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EXECUTIVE SUMMARY



capacity reaching 364.96 GW as of October 2019. The country also has the fifth largest installed capacity in Third largest producer and the world. third largest consumer globally India is ranked 4th in wind power, 5th in solar power and 5th in renewable power installed capacity as of 2018. India is on path to achieve 100 per cent household electrification by March 31, 2019, as envisaged under the Saubhagya scheme. As of March 2019, more than 26.2 million households have been electrified under Saubhagya scheme. Electrification achievements By 2018, a total of 25 states have achieved 100 per cent household electrification which included 23.1 million rural and 844,670 urban households. The remaining households are expected to be electrified by March 2019. As of October 31, 2019, India has an installed renewable energy capacity of 83.37 GW. By 2020, India will cross 100 GW renewable energy capacity mark. Robust growth in Wind energy is estimated to contribute 60 GW, followed by solar power at 100 GW by 2022 and 15GW renewables from biomass and hydropower. The target for renewable energy has been increased to 175 GW by 2022. The government plans to double the share of installed electricity generation capacity of renewable energy to 40 per cent till 2030. Favourable policy 100 per cent FDI is allowed under the automatic route in the power segment and renewable energy. environment

Note: GW - Gigawatt,

Source: Make in India website, Ministry of New and Renewable Energy, IEA, CEA (Central Electricity Authority), TechSci Research , Assorted articles



ADVANTAGE INDIA

ADVANTAGE INDIA



Expansion in industrial activity to boost As of June 2019, government launches demand for electricity. US\$ 5 billion of transmission-line tenders Growing population along with increasing in phases, to reach 175 GW target till electrification and per-capita usage to 2022. provide further impetus. The Government of India is expected to Goming opportunities Power consumption is estimated to reach offer nearly 20 power transmission 1,894.7 TWh in 2022. projects worth Rs 16,000 crore (US\$ India ranked sixth in list of countries to 2.22 billion) for bidding in 2019. make most investments in clean energy with US\$ 90 billion. **ADVANTAGE INDIA** India's power sector is forecasted to attract 100 per cent FDI allowed in the power Hitestiner Hierthents investments worth Rs 9-9.5 trillion (US\$ sector has boosted FDI inflows in this Policyoft 128.24-135.37 billion) between FY19-23. sector. Total FDI inflows in the power sector On April 28, 2018, all un-electrified reached US\$ 14.54 billion during Apr 2000 inhabited census villages have been to June 2019. electrified, supported by schemes like per Economic Survey 2018-19, Deen Dayal Upadhyay Gram Jyoti As additional investments in renewable plants Yojana (DDUGJY) and Integrated Power up to year 2022 would be about US\$ 80 Development Scheme (IPDS). billion and an investment of around US\$ 250 billion for the period 2023-2030.

Note: FDI - Foreign Direct Investment, TWh - Terawatt-Hour, Crisil Research *Source:* CEA, DIPP (Department of Industrial Policy and Promotion), TechSci Research



MARKET OVERVIEW

EVOLUTION OF THE INDIAN POWER SECTOR



- Electricity (Supply) Act 1948.
- Establishment of semiautonomous State Electricity Boards (SEBs).



- Private sector participation in generation.
- Fast-track clearing mechanism of private investment proposals.
- Electricity Regulatory Commissions Act (1998) for establishing Central and State Electricity Regulatory Commissions and rationalisation of tariffs.



- Industrial Policy Resolution (1956).
- Generation and distribution of power under state ownership.
- Power losses, subsidies, infrastructure bottlenecks and resource constraints.

- Implementation of Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) and Integrated Power Development Scheme for rural and urban areas respectively.
- Implementation of Ujwal DISCOM Assurance Yojana (UDAY) which would enable electrification to all villages and tracking it using the Grameen Vidyutikaran App.
- Amendment in National Tariff Policy (2016) has been made, wherein government is focusing more on sustainable utilisation of renewable energy resources.
- In May 2018, India ranked 4th in the Asia Pacific region out of 25 nations on an index that measures their overall power.
- India's rank jumped to 24 in 2018 from 137 in 2014 on World Bank's Ease of Doing Business - "Getting Electricity" ranking.

