

POWER



January 2021

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Table of Contents

Executive Summary	3
Advantage India	4
Market Overview	6
Recent Trends and Strategies	15
Growth Drivers	17
Opportunities	26
Key Industry Contacts	31
Appendix	33

2. ELECTRIFICATION ACHIEVEMENTS

- India has been on a path to achieve 100% 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% villages across the country stands electrified as of April 2018.

1. THIRD-LARGEST PRODUCER AND SECOND-LARGEST CONSUMER GLOBALLY

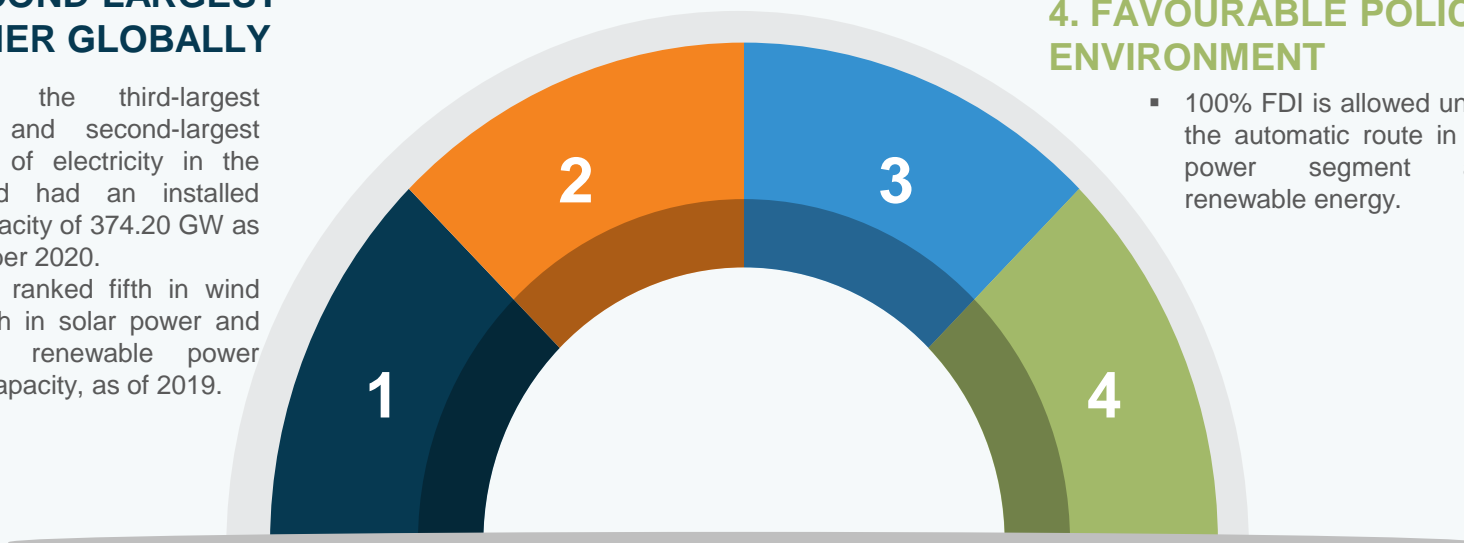
- India is the third-largest producer and second-largest consumer of electricity in the world and had an installed power capacity of 374.20 GW as of November 2020.
- India was ranked fifth in wind power, fifth in solar power and fourth in renewable power installed capacity, as of 2019.

3. ROBUST GROWTH IN RENEWABLES

- As of November, 2020, India had an installed renewable energy capacity of 90.40 GW.
- Solar energy is estimated to contribute 114 GW, followed by 67 GW from wind power and 15 GW from biomass and hydropower by 2022. The target for renewable energy has increased to 227 GW by 2022.
- India is the only country among the G20 nations that is on track to achieve the targets under the Paris Agreement.

4. FAVOURABLE POLICY ENVIRONMENT

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





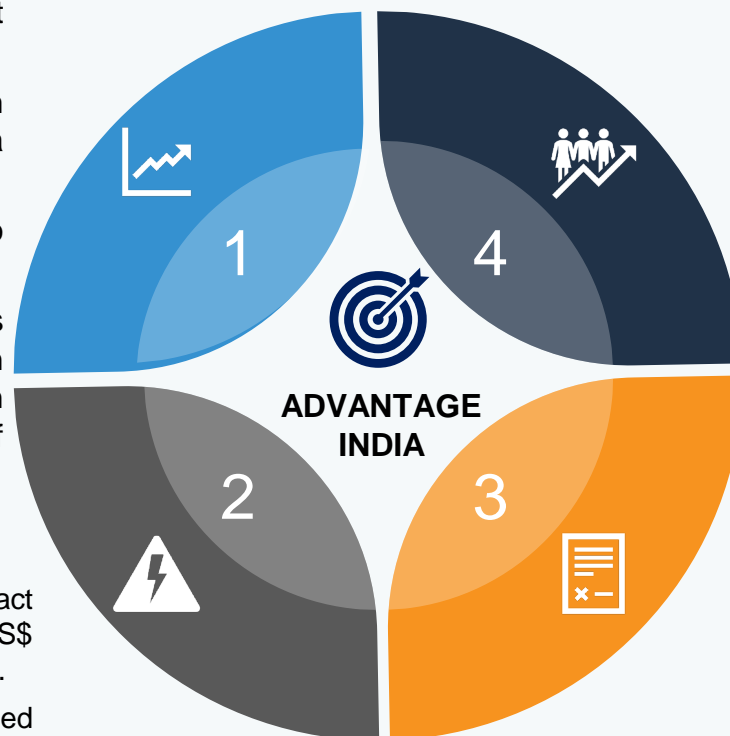
Advantage India

1. Growing demand

- ▶ 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 the list of countries to make significant investments in clean energy by allotting US\$ 90 billion between 2010 and the second half of 2019.

