service Incorporated (NICSI), at New Delhi. Disaster Recovery (DR) site is also operational at NHPC office at Kolkata. IT & Cyber Security policy is also in place to manage the Information Technology (IT) system to ensure optimum and secure utilization of the assets owned by NHPC.

IFS ERP has been implemented in NHPC in centralized environment and the data for the entire Corporation pertaining to ERP resides in single Oracle database. IFS ERP is being accessed remotely from all locations viz. Corporate Office, Regional offices/Projects/Power stations to run the IFS application through above communication network. All key business functions viz. Finance, HR, Procurement & Contracts, Inventory, Project Management, Power Plant Operation and Maintenance Energy Sales and Accounting, Quality Assurance etc. have been implemented in the IFS ERP System, Employee Self Service (ESS) is also implemented across the Corporation catering to all employees of the Corporation,

A host of other software applications has been implemented covering key business functions and providing services like E-mail, Voice, Video Conferencing, Web-casting, Desktop virtualization etc. leveraging the IT & Communication Infrastructure. A bilingual official website of NHPC with state-of-the-art technology can be accessed as http://www.nhpcindia.com. In addition, NHPC has its own integrated intranet which plays pivotal role in displaying information of various divisions of Corporate Office / Projects I Regional Offices for wide viewing throughout the Corporation through WAN. SAHAJ SEWA portal has been upgraded and improved to make it more employees friendly so that users can have easy access to their personal information etc.

Company has successfully reduced paper consumption, achieved standardization of data, and accuracy of information to a large extent with well-planned Information Technology facilities, As per Government of India directives, the procurement process through e-procurement (Electronic Tender) System has also been successfully implemented.

NHPC has been nominated as Sectoral CERT - nodal agency of CERT and designated as CERT-Hydro for hydro sector by MOP.

To comply various regulatory requirements and upkeep the IT Infrastructure following major initiatives has been taken by NHPC during 2018-19:

- Implementation of VLAN
- NHPC has identified the installed Clls and shared with CISO MoP for onward sharing with NCIIPC to declare as Protected system
- VA/PT at 2 Power Stations as Pilot Project
- Implementation of ISMS 27001:2013 certification is underway.

To meet: the organization requirement related to Information Technology. Following are the new key applications developed and implemented -during. 2018-1.9:

- MoU Target: Online HRMS and integration with Finance Division (consisting of online employee data administration, TA/TTA, exit procedures, talent manage management etc.
- Management Dashboard for monitoring Activities and various MIS Reports
- Relief Ws 89(1) Calculation to facilitate Employees
- Land Record Management
- Application submission for Outside Employment
- Adoption of IND-AS in NHPC

POWERGRID

POWERGRID has already in-house developed digitized tools for many of its functions such as recruitment, vigilance, human resource development, bill payment, etc.

POWERGRID has introduced a web based Vigilance Complaint Handling System for proper monitoring and speedy disposal of the cases.

Further, to expedite day to day operation of POWERGRID with increased transparency, POWERGRID has implemented Enterprise Resource Planning (ERP) across the organization.

To promote a culture of Recognition, Feedback, Learning & Knowledge Management, the upgraded POWERGRID HRD web portal has hosted following benchmark web applications which are unique in the entire PSUs

A. **Online HRD Portal >** Digitizing the learning processes for Online Training Feedback System, Online Training Exemptions, Application for Open Programme in Premiere Institutes and Individual Employee Competencies

B. **Employee e-recognition > Capturing Success Stories to figure in POWERGRID & Knowledge Portal > Nomination for Mega Performance Awards** It

provides a simplified web form for e-recognition of employees for outstanding work done. In case the employee giving the recognition recommends that this is a mega achievement and deserves POWERGRID Mega Performance Awards then the employee who is recognized is required to upload his success story in a .pdf file which shall figure in POWERGRID knowledge portal and shall also go for consideration of the Awards Committee for POWERGRID Mega Performance Awards.

C. **Feedback Portal >** Submit suggestions and feedbacks to departments for systems and process improvements

D. **Launch of PAL Android Mobile App** to facilitate training of employees.

E. A web application to View, Print Functional, Behavioral, Managerial, Leadership Competencies captured as a part of competency based Training Needs Assessment in compliance to People Capability Maturity Model (PCMM).

PFC

INFORMATION TECHNOLOGY

1.0 **Objective:** PFC is fostering creative and innovative use of information technology to provide effective stewardship of information access and ensures to provide a secure, reliable technology infrastructure along with quality customer oriented services and support, so as to meet the ever changing business needs. Accordingly, PFC has undertaken many Information Technology (IT) initiatives to help streamline operations, reduce costs, improve efficiency, optimise resource utilization and devote talent to core business to enable better services and relationship with stakeholders.

2.0 **State-of-the-art Datacentre:** In order to provide continuous technological support through reliable infrastructures, established a state-of-the-art Datacentre operational 24x7, housing Database, Applications, Network, MS Exchange Email, Enterprise Antivirus Servers hosted on Rack mounted Servers with full power & data redundancy protection systems. Comprehensive Network Security system with two stage firewalling for server zone and with Intrusion Detection & Prevention system, Antivirus, Internet content filtering systems are put in place to strengthen the information system security.

Network environment of Gigabit Local Area Network with fibre backbone with Layer-3 switching technologies and Exchange email servers implemented at PFC, serves as a backbone of Corporation's internal and external communications.

3.0 **Augmentation of IT Infrastructure:** In order to keep pace with the demand for high speed computing and to comply with regulatory requirements, PFC keeps on updating its IT infrastructure on regular basis. PFC has enhanced the following ICT infrastructure services during the period April-December, 2018.

- A new set of servers and storage has been installed to cater to the performance demanding ERP database.
- To enhance the security of the banking channel, the Snorkel system has been integrated to the ERP system, to ensure safe transmission of banking data to the bank unaltered.
- The IT data centre is augmented with new age servers and SSD technology based SAN storage to host various applications/databases.
- At PFC Corporate Office, the video conferencing facility has been modernised with an IP based video conferencing setup.

4.0 **Development and Implementation of New Applications:** More demand for computerisation and transformation requirements have been met through introduction of new software applications which are developed in-house during the period April-December, 2018.

- PFC's financial software system has been migrated to comply with IND-AS accounting standard.
- Online Human Resource Management System (HRMS).
- Borrower KYC (Know Your Customer) System.
- Online Payment gateway in Recruitment System.
- Online System for determination of eligibility for a Solar Power Project borrower.
- Online System for Lenders Engineer (LE)/ Lenders Insurance Agent (LIA) Empanelment, Project Assignment, Monitoring and submission of project progress report.
- Online system for confirmation of Letter of Comfort (LoC) issued by PFC.
- Implementation of Comprehensive Loan Security Management System.

Shri Rajeev Sharma, CMD, PFC receiving the prestigious CBIP Award 2019 for "Best Power Finance Company" from Hon'ble Union Minister of State (I/C) for Power & NRE Shri R.K. Singh, at a function organized at SCOPE Convention Centre, New Delhi. Other dignitaries present on this occasion were; Shri A.K. Bhalla, Secretary (Power), Shri C. Gangopadhyay, Director (Projects), PFC & Shri P.K. Singh, Director (Commercial), PFC.

REC

Progress made during financial year 2018-19:

1. **Implementation of latest version of ERP running in REC since July 2009:** REC has upgraded existing eBusiness ERP (Oracle e-Biz suite) 11i (launched on 24-07-2009) to the latest version R12.2.7 along with replacement of ERP hardware. The new ERP supports GST and latest accounting standard (Ind-AS) and has advanced features which has facilitated further automation of business operation of the Corporation and integration to other systems like e-Office etc. The project has gone live in July, 2018. Core business function of the Company are driven by Oracle ERP.

2. REC has implemented state-of-art Electronic Office solution of open-text Documentum application for transformation of REC to paperless environment. The system runs in private cloud environment and is continuously improved by adding new features.

3. **Up gradation of REC WAN Network with enhanced Bandwidth:** Organization wide MPLS VPN network infrastructure (operational since 2008) has been completely revamped with latest network devices, enhancement of Bandwidth, high availability and the advanced features (to meet the demanding requirement of operation).

4. **Video Conferencing:** The Video conferencing facility has been revamped and this bridge-based multi-conferencing facility is being used extensively across all offices and subsidiaries for meetings, board meeting (with recording facility), conference with external agencies, training including RECIPMT etc.

5. **Implementation of IT Framework as per RBI Master Direction :**

REC has implemented IT security directives of Master Direction of IT Framework as per RBI Guidelines involving the following:

a. Gap analysis study with current ICT Setup vis-a-vis RBI master directions on IT framework, Roadmap assessment and reporting to Board.

b. Formulation of roles and responsibilities, review of existing policies / procedures and formulation of new policies.

c. Constitution of ITSC committee consisting of Independent Director, CIO, CTO and External Consultant (M/s KPMG).

d. REC now comply with Master Direction of IT Framework issued by RBI for NBFC sector.

6. As a step towards Digital transformation, an On-Line portal for Loan proposals submission has been developed to facilitate borrowers to submit loan application on-line from public domain.

7. **Revamping of REC Corporate Intranet / Internet Website:** REC Corporate Website & Intranet portal have been completely revamped to make it user friendly, dynamic, interactive and accessible from mobile devices from public domain. The website of REC is STQC certified and comply to Guidelines for Indian Government website (GIGW).

8. **Towards transparency, in procurement:** All procurement of goods and services of value above Rs.2 lakhs is being done on-line through an E-procurement system. The system complies to e-Reverse Auction as per CVC guidelines and REC Procurement guidelines. Procurement of Goods and services is also done from Govt. E-market (GEM) portal, MSME vendors. In addition, REC has deployed a number of in-house developed systems as part of IT initiatives towards achieving better e-governance.

9. **Primary Data Centre (PDC) and Disaster Recovery Center (DRC)**: Both PDC and DRC of RECare ISO/IEC 27001:2013 certified and also comply to National Cyber Security Policy of Govt. of India. REC has also implemented Data Leakage & prevention (DLP) system at DC DR for preventing sharing of confidential and critical information outside the corporate network.

10. REC network is IPv6 compliant as per directive of Government of India.

11. **Promoting Government of India initiatives:** REC facilitates and promotes the IT initiatives of Govt. of India like. MyGov, e-Governance, DPE guidelines on digital mode of payments etc., within the Corporation.

12. **Providing training and Computing facility to Employees:** Computer to Employee population ratio is 100%. IT Division also organizes and impart various training programs to upgrade Computer skills of the employees of the Company.

NEEPCO

Information Technology is a major enabler to achieve the business goals of an organization. Keeping this in view, NEEPCO is constantly trying to introduce, upgrade and procure hardware and software technologies to meet with the objective of having an effective and transparent system for better management, control and governance.

An IT road map is already in place to provide guidance on the most suitable hardware, network, software solutions, security and backup procedures. A wide area MPLS network (WAN) has been set up connecting all the offices and project sites for easy and smooth accessibility of these locations, utilizing leased lines facility for both data and voice connectivity. Also in a few locations VSATs are used for Data & voice communications. Currently, at Corporate Office a 70 mbps internet leased line has been subscribed from PGCIL with a redundant link of 10 mbps from BSNL.

Among the major initiatives, the process to acquire and implement an ERP Application covering most of the functional areas of the Corporation has been initiated. The tendering process for ERP implementation is under evaluation stage. The objective of ERP implementation plan is to automate the core activities of the Corporation, namely Finance and Accounts, Stores Management and Materials Management. As part of the ERP initiative strengthening of the communication network is being addressed on a priority basics. Preparation of Master Data for Material codification and preparation of HR master data for input to the ERP System is in the final stage of completion.

Online Leave module of HRMS has been implemented from 1st of January, 2019. Besides, online Annual Performance Appraisal/Reporting System (APAR), Training Information Management System and Online Risk Management System and Asset Management system has been implemented in NEEPCO. The NEEPCO website is revamped.

As per Ministry guidelines, the GePNIC e-Procurement System is implemented throughout all the sites of NEEPCO. Further, as per Ministry guidelines, procurement from GeM(Government e-Market Place) portal is initiated.

