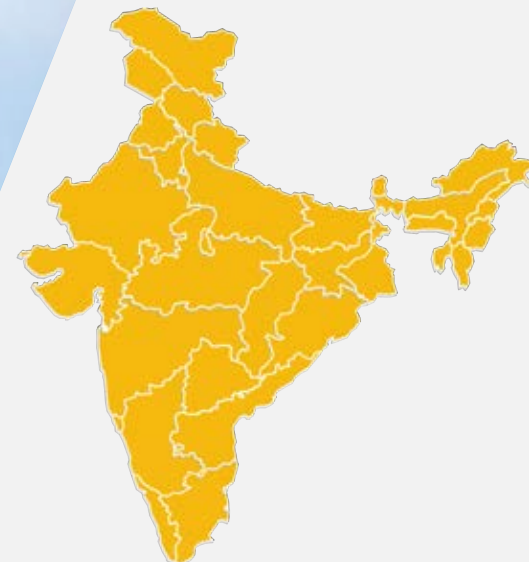


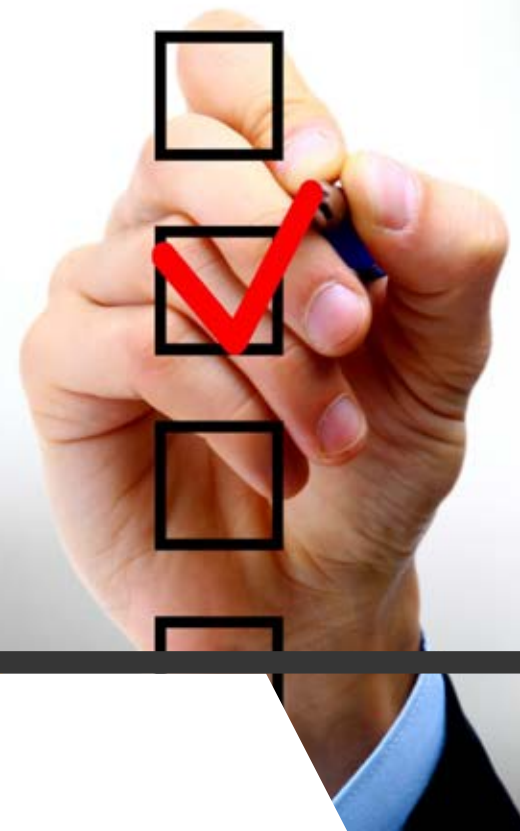
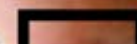
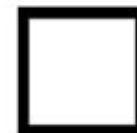
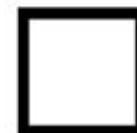
**POWER**



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# Table of Contents

- ▶ Executive Summary.....3
- ▶ Advantage India.....4
- ▶ Market Overview .....6
- ▶ Strategies Adopted.....15
- ▶ Growth Drivers.....17
- ▶ Opportunities.....26
- ▶ Industry Associations.....31
- ▶ Useful Information.....33



## Third largest producer and third largest consumer globally

- India has been the third largest producer and third largest consumer of electricity in the world with an installed power capacity reaching 370.49 GW as of May 2020. The country also has the fifth largest installed capacity in the world.
- India was ranked fourth in wind power, fifth in solar power and fifth in renewable power installed capacity as of 2018.

## Electrification achievements

- India has been on a path to achieve 100 per cent household electrification as envisaged under the Saubhagya scheme. As of March 2019, more than 26.2 million households were electrified under the Saubhagya scheme.
- Under Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), 100 per cent villages across the country stands electrified as on April 2018.

## Robust growth in renewables

- As on May 31, 2020, India had an installed renewable energy capacity of 87.38 GW.
- Wind energy is estimated to contribute 60 GW, followed by 100 GW from solar power and 15 GW from biomass and hydropower by 2022. 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 environment

- 100 per cent FDI is allowed under the automatic route in the power segment and renewable energy.

*Note: GW – Gigawatt,*

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

# ADVANTAGE INDIA



- Expansion in industrial activity to boost demand for electricity.
- Growing population along with increasing electrification and per-capita usage to provide further impetus.
- Power consumption is estimated to reach 1,894.7 TWh in 2022.
- India ranked sixth in list of countries to make significant investment in clean energy by allotting US\$ 90 billion.

Growing Demand

- In June 2019, Government launched US\$ 5 billion of transmission-line tenders in phases to reach 175 GW target by 2022.
- In June 2020, Government launched pan-India Real Time Market in electricity.

Attractive opportunities

## ADVANTAGE INDIA

Higher investment

- India's power sector is forecast to attract investment worth Rs 9-9.5 trillion (US\$ 128.24-135.37 billion) between FY19-FY23.
- Total FDI inflow in the power sector reached US\$ 14.98 billion between April 2000 and March 2020.
- As per Economic Survey 2018-19, additional investment in renewable plants till 2022 would be about US\$ 80 billion. Investment worth US\$ 250 billion will be required for the period 2023-2030.

Policy support

- 100 per cent FDI allowed in the power sector has boosted FDI inflow in this sector.
- On April 28, 2018, all un-electrified inhabited census villages were electrified, supported by schemes like Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) and Integrated Power Development Scheme (IPDS).

*Note: FDI - Foreign Direct Investment, TWh - Terawatt-Hour, Crisil Research, GW- Gigawatt*

*Source: CEA, Department Of Promotion Of Industry And Internal Trade*

# MARKET OVERVIEW





# EVOLUTION OF THE INDIAN POWER SECTOR

- Electricity (Supply) Act 1948
- Establishment of semi-autonomous State Electricity Boards (SEBs)

- Legislative and policy initiatives (1991)
- 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



- Electricity Act (2003)
- Amendments made in Electricity Act so as to create competition
- 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 22 in 2019 from 137 in 2014 on World Bank's Ease of Doing Business - "Getting Electricity" ranking