2. 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 inflows in the power sector reached US\$ 15.23 billion between April 2000 and September 2020.
- ▶ As per the Economic Survey 2019-20, energy sector projects accounted for the highest share (24%) in the Rs. 111 lakh crore (US\$ 1.4 trillion) National Infrastructure Pipeline between 2019-20 and 2024-25.



4. Opportunities

- ▶ 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.

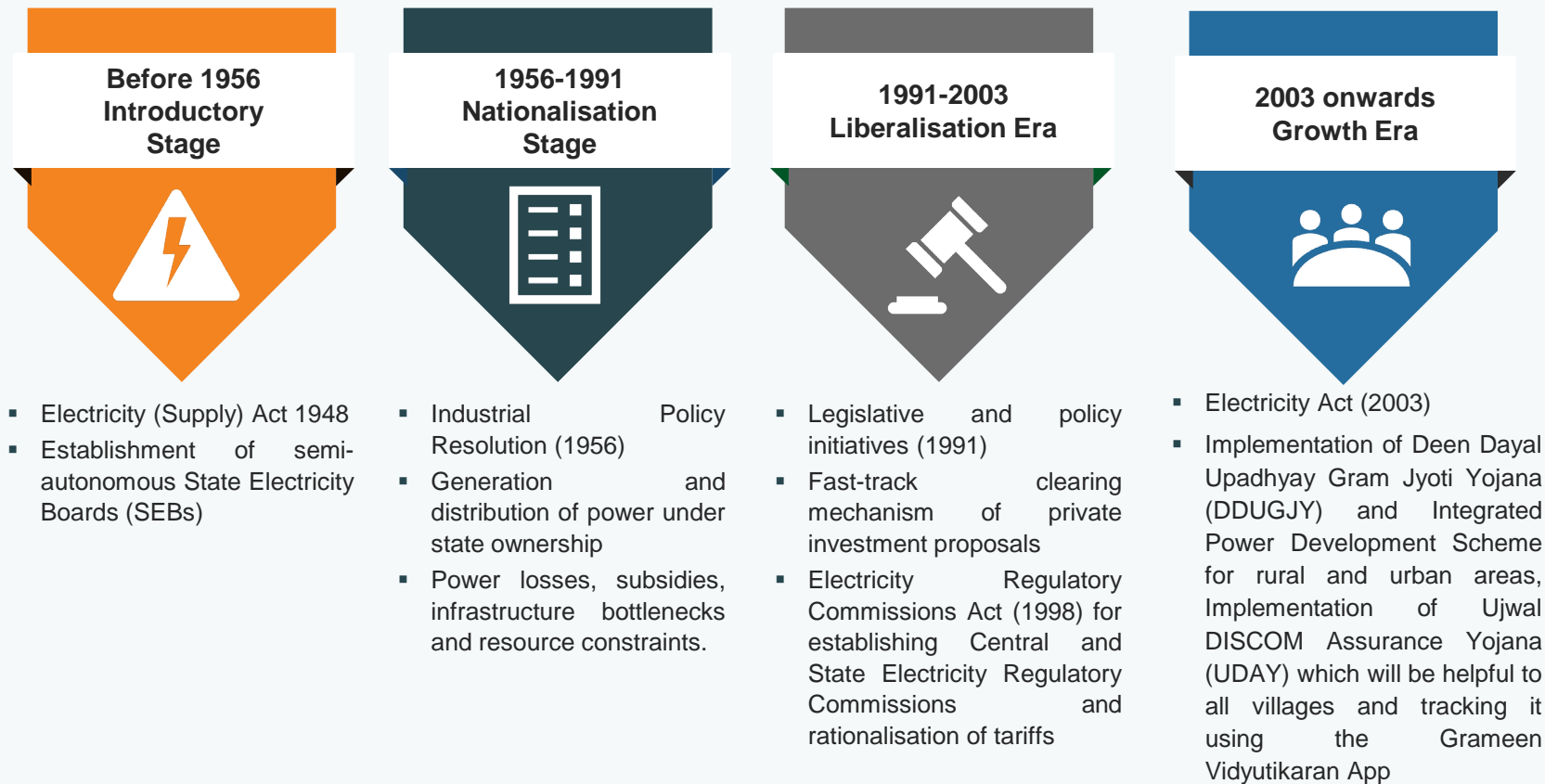
3. Policy support

- ▶ 100% 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).

Source: DPIIT, ICE 360 Survey 2016, Blue Star Investor Presentation August 2018, *BARC India Universe Update July 2018, Bombay Stock Exchange