Source: MNRE, Corporate Catalyst India, IFLR, TechSci Research

INDIA AMONG TOP FOUR POWER GENERATING NATIONS



- With a generation of 1,561 TWh, India is the third largest producer and the third largest consumer of electricity in the world.
- Although power generation has grown more than 100-fold since independence, growth in demand has been even higher due to accelerating economic activity.
- India to become the world's first country to use LEDs for all lighting needs by 2019, thereby saving Rs 40,000 crore (US\$ 6.23 billion) on an annual basis.
- India's energy firms have made significant progress in the global energy sector, according to the latest S&P Global Platts Top 250 Global Energy Rankings, with 10 out of 14 Indian energy companies making it to the list and RIL and IOC ranking third and seventh, respectively.



World's leading electricity generation in 2018 (TWh)

Note: TWh - Terawatt Hours, data is expected to be updated by July 2019 from BP Statistical Review of World Energy **Source:** BP Statistical Review World Energy 2018

POWER GENERATION HAS GROWN RAPIDLY OVER THE YEARS



- With electricity production of 1,249.20 BU in India in FY19, the country witnessed growth of around 55.72 per cent over the previous fiscal year. Electricity production reached 851.51 BU in FY20 (April-November 2019)
- Over FY10–FY19, electricity production in India grew at a CAGR of 5.50 per cent.
- All un-electrified inhabited census villages have been electrified on April 28, 2018 ahead of the deadline May 1, 2018.



Notes: BU – Billion Unit,, [@] - CAGR till FY19 Source: BP Statistical Review, Ministry of Power

SOURCES OF POWER WITH SHARES IN TOTAL INSTALLED CAPACITY ... (1/2)





12.72%

India has large reserves of coal. By the end of November 2019, total installed coal thermal power capacity in India stood at 197.69 GW. By 2022, it is expected to witness total installed capacity addition of 47.86 GW.

India's gas thermal power capacity measures about 24.94 GW as of November 2019. By 2022, it is expected to witness total installed capacity addition of 0.41 GW. Lignite thermal power capacity measures about 6.26 GW as of November 2019

India's diesel thermal power capacity measures about 0.59 GW as of November 2019.

21.96% Renewable

Wind energy is the largest renewable energy source in India; projects like the Jawaharlal Nehru National Solar Mission (aims to generate 20,000 MW of solar power by 2022) are creating a positive environment among investors keen to exploit India's potential. There are plans to set up four solar power plants of 1GW each. As of November 2019, India has 83.37 GW of renewable energy capacity. The target is to achieve installed capacity of 175 GW by FY22.



With a large swathe of rivers and water bodies, India has enormous potential for hydropower. As of November 2019, India has 45.39 GW of hydro power generating capacity. By 2022, it is expected to witness total installed capacity addition of 6.82 GW.



As of November 2019, India has 6.78 GW of installed nuclear capacity; with one of the world's largest reserves of thorium, India has a huge potential in nuclear energy. By 2022, it is expected to witness total installed capacity addition of 3.30 GW.

Notes: GW - Gigawatt

Source: Ministry of Coal, NHPC, CEA, BP Statistical Review 2015, Corporate Catalyst India, Indian Power Sector, Ministry of Power, TechSci Research

For updated information, please visit www.ibef.org

SOURCES OF POWER WITH SHARES IN TOTAL INSTALLED CAPACITY ... (2/2)



- In FY20 (As of November 19), total thermal installed capacity in the country stood at 229.40 GW, while renewable, hydro and nuclear energy installed capacity totalled to 84.39 GW, 45.39 GW and 6.78 GW, respectively.
- By 2022, India has set a target to achieve total production 175 GW from renewable resources out of which 100 GW will be produced from solar power.
- As a part of the green corridor project, the power lines would transmit
 20 giga watts of power capacity from 34 solar parks across 21 states.
- In August 2018, KfW a German based financial institution signed a US\$ 228.15 million loan agreement with India's Rural Electrification Corporation Limited (REC) to provide low interest loans to renewable energy project developers.

