



THERMAL POWER

SUMMARY

Global proven crude oil reserves are estimated at 1730 bn barrels, proven natural gas at 196.9 tn cubic meters, and proven coal at 1,055 bn tonnes. ¹

In the transmission sector, 345 ckm of 200 kV AC lines have been laid during the month of November 2020.

Total Coal reserves in India are estimated to be 326.50 bn tonnes, out of which 155.61 bn tonnes are proven reserves. ² Proven natural gas reserve measures up to 1233 bn cubic meters (BCM), as reported in March 2018. ³

India is the third-largest producer of electricity and consumer of energy. ⁴

Power consumption moderated from its double-digit YoY growth in October, it grew at 3.5 per cent in November, signalling sustained recovery in commercial and industrial activity as compared to a growth of 4.6 per cent in September, 2020

REASONS TO INVEST

The electricity generation target of conventional sources for the year 2019-20 was fixed at 1330 BU comprising of 1142.130 BU thermal; 136.932 BU hydro; 44.720 nuclear; and 6.218 BU import from Bhutan. ⁵

The revised Tariff Policy 2016 ensures an adequate return on investment to companies engaged in power generation, transmission and distribution. It also ensures the financial viability of the industry to attract investments by companies.

Government of India, through the Ministry of Power, launched the initiative of Ultra Mega Power Projects (UMPPs) in 2005. It comprises of 4,000 MW super thermal power projects (both pit head and imported coal-based) with the objective to develop large capacity power projects in India. Power Finance Corporation Ltd (PFC) was 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 the assistance of the Ministry of Power and Central Electricity Authority (CEA). CEA is involved in the selection of sites for these UMPPs.

The Ministry of Power has brought the guidelines for determination of tariff through a transparent process of bidding for procurement of power from UMPPs based on allocated domestic captive coal blocks and to be set up on Build, Own and Operate (BOO) basis.

UMPPs projects in the pipeline: ⁶

Husainabad in Deoghar district in Jharkhand

Bijoypatna in Chandbali Tehsil of Bhadrak District, Narla & Kasinga sub-division of Kalahandi District in Odisha

Kakwara in Banka Distt in Bihar

Niddodi village in Karnataka

Sites in Tamil Nadu and Gujarat for their second UMPPs and a site in Uttar Pradesh are being examined

Hon'ble PM Shri Narendra Modi approved an investment of INR 1810.56 cr for 210 MW Luhri Stage-I Hydro Electric Project located on river Satluj. This project will generate 758.20 mn units of electricity annually. The power generated from the Project will help in providing Grid stability and will improve the power supply position. ¹⁹

Explore more about infrastructure availability in Thermal Power sector >

RECENT ANNOUNCEMENTS

1st January 2021: ADB, India sign USD 231 mn loan to enhance power generation capacity in Assam.

[Read More](#)

21st December 2020: Union Government for the first time lays down Rights to the Electricity Consumers through "Electricity (Rights of Consumers) Rules, 2020" to empower Power Consumers in a paradigm shift bringing Consumers to Centre Stage.

[Read More](#)

18th December 2020: Asian Development Bank (ADB) and the Government of India today signed a \$300 million loan to upgrade rural power distribution networks to provide reliable electricity supply to consumers in the state of Uttar Pradesh.

[Read More](#)

16th December 2020: Cabinet approves MoU between India and USA for exchange of information in areas of mutual interest in the electricity sector.

[Read More](#)

8th December 2020: CCI approves acquisition of shares of Odisha Power Generation Corporation Ltd (OPGC) by Odisha Hydro Power Corporation Limited (OHPC) to get engaged in the business of generation of power from renewable sources namely, hydroelectric and solar power.

[Read More](#)

7th December 2020: SJVN Limited, a PSU under Ministry of Power has entered an MoU with Indian Renewable Energy Development Agency Ltd. (IREDA) to driving sustainable development of the country.