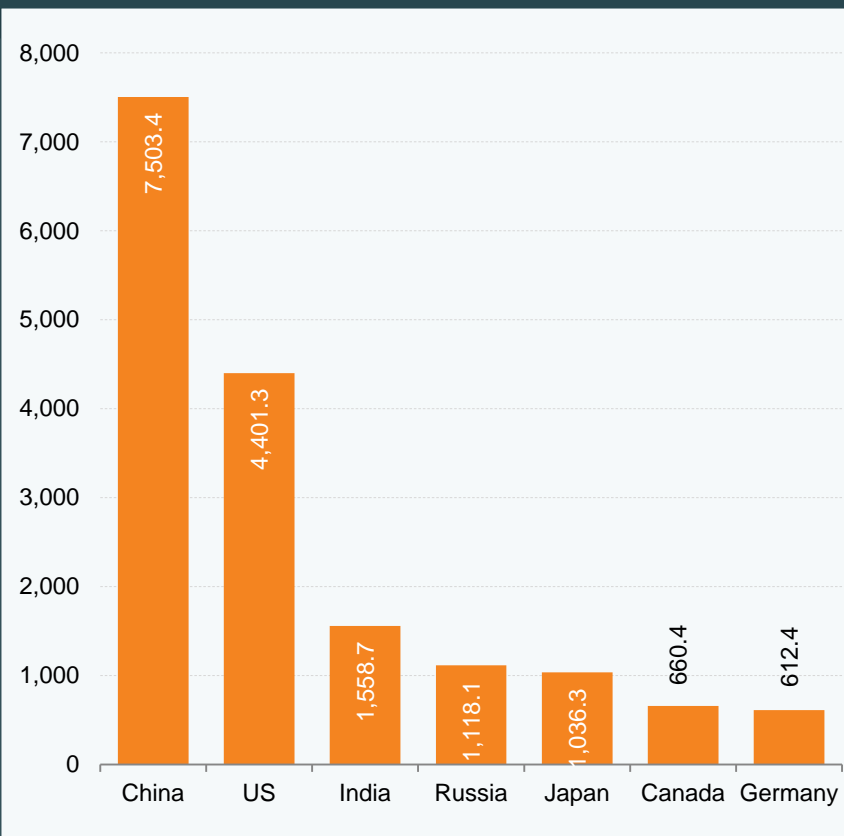
Evolution of the Indian power sector



India among top four power generating nations

- With a generation of 1,558.7 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 the S&P Global Platts Top 250 Global Energy Rankings 2019, Reliance Industries Ltd. and Indian Oil Corp. Ltd. ranked 19th and 25th, respectively.

World's leading electricity generation in 2019 (TWh)