Installed capacity for different sources of power - FY20 (As on Nov 2019) (GW) 250 200 150 229.40 100 50 84.39 45.39 6.78 0 Thermal RES Hydro Nuclear

GENERATION CAPACITY HAS INCREASED AT A HEALTHY PACE



- Installed capacity increased steadily over the years, posting a CAGR of 8.60 per cent in FY09–19.
- Energy generation from conventional sources stood at 98.8 billion units (BU) as of November 2019. Between 2017 and 2022, conventional sources are expected to witness capacity addition of 58.38 GW. Additional 8.11 billion units (BU) of installed capacity is set to be achieved by FY19.
- Coal-based power installed capacity in India, which currently stands at 195.80* GW is expected to reach 330-441 GW by 2040. It is expected to grow at a CAGR of 6.5 per cent during FY18-23.
- In FY20 (as of Nov 19), total installed capacity was 365.98 GW.

Installed electricity generation capacity (GW)



Note: GW - Gigawatt, ^ - Tentative, @ CAGR till FY19, Source: CEA (Central Electricity Authority

MAJOR PLAYERS IN THE POWER SECTOR



Company	Indian company
एनटीपीसी NTPC	 NTPC is the largest power producer in India and is also the sixth largest thermal power producer in the world, with installed capacity* was 55.12 GW as of June 2019, it is building additional installed capacity of 19.75 GW in India. By 2032, NTPC plans to reach 128,000 MW of power capacity. Coal-based power accounts for more than 84.7 per cent of the total capacity. NTPC and Adani Power to acquire 1,260 MW thermal power plant of Avantha Group. It has also diversified into hydro power, coal mining, power equipment manufacturing, oil and gas exploration, power to diversified and distribution.
	power trading and distribution. As of December 2016, NTFC acquired 720 MW baradhi mermai Fower Station.
TATA POWER	 Tata Power is India's largest integrated power company, with significant presence in solar, hydro, wind and geothermal energy space. The company accounts for 52 per cent of total generation capacity in the private sector. The company has an installed capacity of 10.957 MW. By 2022, the company plans to increase the generating
adaai	capacity to 18 GW, distribution networks by 4 GW and energy resources by 25 million tonnes per annum.
dudi II Power	 Adani Power plans to acquire majority stake in cold-chain operator, Snowman Logistics.
	 Adani's first power plant at Mundra was formed to cater to the Mundra port and SEZ business in 2006. Adani ports was already the largest importer of coal, supplying over 50% of the country's imported coal needs and at Mundra, managed the world's largest import coal terminal.
एन एच पी सी	 CESC Limited is a vertically integrated player engaged in coal mining and generation and distribution of power. As of FY18, it owns and operates 3 thermal power plants generating 1225 MW of power. These are Budge Budge Generating Station (750 MW), Southern Generating Station (135 MW) and Titagarh Generating Station (240 MW).
NHPC	 NHPC is the largest hydro power utility in India. In FY18 NHPC executed 20 projects with the capacity of 6.5 GW and 5 projects with the capacity of 0.089.

It had drawn an extensive plan to add about 6 GW of hydropower capacity by 2022.

Note: * - including its Joint Ventures and Subsidiaries Source: Company websites, News articles, Industry sources

MAJOR PLAYERS IN THE POWER SECTOR ... (2/2)

turnover target of Rs 2,175 crore (US\$ 337.47 million).



Note: NBFC - Non-Banking Financial Company **Source:** Company websites, News articles



STRATEGIES ADOPTED



STRATEGIES ADOPTED



Control generation costs	 Companies are developing captive coal fields to reduce price volatility and ensure uninterrupted supply of fuel to control generation cost. Most of the power companies are now located near energy source. This helps minimise costs of fuel transport.
Acquiring sources of fuel supply	 Power companies are now looking at securing adequate supplies of fuel by targeting not only domestic but also overseas resources. Reliance Power already has coal reserves in Indonesia. Essar Power have captive coal mines in Indonesia from which it extracts coal for power plants in India. Government has enabled the power utilities for swapping their coal supplies with the nearest sources so as to save miscellaneous costs and decongest the rail network.
Diversifying generation technologies	 Companies are using multiple-generation technologies based on a project's requirement. Companies such as NTPC and Reliance Power already have coal-fired, gas-fired and hydroelectric capacity. This helps them diversify, reduces dependence on a single source.
Additional revenue streams	 Most of the companies are now looking to sell their carbon credits to generate additional revenue by employing supercritical technology.
Digital India	 Launch of smart grid mission with 14 DISCOMS as a pilot. Smart metering for high – end users of electricity.