During the year 2018-19, Video Conferencing facility is extended to Assam Gas based Power Plant.

SJVNL

1) ERP

Major business functions covered in ERP landscape of SJVN are financing & Accounting, Plant Maintenance,

Human resource management including Payroll and employee Self-Service (ESS). Materials Management, Procurement and Contracts Management, Project Management, Commercial & Billing and E-tendering System.

2) IFS Package for Finance & Accounts, Payroll and MMS

The package manages Financial accounting for all units of SJVN centrally and also facilitates consolidation of accounts at year end beside processing centralized salary.

3) Other Softwares used in SJVN to leverage technology:

- Online recruitment System.
- Online Annual Property return system, Performance Management System
- Online vigilance Clearance system.
- Contract Labour Information Portal
- Mobile Apps for Generation data and Satluj river discharge data
- E-procurement system (services availed from M/s e-procurement Technologies)
- Autodesk Products, Bentley STAAD Pro
- MIKE 11, Multigroundz Software package, ANSYS, Primavera, Libsys, Biometric Attendance System etc.

THDC

1.0 Development and implementation of GST module in FMS application:

The FMS application has been modified and new module of GST has been developed and implemented as per the requirement.

2.0 HRMS:

2.1 Leave Module:

Leave Module covering all types of leave have been developed and implemented in THDCIL in the existing application of HRMS. Now the leave is being applied online and manual system have been discontinued. Leave module is also integrated with FMS application.

2.2 Implementation of online PMR for FY 2017-18 from E2 to E7:

Online PMR Module for executives (E2-E7) has been implemented. Complete cycle (from submission, mid year review to acceptance and disclosure) of PMR for the year 2017-18 has also been executed through PMR module.

2.3 Development of PMR for E8-E9 :

The online PMR module for E8-E9 has been developed and implemented in the year 2018 for PMR 2017-18.

3.0 Development of Website:

New Website with new features has been developed. Same has been deployed on NIC Cloud after Security Audit clearance given by the CERT-in empanelled agency and available at http://thdc.co.in. Contents of Website are regularly being updated.

4.0 Development of Software for Gate pass :

The web based software application for visitor passes to visit Tehri Dam and Power House has been developed and deployed after incorporating the suggestions / modifications by the users.

5.0 Installation and Implementation of Network Attached Storage(NAS) :

NAS is installed and is being used to store the data of various users of all the departments. Space in the NAS has been allocated to each user.

6.0 Cyber Security

6.1 Crisis Management Plan:

The Cyber Crisis Management Plan of THDCIL has been prepared to counter the cyber-attack and cyber terrorism. This describes the framework for cyber incident response and coordination within THDCIL and other Government agencies.

6.2 Cyber Security Awareness :

Training program on "CISO deep Dive" organized by National e-Governance division was attended by THDCIL officials. Other officials have also been nominated for the same program.

6.3 Security Audit of software application:

The work of security audit of HRMS, FMS, Quarterly Vigilance Clearance and Incident Report System has been awarded. The security audit of these applications has been started from 20.3.19.

6.4 Procurement of Desktops:

In the first phase, 122 computers have been procured against BER and same have been issued to the users of different department. Further Purchase Order (PO) for Procurement of 126 nos. of computers through GEM

portal has been issued and delivery is expected in last week of April-19.

6.5 MoU Target for 2018-19 "Online modules for Exit Procedure and Talent Management" have been developed in HRMS application.

6.6 Process for the submission of online application form for the recruitment of Engineer Trainee through GATE-2018 has been successfully completed. The data submitted by Applicants has been complied and processed along with Gate-2018 result.

6.7 **Online Annual Property Return** module in HRMS application has been developed and made available to the users for submission of annual property return for the year 2018. The APR has been filled through this module for the year 2018.

e-Office : THDCIL is gradually moving towards the paper less working for improving efficiency, consistency and effectiveness in the responses from individual / department in handling the letters , notes and files. The e-office developed by NIC shall be implemented. The necessary infrastructure to host the application and database has been completed. Phase-wise training to users at Rishikesh has also been completed. The MOU has also been signed with CDAC for e-sign and the implementation is in process.

BBMB

- BBMB has implemented the e-tendering/e-procurement system on ASP mode which encompasses all stakeholders in the tendering/procurement process. All the tenders by various offices of BBMB above a threshold value of Rs.10.00 lacs are invited through e-procurement/e-tendering system. The e-auction system has also been implemented in various offices of BBMB and many e-auctions have been satisfactorily completed.
- e.Reverse auction implemented for tenders with threshold value Rs. One crore.
- The implementation of e-office in Board Office has been done w.e.f 02.04.2018 and it has been initiated in other Chief Engineers offces.
- The Information Security Management System (ISMS) policies and procedures have been evolved and have been implemented for protection of IT assets. The desktop computers of BBMB are the latest, running with either Windows 7 Professional, Windows 8 Professional/ Windows 10 Professional OS.
- Introduction of ERP system in BBMB has been initiated.
- An app for BBMB employees named as Jan Shakti has been developed for accessing personal/official data, Salary details, GPF details etc. and employees have been using the app. .
- Video conferencing being held for conducting meetings between Top management and Head of Departments.
- Pension monitoring/Documents Tracking System developed and has been implemented in all offices of BBMB.
- Visitor Pass Management Software developed and implemented.
- Online GPF advance application Software is being developed.
- Procurement from GeM Portal enabled and Buyers accounts, Consignees and Paying Authorities accounts have been created on GeM Portal.
- Data Centralization completed for decentralized data from four locations for various application software packages like Payroll, Financial Accounting, Budgeting etc.,
- MIS for Legal Cases.
- Salary Centralization

CPRI

- CPRI has successfully implemented e-office for Leave Management System and Tour Management System
- CPRI is active in social media such as Facebook, twitter
- Online test booking facility has been implemented for Distribution Transformers
- Online applications for Recruitment have been introduced

NPTI

NPTI has started various activities for E-governance. Computerization and networking of NPTI Corporate office and respective Institutes is being developed.

State-of-the-art Website and Mobile Applications are also being developed. E-office, E-procurement, E-mail services under E-Governance initiatives are being taken from NIC. Social Media activities (twitter and facebook) are being used for better interaction with various stakeholders. Apart from this (2) two new online courses have been launched.

CHAPTER 37

REGION-WISE INSTALLED CAPACITY

ALL INDIA INSTALLED CAPACITY (IN MW) OF POWER STATIONS LOCATED IN THE REGIONS OF MAIN LAND AND ISLANDS

(As on 31.03.2019)

(UTILITIES)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES * (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
North-ern Region	State	16344.00	250.00	2879.20	0.00	19473.20	0.00	8697.55	699.56	28870.31
	Private	21680.83	1080.00	558.00	0.00	23318.83	0.00	2514.00	13120.46	38953.29
	Central	12335.37	250.00	2344.06	0.00	14929.43	1620.00	8496.22	379.00	25424.65
	Sub Total	**50360.20**	**1580.00**	**5781.26**	**0.00**	**57721.46**	**1620.00**	**19707.77**	**14199.02**	**93248.25**
Western Region	State	21560.00	1040.00	2849.82	0.00	25449.82	0.00	5446.50	547.89	31444.21
	Private	34745.67	500.00	4676.00	0.00	39921.67	0.00	481.00	21864.76	62267.43
	Central	16502.95	0.00	3280.67	0.00	19783.62	1840.00	1620.00	666.30	23909.92
	Sub Total	**72808.62**	**1540.00**	**10806.49**	**0.00**	**85155.11**	**1840.00**	**7547.50**	**23078.94**	**117621.55**
South-ern Region	State	19932.50	0.00	791.98	287.88	21012.36	0.00	11774.83	586.88	33374.07
	Private	11874.50	250.00	5322.10	273.70	17720.30	0.00	0.00	37491.40	55211.70
	Central	11235.02	2890.00	359.58	0.00	14484.60	3320.00	0.00	541.90	18346.50
	Sub Total	**43042.02**	**3140.00**	**6473.66**	**561.58**	**53217.26**	**3320.00**	**11774.83**	**38620.18**	**106932.27**
Eastern Region	State	6240.00	0.00	100.00	0.00	6340.00	0.00	3537.92	275.11	10153.03
	Private	6387.00	0.00	0.00	0.00	6387.00	0.00	399.00	1116.37	7902.37
	Central	14836.64	0.00	0.00	0.00	14836.64	0.00	1005.20	10.00	15851.84
	Sub Total	**27463.64**	**0.00**	**100.00**	**0.00**	**27563.64**	**0.00**	**4942.12**	**1401.48**	**33907.24**
North Eastern Region	State	0.00	0.00	497.71	36.00	533.71	0.00	422.00	233.25	1188.95
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	61.04	85.54
	Central	770.02	0.00	1253.60	0.00	2023.62	0.00	1005.00	30.00	3058.62
	Sub Total	**770.02**	**0.00**	**1775.81**	**36.00**	**2581.83**	**0.00**	**1427.00**	**324.29**	**4333.11**
Islands	State	0.00	0.00	0.00	40.05	40.05	0.00	0.00	5.25	45.30
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.38	7.38
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.10	5.10
	Sub Total	0.00	0.00	0.00	40.05	40.05	0.00	0.00	17.73	57.78
ALL INDIA	State	64076.50	1290.00	7118.71	363.93	72849.13	0.00	29878.80	2347.93	105075.86
	Private	74688.00	1830.00	10580.60	273.70	87372.30	0.00	3394.00	73661.40	164427.70
	Central	55680.00	3140.00	7237.91	0.00	66057.91	6780.00	12126.42	1632.30	86596.63
	Total	**194444.50**	**6260.00**	**24937.22**	**637.63**	**226279.34**	**6780.00**	**45399.22**	**77641.63**	**356100.19**

Figures at decimal may not tally due to rounding off

Abbreviation:- SHP=Small Hydro Project (≤ 25 MW), BP=Biomass Power, U&I=Urban & Industrial Waste Power, RES=Renewable Energy Sources

Note : - 1. RES include SHP, BP, U&I, Solar and Wind Energy. Installed capacity in respect of RES (MNRE) as on 31.03.2019

(As per latest information available with MNRE)

***Break up of RES all India as on 31.03.2019 is given below (in MW) :**

Small Hydro Power	Wind Power	Bio-Power		Solar Power	Total Capacity
		BM Power/ Cogen.	Waste to Energy		
4593.15	35625.97	9103.50	138.30	28180.71	77641.63

A. Capacity Added during Mar., 2019 3652 MW

1. Unit 3 (250 MW) of NABI NAGAR TPP has been commissioned and share has been added to the central sector of beneficiary states of ER.
2. Unit 3 (250 MW) of BONGAIGAON TPP has been commissioned and share has been added to the central sector of beneficiary states of NER.
3. Unit 4 (360 MW) of UCHPINDA TPP has been commissioned and added to private sector of Chhattisgarh.
4. Unit 6 (660 MW) of CHHABRA TPP has been commissioned and added to state sector of Rajasthan.
5. Unit 4 (660 MW) of SHREE SINGAJI TPP has been commissioned and added to state sector of Madhya Pradesh.
6. Unit 1 (12 MW) of DISHERGARH TPP has been commissioned and added to private sector of West Bengal.
7. Unit 2 (660 MW) of SOLAPUR STPS has been commissioned and share has been added to the central sector of beneficiary states of WR.
8. Unit 1 (800 MW) of GADARWARA TPP has been commissioned and share has been added to the central sector of beneficiary states of WR.

B. Capacity Retired during Mar., 2019 300 MW

1. U-3, U-6 & U-8 of KOTHAGUDEM TPS (60+2*120=300 MW) has been retired from state sector of Telangana.

C. Capacity removed due to change from Conventional to RES during Mar., 2019 0 MW

D. Net Capacity Added during Mar., 2019 A-B-C 3352 MW

*Sector wise breakup of RES capacity as shown is provisional.

Share of installed capacity of BBMB Stations is included in state sector of partner states.