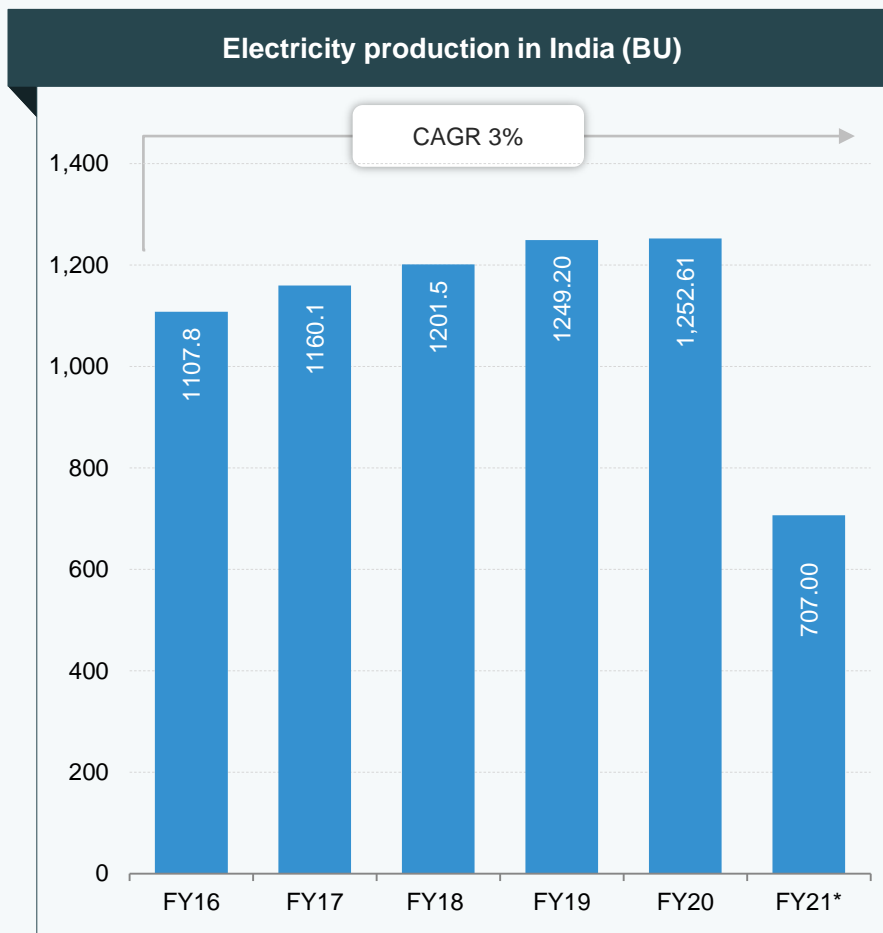


Note: TWh - Terawatt Hours

Source: BP Statistical Review World Energy 2020

Power generation has grown rapidly over the years

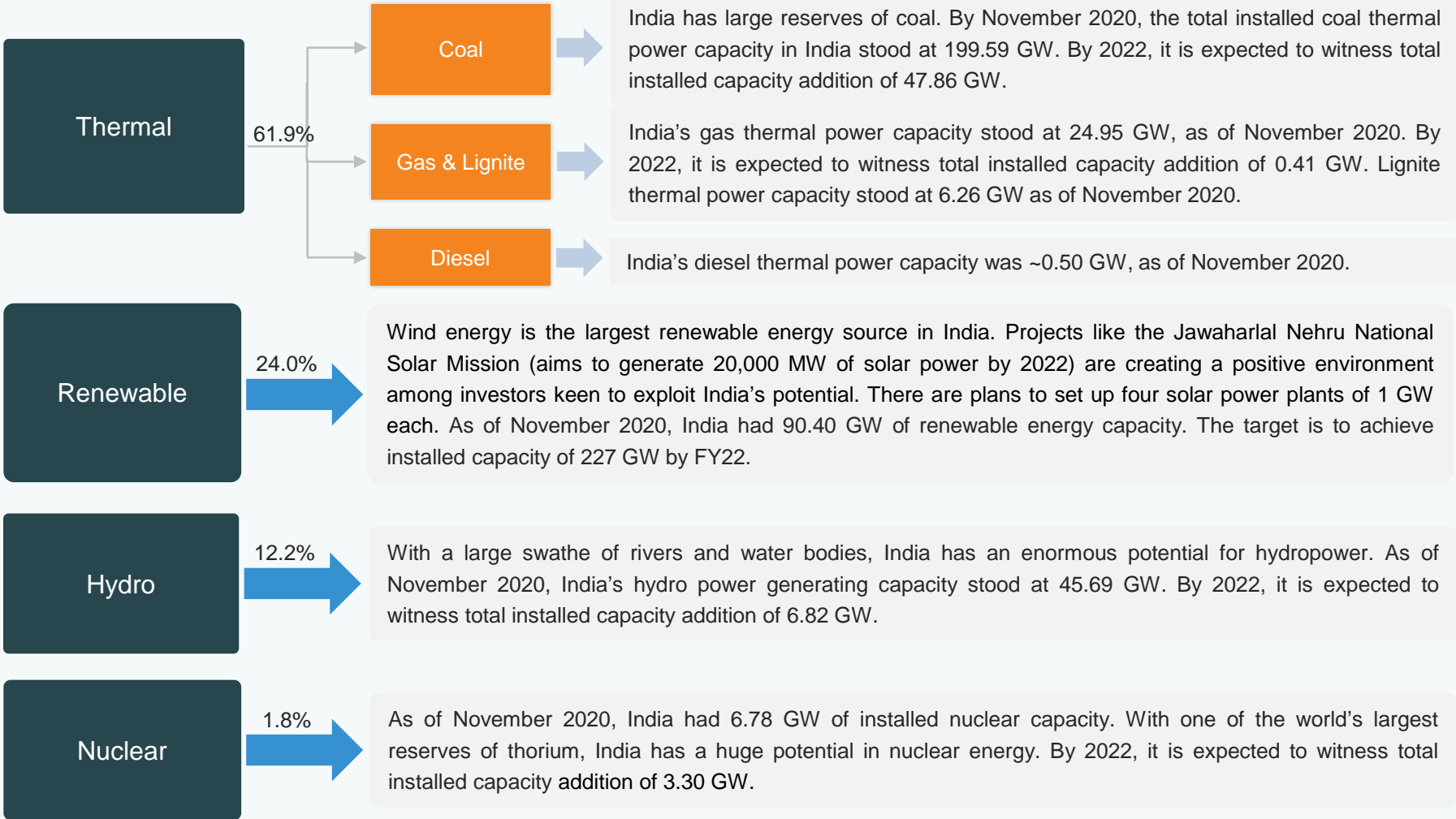
- With electricity production of 1,252.61 BU in India in FY20, the country witnessed growth of around 0.26% over the previous fiscal year.
- During FY16-FY20, electricity production in India grew at a CAGR of 3%.
- All un-electrified inhabited census villages were electrified by April 28, 2018, ahead of the deadline of May 1, 2018.
- Under the Union Budget 2020-21, the government has allocated Rs. 22,000 crore (US\$ 3.11 billion) for the power and renewable energy sector.
- In the first half of November 2020, India's power consumption increased 7.8% to 50.15 billion units (BU), indicating an improvement in economic activity, according to government data.



Notes: BU - Billion Unit, *- Until October 2020

Source: BP Statistical Review, Ministry of Power, News Article

Sources of power with shares in total installed capacity... (1/2)

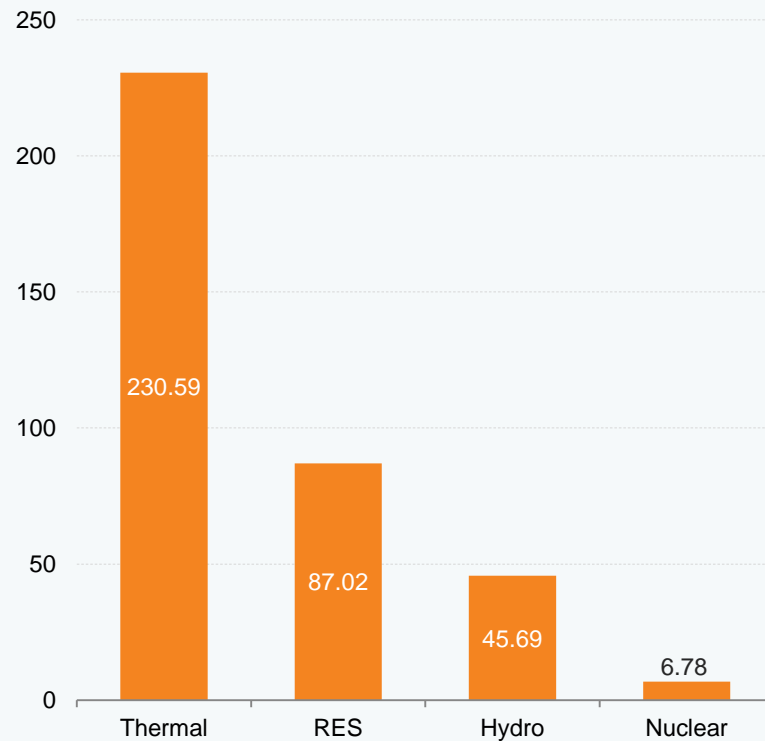


Notes: GW - Gigawatt
Source: Ministry of Coal, NHPC, CEA, Corporate Catalyst India, Indian Power Sector, Ministry of Power

Sources of power with shares in total installed capacity... (2/2)

- In FY20, the total thermal installed capacity in the country stood at 230.59 GW. Renewable, hydro and nuclear energy installed capacity totalled 87.02 GW, 45.69 GW and 6.78 GW, respectively.
- By 2022, India has a target to achieve total production of 227 GW from renewable resources, of which 114 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%.