Source: TechSci Research

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GROWTH DRIVERS

GROWTH DRIVERS IN POWER SECTOR OF INDIA



Note: FDI - Foreign Direct Investment, MOU - Minutes of Use per month and per subscriber, M&A - Mergers and Acquisitions **Source:** PE Roundup – August'18 report by EY, Central Electricity Authority of India, Crisil Research

INDUSTRIAL EXPANSION AND STRONG GDP GROWTH DRIVING POWER DEMAND ... (1/2)



 Multiple drivers (industrial expansion, growing per-capita incomes) are leading to growth in power demand; this is set to continue in the coming years.

India is set to become a global manufacturing hub with investments across the value chain.

- India's power demand is expected to rise to 1,905 TWh by FY22.
- Industrial sector had a share of 41 per cent of the total electricity consumption in FY17-18P.



Share of electricity consumption in industrial sector

Note: TWh - Terawatt Hours, P – Provisional, data expected to be updated by June 2019 from Energy Statistics Report 2019 by Ministry of Statistics and Programme Implementation **Source:** Ministry of Statistics and Program Implementation, CEA

INDUSTRIAL EXPANSION AND STRONG GDP GROWTH DRIVING POWER DEMAND ... (2/2)



- Future investments will benefit from strong demand fundamentals, policy support and increasing government focus on infrastructure.
- Per capita electricity consumption in the country grew at a CAGR of 4.69 per cent, during FY11-FY19, reaching 1,181 KWh in FY19.



Note: P : Provisional, data as per latest available figures, BU – Billion Units, FY19 data expected to be updated by September 2019 from Executive Summary report by Central Electricity Authority

Source: CEA

POLICY SUPPORT AND INITIATIVES...(1/4)



National Policy on Biofuels - 2018	 In May 2018, the Government of India approved National Policy on Biofuels – 2018. The expected benefits of this policy are health benefits, cleaner environment, employment generation, reduced import dependency, boost to infrastructural investment in rural areas.
Ultra Mega Power Projects (UMPPs)	 Launch of the UMPP scheme through tariff-based competitive bidding. Ease of land possession, provision of fuel, water and necessary clearances for enhancing investor confidence.
R-APDRP	 Linking disbursement of central government funds (to states), with actual reduction in transmission and distribution losses. Sanctioned projects of more than US\$ 5.8 billion. In June 2019, The state administrative council sanctioned Rs 173 crore (US\$24.3 million) for Supervisory Control and Data Acquisition (SCADA) and Distribution Management System (DMS) under R-APDRP Scheme for Jammu and Srinagar cities.
Saubhagya Scheme	 The Pradhan Mantri Sahaj Bijli Har Ghar Yojana-"Saubhagya", launched by the Government of India with the aim of achieving universal household electrification by March 2019. By 2018, a total of 25 states have achieved 100 per cent household electrification which included 23.1 million rural and 844,670 urban households. Amount of 1,463.95 crore (US\$ 209.45 million) was spent in 2017-18 for Saubhagya,scheme, However, no additional budget allocation has been made in 2019-20 for this scheme.
UJALA Scheme	 Over 353 million LED bulbs were distributed to consumers in India by Energy Efficiency Services Limited (EESL) under Unnati Jyoti by Affordable LEDs for All (UJALA) as on July 08, 2019 and 11.17 million LED bulbs were sold by private players till March 2019.