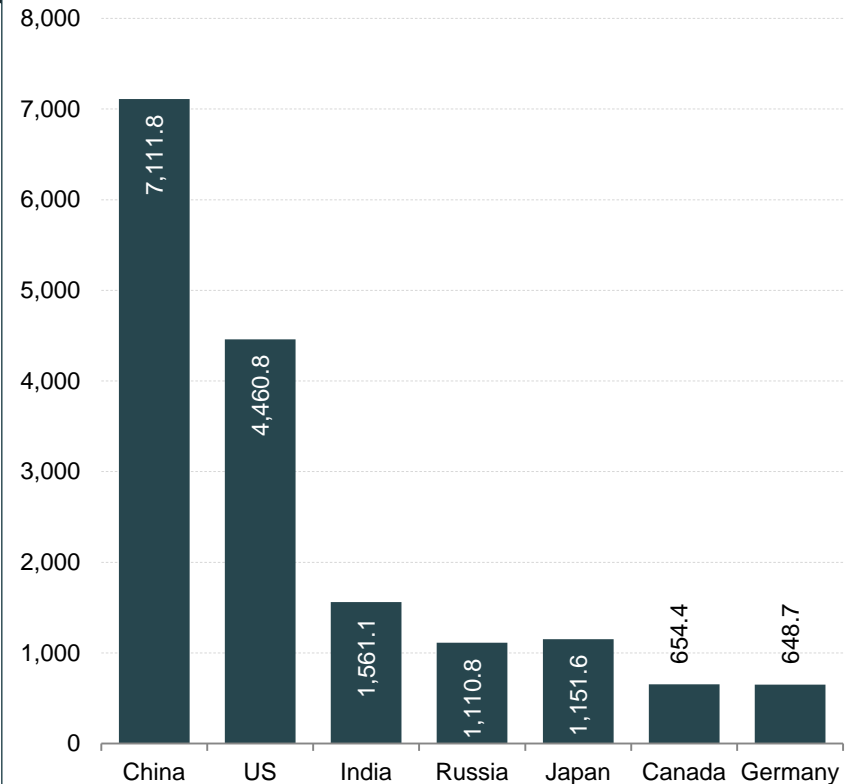


Source: MNRE, Corporate Catalyst India, IFLR

# 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 is on its way to become the world's first country to use LEDs for all lighting needs, 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 S&P Global Platts Top 250 Global Energy Rankings, 10 out of 14 Indian energy companies make it to the list with RIL and IOC at third and seventh position, respectively.

World's leading electricity generation in 2018 (TWh)