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN NORTHERN REGION

INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.03.2019)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Delhi	State	135.00	0.00	1800.40	0.00	1935.40	0.00	0.00	0.00	1935.40
	Private	869.22	0.00	108.00	0.00	977.22	0.00	0.00	178.89	1156.11
	Central	3112.72	0.00	207.01	0.00	3319.73	102.83	723.09	0.00	4145.65
	Sub-Total	**4116.94**	**0.00**	**2115.41**	**0.00**	**6232.35**	**102.83**	**723.09**	**178.89**	**7237.16**
Haryana	State	2720.00	0.00	150.00	0.00	2870.00	0.00	1102.82	69.30	4042.12
	Private	4080.78	0.00	0.00	0.00	4080.78	0.00	200.00	345.12	4625.90
	Central	1294.72	0.00	535.61	0.00	1830.34	100.94	663.70181	5.00	2599.98
	Sub-Total	**8095.50**	**0.00**	**685.61**	**0.00**	**8781.12**	**100.94**	**1966.52**	**419.42**	**11267.99**
Himachal Pradesh	State	0.00	0.00	0.00	0.00	0.00	0.00	694.60	256.61	951.21
	Private	0.00	0.00	0.00	0.00	0.00	0.00	992.00	626.68	1618.68
	Central	183.40	0.00	62.01	0.00	245.41	28.95	1223.88	0.00	1498.24
	Sub-Total	**183.40**	**0.00**	**62.01**	**0.00**	**245.41**	**28.95**	**2910.48**	**883.29**	**4068.13**
Jammu & Kash-mir	State	0.00	0.00	175.00	0.00	175.00	0.00	1230.00	129.03	1534.03
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.83	64.83
	Central	506.39	0.00	129.07	0.00	635.47	67.98	1091.88	0.00	1795.33
	Sub-Total	**506.39**	**0.00**	**304.07**	**0.00**	**810.47**	**67.98**	**2321.88**	**193.86**	**3394.19**
Punjab	State	1760.00	0.00	150.00	0.00	1910.00	0.00	2597.70	127.80	4635.50
	Private	5115.50	0.00	0.00	0.00	5115.50	0.00	288.00	1154.62	6558.12
	Central	854.58	0.00	264.01	0.00	1118.59	196.81	923.42	0.00	2238.82
	Sub-Total	**7730.08**	**0.00**	**414.01**	**0.00**	**8144.09**	**196.81**	**3809.12**	**1282.42**	**13432.44**

Rajasthan	State	6260.00	250.00	603.80	0.00	7113.80	0.00	1096.18	23.85	8233.83
	Private	2802.00	1080.00	0.00	0.00	3882.00	0.00	104.00	7301.81	11287.81
	Central	956.25	250.00	221.10	0.00	1427.35	556.74	739.01	344.00	3067.10
	Sub-Total	**10018.25**	**1580.00**	**824.90**	**0.00**	**12423.15**	**556.74**	**1939.19**	**7669.66**	**22588.74**
Uttar Pradesh	State	5469.00	0.00	0.00	0.00	5469.00	0.00	724.10	25.10	6218.20
	Private	8714.33	0.00	0.00	0.00	8714.33	0.00	842.00	2887.60	12443.93
	Central	3796.39	0.00	549.49	0.00	4345.88	289.48	1802.53	30.00	6467.89
	Sub-Total	**17979.72**	**0.00**	**549.49**	**0.00**	**18529.21**	**289.48**	**3368.63**	**2942.70**	**25130.02**
Uttarakhand	State	0.00	0.00	0.00	0.00	0.00	0.00	1252.15	67.87	1320.02
	Private	99.00	0.00	450.00	0.00	549.00	0.00	88.00	526.20	1163.20
	Central	343.24	0.00	69.66	0.00	412.90	31.24	475.54	0.00	919.68
	Sub-Total	**442.24**	**0.00**	**519.66**	**0.00**	**961.90**	**31.24**	**1815.69**	**594.07**	**3402.90**
Chandigarh	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.71	34.71
	Central	38.15	0.00	15.03	0.00	53.17	8.01	101.71	0.00	162.89
	Sub-Total	**38.15**	**0.00**	**15.03**	**0.00**	**53.17**	**8.01**	**101.71**	**34.71**	**197.60**
Central - Unallocated		1249.53	0.00	291.05	0.00	1540.58	237.03	751.45	0.00	2529.07
Total (Northern Region)	State	16344.00	250.00	2879.20	0.00	19473.20	0.00	8697.55	699.56	28870.31
	Private	21680.83	1080.00	558.00	0.00	23318.83	0.00	2514.00	13120.46	38953.29
	Central	12335.37	250.00	2344.06	0.00	14929.43	1620.00	8496.22	379.00	25424.65
	Grand Total	**50360.20**	**1580.00**	**5781.26**	**0.00**	**57721.46**	**1620.00**	**19707.77**	**14199.02**	**93248.25**

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN WESTERN REGION

INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.03.2019)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Goa	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
	Private	0.00	0.00	48.00	0.00	48.00	0.00	0.00	3.92	51.92
	Central	469.59	0.00	19.67	0.00	489.26	26.00	0.00	0.00	515.26
	Sub-Total	**469.59**	**0.00**	**67.67**	**0.00**	**537.26**	**26.00**	**0.00**	**3.97**	**567.23**
Daman & Diu	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.47	14.47
	Central	141.41	0.00	43.34	0.00	184.75	7.00	0.00	0.00	191.75
	Sub-Total	**141.41**	**0.00**	**43.34**	**0.00**	**184.75**	**7.00**	**0.00**	**14.47**	**206.22**
Gujarat	State	3710.00	1040.00	2177.82	0.00	6927.82	0.00	772.00	64.70	7764.52
	Private	7265.67	500.00	3960.00	0.00	11725.67	0.00	0.00	8331.80	20057.47
	Central	3242.43	0.00	424.00	0.00	3666.43	559.00	0.00	243.30	4468.73
	Sub-Total	**14218.10**	**1540.00**	**6561.82**	**0.00**	**22319.92**	**559.00**	**772.00**	**8639.80**	**32290.72**
Madhya Pradesh	State	5400.00	0.00	0.00	0.00	5400.00	0.00	1703.66	83.96	7187.62
	Private	6174.00	0.00	100.00	0.00	6274.00	0.00	0.00	4180.40	10454.40
	Central	3342.38	0.00	257.00	0.00	3599.38	273.00	1520.00	300.00	5692.38
	Sub-Total	**14916.38**	**0.00**	**357.00**	**0.00**	**15273.38**	**273.00**	**3223.66**	**4564.36**	**23334.40**
Chhattis-garh	State	2280.00	0.00	0.00	0.00	2280.00	0.00	120.00	11.05	2411.05
	Private	8850.00	0.00	0.00	0.00	8850.00	0.00	0.00	524.30	9374.30
	Central	2110.75	0.00	0.00	0.00	2110.75	48.00	100.00	0.00	2258.75
	Sub-Total	**13240.75**	**0.00**	**0.00**	**0.00**	**13240.75**	**48.00**	**220.00**	**535.35**	**14044.10**

Maha-rashtra	State	10170.00	0.00	672.00	0.00	10842.00	0.00	2850.84	388.13	14080.97
	Private	12456.00	0.00	568.00	0.00	13024.00	0.00	481.00	8804.41	22309.41
	Central	4667.80	0.00	2272.73	0.00	6940.53	690.00	0.00	123.00	7753.53
	Sub-Total	**27293.80**	**0.00**	**3512.73**	**0.00**	**30806.53**	**690.00**	**3331.84**	**9315.53**	**44143.90**
Dadra & Nagar Naveli	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.46	5.46
	Central	195.60	0.00	66.34	0.00	261.94	9.00	0.00	0.00	270.94
	Sub-Total	**195.60**	**0.00**	**66.34**	**0.00**	**261.94**	**9.00**	**0.00**	**5.46**	**276.40**
Central - Unallo-cated		2333.00	0.00	197.59	0.00	2530.59	228.00	0.00	0.00	2758.59
Total (Western Region)	State	21560.00	1040.00	2849.82	0.00	25449.82	0.00	5446.50	547.89	31444.21
	Private	34745.67	500.00	4676.00	0.00	39921.67	0.00	481.00	21864.76	62267.43
	Central	16502.95	0.00	3280.67	0.00	19783.62	1840.00	1620.00	666.30	23909.92
	Grand Total	**72808.62**	**1540.00**	**10806.49**	**0.00**	**85155.11**	**1840.00**	**7547.50**	**23078.94**	**117621.55**

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN SOUTHERN REGION

INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.03.2019)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Andhra Pradesh	State	5010.00	0.00	235.40	0.00	5245.40	0.00	1673.60	56.18	6975.18
	Private	3873.88	0.00	3813.18	36.80	7723.86	0.00	0.00	7433.42	15157.28
	Central	1546.83	127.73	0.00	0.00	1674.56	127.27	0.00	250.00	2051.83
	Sub-Total	**10430.71**	**127.73**	**4048.58**	**36.80**	**14643.82**	**127.27**	**1673.60**	**7739.60**	**24184.29**
Telan-gana	State	5582.50	0.00	0.00	0.00	5582.50	0.00	2479.93	41.22	8103.65
	Private	839.45	0.00	831.82	0.00	1671.27	0.00	0.00	3936.44	5607.71
	Central	1806.85	149.27	0.00	0.00	1956.12	148.73	0.00	10.00	2114.85
	Sub-Total	**8228.80**	**149.27**	**831.82**	**0.00**	**9209.89**	**148.73**	**2479.93**	**3987.66**	**15826.21**
Karna-taka	State	5020.00	0.00	0.00	127.92	5147.92	0.00	3586.60	193.89	8928.41
	Private	1958.50	0.00	0.00	25.20	1983.70	0.00	0.00	13635.91	15619.61
	Central	2427.80	401.40	0.00	0.00	2829.20	698.00	0.00	0.00	3527.20
	Sub-Total	**9406.30**	**401.40**	**0.00**	**153.12**	**9960.82**	**698.00**	**3586.60**	**13829.79**	**28075.21**
Kerala	State	0.00	0.00	0.00	159.96	159.96	0.00	1856.50	172.90	2189.36
	Private	615.00	0.00	174.00	0.00	789.00	0.00	0.00	190.21	979.21
	Central	861.42	281.80	359.58	0.00	1502.80	362.00	0.00	50.00	1914.80
	Sub-Total	**1476.42**	**281.80**	**533.58**	**159.96**	**2451.76**	**362.00**	**1856.50**	**413.11**	**5083.37**
Tamil Nadu	State	4320.00	0.00	524.08	0.00	4844.08	0.00	2178.20	122.70	7144.98
	Private	4587.67	250.00	503.10	211.70	5552.47	0.00	0.00	12292.28	17844.75
	Central	3025.32	1364.20	0.00	0.00	4389.52	1448.00	0.00	231.90	6069.42
	Sub-Total	**11932.99**	**1614.20**	**1027.18**	**211.70**	**14786.07**	**1448.00**	**2178.20**	**12646.88**	**31059.15**

NLC	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
	Sub-Total	**0.00**	**100.00**	**0.00**	**0.00**	**100.00**	**0.00**	**0.00**	**0.00**	**100.00**
Puduch-erry	State	0.00	0.00	32.50	0.00	32.50	0.00	0.00	0.00	32.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.14	3.14
	Central	140.80	107.60	0.00	0.00	248.40	86.00	0.00	0.00	334.40
	Sub-Total	**140.80**	**107.60**	**32.50**	**0.00**	**280.90**	**86.00**	**0.00**	**3.14**	**370.04**
Central - Unallo-cated		1426.00	358.00	0.00	0.00	1784.00	450.00	0.00	0.00	2234.00
Total (South-ern Region)	State	19932.50	0.00	791.98	287.88	21012.36	0.00	11774.83	586.88	33374.07
	Private	11874.50	250.00	5322.10	273.70	17720.30	0.00	0.00	37491.40	55211.70
	Central	11235.02	2890.00	359.58	0.00	14484.60	3320.00	0.00	541.90	18346.50
	Grand Total	**43042.02**	**3140.00**	**6473.66**	**561.58**	**53217.26**	**3320.00**	**11774.83**	**38620.18**	**106932.27**