Notes: R-APDRP - Restructured Accelerated Power Development and Reform Programme , AT&T - American Telephone and Telegraph Systems **Source:** Ministry of Power

POLICY SUPPORT AND INITIATIVES...(2/3)



Energy Conservation Campaign Power to the people	 Replacing nationwide street lights with LED lights. Plan to save 10 per cent energy that would light up 11 crore lives. Replacing 1 crore bulbs in Delhi within one year. The Union Budget 2019-20 has allocated Rs 40.66 billion (US\$ 592.4 million) towards the Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) and Rs 52.8 billion (US\$ 769.3 million) towards the Integrated Power Development Scheme (IPDS).
Ujwal Discoms Assurance Yojana (UDAY)	 It was launched by the Government of India to encourage operational and financial turnaround of State-owned Power Distribution Companies (DISCOMS), with an aim to reduce Aggregate Technical & Commercial (AT&C) losses to 15 per cent by FY19. The Government of India has signed four Memorandum of Understanding (MoU) with the state of Nagaland and Union Territories (UTs) of Andaman & Nicobar Islands, Dadra & Nagar Haveli & Daman & Diu under the Ujwal DISCOM Assurance Yojana (UDAY) to improve operational efficiency of electricity departments in these places.
Boost to manufacturing	 To create potential for domestic manufacturers and developers, Government of India will auction 40 GW of renewable energy projects including 30 GW solar and 10 GW wind every year till 2028.
Other Initiatives	 As of September 2018, the Government of India launched a voluntary based programme to promote energy efficient chiller systems in India. It labels the energy performance by providing star ratings and will be effective up to December 31, 2020. As of September 2018, a draft amendment to Electricity Act, 2003 has been introduced. It discusses separation of content & carriage, direct benefit transfer of subsidy, 24*7 Power supply is an obligation, penalisation on violation of PPA, setting up Smart Meter and Prepaid Meters along with regulations related to the same.

Source: Ministry of Power, News articles

POLICY SUPPORT AND INITIATIVES...(3/3)



Direct Benefit Transfer (DBT) Scheme	 The Union and state governments have agreed to implement the Direct Benefit Transfer (DBT) scheme in the electricity sector for better targeting of subsidies.
Vision '24x7' Power for All'	 All the states and union territories of India are on board to fulfil the Government of India's vision of ensuring 24x7 affordable and quality power for all by March 2019, as per the Ministry of Power and New & Renewable Energy, Government of India.
No environment clearance required for solar projects	 The Ministry of Environment, Forest and Climate Change, Government of India has clarified that solar PV (photovoltaic) power, solar thermal power projects, and solar parks will not require the environment clearance which was mandatory under the provisions of Environment Impact Assessment (EIA) notification, 2006.
Green Energy Corridor Project	 Under the Union Budget 2019-20, the Government of India has allocated Rs 5 billion (US\$ 73 million) to increase capacity of Green Energy Corridor Project along with Rs 9.20 billion (US\$ 130 million) for wind and Rs 30.05 billion (US\$ 440 million) for solar power projects.
Tariff	 Feed – in Tariff, scheme used for promoting generation of electricity from renewable energy sources. It allows Power Producers to sell renewable energy generated electricity to an off – taker at a pre – determined tariff for a given period of time. As of August 2018 the Ministry of New and Renewable Energy set solar power tariff caps at Rs 2 50 (US\$)
	 As of August 2010, the Ministry of New and Renewable Energy set solar power tann caps at Rs 2.50 (03\$ 0.04) and Rs 2.68 (US\$ 0.04) unit for developers using domestic, and imported solar cells and modules, respectively.
Rent a roof policy	 The Union Government of India is preparing a 'rent a roof' policy for supporting its target of generating 40 gigawatts (GW) of power through solar rooftop projects by 2022.

Source: Ministry of Power, News articles

INCREASING INVESTMENTS: FDI INFLOWS AND KEY DEALS ... (1/2)



- Power is one of the key sectors attracting FDI inflows into India.
- From April 2000 to June 2019, India recorded FDI of US\$ 8.06 billion in non-conventional energy sector. New and renewable energy sector witnessed maximum power generation capacity addition, since 2000.
- Power sector accounted for 3 per cent of total inflows till June 2019.
- Cumulative FDI inflows in the power sector in April 2000–June 2019 were US\$ 14.54 billion.