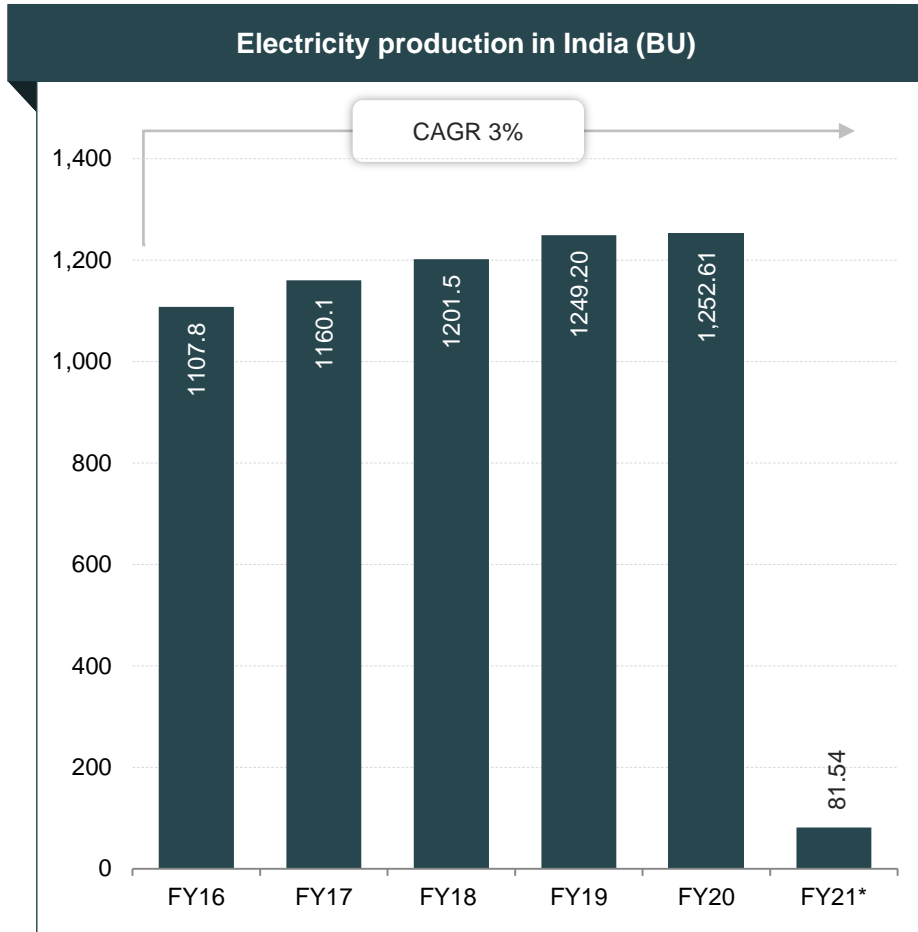
*Note: TWh - Terawatt Hours*

*Source: BP Statistical Review World Energy 2019*



# POWER GENERATION HAS GROWN RAPIDLY OVER THE YEARS

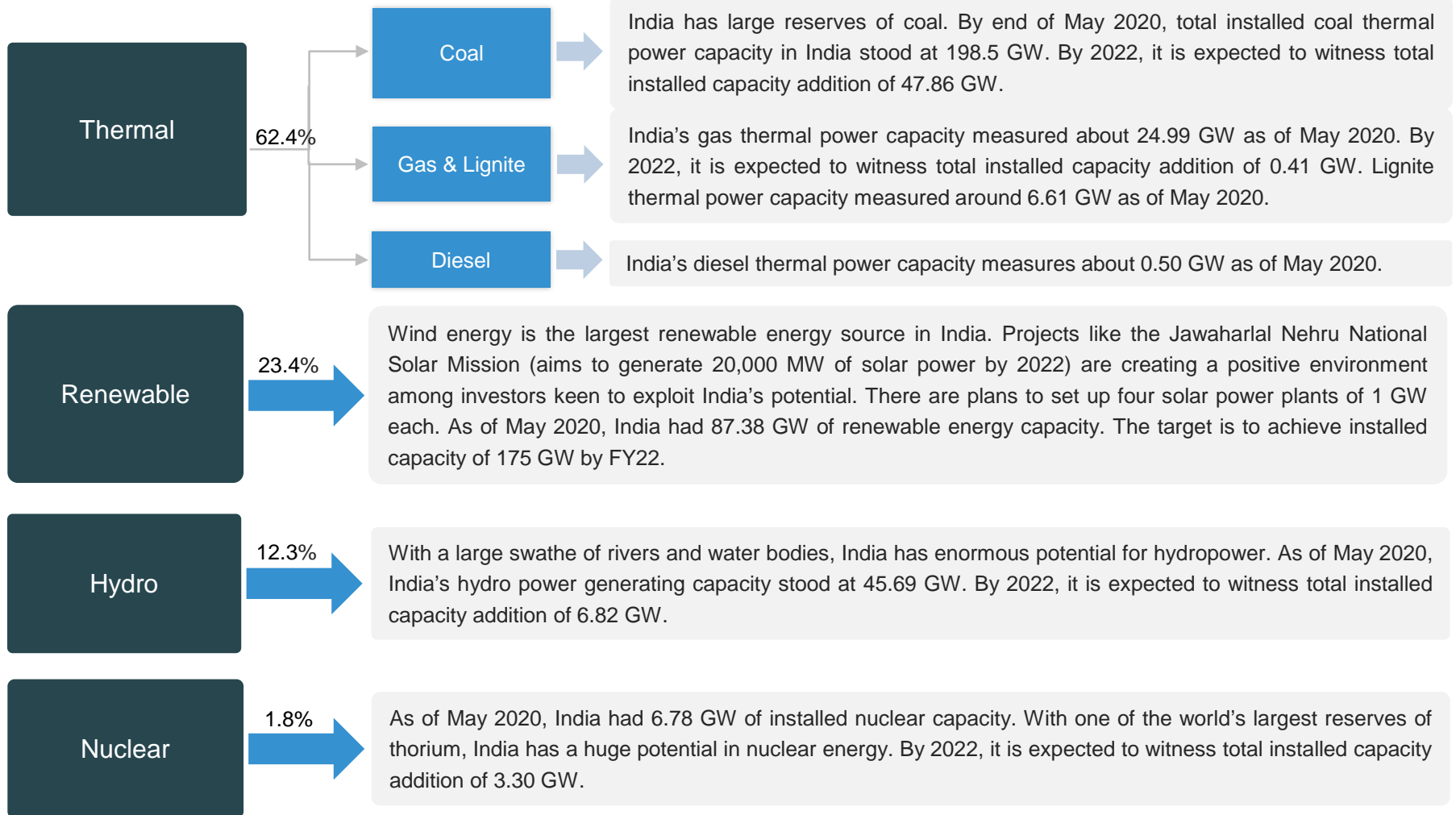
- With electricity production of 1,252.61 BU in India in FY20, the country witnessed growth of around 0.26 per cent over the previous fiscal year.
- During FY16–FY20, electricity production in India grew at a CAGR of 3 per cent.
- All un-electrified inhabited census villages were electrified by April 28, 2018, ahead of the deadline of May 1, 2018.



Notes: BU – Billion Unit, \*- till April 2020

Source: BP Statistical Review, Ministry of Power

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



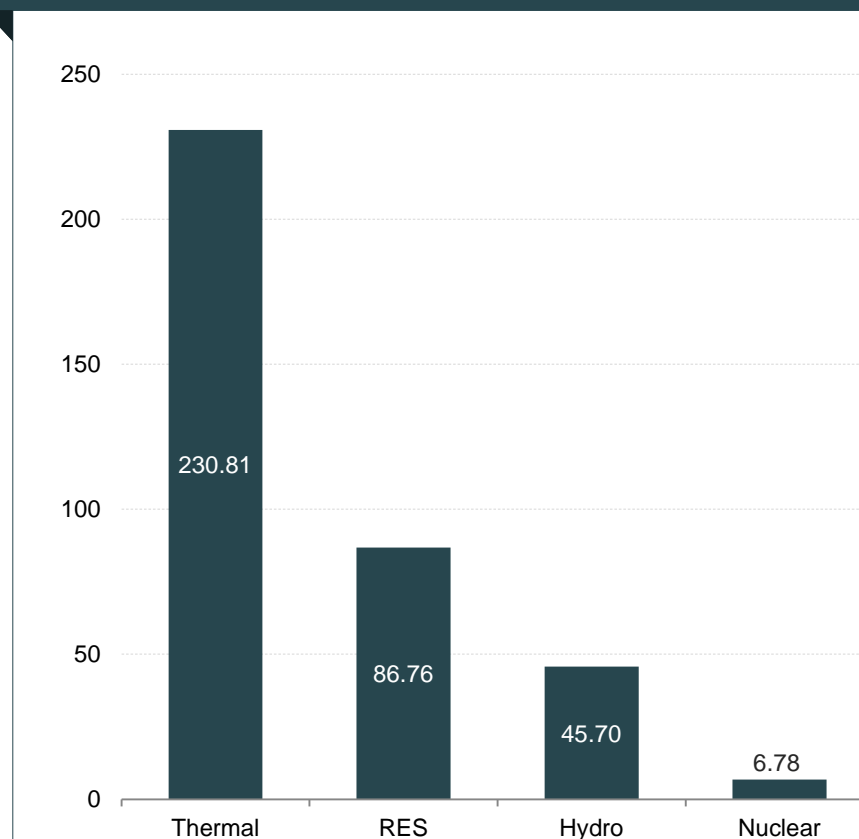
Notes: GW - Gigawatt

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

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

- In FY20, total thermal installed capacity in the country stood at 230.81 GW. Renewable, hydro and nuclear energy installed capacity totalled 86.76 GW, 45.70 GW and 6.78 GW, respectively.
- By 2022, India has set a target to achieve total production of 175 GW from renewable resources, out of which, 100 GW will be produced from solar power.
- As part of the green corridor project, power lines would transmit 20 GW of power capacity from 34 solar parks across 21 states.
- In April 2020, NTPC Vindhyachal became the largest power plant in the country to achieve a plant load factor (PLF) of 100 per cent.

Installed capacity for different sources of power – FY20 (GW)