[Read More](#)

STATISTICS

With a production of 156.1 Tera Watt-hour (TWh), India is the world's third largest producer of electricity.⁷ India is also the third largest consumer of energy.⁸

The Power industry accounts for almost a quarter of the projected investments amongst all the infrastructure industries between 2012-17.

FDI in the Power industry between April 2000 to December 2019 stood at USD14.65 Bn.⁹ Electricity generation installed capacity increased by 39.2% from 248.5 GW in March 2014 to 370.1 GW in March 2020.¹⁰

As of March 2020, India has a total thermal installed capacity of 230.59 GW. Almost 86% of the thermal capacity comes from coal and the rest from Lignite, Diesel and Gas.¹¹

GROWTH DRIVERS

Expansion in industrial activity to boost demand for electricity.

A growing urban and rural population is likely to boost demand for energy.

Increasing market penetration and per-capita usage are expected to provide further impetus to the energy industry.

Ambitious projects and increasing investments across the value chain in various sectors with high electricity demand.

Power Finance Corporation (PFC) is a PSU under Ministry of Power, registered a growth of 80% in its standalone net profit to INR 2085 cr and 14% growth in the loan assets as compared to the same period in FY20. The total income also registered an increase of 15% to INR 9,232 Cr.

Cabinet Committee on Economic Affairs, chaired by Prime Minister Shri Narendra Modi, has approved the Revised Cost Estimate (RCE) of North Eastern Region Power System Improvement Project (NERPSIP) at an estimated cost of INR 6,700 cr.

FDI POLICY

Under the automatic route, 100% Foreign Direct Investment (FDI) is allowed in the Power industry for generation from all sources (except atomic energy), transmission and distribution of electric energy and power trading, subject to all the applicable regulations and laws.

FDI in power exchanges up to 49% registered under Central Electricity Regulatory Commission (Power industry) Regulations, 2010 under the automatic route, subject to the following conditions, as laid down in the Policy:

Foreign Institutional Investors (FII)/ Foreign Portfolio Investors (FPI) purchases shall be restricted to secondary market only

No non-resident investor/entity, including persons acting in concert, will hold more than 5% of the equity in these companies

The foreign investment will have to comply with the Securities & Exchange Board of India (SEBI) regulations and the applicable laws/regulations, security and other conditions

[Read more about Foreign Direct Investment Policy in India >](#)

SECTOR POLICY

ELECTRICITY ACT, 2003

Elimination of licensing for electricity generation projects

Increased competition through international competitive bidding

Demarcation of transmission as a separate activity

NATIONAL TARIFF POLICY, 2006

Revised Tariff Policy, 2016:

Ensure the 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 and minimize perceptions of regulatory risks

Promote competition, efficiency in operations and improvement in the quality of supply

Promote the generation of electricity from renewable sources

Promote hydroelectric power generation including Pumped Storage Projects (PSP) to provide adequate peaking reserves, reliable grid operation and integration of variable renewable energy sources

Evolve a dynamic and robust electricity infrastructure for better consumer services

Facilitate the supply of adequate and uninterrupted power to all categories of consumers

Ensure creation of adequate capacity including reserves in the generation, transmission and distribution in advance, for the reliability of supply of electricity to consumers.

ULTRA MEGA POWER PROJECTS (UMPPS)

Govt. of India undertook the initiative for setting up of Ultra Mega Power Projects of 4 GW capacity each, to reap the benefits of economies of scale, and provide fast capacity addition. The Ministry of Power identified Power Finance Corporation (PFC) as the nodal agency for the UMPPs. To enhance investors' confidence, reduce risk perception and get a good response to competitive bidding, PFC incorporated Special Purpose Vehicles (SPVs) for each UMPP. The SPVs take up the bidding process on behalf of the power procuring (beneficiary) states. The purpose of the SPVs is to carry out the bid process management and obtain various clearances/consents for the projects. Thus, the same is transferred to the successful bidder along with the SPV, who are selected through the tariff based International Competitive Bidding (ICB). The logistic support provided by the SPV, prior to award of the project, is considered necessary - to enhance the investor's confidence, reduce risk perception and get a good response to the competitive bidding process. Based on the above initiative of Government of India and its implementation process, four UMPPs -Sasan in Madhya Pradesh, Mundra in Gujarat, Krishnapatnam in Andhra Pradesh and Tilaiya in Jharkhand - were awarded to the successful bidders. Mundra UMPP and Sasan UMPP are fully commissioned and are generating electricity.