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN EASTERN REGION

INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.03.2019)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Bihar	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.70	70.70
	Private	281.00	0.00	0.00	0.00	281.00	0.00	0.00	255.45	536.45
	Central	3849.33	0.00	0.00	0.00	3849.33	0.00	110.00	0.00	3959.32
	Sub-Total	**4130.33**	**0.00**	**0.00**	**0.00**	**4130.33**	**0.00**	**110.00**	**326.15**	**4566.47**
Jharkhand	State	420.00	0.00	0.00	0.00	420.00	0.00	130.00	4.05	554.05
	Private	730.00	0.00	0.00	0.00	730.00	0.00	0.00	34.95	764.95
	Central	393.74	0.00	0.00	0.00	393.74	0.00	61.00	0.00	454.74
	Sub-Total	**1543.74**	**0.00**	**0.00**	**0.00**	**1543.74**	**0.00**	**191.00**	**39.00**	**1773.74**
West Bengal	State	5400.00	0.00	100.00	0.00	5500.00	0.00	986.00	121.95	6607.95
	Private	2437.00	0.00	0.00	0.00	2437.00	0.00	0.00	352.50	2789.50
	Central	760.77	0.00	0.00	0.00	760.77	0.00	410.00	0.00	1170.77
	Sub-Total	**8597.77**	**0.00**	**100.00**	**0.00**	**8697.77**	**0.00**	**1396.00**	**474.45**	**10568.22**
DVC	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	6985.04	0.00	0.00	0.00	6985.04	0.00	186.20	0.00	7171.24
	Sub-Total	**6985.04**	**0.00**	**0.00**	**0.00**	**6985.04**	**0.00**	**186.20**	**0.00**	**7171.24**
Odisha	State	420.00	0.00	0.00	0.00	420.00	0.00	2061.92	26.30	2508.22
	Private	2939.00	0.00	0.00	0.00	2939.00	0.00	0.00	473.46	3412.46
	Central	1633.90	0.00	0.00	0.00	1633.90	0.00	89.00	10.00	1732.90
	Sub-Total	**4992.90**	**0.00**	**0.00**	**0.00**	**4992.90**	**0.00**	**2150.92**	**509.76**	**7653.58**

Sikkim	State	0.00	0.00	0.00	0.00	0.00	0.00	360.00	52.11	412.11
	Private	0.00	0.00	0.00	0.00	0.00	0.00	399.00	0.01	399.01
	Central	87.03	0.00	0.00	0.00	87.03	0.00	64.00	0.00	151.03
	Sub-Total	**87.03**	**0.00**	**0.00**	**0.00**	**87.03**	**0.00**	**823.00**	**52.12**	**962.15**
Central - Unallocated		1126.83	0.00	0.00	0.00	1126.83	0.00	85.01	0.00	1211.84
Total (Eastern Region)	State	6240.00	0.00	100.00	0.00	6340.00	0.00	3537.92	275.11	10153.03
	Private	6387.00	0.00	0.00	0.00	6387.00	0.00	399.00	1116.37	7902.37
	Central	14836.64	0.00	0.00	0.00	14836.64	0.00	1005.20	10.00	15851.84
	Grand Total	**27463.64**	**0.00**	**100.00**	**0.00**	**27563.64**	**0.00**	**4942.12**	**1401.48**	**33907.24**

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN NORTH-EASTERN REGION

INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.03.2019)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Assam	State	0.00	0.00	328.21	0.00	328.21	0.00	100.00	5.01	433.22
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	26.50	51.00
	Central	408.52	0.00	435.56	0.00	844.08	0.00	357.08	25.00	1226.16
	Sub-Total	**408.52**	**0.00**	**788.27**	**0.00**	**1196.79**	**0.00**	**457.08**	**56.51**	**1710.38**
Arunachal Pradesh	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107.11	107.11
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.39	29.39
	Central	37.05	0.00	46.82	0.00	83.87	0.00	116.55	0.00	200.42
	Sub-Total	**37.05**	**0.00**	**46.82**	**0.00**	**83.87**	**0.00**	**116.55**	**136.50**	**336.92**
Megha-laya	State	0.00	0.00	0.00	0.00	0.00	0.00	322.00	32.53	354.53
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12
	Central	45.60	0.00	109.69	0.00	155.29	0.00	72.27	0.00	227.56
	Sub-Total	**45.60**	**0.00**	**109.69**	**0.00**	**155.29**	**0.00**	**394.27**	**32.65**	**582.21**
Tripura	State	0.00	0.00	169.50	0.00	169.50	0.00	0.00	16.01	185.51
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09
	Central	56.10	0.00	436.95	0.00	493.05	0.00	68.49	5.00	566.54
	Sub-Total	**56.10**	**0.00**	**606.45**	**0.00**	**662.55**	**0.00**	**68.49**	**21.10**	**752.14**
Manipur	State	0.00	0.00	0.00	36.00	36.00	0.00	0.00	5.45	41.45
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.44	3.44
	Central	47.10	0.00	71.57	0.00	118.67	0.00	95.34	0.00	214.01
	Sub-Total	**47.10**	**0.00**	**71.57**	**36.00**	**154.67**	**0.00**	**95.34**	**8.89**	**258.90**
Nagaland	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.67	30.67

	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
	Central	32.10	0.00	48.93	0.00	81.03	0.00	57.33	0.00	138.36
	Sub-Total	**32.10**	**0.00**	**48.93**	**0.00**	**81.03**	**0.00**	**57.33**	**31.67**	**170.03**
Mizoram	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.47	36.47
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50
	Central	31.05	0.00	40.46	0.00	71.51	0.00	97.94	0.00	169.45
	Sub-Total	**31.05**	**0.00**	**40.46**	**0.00**	**71.51**	**0.00**	**97.94**	**36.97**	**206.42**
Central - Unallocated		112.50	0.00	63.62	0.00	176.12	0.00	140.00	0.00	316.12
Total (North-Eastern Region)	State	0.00	0.00	497.71	36.00	533.71	0.00	422.00	233.25	1188.95
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	61.04	85.54
	Central	770.02	0.00	1253.60	0.00	2023.62	0.00	1005.00	30.00	3058.62
	Grand Total	**770.02**	**0.00**	**1775.81**	**36.00**	**2581.83**	**0.00**	**1427.00**	**324.29**	**4333.11**

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN ISLANDS

INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES

(As on 31.03.2019)

Region	Owner-ship/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES * (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Andaman & Nicobar	State	0.00	0.00	0.00	40.05	40.05	0.00	0.00	5.25	45.30
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.63	6.63
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.10	5.10
	Sub-Total	**0.00**	**0.00**	**0.00**	**40.05**	**40.05**	**0.00**	**0.00**	**16.98**	**57.03**
lakshad-weep	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.75
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.75**	**0.75**
Total (Is-lands)	State	0.00	0.00	0.00	40.05	40.05	0.00	0.00	5.25	45.30
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.38	7.38
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.10	5.10
	Grand Total	**0.00**	**0.00**	**0.00**	**40.05**	**40.05**	**0.00**	**0.00**	**17.73**	**57.78**

NEEPCO'S POWER PLANTS UNDER OPERATION:

Sl. No.	Name of the Plant	State	Installed Capacity (MW)	Year of Commissioning
		HYDRO		
1	Kopili Hydro Electric Plant.	Assam	275	50 MW: May 1984. 100 MW: July 1988 100 MW: July 1997 25 MW: July 2004
2	Doyang Hydro Electric Plant.	Nagaland	75	July 2000
3	Ranganadi Hydro Electric Plant.	Arunachal Pradesh	405	March 2002
4	Tuirial Hydro Electric Project	Mizoram	60	Unit -1: October 2017 Unit - 2: January 2018
5	Pare Hydro Electric Project	Arunachal Pradesh	110	May 2018
		Hydro Total	**925**	
		THERMAL		
6	Assam Gas Based power Plant.	**Assam**	**291**	GTG: 1995/96 STG: 1998
7	Agartala Gas Turbine Combined Cycle Plant.	Tripura	135	June 1998 (84 MW)/ July & Sept'2015 (51 MW)
8	Tripura Gas Based Power Project	Tripura	101	GTG: Dec' 2015 STG: Mar' 2017
		Thermal Total	**527**	
		SOLAR		
9	Grid Interactive Solar Power Plant, Monarchak	Tripura	5	February 2015
		Thermal Total	**5**	
		TOTAL	**1457**	

CHAPTER 38

OFFICE OF THE CHIEF CONTROLLER OF ACCOUNTS

The Secretary (Power) is the Chief Accounting Authority of the Ministry. The office of chief Controller of Accounts functions under overall supervision of Joint Secretary & Finance Adviser. The office is headed by the Chief Controller of Accounts with one Controller of Accounts and seven Pay & Account Officers responsible for making all the payments, expenditure control & banking arrangements, Internal Audit and Accounting of all the receipts/payments. Out of these one Pay and Accounts Office is stationed in Bengaluru. The Principal Accounts Office is responsible for consolidation of monthly accounts of all the Pay & Accounts Offices and submission of monthly accounts of the Ministry to Controller General of Accounts (CGA), Department of Expenditure, Ministry of Finance, preparation of Appropriation Accounts, Statement of Central Transactions (SCT) and Finance accounts on annual basis for submission to the CGA. It is also responsible for the compilation of various data and generation of reports for submission to Ministry of Power, Ministry of Finance, and CGA etc.

The Office of Chief Controller of Accounts also bring out an annual accounting booklet called Accounts at a Glance which contains details of total transactions (Receipts, Expenditure, Investments and Loans) of the Ministry and its various organization. It gives a brief overview of accounting trends. The office is also responsible for preparing the Receipt Budget of the Ministry.

Internal Audit Wing

The Internal Audit Wing facilitates the executive for adoption of sound procedure, rule and regularities and financial propriety of transactions of accounts. This Wing advises DDOs and Grantee Institutions for correct implementation of rules and maintenance of records. The Internal Audit Wing also conducts audit of Deen Dayal Upadhyay Gram Jyoti Yojna (DDUGJY), Integrated Power Development Scheme (IPDS), Power System Development Fund (PSDF) and Transmission Line Scheme of J&K, A.P and Sikkim.