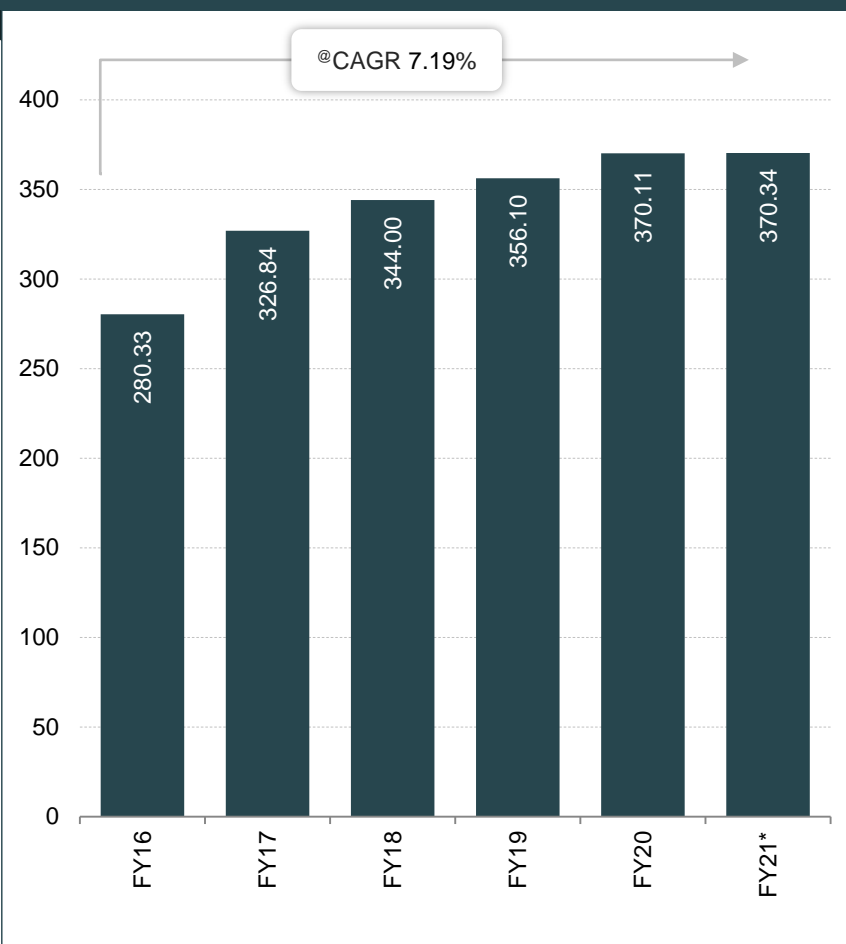
Notes: GW – Gigawatt,

Source: Ministry of Coal, NHPC, Central Electricity Authority (CEA), Corporate Catalyst India

# GENERATION CAPACITY HAS INCREASED AT A HEALTHY PACE

- Installed capacity have increased steadily over the years, posting a CAGR of 7.19 per cent in FY16–FY20.
- Energy generation from conventional sources stood at 97.70 billion units (BU) in March 2020. Between 2017 and 2022, conventional sources are expected to witness capacity addition of 58.38 GW.
- Coal-based power installed capacity in India, which currently stands at 198.52 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-FY23.






Installed electricity generation capacity (GW)



*Note: GW - Gigawatt, ^ - Tentative, @ CAGR till FY20, \*- till April 2020*





*Source: CEA (Central Electricity Authority)*

# MAJOR PLAYERS IN THE POWER SECTOR

Company	Indian company
	<ul style="list-style-type: none"> <li>▪ NTPC is the largest power producer in India and is also the sixth largest thermal power producer in the world. By 2032, NTPC plans to reach 128 GW of power capacity. Coal-based power account for more than 84.7 per cent of the total capacity.</li> <li>▪ It has also diversified into hydro power, coal mining, power equipment manufacturing, oil and gas exploration, power trading and distribution. NTPC group reported a 5,290 MW commercial capacity addition plan for FY20.</li> <li>▪ NTPC Ltd achieved 100 per cent plant load factor (PLF) on May 9, 2020 in three of its thermal power stations.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ 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 the 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 capacity to 18 GW, distribution networks to 4 GW and energy resources to 25 million tonnes per annum.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Adani Power is one of India's largest private thermal power producers, with total capacity at 12.45 GW in 2019; the company aims to generate 20 GW of power by 2020.</li> <li>▪ In June 2020, Adani Green Energy won a major tender to set up 8 GW of manufacturing-linked solar energy project with an investment of Rs 45,000 crore (US\$ 6.38 billion).</li> </ul>
	<ul style="list-style-type: none"> <li>▪ CESC Limited is a vertically integrated player engaged in coal mining and generation and distribution of power. As of January 2020, it owns and operates three thermal power plants generating 1125 MW of power. These are Budge Budge Generating Station (750 MW), Southern Generating Station (135 MW) and Titagarh Generating Station (240 MW).</li> </ul>
	<ul style="list-style-type: none"> <li>▪ NHPC is the largest hydro power utility in India. In FY19, the company achieved the highest ever generation of 24.19 BU. It is engaged in construction of two hydro-electric project with aggregate installed capacity of 2,800 MW.</li> <li>▪ It has drawn an extensive plan to add about 6 GW of hydropower capacity by 2022.</li> </ul>

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

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

Company	Indian company
	<ul style="list-style-type: none"> <li>Power Finance Corporation Limited (PFC) is an NBFC, engaged in financing and development activities within the Indian power sector.</li> <li>Major products and services include project term loans, lease financing, direct discounting of bills, short-term loans and consultancy services.</li> </ul>
	<ul style="list-style-type: none"> <li>Power Grid Corporation of India Limited (PGCIL) is the single largest transmission utility in India. It is responsible for planning, co-ordination, supervision and control over inter-state transmission systems.</li> <li>As of January 2020, the company managed 162,489 km of transmission lines and 248 sub-stations.</li> </ul>
	<ul style="list-style-type: none"> <li>Damodar Valley Corporation is engaged in power generation, distribution and transmission of electric power, irrigation and flood control.</li> </ul>
	<ul style="list-style-type: none"> <li>SJVN Limited is the second largest hydro power company in India.</li> <li>The company plans to diversify into wind power projects soon.</li> <li>For FY19, SJVN's capital expenditure (CAPEX) target was Rs 900 crore (US\$ 139.64 million) and turnover target was Rs 2,175 crore (US\$ 337.47 million).</li> </ul>

**Note:** NBFC - Non-Banking Financial Company

**Source:** Company websites, News articles

# 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 power utilities for swapping their coal supplies with the nearest source 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 and reduce 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