RENOVATION & MODERNIZATION OF DISTRIBUTION SYSTEM

Government of India launched two schemes, namely, Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and Integrated Power Development Scheme (IPDS) in December 2014. It provides capital subsidy to the States for strengthening of sub-transmission and distribution networks in rural areas and urban areas. Under DDUGJY scheme, a capital subsidy is being provided for feeder separation, electrification of un-electrified villages and households, metering and system strengthening & augmentation of the distribution system in rural areas. The erstwhile scheme of RGGVY was subsumed in DDUGJY as a separate component for rural electrification in the country. Under the IPDS Scheme, a capital subsidy is provided for strengthening and augmentation of the distribution system. A capital subsidy is also provided for metering of distribution transformers/feeders/consumers, and IT enablement in the distribution sector in the urban areas. The erstwhile Restructured Accelerated Power Development and Reform Programme (R-APDRP) scheme was subsumed in the IPDS as a separate component for IT enablement and system strengthening.

DOMESTIC AND STREET LED LIGHTING PROGRAM

The Ministry of Power has launched UJALA (Unnat Jyoti by Affordable LED for All) scheme for replacement of 770 mn incandescent domestic bulbs with energy efficient LED bulbs in the country. In addition, 35 mn street lightings are also being replaced with energy efficient LED street lights in the country.

FUEL SUPPLY AGREEMENT

The Fuel Supply Agreement with Coal India Ltd. will ensure the availability of coal for power companies over the long term.

PUBLIC-PRIVATE PARTNERSHIP (PPP)

To reduce dependency on imported coal, a PPP policy framework is planned to be devised with Coal India Ltd. to increase coal production.

NATIONAL ELECTRICITY POLICY

The Government of India is planning to revise the National Electricity Policy to bring out far-reaching changes in the Power industry. This includes ensuring a cleaner atmosphere by increasing renewable generation including rooftop solar PV generation, increasing electric vehicles in cities and towns, improved power supply reliability to consumers through the smart grid. This policy would also encourage efficient utilization of resources including land and water.

UJWAL DISCOM ASSURANCE YOJANA (UDAY)

The Scheme "UDAY" (Ujwal DISCOM Assurance Yojana) was formulated and launched by the Government in November 2015, for the financial and operational turnaround of State-owned DISCOMs (Electricity Distribution Companies). The scheme UDAY envisages reform measures in all sectors – generation, transmission, distribution, coal, and energy efficiency. The scheme aims to reduce interest burden, reduce the cost of power, reduce power losses in distribution and improve the operational efficiency of DISCOMs. The scheme also incentivizes the States by

Exempting State takeover of DISCOM debts from Fiscal Responsibility & Budget Management (FRBM) limits for two years

Increased supply of domestic coal

Coal linkage rationalization

Liberalizing coal swaps from inefficient to efficient plants

Allocation of coal linkages to States at notified prices and additional/priority funding in schemes of the Ministry of Power and the Ministry of New & Renewable Energy, if they meet the operational milestones in the scheme.

The scheme also envisages that the States accepting UDAY and performing as per operational milestones will be given additional/priority funding through DDUGJY, IPDS and Power System Development Fund (PSDF) or other such schemes of Ministry of Power and Ministry of New and Renewable Energy. These States shall also be supported with additional coal at notified prices and, in case of availability through higher capacity utilization. The States not meeting operational milestones will be liable to forfeit their claim on IPDS and DDUGJY grants.