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

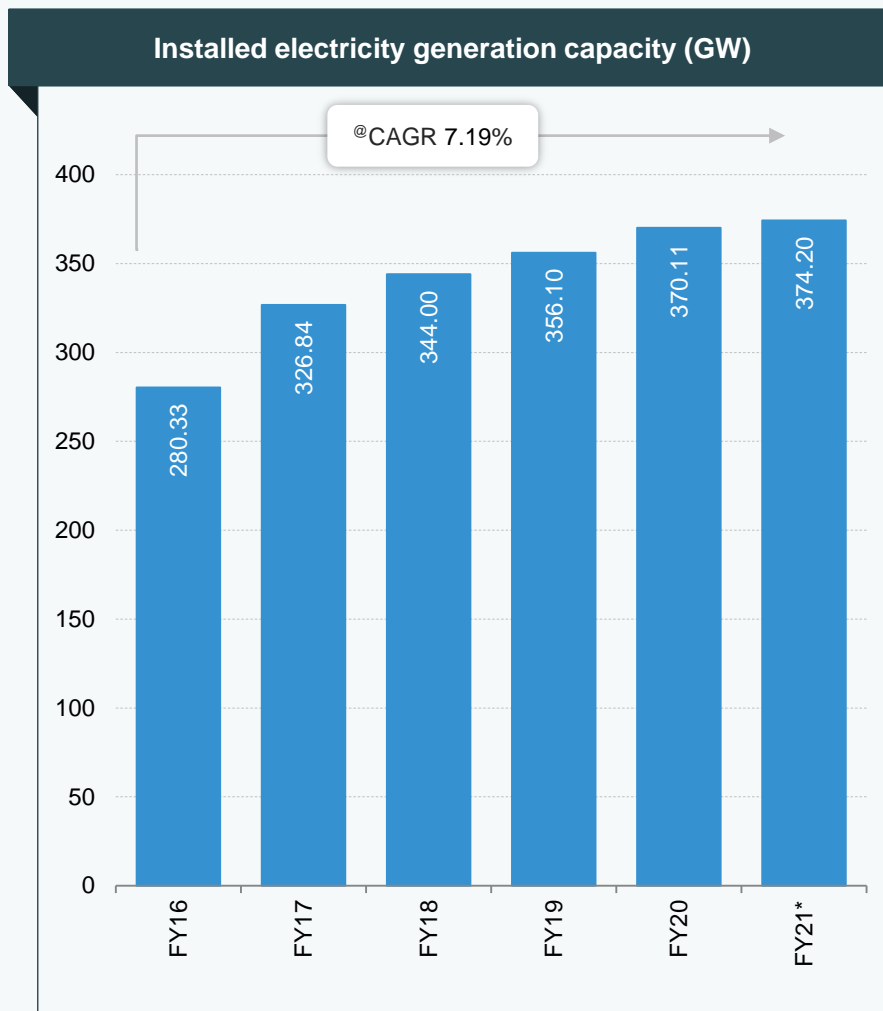


Notes: GW - Gigawatt,

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% in FY16-FY20.
- Energy generation from thermal sources stood at 562.959[^] billion units (BU) between April and October 2020.
- Coal-based power installed capacity in India, which currently stands at 199.5 GW, is expected to reach 330-441 GW by 2040. It is expected to grow at a CAGR of 6.5% during FY18-FY23.



*Note: GW - Gigawatt, [^]-Tentative, @ CAGR till FY20, *- Until November 2020*

Source: CEA (Central Electricity Authority)

Major players in the power sector ... (1/2)

1

- NTPC is the largest power producer in India and is also the sixth-largest thermal power producer in the world.
- With a total installed capacity of 62.9 GW, NTPC has 71 power stations comprising 24 coal, seven combined cycle gas/liquid fuel, one hydro, 14 renewables, along with 25 subsidiary & JV power stations. The group has over 20 GW of capacity under construction.
- 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.
- NTPC Ltd. achieved 100% plant load factor (PLF) on May 9, 2020 in three of its thermal power stations.
- In June 2020, Republic of Mali awarded Project Management Consultancy contract to NTPC for development of 500 MW solar park.
- It achieved highest daily gross generation of 977.07 million unit (MU) on July 28, 2020.



2

- 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% 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.

TATA POWER

3

- Power Finance Corporation Limited (PFC) is an NBFC, engaged in financing and development activities within the Indian power sector.
- Major products and services include project term loans, lease financing, direct discounting of bills, short-term loans and consultancy services.



4

- 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.
- 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).

adani | Power

Source: Company website, News articles, Industry sources

Major players in the power sector ... (2/2)

5

- 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 1,125 MW of power.
- These are Budge Budge Generating Station (750 MW), Southern Generating Station (135 MW) and Titagarh Generating Station (240 MW).



6

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



7

- Damodar Valley Corporation is engaged in power generation, distribution and transmission of electric power, irrigation and flood control.



8

- SJVN Limited is the second largest hydro power company in India.
- The company plans to diversify into wind power projects soon.
- 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).
- In December 2020, SJVN Ltd. has been awarded three hydroelectric power projects totaling 501 MW by the Himachal Pradesh government.



9

- 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.
- As of November 2020, the company managed 168,140 km of transmission lines and 252 substations.



Source: Company website, News articles, Industry sources

Recent Trends and Strategies



Strategies adopted

1 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.

2 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.

3 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.