FDI inflows into the power sector (US\$ billion)

Source: DPIIT

INCREASING INVESTMENTS: FDI INFLOWS AND KEY DEALS ... (3/3)



Important deals

Acquirer	Target	Date	Value (US\$ mn)
Adani Transmission	Bikaner-Khetri Transmission Limited (BKTL)	September 2019	-
SunEdison Infrastructure	Megamic Electronics	July 2019	10 million
Power Finance Corporation (PFC) Ltd	Rural Electrification Corporation (REC) Ltd	December 2018	52.63 per cent of holding
Renascent Power Ventures Pte Ltd	Prayagraj Power Generation Company Limited (PPGCL)	November 2018	854.94 (75.01 per cent stake)
Kohlberg Kravis Roberts & Co (KKR)	Ramky Enviro Engineers Limited	August 2018	530
ReNew Power	Ostro Energy	April 2018	1,668.21
Canada Pension Plan Investment Board (CPPIB)	ReNEW Power Ventures Ltd	January 2018	144 (6.3 per cent stake)
ReNew Power	Wind power assets of KC Thapar Group	21 November 2017	155.55
Adani Transmission Limited	Reliance Infrastructure Limited (Mumbai)	October 2017	2,932
India Power Corp. Ltd	Meenakshi Energy Pvt Ltd	16 November 2016	-
Greenko Energy Holdings (GEH)	SunEdison	4 October 2016	392
Tata Power	Welspun Energy	14 June 2016	1,528
Suzlon Energy	Gale Solarfarms Pvt. Ltd, Tornado Solarfarms Pvt. Ltd, Abha Solarfarms Pvt. Ltd, Aalok Solarfarms Pvt. Ltd and Shreyas Solarfarms Pvt. Ltd.	21 April 2016	-

Note: FDI - Foreign Direct Investment, PE - Private Equity, Thomson One Banker **Source:** Thomson One Banker, Industry News, VC Circle, TechSci Research



OPPORTUNITIES

POWER GENERATION: OVERALL FUNDAMENTALS WILL REMAIN STRONG



- Demand for electricity is expected to increase at a CAGR of 7 per cent to 1,894.7 TWh over FY07–22.
- Current production levels are not enough to meet demand; annual demand outstrips supply by about 7.5 per cent.
- All India per capita consumption of electricity estimated 1,894.70 TWh by FY22.
- Various reforms being undertaken by the government are positively impacting India's power sector. In wake of the surging domestic coal production, the country's power sector is becoming increasingly stable.
- Non-coking coal consumption is forecasted to grow at a CAGR of 5.4 per cent to reach 1,076 MT in FY23 from 826 MT in FY18 and domestic supply is forecasted to reach 931 MT in FY23 from 664 MT in FY19, at a CAGR of 7 per cent.



Electricity demand forecast (TWh)

Notes: TWh - Terawatt Hour **Source:** International Energy Agency (IEA), CEA, Demand estimates based on IEA forecasts

INDIAN POWER SECTOR: MARKET WITH ENORMOUS GROWTH POTENTIAL



- India is forecasted to be a power surplus country by FY19 with peak power surplus at 2.5 per cent.
- The peak power demand in the country stood at 180.80 GW as of November 2019 (P).



Note: GW - Gigawatt , P – Provisional **Source:** NTPC presentation, CEA

RENEWABLE ENERGY IS FAST EMERGING AS A MAJOR SOURCE OF POWER



- Wind energy is the largest source of renewable energy in India and India ranks 4 globally; it accounts for 47.44 per cent (35.14 GW)* of total installed renewable capacity (74.08 GW)*. There are plans to double wind power generation capacity to 60 GW by 2022.
- The Ministry of New and Renewable Energy (MNRE) has proposed wind power capacity addition of 10 GW each to be awarded in FY19 and FY20.
- As of August 2018, The Ministry of New and Renewable Energy commissioned India's first inter state transmission system (ISTS) auction with wind power capacity of 126 MW.
- Solar Power is the second largest source of renewable energy and ranks 6 globally; it accounts for 34.03 per cent (25.21 GW)* of total installed capacity in renewable energy. The government has set a target of achieving 100 GW by 2022.
- The Government of India and Ministry of Power aims to achieve 175 GW and 225 GW, respectively of installed renewable energy capacity by 2022.
- Government plans to establish renewable energy capacity of 500 GW by 2030.