Performance of the Internal Audit Wing, during the year 2018-19 is as under:-

No. of Units		No. of Paras Raised	No. of Paras Settled	Total No. of Paras Outstanding
Audit Target	Audit Done			
23	20	55	66	507

AUDIT OBSERVATIONS

The Organization-wise Break-up of outstanding Audit Observation & Inspection Reports issued up-to 31/03/19 is as under:-

Sl.No	Name of organization/Office	No. of Inspection Reports Issued	No. of Paras Outstanding (Including old Paras)
01	Ministry of Power	02	48
02	Central Electrical Authority	16	141
03	Appellate Tribunal for Electricity	01	05
04	Grantee Institutions	09	106
05	Special Audits	13	94
06	RGGVY/DDUGJY Scheme	27	27
07	R-APDRP Scheme	24	24
08	Pay & Accounts Officers	06	55
09	PSDF Scheme	04	04
10	Transmission Line	03	03
Total		**105**	**507**

STATUS OF OUTSTANDING PARA AS ON 31st Dec, 2018						
Sl.No	**Office**	**Opening Balance as on 1.4.2018**	**Para Added**	**Total**	**Para Settled**	**Closing Balance as on 31.12.18**
Ministry of Power						
01	MoP USGAD	20	9	29	0	29
02	MoP (FTE/OE)	19	0	19	0	19
	Total of MoP	39	9	48	0	48
Central Electricity Authority						
01	CEA (HQ)	31	0	31	0	31
02	RPSO, MUMBAI	6	0	6	0	6
03	RPSO, DELHI	5	0	5	0	5
04	RPSO, KOLKATA	3	0	3	0	3
05	RPSO, BANGALORE	11	0	11	0	11
06	RIO, MUMBAI	9	0	9	0	9
07	RIO, N.DELHI	8	0	8	1	7
08	RIO, KOLKATA	8	0	8	0	8
09	RIO, CHENNAI	11	0	11	0	11
10	RIO, SHILONG	5	0	5	2	3
11	NRPC, N.DELHI	12	3	15	4	11
12	WRPC, MUMBAI	3	0	3	0	3
13	SRPC, BANGALORE	1	0	1	0	1
14	ERPC, KOLKATA	15	0	15	0	15
15	NERPC, SHILONG	5	0	5	0	5
16	DEPTT. of CANTEEN	12	0	12	0	12
Total of CEA		**145**	**3**	**148**	**7**	**141**
Appellate Tribunals For Electricity						
01	ATE (APTEL)	5	5	10	5	5
GRANTEE INSTITUTIONS						
01	BBMB, NANGAL	4	0	4	0	4
02	JERC, GURGAON	10	0	10	0	10
03	NPTI, FARIDABAD	13	8	21	9	12
04	CPRI, BANGALORE	15	0	15	0	15
05	FOR, DELHI	12	0	12	0	12
06	BEE, N.DELHI	16	0	16	0	16
07	CERC, N.DELHI	21	6	27	12	15
08	CPRI, UHVRL Hyderabad	13	0	13	3	10
09	CPRI Bhopal	12	0	12	0	12
Total of Grantee		**116**	**14**	**130**	**24**	**106**
SPECIAL AUDITS						
01	REC (AG& SP) &RGGVY	5	0	5	0	5
02	BEE (BLY)	1	0	1	0	1
03	BEE (NMEEE)	11	0	11	0	11

04	BBMB (CHANDIGARH)	10	0	10	0	10
05	THDC	9	0	9	4	5
06	NEEPCO SHILONG	15	0	15	10	5
07	PFC (HQ) New Delhi	8	3	11	0	11
08	LOHARINAG PALA	9	0	9	0	9
09	NHPC FARIDABAD	7	0	7	0	7
10	BTPS	1	0	1	0	1
11	NLDC	6	4	10	0	10
12	REC (HQ) new Delhi	12	8	20	3	17
13	NEF (REC) New Delhi	4	2	6	4	2
	Total of Special Audits	**98**	**17**	**115**	**21**	**94**

OFFICE OF CHIEF CONTROLLER OF ACCOUNTS						
Sl.No	**Office**	**Opening Balance**	**Added**	**Total**	**Dropped**	**Closing Balance**
01	Pr.AO ADMIN	15	0	15	0	15
02	Pr.AO A/c	8	0	8	0	8
03	PAO (Sectt.)	11	0	11	0	11
04	PAO (BMCC)	5	0	5	1	4
05	PAO (CEA), N.DELHI	14	1	15	7	8
06	PAO (CEA), BEN-GALURU	9	0	9	0	9
Total of O/o CHIEF CONTROLLER OF ACCOUNTS		**62**	**1**	**63**	**8**	**55**

RGGVY/DDUGJY						
Sl.No	**Office**	**Opening Balance**	**Added**	**Total**	**Dropped**	**Closing Balance**
01	RGGVY/DDUGJY	27	0	27	0	27
Total		**27**	**0**	**27**	**0**	**27**

RAPDRP SCHEME						
Sl.No	**Office**	**Opening Balance**	**Added**	**Total**	**Dropped**	**Closing Balance**
01	RAPDRP/IPDS	24	0	24	0	24
Total		**24**	**0**	**24**	**0**	**24**

PSDF SCHEME						
Sl.No	**Office**	**Opening Balance**	**Added**	**Total**	**Dropped**	**Closing Balance**
01	PSDF	4	0	4	0	4
Total		**4**	**0**	**4**	**0**	**4**

Transmission Line SCHEME						
Sl.No	**Office**	**Opening Balance**	**Added**	**Total**	**Dropped**	**Closing Balance**
01	Transmission Line (PGCIL- J&K, A.P and Sikkim)	3	0	3	0	4
		3	**0**	**3**	**0**	**3**

Consolidated Report of Outstanding Paras (as on 31-03-2019)

Opening Balance as on 01.04.2018

Compliance and Special Audit	445
RGGVY/DDUGJY Scheme (Units)	32
R-APDRP	31
PSDF	8
Transmission Line	2
Total	**518**

Added between 01.04.2018 to 31.03.2019

Compliance and Special Audit	35
RGGVY/DDUGJY Scheme (Units)	1
R-APDRP	1
PSDF	2
Transmission Line	1
Total	**40**

Dropped between 01.04.2018 to 31.03.2019

Compliance and Special Audit	63
RGGVY/DDUGJY Scheme (Units)	0
R-APDRP	0
PSDF	0
Transmission Line	0
Total	**63**

Closing balance as on 31.03.2019

Compliance and Special Audit	449*
RGGVY/DDUGJY Scheme (Units)	27
R-APDRP	24
PSDF	4
Transmission Line	3
Total	**507**

*The data is tentative as the audit report of Pr. Accounts Office (Admn) and PAO Sectt have been put up for approval.

Srinagar-Leh-Kargil-Drass Transmission System

CHAPTER 39

AUDIT OBSERVATIONS OF C&AG

Summary of the Reports of C&AG of India pertaining to the Ministry of Power

1. Report No. 4 of 2018

Para No. 17.1(Report No. 4/2018)

Irregular payment of Compensatory Allowance

The Bhakra Beas Management Board (BBMB) in its 143rd meeting held on 19 July 1991 decided to adopt the Punjab State Electricity Board (PSEB) - now Punjab State Power Corporation Limited-PSPCL - pay scales, as revised from time to time, as the pay scales for all the employees working in BBMB. The BBMB also decided that allowances/concessions sanctioned by PSEB from time to time would be adopted by it in future.

A test check of various allowances paid to the employees in eight units of BBMB brought out that the employees were drawing Compensatory Allowance in addition to the pay and allowances as per the pay scales/allowances of PSEB. Though the compensatory allowance was being paid to the employees of BBMB before adoption of pay scales of PSEB, its continued payment after July 1991 was irregular. PSPCL had also clarified (July 2014) that there was no provision to allow compensatory allowance to its employees. The irregular expenditure towards payment of compensatory allowance during 2014-15 to 2015-16 in the eight units covered in audit worked out to 2.56 crore.

2. Report No. 11 of 2018

Para No.10.1 (Report No.11/2018)

Loss due to disallowance of Capital Expenditure

As per Tariff Regulations 2004, capital expenditure actually incurred after the date of commercial operation and up to the cut-off date, on procurement of initial spares as per the original scope of work was allowed for capitalization. NTPC Limited (NTPC) set up Stage-III (one unit of 210 MW) of Feroze Gandhi Unchahar Thermal Power Station, the commercial operation of which was declared on 01 January 2007. In line with the tariff regulations, the cut-off date for capitalisation against this project was 31 March 2008. Initial spares, if procured, by 31 March 2008 would have been eligible for capitalization.

Audit noticed that NTPC procured the initial spares valuing 17.03 crore late, during 2009-10 and 2011-12 and claimed capitalization of the same in the tariff petition filed before Central Electricity Regulatory Commission (CERC) for the period 2009-2014. CERC disallowed (May 2012) the capitalization as the expenditure was incurred after the cut-off date. CERC also noted that NTPC failed to initiate pro-active steps to complete the procurement of spares within the cut-off date. A review petition filed by NTPC in this regard was also disposed (April 2013) by CERC on similar grounds. Subsequently, NTPC filed an appeal before Appellate Tribunal for Electricity (ATE), which upheld (April 2014) the decision of CERC. ATE observed that when it was known that the spares could not be delivered before the cut-off date, NTPC could have moved an application before CERC under Regulation 13 of Tariff Regulations 2004 for extension of the cut-off date, which was not done.

Para No. 10.2 (Report No. 11/2018)

Extra expenditure on water by NSPCL, Bhilai

NTPC-SAIL Power Company Private Limited (NSPCL or Company) requested Water Resources Department (WRD), Government of Chhattisgarh (GoC) for allotment of 0.6 TMC (17 million cum) water per annum for the Bhilai Expansion Project (PP-III, 2 x250 MW power plant). An agreement was entered into between NSPCL and GoC (7 August 2008) for drawing 1415840 cum of water per month from Tandula Water Resources for a period of thirty years from the date of signing of the agreement. As per clause 2 of the agreement, NSPCL was required to pay for at least 90 per cent (15.29 million cum) of the contracted quantity of water, even if the actual quantity drawn was lower.

Audit observed that:

i. Commercial operation of the plant started in 2009-10. The average water consumption was 70.5 per cent of the contracted quantity during the period 2010-11 to 2016-17. In fact, in 2016-17, there was a steep decline in water consumption from 11.97 million cum in 2015-16 to 10.60 million cum, which the Management attributed to its special drive to save water resources. NSPCL, however, paid water charges for 90 per cent of the contracted quantity for the entire period.

ii. Coal and water are key input requirements for thermal power generation. Coal is required to raise steam in boilers which turns the turbine. Requirement of additional water would depend upon additional coal availability. The Standing Linkage Committee (SLC) of Ministry of Coal, for Power, Cement and Sponge Iron,

in their meeting held on 31 May 2013, decided that fresh applications for coal linkages from power sector would be kept in abeyance for a period of two years in view of the huge gap in supply and demand of coal. With chances of additional coal linkages remote, the utilisation of excess contracted water for alternate use was also unlikely.

Para No. 10.3 (Report No. 11/2018)

Performance of Telecom Business

Power Grid Corporation of India Limited (Company) is the largest electric power transmission utility of the country. The Company had laid optical fiber cables on its power transmission lines since 1996 to track real-time data for Load Dispatch and Communication purposes for monitoring the power transmission system. This was done by replacing one of the earth wires in the transmission lines with a special cable known as Optical Ground Wire (OPGW) which serves the purpose of earth wire as well as optical fiber. Thus, electricity is transmitted through the overhead metal wires while real-time data from sub-stations etc. is transmitted electronically through OPGW strung alongside the metal wires. The OPGW had 24 fibers out of which six fibers are required for load despatch functions while the balance fibers are available for transmission of data.

Sensing business potential in data transmission through the spare fibers in OPGW, the Company diversified into telecom business in October 1998. The backbone telecommunication network is built by installing the necessary equipment (routers, transponders, repeaters etc.) along the fiber route. As of September 2017, the Company has installed about 41988 km of telecom network and provided connectivity to about 595 POPs (Point of Presence) including all metros, major cities and towns, remote areas of North East Region (NER) and Jammu and Kashmir.

3. Report No. 18 of 2018

(i) Para No. 1.1.3

Number of CPSEs and Government Controlled other Companies

As on 31 March 2017, there were 636 CPSEs under the audit jurisdiction of the CAG. These include 438 Government Companies, 06 Statutory Corporations 2 and 192 Government Controlled Other Companies. Of these, financial performance of 579 CPSEs is covered in this report and the nature of these CPSEs is indicated in Table below:

Nature of the CPSE's	Total number	Number of CPSEs covered in the Report				Number of CPSEs not covered in the Report
		Accounts up to 2016-17	Accounts up to		Total	
			2015-16	2014-15		
Government Companies	438	376	21	3	400	38
Statutory Corporations	6	6	0	0	6	0
Total number of Companies/ Corporations	444	382	21	3	406	38
Government Controlled other Companies	192	168	3	2	173	19
Total	**636**	**550**	**24**	**5**	**579**	**57**

(ii) Para No. 1.2.1.2

Disinvestment (CPSEs didn't comply with guidelines of buy back shares.

During 2016-17, the Central Government realised ₹ 46,246.58 crore against a budgeted receipt of ₹ 56,500 crore on disinvestment in CPSEs. The realised amount consisted of ₹ 8,499.98 crore from CPSE Exchange Traded Fund (CPSE-ETF), ₹ 10,778.71 crore from disinvestment of strategic holdings of Specified Undertaking of the Unit Trust of India

(SUUTI) investment and balance ₹ 26,967.89 crore from disinvestment of holdings in 14 CPSEs.