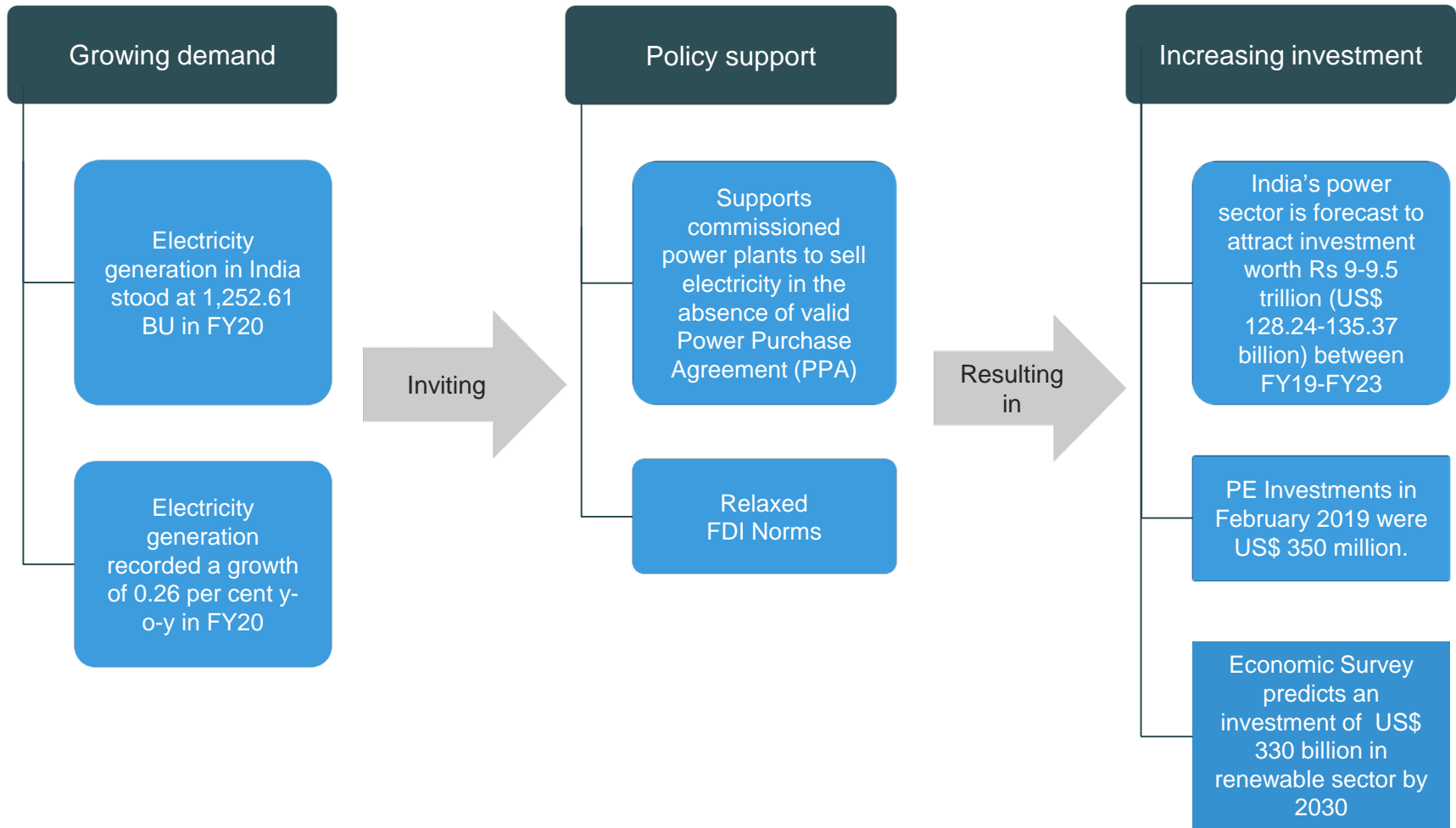
- Launch of smart grid mission with 14 DISCOMS as a pilot.
- Smart metering for high-end users of electricity.
- In June 2020, Government launched pan-India Real Time Market in electricity.

Source: News Sources

# GROWTH DRIVERS



# GROWTH DRIVERS IN POWER SECTOR OF INDIA



*Note: FDI - Foreign Direct Investment*  
*Source: Central Electricity Authority of India*

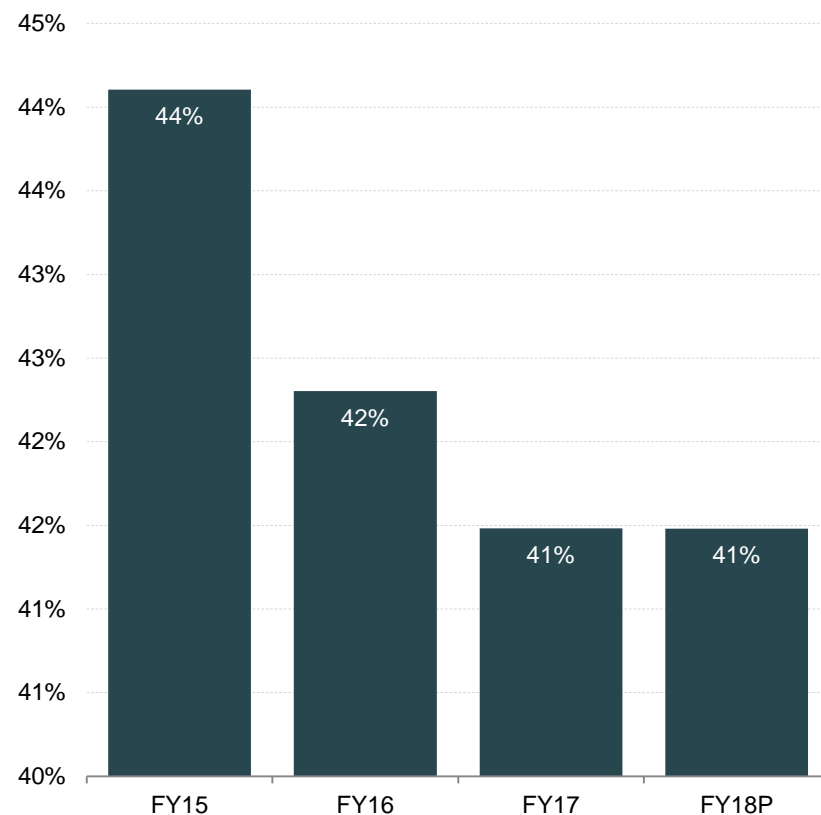
# INDUSTRIAL EXPANSION AND STRONG GDP GROWTH DRIVING POWER DEMAND ... (1/2)

- 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 investment 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 and FY18P.