Hydro power generation capacity at the end of 2018 (GW)

Notes: GW – Gigawatt, Figures mentioned in the graph is as per latest data available, * - as of December 2018, SEIC – Solar Energy Corporation of India, data is expected to be updated by June 2019 from Renewables 2019 Global Status Report by Renewable Energy Policy Network
Source: Renewables 2018 Global Status Report (REN21), CEA

STRONG UPWARD MOMENTUM IN NUCLEAR ENERGY LIKELY IN MEDIUM TO LONG TERM



- Currently, the country has net installed capacity of 6.78 GW as of November 2019, using nuclear fuels, across 20 reactors. Of the 20 reactors, 18 are Pressurised Heavy Water Reactors (PHWR) and 2 are Boiling Water Reactors (BWR).
- The government aims to quadruple India's nuclear power generation capacity to 20 GW by 2020.
- Nuclear Power Corporation of India Limited (NPCIL) plans to construct 5 nuclear energy parks with a capacity of 10,000 MW.
- The Government of India will set up 21 new nuclear power reactors with a total installed capacity of 15,700 megawatt (MW) by 2031.





KEY INDUSTRY ASSOCIATIONS



INDUSTRY ASSOCIATIONS



Council of Power Utilities

Address: A-2/158, Janakpuri, New Delhi-110058, India Tel: 91 11 25618472, 45652708 Fax: 25611622 E-mail: cvjvarma@gmail.com, cvjv1933@yahoo.com Web site: www.indiapower.org

Bureau of Energy Efficiency (BEE)

Address: Ministry of Power, 4th Floor, SEWA Bhawan, R. K. Puram, New Delhi – 110066, India Tel: 91 11 26179699 Fax: 91 11 26178352 E-mail: webmanager-bee@nic.in Website: http://www.beeindia.in/

Hydro Power Association (India)

Address: Flat no 6, Green Park Apartment, Shriram Society, Warje, Pune - 411058, Maharashtra, India Tel: 91 20 25233338 E-mail: hypaindia@gmail.com, president@hpaindia.org, secretary@hpaindia.org Website: http://hpaindia.org/

Indian Wind Energy Association (INWEA)

Address: PHD House, 3rd Floor, Opp. Asian Games Village, August Kranti Marg, New Delhi-110016, India Tel: 91 11 26523042 E-mail: manish@inwea.org Web site: http://www.inwea.org/



USEFUL INFORMATION







- CAGR: Compound Annual Growth Rate
- FDI: Foreign Direct Investment
- FY: Indian Financial Year (April to March)
 - So FY10 implies April 2009 to March 2010
- GW: Gigawatt
- MandA: Merger and Acquisition
- MW: Megawatt
- NBFC: Non-Banking Financial Company
- PE: Private Equity
- PLF: Plant Load Factor
- Rand D: Research and Development
- R-APDRP: Restructured Accelerated Power Development and Reform Programme
- TandD: Transmission and Distribution
- TWh: Terawatt-Hour
- RGGVY: Rajiv Gandhi Grameen Vidyutikaran Yojana
- US\$: US Dollar
- Wherever applicable, numbers have been rounded off to the nearest whole number

EXCHANGE RATES

Exchange Rates (Fiscal Year)

INR Equivalent of one US\$ INR Equivalent of one US\$ Year Year 2004-05 44.95 2005 44.11 2005-06 44.28 2006 45.33 2006-07 45.29 2007 41.29 2007-08 40.24 2008 43.42 2008-09 45.91 2009 48.35 2009-10 47.42 2010 45.74 2010-11 45.58 2011 46.67 2011-12 47.95 2012 53.49 2012-13 54.45 2013 58.63 2013-14 60.50 2014 61.03 2014-15 61.15 2015 64.15 2015-16 65.46 2016 67.21 2016-17 67.09 2017 65.12 2017-18 64.45 2018-19 69.89 2018 68.36

Source: Reserve Bank of India, Average for the year



Exchange Rates (Calendar Year)





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