The guidelines on capital restructuring of CPSEs issued by the Department of Investment & Public Asset Management (DIPAM), Ministry of Finance in May 2016 envisaged that every CPSE having net-worth of at least ₹ 2,000 crore and cash and bank balance of over ₹ 1,000 crore should exercise the option to buy-back its shares.

(iii) Para No. 1.3.2

Dividend payout by CPSEs.

There were 111 CPSEs which declared dividends in 2016-17. The dividends declared as a percentage of net profit earned by the CPSEs increased from 47.85 per cent in 2015-16 to 54.16 per cent in 2016-17. In absolute terms, the dividends declared by the CPSEs in 2016-17 increased by ₹ 10,961 crore compared to previous year.

Out of a total dividend of ₹ 82,491 crore declared by 111 CPSEs for the year 2016-17, dividend received/receivable by Central Government was ₹ 47,226 crore. The return on aggregate investment of ₹ 3,24,270 crore made by the Central Government in equity capital of 406 CPSEs was 14.57 per cent as compared to 13.68 per cent during 2015-16. Similarly, 38 CPSEs received ₹ 17,799 crore as dividend on paid up capital of ₹ 23,844 crore on the equity holdings in other CPSEs.

(iv) Para No. 2.5.4

Comments of the CAG issued as supplement to the statutory auditors' reports on Government Companies/Government Controlled Other Companies.

In Cash Flow Statement, cash outflow of 269.98 crore towards bank deposits with more than 12 months' maturity (including impact of interest accrued) was included in 'Cash Flow from Operating activities' instead of 'Cash Flow from Investing Activities' which was contrary to the requirements of IND AS 7 – Statement of Cash Flows.

(v) Para No. 3.2.1

CPSEs where Non Executive Directors of the Board is less than 50%.

The Board is the most significant instrument of corporate governance. Clause 49 (II) (A) (1) of Listing Agreement and Regulation 17 (1)(a) of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 stipulates that the Board of Directors of the company shall have an optimum combination of executive and non-executive directors with not less than 50 per cent of the Board of Directors comprising non-executive directors.

(vi) Para No. 3.2.2

CPSEs not having required no. of Independent Directors.

The presence of independent representatives on the Board, capable of taking an independent view on the decisions of the management is widely considered as a means of protecting the interests of shareholders and other stakeholders. In terms of Section 149 (4) of the Companies Act 2013, Rule 4 of Chapter XI of the Companies (Appointment and Qualification of Directors) Rules, 2014, Clause 49 (II) (A) (2) of Listing Agreement, Regulation 17 (1) (b) of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 and Para 3.14 of the DPE guidelines, where the Chairman of the Board is a non-executive director, at least one-third of the Board should comprise independent directors and, in case he is an executive director, at least half of the Board should comprise independent directors. However, as per Clause 49 (II) (B) (1), 'independent director' shall mean a non-executive director, other than a nominee director of the company.

(vii) Para No. 3.2.3

CPSEs not having a Woman Director in the Board

Section 149 (1) of the Companies Act, 2013, Rule 3 of Chapter XI of the Companies (Appointment and Qualification of Directors) Rules, 2014 and Clause 49 (II) (A) (1) of the Listing Agreement and Regulation 17 (1) (a) of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 stipulates that the Board of Directors of the company shall have at least one woman Director in its Board.

(viii) Para No.3.3.1

Appointment letter of Independent Directors not issued by CPEs

Clause 49 (II) (B) (4) (a) of the Listing Agreement (April 2014) stipulates that the company shall issue a formal letter of appointment to independent directors in the manner as provided in the Companies Act 2013. As per schedule IV of the Companies Act 2013, the appointment of Independent Directors shall be formalized through a letter of appointment which shall set out the terms and conditions of appointment.

(ix) Para No. 3.3.4

Independent Directors who didn't attend some of the meeting

Schedule IV (III) (3) of the Companies Act, 2013 states that Independent Directors should strive to attend all the meetings of Board of Directors and Board Committees of which he/she was a member.

Table: Independent Directors who did not attend some of the meetings

Sl. No.	Name of the CPSE	No. of Independent Directors who did not attend some Board meetings	No. of Independent Directors who did not attend some Board committee meetings
1	NMDC Ltd	3	-
2	KIOCL Ltd	2	2
3	NLC India Ltd	2	1
4	Madras Fertilisers ltd	3	1
5	Hindustan Photo Films (Manufacturing) Company Ltd	1	-
6	Bharat Electronics Ltd	4	1
7	IRCON International Ltd	2	2
8	Indian Railway Finance Corporation	1	1
9	Mahanagar Telephone Nigam Ltd	2	-
10	Steel Authority of India ltd	2	1
11	Coal India Ltd	3	2
12	National Aluminium Company Ltd	5	1
13	Hindustan Copper Ltd	2	1
14	Shipping Corporation of India Ltd	1	-
15	Rashtriya Chemicals & Fertilisers Ltd	2	-
16	Oil & Natural Gas Corporation Ltd	1	2
17	Bharat Petroleum Corporation Ltd	2	2
18	NBCC (India) Ltd	3	4
19	India Tourism Development Corporation Ltd	1	-
20	State Trading Corporation of India Ltd	3	2
21	GAIL (India) Ltd	2	-
22	Engineers India ltd	4	4
23	IFCI Ltd	3	1
24	NTPC Ltd	3	2
25	Power Grid Corporation of India Ltd	1	-
26	Bharat Heavy Electricals Ltd	6	1
27	NHPC Ltd	4	2
28	Rural Electrification Corporation Ltd	1	1
29	MOIL Ltd	3	2

(x) Para No.3.3.5

Independent Directors who didn't attend General Meeting.

Schedule IV (III) (5) of the Companies Act, 2013 states that Independent Directors shall strive to attend all the General meetings of the Company. Table indicates the listed CPSEs where Independent directors did not attend the general meetings of the Company:

Table : Independent Directors who did not attend General meetings

Sl. No.	Name of the CPSE	No. of Independent Directors who did not attend General meetings
1	KIOCL Ltd	5
2	Dredging Corporation of India Ltd	1
3	NLC India Ltd	2
4	Madras Fertilisers ltd	1
5	Hindustan Photo Films (Manufacturing) Company Ltd	1
6	Bharat Electronics Ltd	1
7	Mahanagar Telephone Nigam Ltd	2
8	Steel Authority of India ltd	1
9	National Aluminium Company Ltd	2
10	Hindustan Organic Chemicals Ltd	3
11	NBCC (India) Ltd	1
12	State Trading Corporation of India Ltd	1
13	GAIL (India) Ltd	1
14	IFCI Ltd	2
15	Bharat Heavy Electricals Ltd	1
16	NHPC Ltd	1
17	MOIL Ltd	1
18	Housing & Urban Development Corporation Ltd	1

(xi) Para No.3.3.6.1

CPSEs where separate meeting of Independent Directors not conducted.

Schedule IV (VII) (1) of the Companies Act, 2013, Clause 49 II B (6) (a) of Listing Agreement and Regulation 25 (3) of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 require that Independent Directors shall meet at least once in a year, without the presence of non-independent directors and members of the Management. Table indicates CPSEs where no separate meeting was conducted:

Table : CPSEs where separate meetings of Independent Directors not conducted

Sl. No.	Name of the CPSE
1	Madras Fertilisers ltd
2	Hindustan Organic Chemicals Ltd
3	Power Grid Corporation of India Ltd

(xii) Para No.3.3.6.3

CPSEs where required issues not reviewed.

Schedule IV (VII)(3) of the Companies Act, 2013, Clause 49 II B (6) (b) of Listing Agreement and Regulation 25 (4) of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 requires that the Independent Directors in separate meeting shall review (a) Performance of non-independent directors and the Board as a whole (b) Performance of Chairperson and (c) Assess the flow of information between management and board of directors that is necessary for the Board to effectively and reasonably perform their duties. In the CPSEs given in Table, though separate meeting of Independent Directors were held, the above issues were not reviewed in such meetings:

Table : CPSEs where required issues not reviewed

Sl. No.	Name of the CPSE
1	KIOCL Ltd
2	The Fertilisers and Chemicals Travancore ltd
3	BEML Ltd
4	IRCON International Ltd
5	Indian Railway Finance Corporation
6	Mahanagar Telephone Nigam Ltd
7	Steel Authority of India ltd
8	Coal India Ltd
9	National Aluminium Company Ltd
10	Hindustan Copper Ltd
11	Andrew Yule & Co Ltd
12	Oil & Natural Gas Corporation Ltd
13	NBCC (India) Ltd
14	MMTC Ltd

15	State Trading Corporation of India Ltd
16	Indian Oil Corporation ltd
17	GAIL (India) Ltd
18	Engineers India ltd
19	National Fertilisers Ltd
20	NTPC Ltd
21	Power Finance Corporation Ltd
22	Rural Electrification Corporation Ltd
23	SJVN Ltd
24	MOIL Ltd

(xiii) Para No. 3.3.7

CPSEs where the Board didn't evaluate performance of Independent Directors.

Clause 49 II B (5) of Listing Agreement, Regulation 17 (10) of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 and Schedule IV (VIII) of the Companies Act, 2013 stipulates that the entire Board of Directors (excluding the Directors being evaluated) shall evaluate the performance of Independent Directors and on the basis of report of such evaluation, it shall be determined whether to extend or continue the term of appointment of the Independent Director.

(xiv) Para No.3.5

CPSEs where vacancy of Independent Directors not filled in time.

Timely filling up of vacancies in the posts of Directors ensures the availability of required skill and expertise in the management of the company. Any delay in filling of vacancies may hamper the effectiveness of the decision making process. Schedule IV (Para VI (2)- Resignation or removal) of Companies Act, 2013, Clause 49 (II) (D) (4) of the listing agreement and Regulation 25 (6) of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 stipulate that vacancy arising out of resignation or removal of an Independent Director should be filled up at the earliest but not later than the immediate next board meeting or three months from the date of such vacancy, whichever is later.

(xv) Para No.3.6.1

CPSEs where Audit Committee didn't consist of 2/3rd Independent Directors.

Section 177 (1) and (2) of the Companies Act, 2013, Clause 49 (III) (A) of listing agreement and Regulation 18 of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 stipulate that there shall be an Audit Committee with a minimum of three directors as members of which two-thirds shall be Independent Directors.

Two-thirds of the members of the Audit Committee were not Independent Directors in respect of the CPSEs as detailed in Table below:

CPSEs where Audit Committees did not consist of two-third Independent Directors

Sl. No.	Name of the CPSE
1	HMT Ltd
2	Mangalore Refinery and Petrochemicals Ltd
3	Indian Railway Finance Corporation
4	ITI Ltd
5	Balmer Lawrie & Co Ltd
6	Power Finance Corporation Ltd

(xvi) Para No.3.6.3.1

Inefficient quorum in Audit Committee meeting

Clause 49 (III) (B) of the Listing Agreement and Regulation 18 (2) (a) and (b) of SEBI (Listing Obligations and Disclosure Requirements) Regulations 2015 stipulate that the Audit Committee should meet at least four times in a year and not more than 120 days shall elapse between two meetings. The quorum shall be either two members or one- third of members of the Audit Committee whichever is greater, but a minimum of two Independent Directors must be present.

(xvii) Para No. 3.6.7.1

CPSEs where finding of CAG not reviewed by Audit Committee.

All the CPSEs are subject to the audit of CAG of India as per the statutory mandate. Section 143 (6) of the Companies Act, 2013, authorises CAG to carry out supplementary audit of accounts of Government Companies. Further, section 177 (4) (iii) of the Companies Act, 2013 provides that Audit Committee shall examine the financial statements and Auditors' Report thereon. Thus, in case of CPSEs, it is the responsibility of the Audit Committee to review the findings of the CAG.

(xviii) Para No.4.5.2.1

Shortfall of actual CSR expenditure vis-a-vis prescribe amount

Section 135 (5) of the Companies Act 2013 specified

that the Board of every company should ensure that the company spent, in every financial year, at least two per cent of the average net profits of the company made during the three immediately preceding financial years, in pursuance of its Corporate Social Responsibility Policy; provided that, under Clause (o) of sub-section (3) of section 134, if the company failed to spend such amount, the Board should specify reasons for not spending in its report.