Share of electricity consumption in industrial sector

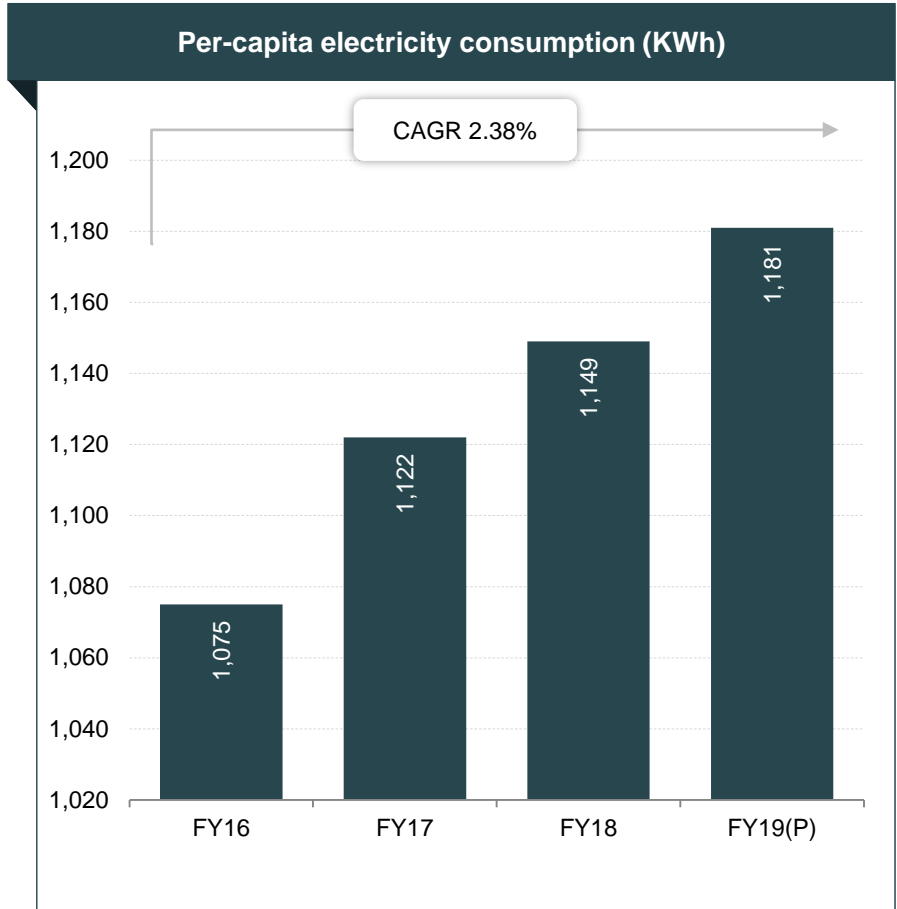


*Note: TWh - Terawatt Hours, P – Provisional*

*Source: Ministry of Statistics and Program Implementation, CEA*

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

- Future investment 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 2.38 per cent during FY16-FY19, reaching 1,181 KWh in FY19P.



*Note: P : Provisional, data as per latest available figures, BU – Billion Units*

*Source: CEA*

## National Policy on Biofuels - 2018

- In May 2018, the Government of India approved National Policy on Biofuels 2018.
- Benefits of this policy were related to health, clean environment, employment generation, reduced import dependency, and boost to infrastructural investment in rural areas.

## Ultra Mega Power Projects (UMPPs)

- Launch of 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", was launched by the Government of India with an aim of achieving universal household electrification by March 2019. By 2018, a total of 25 states 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 was made in 2019-20 for this scheme.

## UJALA Scheme

- Over 36.10 crore LED bulbs, 71.61 lakh LED tube lights and 23.10 lakh energy efficient fans have been distributed across the country, saving around 47 billion kWh per year. Around Rs 18,935 crore (US\$ 2.71 billion) per year in electricity bills of consumer was saved.

**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

- 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.

## Power to the people

- The Union Budget 2020-21 has allocated Rs 15,875 crore (US\$ 2.27 billion) to the Ministry of Power and Rs 5,500 crore (US\$ 786.95 million) towards the Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY).

## 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 will auction 40 GW of renewable energy projects including 30 GW solar and 10 GW wind every year till 2028.

Source: Ministry of Power, News articles



## Direct Benefit Transfer (DBT) Scheme

- Union and state Governments have agreed to implement 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 was on board to fulfil Government's vision of ensuring 24x7 affordable and quality power for all 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 Union Budget 2019-20, the Government 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 is 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.
- Ministry of New and Renewable Energy set solar power tariff caps at Rs 2.50 (US\$ 0.04) and Rs 2.68 (US\$ 0.04) unit for developers using domestic, and imported solar cells and modules, respectively, in August 2018.

## Rent a roof policy

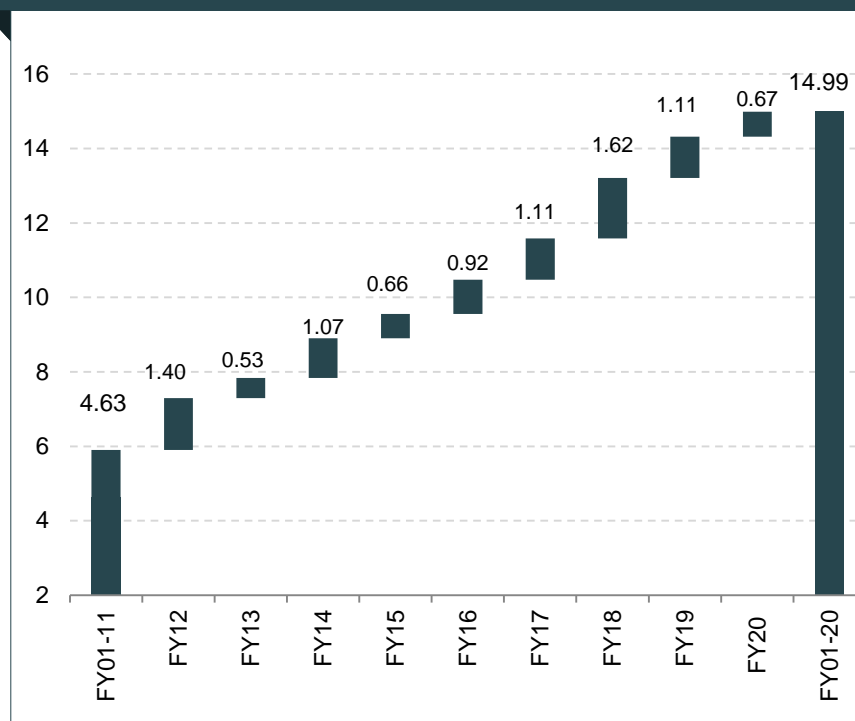
- Indian Government is preparing a 'rent a roof' policy for supporting its target of generating 40 GW of power through solar rooftop projects by 2022.

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 March 2020, India recorded FDI of US\$ 9.22 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 December 2019.
- Cumulative FDI inflow in the power sector stood at US\$ 14.99 billion between April 2000 and March 2020 .