INTEGRATED POWER DEVELOPMENT SCHEME (IPDS)¹⁷:

The Integrated Power Development Scheme (IPDS) envisages strengthening of sub-transmission and distribution network including metering at all levels in urban areas. Major components of the scheme are as under:

- a) Strengthening of sub-transmission and distribution network
- b) Metering
- c) IT application-ERP and Customer Care Services
- d) Provisioning of Solar Panels
- e) Ongoing works of R-APDRP to be completed.

The projects worth INR 30,991 cr has been sanctioned under IPDS, against which, INR 14,050 cr has been released towards projects and INR 206 cr released for enabling activities.¹⁹

PRADHAN MANTRI SAHAJ BIJLI HAR GHAR YOJANA²¹

Government of India launched Pradhan Mantri Sahaj Bijli Har Ghar Yojana – Saubhagya in September 2017 with the objective to achieve universal household electrification by providing electricity connections to all willing un-electrified households in rural and all poor households in urban areas across the country, by March 2019.

Explore Government policies/ schemes in Thermal Power sector >

FINANCIAL SUPPORT

BUDGET INCENTIVES

For the year 2020-21, INR 220 Bn (~USD 3.08 Bn) has been allocated for the power and renewable sectors. Highlighting the importance of solar, the budget included that a large solar capacity would be developed along the railway tracks on lands owned by the Indian Railways. The government aims to electrify 27,000 km of railway tracks, she said. Besides this, for solar cells not assembled (8541 40 11) and for those assembled in modules or made up into panels (8541 40 12), the government has proposed a basic customs duty of 20%.

To attract investment in the power sector, the concessional corporate tax rate of 15% could be extended to new domestic companies engaged in the generation of electricity.

The Budget has also proposed a 100% profit deduction for three years out of 10 years for startups with a turnover of up to INR 1 Bn (~ USD 13.98 Mn).

TAX INCENTIVES R&D INCENTIVES

Industries and infrastructure sectors including the power/energy efficiency sectors with in-house R&D centers get a write-off in revenues and capital expenditure incurred on R&D.

A weighted tax deduction is given under section 35 (2AA) of the Income Tax Act to industry/private sponsored research programmes.

A weighted deduction of 200% is granted to assesses for any sums paid to a national laboratory, university or institute of technology, or specified people with a specific direction. The said sum will be used for scientific research within a programme approved by the prescribed authority.

STATE INCENTIVES

India offers additional incentives for industrial projects in certain states.

Incentives are in areas such as rebates in land cost, the relaxation of stamp duty exemption on the sale and lease of land, power tariff incentives, a concessional rate of interest on loans, investment subsidies, tax incentives, backward area subsidies and special incentive packages for mega projects.

AREA BASED INCENTIVES

Incentives are available for the setting up of projects in special areas like the North-east, Jammu & Kashmir, Himachal Pradesh, and Uttarakhand.

INVESTMENT OPPORTUNITIES

THERMAL POWER PROJECTS

SL.	PROJECT TYPE	LIKELY INVESTMENT [USD BILLION]
1.	Thermal Power projects under Construction (63,000 MW)	29.23
2.	New Capacity Addition (26,400 MW)	28.43
3.	Nuclear Power Capacity Addition (18,000 MW)	41.53
4.	Replacement of Old & Inefficient Thermal Power Plant by Super Critical Units (10,000 MW)	10.76
5.	Thermal Power Stations Renovation and Modernisation (12,750 MW)	4.92
6.	6 Ultra Mega Power Projects (3 in Phase-I and 3 in Phase-II)	27.92
	TOTAL	142.79