6 AatmaNirbhar Bharat

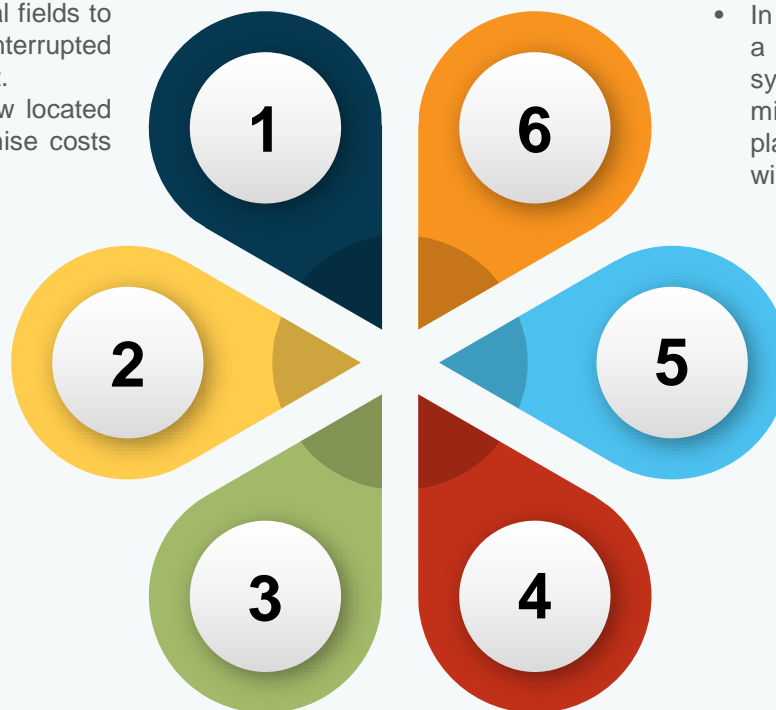
- In November 2020, GE Power India received a letter of award to supply NOx reduction system worth Rs. 12.78 crore (US\$ 1.73 million) to NTPC's Barauni thermal power plant. All the key components for the project will be manufactured in India.

5 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.

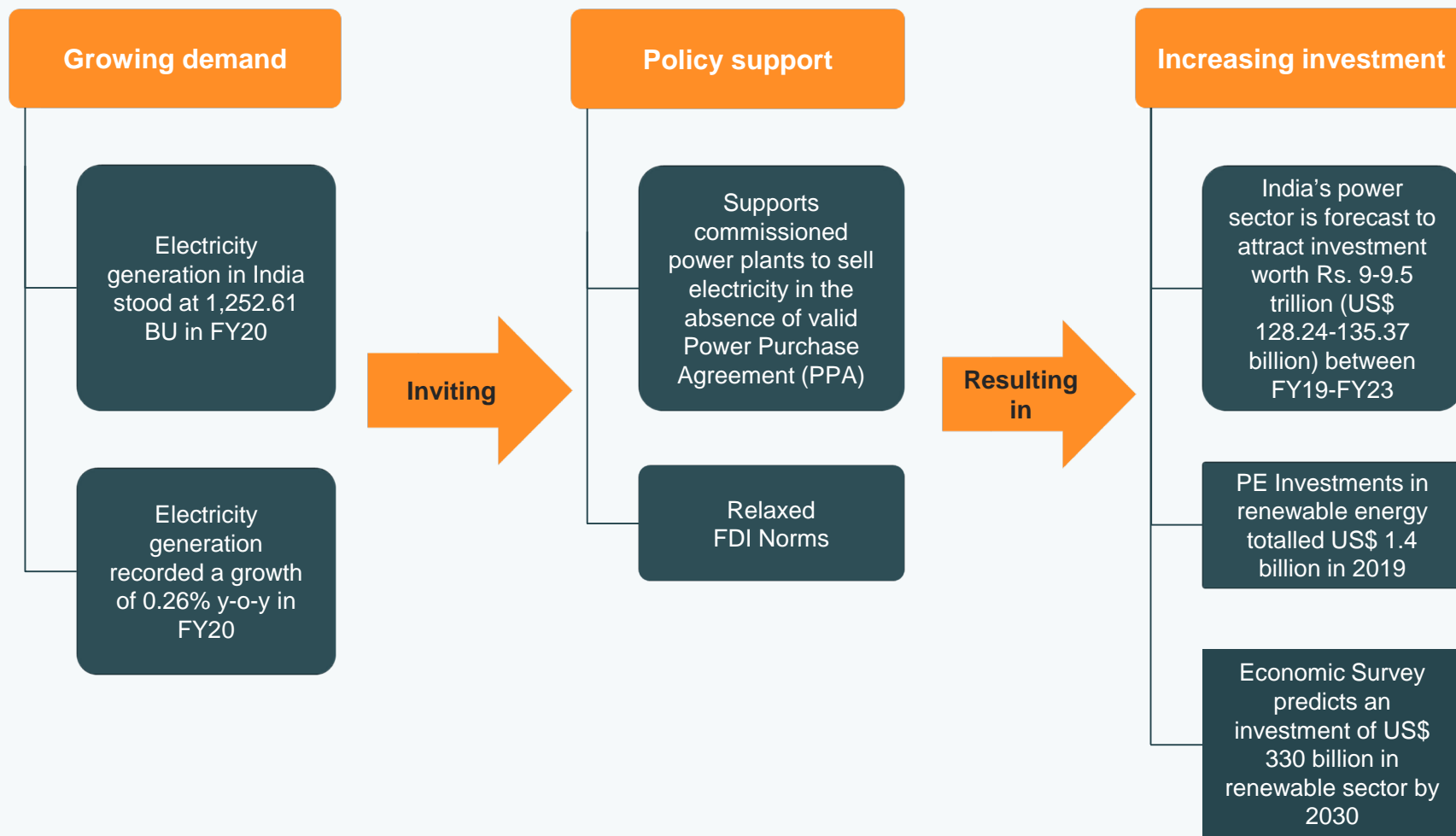
4 Additional revenue streams

- Most of the companies are now looking to sell their carbon credits to generate additional revenue by employing supercritical technology.