(xix) Para No. 4.5.3.6

Administrative Overheads

As per Rule 4(6) of CSR Rules 2014 Companies could build CSR capacities of their own personnel as well as those of their Implementing agencies through Institutions, with established track records of at least three financial years but such expenditure, including expenditure on administrative overheads should not exceed 5 per cent of total CSR expenditure of the company in one financial year.

(xx) Para No.5.7.3

Benchmarking with national and international peers

As per MOU guidelines 2015-16 and 2016-17, CPSEs were to provide information on national/international benchmarks pertaining to financial/non-financial parameters as applicable. The Ministry/Department was also required to give a background note on the performance of the sector as well as CPSE along with applicable benchmarks while sending the MOU for 2015-16 for consideration of the IMC. MOU guidelines 2016-17 also required benchmarking of MOU parameter of Navratna CPSEs at least with best performing company in private sector at national level. Audit observed that PGCIL did not carry out benchmarking exercise in 2016-17 with comparable global transmission utilities.

(xxi) Para No.5.7.4

Commitment from administrative Ministry-Independent Directors

MOU guidelines 2015-16 stipulated that considering the importance of Independent Directors, specific commitment from the Administrative Ministries/ Departments regarding timely action on filling up position of non-official directors on the Board of CPSE concerned would be incorporated in MOU of the CPSEs concerned, wherever applicable. The MOU guidelines 2016-17 provided an additional eligibility criterion for 'Excellent' rating whereby CPSEs were asked to adhere to the compliances of provisions of Listing Agreement and Companies Act, 2013 to the extent the same were within the ambit of CPSEs and compliance of DPE guidelines having financial implications.

As per Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015 and DPE guidelines on Corporate Governance for CPSEs 2010, Board of Directors of CPSEs should consist of 50 percent Independent Directors. In this regard Sections 149(4) and 149(1) of the Companies Act, 2013 also require every listed public company to have at least one-third of the total number of Directors as Independent Directors and at least one woman Director, respectively. In this regard, it was observed that The Board of Directors of PFC, PGCIL, BPCL, BEL and CONCOR were not represented by required number of Independent Directors during 2015-16 and 2016-17 while Hindustan Petroleum Corporation Limited (HPCL) and Engineers India Limited (EIL) did not have required number of Independent Directors on its Board during 2015-16.

(xxii) Para No.5.7.5

Non-Compliance of guidelines of MSME

As per MOU guidelines 2015-16, CPSEs were required to comply with the Public Procurement Policy for Micro, Small and Medium Enterprises (MSMEs) Order dated 25.04.2012. Non-compliance of this would be penalised up to one mark. The above order also required that from 2015-16 onwards, at least 20 percent of CPSEs requirement should be procured from MSME. Audit observed that PFC, PGCIL and Mahanagar Telephone Nigam Limited (MTNL) did not achieve the above target during 2015-16.

(xxiii) Para No.5.7.7

Non-laying of MoU before Parliament

DPE encourages hosting of the MOU of the CPSEs on their respective websites. It was, however, observed that PFC, HAL and SCI did not host their MOU for both 2015-16 and 2016-17 on their websites. Similarly, REC and MTNL did not host MOU 2015-16 and MOU 2016-17 respectively on their website.

PFC and SCI stated (September 2017) that MOU were not hosted on websites on account of confidentiality of business targets. PFC, REC, HAL and MTNL stated (September/ November 2017) that web hosting of MOU was not mandatory.

(xxiv) Para No. 6.5

Where JVs share holding is less than 51% paid up capital and in case of unincorporated JVs the C&AG

has no power to conduct audit on accounts of such JVs.

This audit covered CPSEs categorized as Maharatna, Navratna and Miniratna. There were 98 CPSEs categorized as Maharatna, Navratna and Miniratna by the Department of Public Enterprises (May 2017). Out of this, 46 CPSEs did not have any JV and accordingly, 52 CPSEs (7 Maharatna, 17 Navratna and 28 Miniratna) were covered under this review.

(xxv) Para No. 6.6

JVs set up by Central Public Sector Undertakings

There are 361 JVs in which 51 CPSEs invested 172747 crore in the form of share capital and 73968.54 crore in the form of loans, debentures etc. The JVs consisted of both those incorporated under the Companies Act and the Indian partnership Act as well as those not incorporated. There were 234 incorporated JVs and 127 unincorporated JVs. There were 58 incorporated JVs in which more than one CPSE had invested share capital.

(xxvi) Para No. 6.7.1

Planning/Formation of Joint Venture selection of JV Partners: Attendance of less no. of Official Directors DPE vide OM no 11(32)/96-Fin dated January 2000 inter alia stipulated that

(i) Selection of the partner and its process should be transparent and all such proposals should be presented to the Board.

(ii) At least two non-official part time directors should be present in the meeting of the Board of Directors wherein the proposal for JV formation was appraised.

(iii) Board should ensure adequate representation in the Management and operation of its JVs in proportion to its contribution.

The CPSEs selected their JV partners (i) as per directives of Government (ii) through open tender, (iii) through choice out of few prospective partners identified by CPSE itself and (iv) on nomination basis to a single party. Further, in some cases, CPSEs made investment in already existing JVs. Out of 292 incorporated JVs (including JVs formed by more than one CPSE,) information in this regard was available for 251 JVs. Out of these 251 JVs, selection of JV partner in 84 JVs was as per directives of Government, in 19 JVs through Open tender, in 75 JVs through choice out of few prospective partners identified by CPSE, in 49 JVs on nomination basis and in 24 cases investment was made by CPSEs in already existing JVs .

(xxvii) Para No.6.7.2

CPSEs not submitting status of JVs on half yearly basis to DPE

DPE had stipulated (January 2000) that the Navratna CPSEs would submit comprehensive list of JVs formed and status thereof to DPE on a half-yearly basis. However, audit observed that none of the Maharatna / Navratna CPSEs had complied with these guidelines.

(xxviii) Para No 6.7.3

Performance of JVs

Out of 234 incorporated JVs (i) 76 JVs were earning profit (ii) 64 JVs were continuously incurring losses and (iii) 18 JVs earned profit only in the year 2016-17 but have accumulated losses. In respect of remaining 76 JVs, information was yet to be received from CPSEs.

(xxix) Para No.7.5.1

Mandatory procurement from MSEs

As per clause 3 of Public Procurement Policy Order, 2012, CPSEs were mandatorily required to procure a minimum of 20 per cent of their total procurement from MSEs 1 April 2015. Clause 4 of the policy earmarked a sub target of 20 per cent (i.e., 4 per cent of the total procurement) procurement from MSEs owned by SC/ ST entrepreneurs.

Compliance with this clause was checked in the 18 selected CPSEs and the following were observed:

a) As per the information provided by the CPSEs, out of 18 selected CPSEs 7 had achieved the target of minimum of 20 per cent of their total procurement from MSEs during 2015-16 and 2016-17 (mandatory period).

b) On further examination, it was observed that the Development Commissioner (MSME) had clarified (March 2016) to all CPSEs that the cost of any item could not be excluded while computing the total procurement made by them during the year.

(xxx) Para No. 7.5.2

Outstanding dues payable to MSEs

As per section 15 of the MSME Act 2006 where any MSE supplier supplies goods or renders services to a buyer, the buyer should make payment on or before the date agreed upon between the buyer and the supplier, provided that in no case, the period agreed upon should exceed 45 days from the date of acceptance. The Act further provides that if the buyer fails to make payment of the amount to the supplier, the buyer would be liable to pay compound interest

from the appointed day. Further, the notification dated 4 September 2015 of Ministry of Corporate Affairs made it mandatory for all CPSEs to disclose the details of trade payables to MSEs in the notes to their financial statements.

(xxxi) Para No.8.5

Review of first time adoption of Ind AS

Ind AS 101 – First time adoption of Ind AS prescribes the procedures that a company is required to follow while adopting Ind AS for the first time. While adopting Ind AS for the first time, the financial results shall include a reconciliation of its equity and net profit/loss as per Ind AS to equity and net profit/loss as per IGAAP, to enable the stakeholders to understand the material adjustments to the Balance Sheet and Statement of Profit and Loss because of transition from the previous IGAAP to Ind AS.

The underlying principle of Ind AS 101 is that a first time adopter should prepare financial statements as if it had always applied Ind AS. However, it permitted two types of exception to the principle of full retrospective application of Ind AS namely mandatory exceptions and voluntary exceptions. The mandatory exceptions related to retrospective application of some aspects of Ind AS 10 - Events after the Reporting Period, Ind AS 109 - Financial Instruments and Ind AS 110 - Consolidated Financial Statements.

(xxxii) Para No.8.7

Impact on Profit after Tax

Review of implementation of Ind AS in audit indicated that there was increase in profits of CPSEs in defence sector, infrastructure sector, power sector and shipping sector consequent to adoption of Ind AS. However Profits of CPSEs in communications sector, energy sector, fertilizers sector, metal sector and mining sector had decreased.

(xxxiii) Para No. 8.9

Impact of adoption of Ind AS on booking of Revenue

Ind AS 18 - Revenue is the applicable Ind AS for accounting of revenues. The definition of 'revenue' under Ind AS 18 covers all economic benefits that arise in the ordinary course of activities of an entity which results in increase in net worth, other than increases relating to contributions from net worth participants. Revenue, as per IGAAP (AS 9 – Revenue Recognition), however is defined as gross inflow of cash, receivables or other consideration arising in the course of the ordinary activities of an enterprise from the sale of goods, from the rendering of services, and from the use by others of enterprise resources yielding interest, royalties and dividends.

(xxxiv) Para No. 8.10

Impact of adoption of Ind AS on total value of Assets

Total value of assets are impacted upon implementation of Ind AS due to difference in methods of accounting prescribed compared to IGAAP under Ind AS 16 - Property, Plant and Equipment (PPE), Ind AS 38 - intangible assets, Ind AS 32 - Financial Instruments: Presentation, Ind AS 109 - Financial Instruments and Ind AS 40 - Investment Property. Ind AS 101 pertaining to first time adoption of Ind AS permitted the first-time adopter to elect to continue with the carrying value for all of its PPE as recognised in the Financial Statements measured under IGAAP as at the date of transition to Ind AS, and the carrying value as its deemed cost on the date of transition after making necessary adjustments for de-commissioning liabilities. This exemption could also be used for valuation of intangible assets under Ind AS 38 - Intangible assets and Ind AS 40 - Investment property.

(xxxv) Para No. 8.11

Impact of adoption of Ind AS on Net worth

Net worth is the difference between the value of assets and the liabilities of a company. Net worth (equity) is arrived at by reducing from the aggregate value of the paid-up share capital, free reserves and securities premium account, the aggregate value of accumulated losses, deferred expenditure and miscellaneous expenditure not written off. Free reserves do not include reserves created out of revaluation of assets, write- back of depreciation and amalgamation.

Adoption of Ind AS mandates preparation and presentation of an opening Ind AS Balance Sheet at the date of transition to Ind ASs. The accounting policies that an entity uses in its opening Ind AS Balance Sheet may differ from those that it used for the same date using IGAAP. As per provisions of Ind AS 101 – First time adoption of Ind AS, any differences between carrying amounts of assets and liabilities as of 01 April 2015 compared with those presented in the IGAAP Balance Sheet as of 31 March 2015, are to be recognized in net worth under retained earnings within the Ind AS Balance Sheet.