FDI inflow 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)
TOTAL Gas & Power Business Services	Adani Green Energy Limited (AGEL)	April 2020	530.40
IndiGrid	Sterlite Power	January 2020	145.94
Bharti Airtel Limited	AMPSolar Evolution	October 2019	1.20 (26 per cent)
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

*Note: FDI - Foreign Direct Investment, PE - Private Equity, Thomson One Banker*

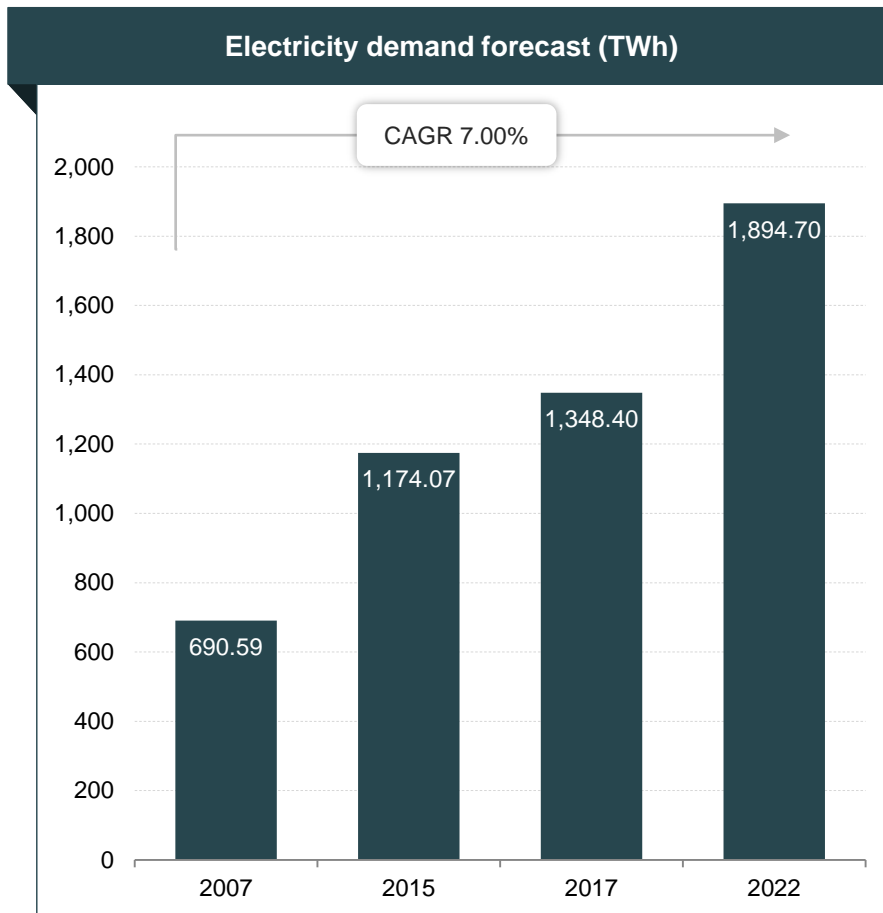
*Source: Thomson One Banker, Industry News, VC Circle*

# OPPORTUNITIES



# POWER GENERATION: OVERALL FUNDAMENTALS WILL REMAIN STRONG

- Demand for electricity is expected to increase – per capita consumption of electricity is estimated to be at 1,894.70 TWh by FY22.
- Current production levels are not enough to meet demand – annual demand outstrips supply by about 7.5 per cent.
- 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 forecast to grow at a CAGR of 5.4 per cent to reach 1,076 MT in FY23 from 826 MT in FY18. Domestic supply is forecast to reach 931 MT in FY23 from 664 MT in FY19, growing at a CAGR of 7 per cent.
- In order to decarbonise the energy consumption, India needs a 30-fold increase in renewable energy, 30-fold increase in nuclear energy and doubling of thermal energy, which would make 70 per cent of energy consumed carbon free.

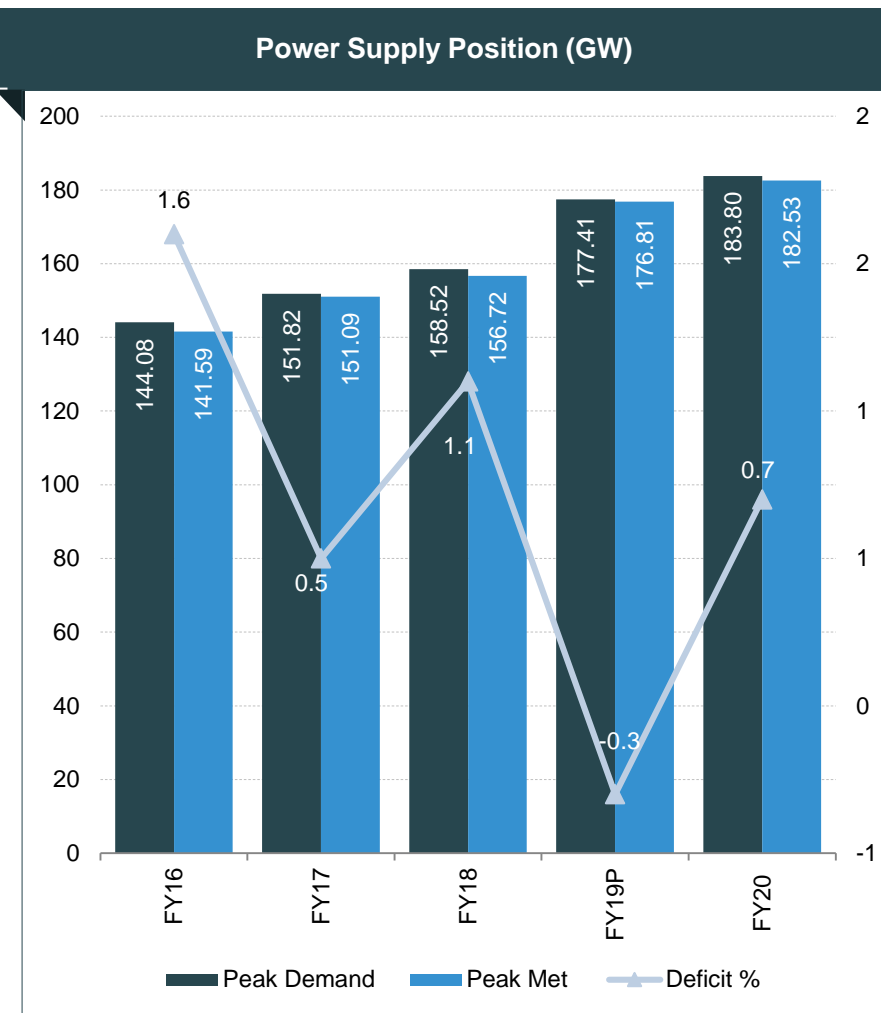


*Notes: TWh - Terawatt Hour*

*Source: International Energy Agency (IEA), CEA, Demand estimates based on IEA forecasts*

# INDIAN POWER SECTOR: MARKET WITH ENORMOUS GROWTH POTENTIAL

- India is forecast 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 183.80 GW in FY20.