HYDRO ELECTRIC PROJECTS

SL.	NAME OF PROJECT	DEVELOPER	INVESTMENT [USD BILLION]
1.	MAWPHU HEP, STAGE-II (75 MW), MEGHALAYA	NEEPCO	0.135
2.	KURUNG HEP (330 MW), ARUNACHAL PRADESH	NEEPCO with JV with Govt. of Ar. Pradesh	0.524
3.	DHAULASIDH HEP (66 MW), HIMACHAL PRADESH	SJVNL	0.131
4.	LUHRI HEP, STAGE I (219 MW), HIMACHAL PRADESH	SJVNL	0.39
5.	DEVSARI HEP (252 MW), UTTARAKHAND	SJVNL	0.356
6.	JAKHOL SANKRI HEP (51 MW), UTTARAKHAND	SJVNL	0.067
7.	NAITWAR MORI HEP (60 MW), UTTARAKHAND	SJVNL	0.106
8.	DOIMUKH HEP (80 MW), ARUNACHAL PRADESH	SJVNL	0.113
9.	ARUN III HEP (900 MW), NEPAL	SJVNL	0.88
	TOTAL		2.707

DEENDAYAL UPADHAYA GRAM JYOTIYOJANA (DDUGJY)

Components

1. Separation of agriculture and non-agriculture feeders
2. Strengthening and augmentation of sub-transmission and distribution systems including metering
3. Rural electrification including off-grid solutions

Objectives

1. Electrification of 18452 un-electrified villages by 01 May 2018
2. Providing electricity access to 50 mn households

Investment Opportunities

Total Outlay: \$11.67 Bn

1. System Strengthening:

Power Transformers: 14,491 nos

Distribution Transformers: 317,068 nos

Conductors: 869,521 km

Energy Meters: 11 mn nos

2. Metering the un-metered

Feeder/Boundary/ DTs: 1.19 mn nos

Energy Meters: 9.99 mn nos

Achievements

1. 1227 additional villages were identified by the states for electrification in addition to 18452 un-electrified villages reported by states as in 2015. Out of these 19679 villages, electrification in 18379 villages have been completed and remaining 1305 villages found to be inhabited/grazing reserve.
2. The country achieved the milestone of 100% village electrification on 28th April well before the deadline of 1000 days fixed by the Prime Minister of India.¹³
3. Government of India launched the Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) scheme with a total outlay of INR 75,893 cr (DDUGJY: INR 43,033 cr and RE Component: INR 32,860 crore).²⁰

INTEGRATED POWER DEVELOPMENT SCHEME

Total outlay: \$11.78 Bn with gross budgetary support of \$7.39 Bn from Government of India (including erstwhile R-APDRP)

Components

1. Strengthening of sub-transmission and distribution networks in the urban areas
2. Metering of distribution transformers/feeders/ consumers in the urban areas.
3. IT enablement of the distribution sector and strengthening of distribution network under R-APDRP.

Investment opportunities

1. Metering: \$317.07 Mn; Sub Stations (New + Augmentation): \$592.61 Mn; HT / LT Lines (New + Augmentation): \$1.27 Bn; DTs (New + Augmentation): \$495.23 Mn; UG Cabling (HT & LT): \$339.87 Mn; Rooftop Solar / net metering: \$36.30 Mn; Misc. (ABC cable, R&M, Capacitor etc): \$696.76 Mn.

Objectives

1. Electrification of 18452 un-electrified villages by 01 May 2018
2. Providing electricity access to 50 mn households

Explore projects to invest in Thermal Power sector >

FOREIGN INVESTORS

CLP Holdings (Hong Kong)

GE Energy (USA)

AES (USA)

Kosep (South Korea)

Abellon Clean Energy (Canada)

GDF SUEZ (France)

AGENCIES

Ministry of Power

Council of Power Utilities

Bureau of Energy Efficiency

Independent Power Producers Association of India

KEY ACHIEVEMENTS

During the period Apr'19 – Dec'19 Raw Coal dispatch from Coal India Limited (CIL) was 417.079 Million Tonne (Provisional). Total Indian raw coal production has increased from 565 MT IN 2013-14 TO 729 MT IN 2019-20. This is registered as an absolute increase of 163 MT as compared to an increase of 73 MT in the preceding 5 years.