Status of pending C&AG paras as on 31/03/2019:

Sl. No.	Report Ref.	Para No.	Particulars	ATN Status	Remarks
1.	Report No. 10 of 2012-13		Performance Audit on Capacity Addition in Hydro Power Sector by CPSEs.	Replied to Under Secretary, MoP, GOI vide Letter No. NEEPCO/IC&A/178/2017-18/45 dated 25.04.2017 & NEEPCO/IC&A/49/15-16/111 dated 24.06.2016 & emailed on 16.05.2017	No further communication / observation received from MoP since last reply submitted.
2.	Inspection Report (C&AG) for FY 2015-16		Blockage of expenditure amounting to Rs. 113.99 crore –Siang Upper Hydro Electric Project.	Letter no. NEEPCO/IC&A/178/2017-18/693 dated 07.03.17 & NEEPCO/IC&A/178/2017-18/97 dated 11.05.17 to the Sr. A. O., PDCA-I, Kolkata	No further communication /observation received from PDCA –I since last reply submitted.
3.			Non-disposal of Material amounting to Rs. 81.86 lakhs	Letter no. NEEPCO/IC&A/178/2017-18/693 dated 07.03.17 to the Sr. A. O., PDCA-I, Kolkata	
4.			Under Insurance of Contractors' All Risk policies in respect of KaHEP.	Letter no. NEEPCO/IC&A/178/2017-18/97 dated 11.05.17 to the Sr. A. O., PDCA-I, Kolkata	
5.			Land lying abandoned at Teju. Land allotted for Damwe Hydro Project in Arunachal Pradesh but as the project was withdrawn from the Corporation the land is lying vacant.	Letter no. NEEPCO/IC&A/178/2017-18/693 dated 07.03.17 to the Sr. A. O., PDCA-I, Kolkata	
6.			Non-completion of additional capitalisation as per schedule of Tariff Order.	Letter no. NEEPCO/IC&A/178/2017-18/97 dated 11.05.17 to the Sr. A. O., PDCA-I, Kolkata	
7.			Increase of Project Cost by Rs. 701.80 crore and higher electricity cost per unit –Pare Project.	Letter no. NEEPCO/IC&A/178/2017-18/693 dated 07.03.17 to the Sr. A. O., PDCA-I, Kolkata	
8.	Report 41 of 2015 (Performance Audit)	3.1.3	Why design energy review was not done in HEPs when the actual energy produced is consistently less or more than design energy.	Letter no. NEEPCO/IC&A/178/2017-18/318 dated 22.08.17 to the Sr. A. O., PDCA-I, Kolkata	
		5.2.1	What measures have been undertaken by CPSUs/MOP for recovery of outstanding dues?	NEEPCO/IC&A/178/2017-18/318 dated 22.08.17 to the Sr. A. O., PDCA-I, Kolkata	
9.	Report 15 of 2016	11.4	Failure of the management in ensuring accuracy of important data submitted for fixation of tariff resulted in loss of Rs. 28.32 crore. [Loss of Rs.28.32 crore due to under-recovery of fuel cost]	Letter no. NEEPCO/IC&A/178/2016-17/591 dated 06.03..2017 to the Under Secretary, GOI, MOP	C&AG vide their letter No. 1024/Co0ord/04-47/NEEPCO/Corp./CO-Kol/ED (H)-GWH/IR/2014-15 dated 21.10.2016 has treated the same as settled so far as the Inspection Report (2012-13) is concerned. Further vetting remarks were requested by C&AG as intimated by US, MOP, New Delhi vide their letter No. 7/31/2015-H-I dated 29.12.2016.

10.	Report No. 6/2017		Shortfall in dividend declared by Government Companies in 2015-2016.	Letter no. NEEPCO/IC&A/178/2017-18/ dated 03.01.2018 to the Under Secretary, GOI, MOP	No further communication / observation received from MOP since last reply submitted.
11.	Inspection Report (C&AG) for FY 2016-17 THERMAL	Part–IIA 1	Loss of Rs. 272.2 crore due to under recovery of Fuel Cost and Fixed cost at AGBPP		No further communication / observation received from PDCA –I since last reply submitted.
12.		2	Loss of Rs. 30.83 crore due to non-recovery of cost of gas used for Gas Booster Station at AGBPP		
13.		Part–IIB 1	Delay in commissioning of Combined Cycle Extension Project in AGTCCP and non-recovery of LD of Rs.16 crores from M/s Thermax Ltd.		
14.		2	Loss of revenue of Rs. 13.30 crore due to excess auxiliary consumption		C&AG vide Letter No.2853/Co-ord/04-07/ NEEPCO / AGBTCCP & AGBP/IR/2018-19 Dated 26.11.2018 has treated the same as settled.
15.		3	Loss of Rs. 7.69 crore due to Unscheduled Interchange.		
16.		4	Disallowance of additional expenditure of Rs.68.38 crore by CERC for tariff fixation of Combine Cycle Extension Project		No further communication / observation received from PDCA –I since last reply submitted.
17.		5	Avoidable payment of Rs.34.72 lakh to M/s Pragati Engineering Pvt Ltd due to Arbitration Award.		C&AG vide Letter No.2853/Co-ord/04-07/ NEEPCO / AGBTCCP & AGBP/IR/2018-19 Dated 26.11.2018 has treated the same as settled.
18.		6	Avoidable expenditure on Hotel Accommodation		
19.		7	Non-disposal of Mark V Control Panel valuing Rs. 64.36 lakh at AGTCCP		
20.		8	Overdrawal of non-APM gas and excess payment of Rs. 0.54crore to GAIL		
21.		9	Non-disposal of Idle assets of Rs.7.96 crore with consequential non-realization of disposal value at AGBP		
22.		10	Blockage of fund to the tune of Rs. 20.99 Lakh towards purchase of store and spare.		

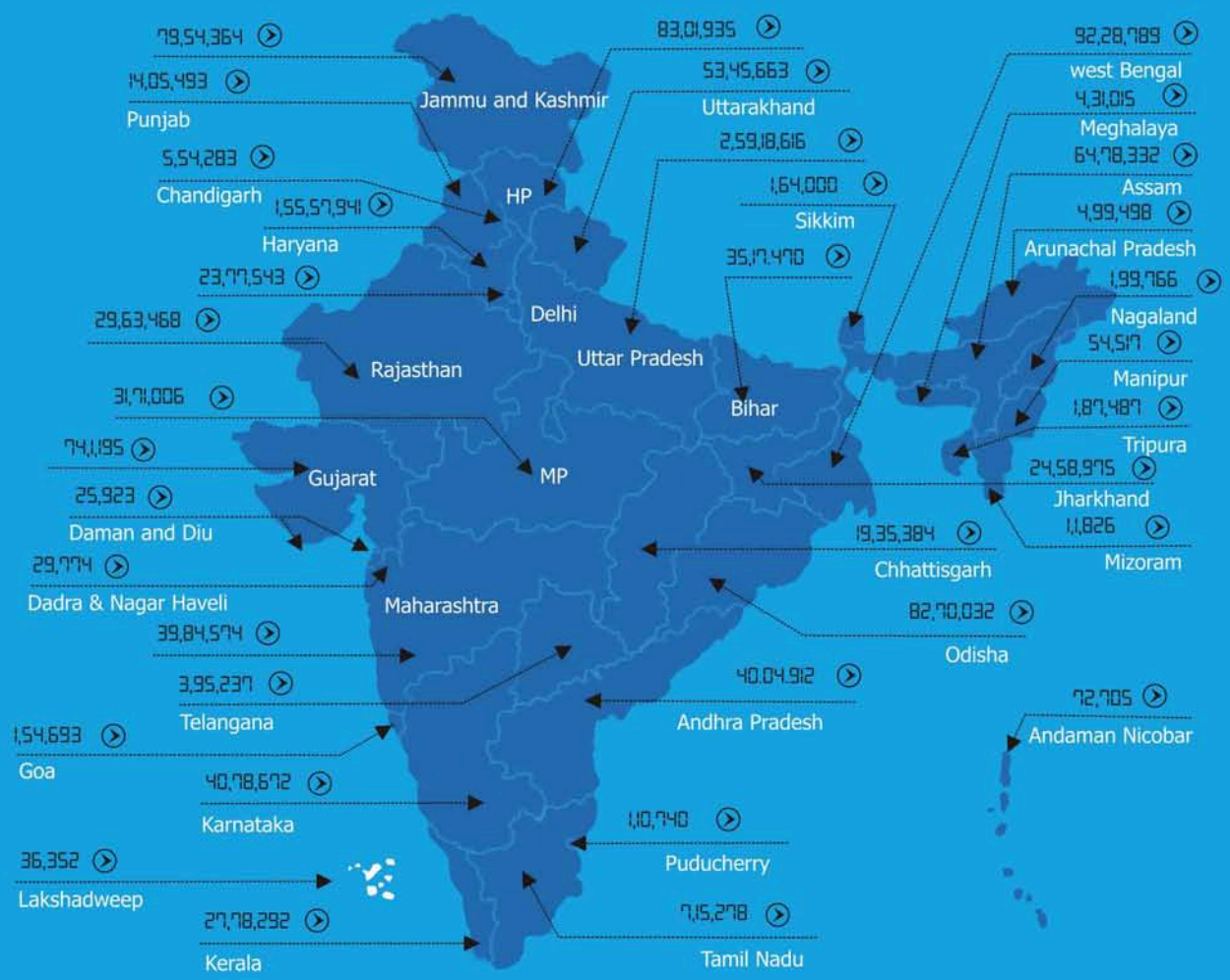
23	Inspection Report (C&AG) for FY 2016-17 HYDRO	PART-IIA 1	Unfruitful Expenditure of Rs.32.26 crore for acceleration of Hydro-Mechanical work.		No further communi-cation / observation received from PDCA –I since last reply submitted.
24		2	Loss of Rs. 9.83 crore due to prolonged/unplanned storage of Electro-Mechanical materials at site.		
25		3	Additional expenditure of Rs. 8.06 core on purchase of construction power during the period April 2016 to March 2017 at Kameng HEP.		
26.		4	Over payment of Rs. 4.96 core due to acceptance of Contractor's claim beyond contractual terms for dewatering of excess ingress of underground water in respect of civil work of underground con-struction under Package-II.		C&AG vide Letter No.4108/Co-ord/04-07/ NEEPCO /IR/2017-18 Dat-ed 25.03.2019 has treated the same as settled.
27.		PART –IIB 1	Additional Expenditure of Rs. 252.20 crore due to acceptance of higher transportation rate on account of additional lead.		C&AG vide Letter No.3433/Co-ord/04-07/ NEEPCO /IR/2017-18 Dat-ed 07.01.2019 has treated the same as settled.
28.		2	Unfruitful expenditure of Rs. 4.43 crore up to March 2017 due to continuation of Drilling Division at Lanka.		
29.		3	Failure to take appropriate steps against the contractor under package-1 resulted into overall delay in completion of the Pare Hydro Electric Project.		
30.		4	Additional Expenditure of Rs. 3.78 crore on account of payment towards construction of River Diversion Works (Coffer Dam) beyond contractual provisions under package-I.		
31	Inspection Report (C&AG) for FY 2017-18	PART -IIA 1	Loss of revenue and extra expenditure to the tune of Rs.1000.69 crore due to lack of supervision in Penstock work under Hydro-mechanical package of Kameng HEP.	Reply under process	
32			Indecision in foreclosing the contract with respect to Tuirial Hydro Electric Project leading to extra burden of Rs.456.90 crore towards idle claims of various contracts.		
33		PART –IIB 1	Non-recovery of Rs.1.36 crore from M/s Texmaco Limited against 407.345 MT of unused steel materials.		
34		2	Infructuous expenditure towards two Grid Interactive Solar PV Projects.		

NATIONAL UJALA DASHBOARD

Total LEDs distributed as on 28 JUN 2019 15:44

35,16,71,377

45,671 mn kWh	INR 18,268 Cr	9,143 MW	3,69,93,110 t CO_2
Energy saved per year	Cost saving per year	Avoided Peak Demand	CO_2 Reduction per year



UJALA QUALITY CHECKS

- 3-tier Quality Control Measures
- Actual LED Failure Rate & Replacement Mechanism
- Independent verification of annual energy savings & LED failure rate
- Third Party Testing Laboratories empanelled with EESL for Testing of LED bulbs

LED Industry has sold 111.66 Crore LEDs till March,19

About UJALA

सत्यमेव जयते

Ministry of Power

Government of India

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Interads'19