Growth drivers in power sector of India

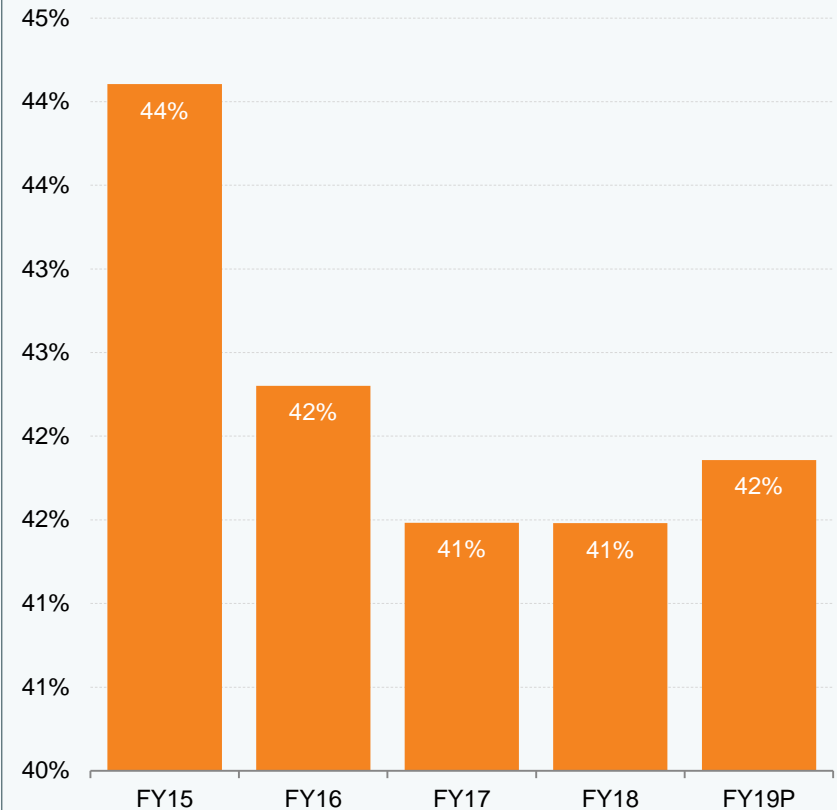


Note: FDI - Foreign Direct Investment
Source: Central Electricity Authority of India

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.
- The industrial sector accounted for 42% of the total electricity consumption in FY19P.

Share of electricity consumption in industrial sector

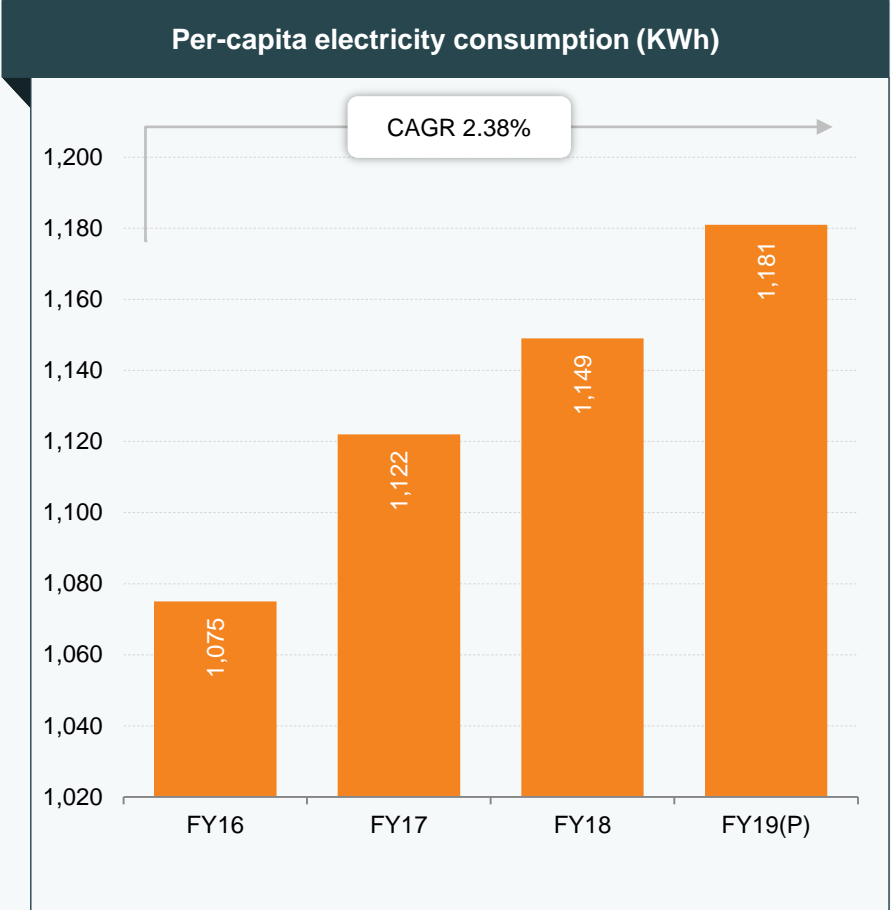


Note: TWh - Terawatt Hours, P - Provisional

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% during FY16-FY19, reaching 1,181 KWh in FY19P.
- India aims to reduce emissions intensity of its gross domestic product (GDP) by 33% to 35% by 2030 from 2005 levels and increase share of non-fossil fuels to 40% of the total electricity generation capacity.



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

Source: CEA, KPMG

1

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.

2

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

3

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.

4

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% 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.

Notes: R-APDRP - Restructured Accelerated Power Development and Reform Programme

Source: Ministry of Power, Asian Development Bank, KPMG, News articles

5

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.