Sustainable Alternative Towards Affordable Transportation (SATAT) has envisaged developing 5000 CBG plants with total CBG production capacity of 15 MMTPA by 2023.¹⁵

During September 2020, the production from coal mines according to the CM (SP) Act, 2015 was 2.345 mn tonne.¹⁶

Revenue in September 2020 by coal mines production was INR 45.96 cr.¹⁶

The total electricity generation from renewable sources in the country during the month of September 2020 was 1,20,273 MU as against the generation of 1,15,991 MU during the corresponding period last year, showing a growth of 3.69%.¹⁹

SOURCES

1. "BP Statistical Review of World Energy- June 2019," British Petroleum (BP) Website, <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-electricity.pdf>
2. Annual Report, Ministry of Coal-https://coal.nic.in/sites/upload_files/coal/files/coalupload/AnnualReport2019-20/Chapter2-en.pdf
3. Annual Report, Ministry of Petroleum and Natural Gas, http://petroleum.nic.in/sites/default/files/AR_2018-19.pdf
4. "Energy is the key driver of Socio-Economic growth'," PIB Website: PMO, <http://pib.nic.in/PressReleaseDetail.aspx?PRID=1563758>
5. "Power Sector at a Glance - ALL INDIA," Ministry of Power Website, <https://powermin.nic.in/en/content/power-sector-glance-all-india>
6. "ULTRA MEGA POWER PROJECTS," Ministry of Power Website, https://powermin.nic.in/sites/default/files/uploads/ultra_mega_power_project.pdf
7. "BP Statistical Review of World Energy- June 2019," British Petroleum (BP) Website, <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-electricity.pdf>
8. "Energy is the key driver of Socio-Economic growth'," PIB Website: PMO, <http://pib.nic.in/PressReleaseDetail.aspx?PRID=1563758>
9. "Fact Sheet On Foreign Direct Investment (FDI) From April 2000 To December 2019," DPIIT website, https://dipp.gov.in/sites/default/files/FDI_Factsheet_December-19_5March2020.pdf
10. "Power Sector at a Glance - ALL INDIA," Ministry of Power Website, <https://powermin.nic.in/en/content/power-sector-glance-all-india>
11. All India Installed Capacity (in MW) of Power Stations, Central Electrical Authority, Ministry of Power, http://www.cea.nic.in/reports/monthly/installedcapacity/2020/installed_capacity-03.pdf
12. "Outlay on major Schemes," Union Budget Website, https://www.indiabudget.gov.in/doc/Budget_at_Glance/bag7.pdf
13. Ministry of Power- Annual Report, https://powermin.nic.in/sites/default/files/uploads/MOP_Annual_Report_Eng_2018-19.pdf
14. PIB Release, <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1640707#:~:text=27.60%20crores.,years%2C%20said%20Shri%20Pralhad%20Joshi.&text=The%20coal%20and%20lignite%20PSUs%20have%20planned%20to%20spend%20Rs.>
15. Annual Report, Ministry of Petroleum and Natural Gas, http://petroleum.nic.in/sites/default/files/AR_2019-20E.pdf
16. Ministry of Coal- Monthly Report, https://coal.nic.in/sites/upload_files/coal/files/coalupload/13102020september.pdf
17. Ministry of Power- Monthly Report https://powermin.gov.in/sites/default/files/uploads/Monthly_Summary_for_the_Cabinet_concerning_Ministry_of_Power_for_the_month_of_Sep_2020.pdf
18. PIB <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1670013>
19. Ministry of Power- Monthly Report, https://powermin.gov.in/sites/default/files/uploads/Monthly_Summary_for_the_Cabinet_concerning_Ministry_of_Power_for_the_month_of_Sep_2020.pdf
20. PIB Release, <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1684579>
21. PIB Release, <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1684579>

HAVE A QUERY? CONNECT WITH US



MAKE IN INDIA