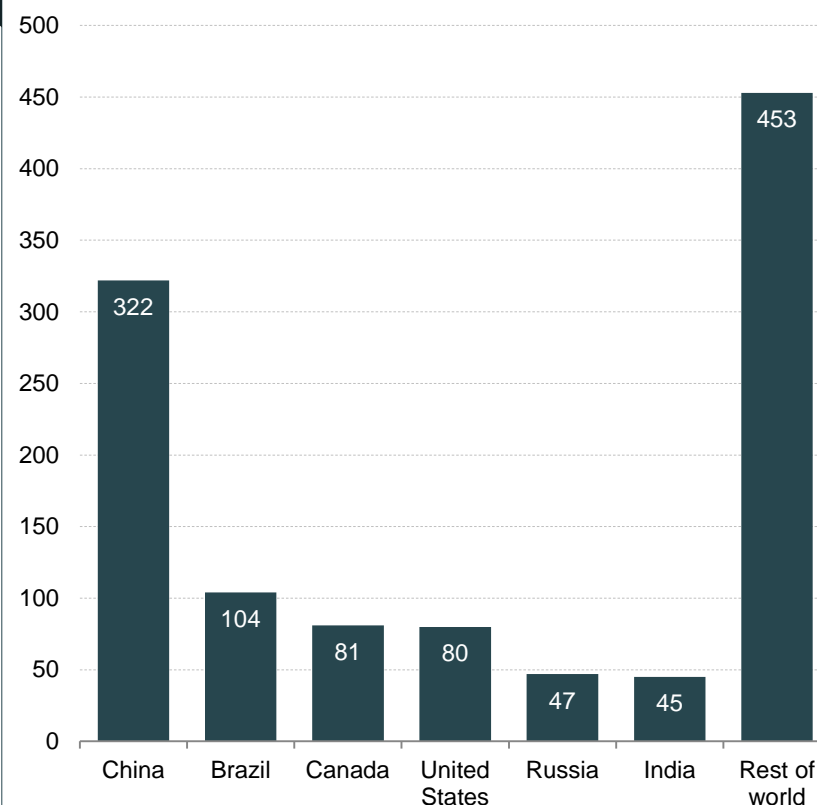
Note: GW - Gigawatt , P – Provisional

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. It accounts for 47.44 per cent (37.75 GW)\* of the total installed renewable capacity (87.38 GW)\*. There are plans to double wind power generation capacity to 60 GW by 2022.
- Ministry of New and Renewable Energy commissioned India's first inter state transmission system (ISTS) auction with wind power capacity of 126 MW in August 2018.
- Solar Power is the second largest source of renewable energy. It accounts for 34.03 per cent (34.91 GW)\* of total the renewal energy installed capacity. The Government has set a target of achieving 100 GW by 2022.
- Ministry of Power aims to achieve 225 GW of installed renewable energy capacity by 2022.
- Government plans to establish renewable energy capacity of 500 GW by 2030.
- Around 15 GW of wind-solar hybrid capacity is expected to be installed between 2020-2025.

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 May 2020, SEIC – Solar Energy Corporation of India

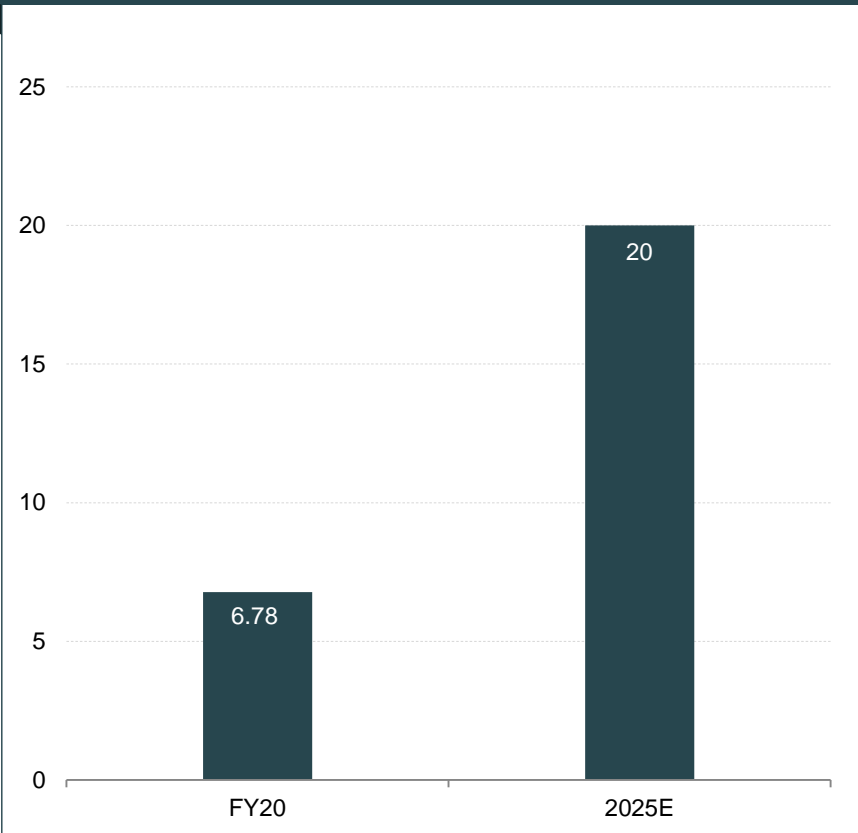
**Source:** Renewables 2019 Global Status Report (REN21), CEA



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

- India has a net installed capacity of 6.78 GW as of May 2020. It has been using nuclear fuels across 20 reactors, and of these, 18 are Pressurised Heavy Water Reactors (PHWR) and 2 are Boiling Water Reactors (BWR).
- 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.

Nuclear energy installed capacity in India (GW)



*Note: GW – Gigawatt, E – Estimates*

*Source: Ministry of New and Renewable Energy, Business Monitor International, CEA*

# KEY 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](mailto:cvjvarma@gmail.com), [cvjv1933@yahoo.com](mailto:cvjv1933@yahoo.com)  
Web site: [www.indiapower.org](http://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  
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# 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
- M&A: 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)

Year INR	INR Equivalent of one US\$
2004-05	44.95
2005-06	44.28
2006-07	45.29
2007-08	40.24
2008-09	45.91
2009-10	47.42
2010-11	45.58
2011-12	47.95
2012-13	54.45
2013-14	60.50
2014-15	61.15
2015-16	65.46
2016-17	67.09
2017-18	64.45
2018-19	69.89
2019-20	70.49

## Exchange Rates (Calendar Year)

Year	INR Equivalent of one US\$
2005	44.11
2006	45.33
2007	41.29
2008	43.42
2009	48.35
2010	45.74
2011	46.67
2012	53.49
2013	58.63
2014	61.03
2015	64.15
2016	67.21
2017	65.12
2018	68.36
2019	69.89

Source: Reserve Bank of India, Average for the year

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