6

Loan

- In December 2020, the Asian Development Bank (ADB) and Government of India signed a US\$ 132.8 million loan to strengthen and modernise the distribution network and improve quality of power supplied to households, industries and businesses in Meghalaya.

7

Energy Conservation Campaign

- Replacing nationwide streetlights with LED lights. Plan to save 10% energy that would light up 11 crore lives. Replacing 1 crore bulbs in Delhi within one year.

8

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).

9

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 losses to 15% by FY19.
- The Government of India 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.

10

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.

11

Smart Meter

- Under the Union Budget 2020-21, the government has set a target of installing smart electricity meters in all households across the country by 2023

12

India Energy Modelling Forum(IEMF)

- In October 2020, the government announced a plan to set up an inter-ministerial committee under NITI Aayog to forefront research and study on energy modelling. This, along with a steering committee, will serve the India Energy Modelling Forum (IEMF) jointly launched by NITI Aayog and the United States Agency for International Development (USAID)

13

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.

14

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.

15

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.

16

Green Energy Corridor Project

- Under the 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.

17

Tariff

- Feed-in Tariff scheme is used for promoting generation of electricity from renewable energy sources. The 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.
- Solar tariffs in India have reduced from ~Rs. 7.36/kWh (US 10 cents/kWh) in FY15 to Rs. 2.63/kWh (US 3.57 cents/kWh) in FY20.

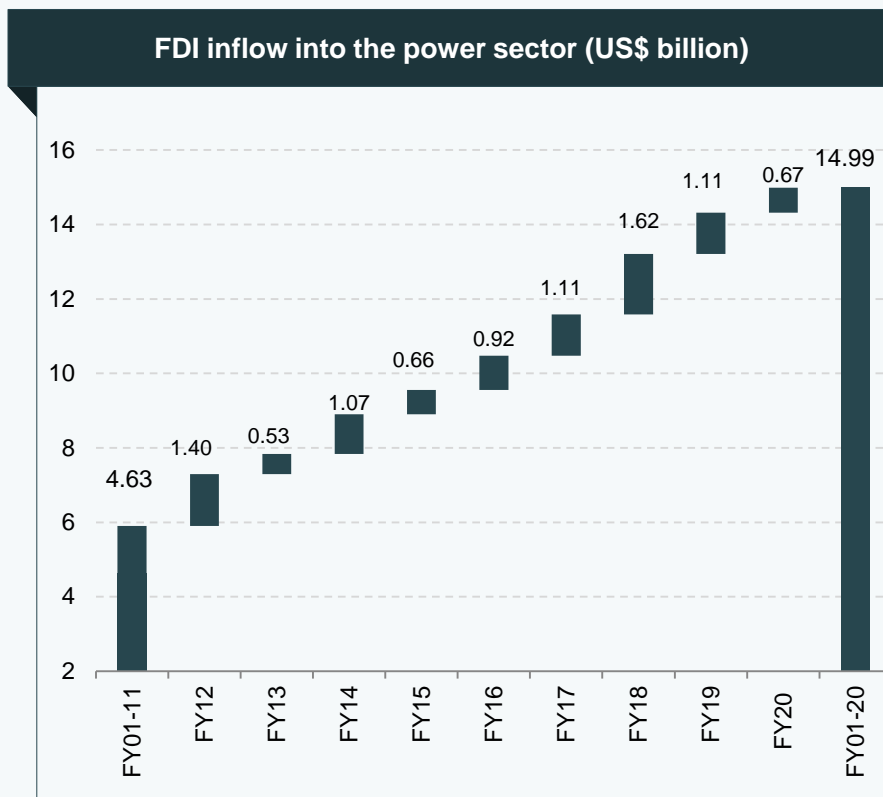
18

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.

Increasing investments: FDI inflow and key deals... (1/2)

- Power is one of the key sectors attracting FDI inflow into India.
- From April 2000 to September 2020, India recorded FDI inflow worth US\$ 9.68 billion in the non-conventional energy sector. New and renewable energy sector witnessed maximum power generation capacity addition, since 2000.
- Power sector accounted for 3% of the total FDI inflow until September 2020.
- Cumulative FDI inflow in the power sector stood at US\$ 15.23 billion between April 2000 and September 2020.



Source: DPIIT

Increasing investments: FDI inflow and key deals... (2/2)

Important deals

Acquirer	Target	Date	Value (US\$ million)
Ayana Renewable	ReNew Power (Wind Farm in Karnataka)	Nov 2020	219
Global Infrastructure Partners	RattanIndia	Sep 2020	232
Actis	Acme Solar	Aug 2020	312
Adani Power Limited	Odisha Power Generation Corporation (OPGC)	Jul 2020	135
TOTAL Gas & Power Business Services	Adani Green Energy Limited (AGEL)	Apr 2020	530.40
IndiGrid	Sterlite Power	Jan 2020	145.94
Bharti Airtel Limited	AMPSolar Evolution	Oct 2019	1.20 (26%)
Adani Transmission	Bikaner-Khetri Transmission Limited (BKTL)	Sept 2019	-
SunEdison Infrastructure	Megamic Electronics	Jul 2019	10 million
Power Finance Corporation (PFC) Ltd.	Rural Electrification Corporation (REC) Ltd.	Dec 2018	52.63% of holding
Renascent Power Ventures Pte Ltd.	Prayagraj Power Generation Company Ltd (PPGCL)	Nov 2018	854.94 (75.01% stake)
Kohlberg Kravis Roberts & Co (KKR)	Ramky Enviro Engineers Limited	Aug 2018	530
ReNew Power	Ostro Energy	Apr 2018	1,668.21
Canada Pension Plan Investment Board (CPPIB)	ReNEW Power Ventures Ltd.	Jan 2018	144 (6.3% stake)
ReNew Power	Wind power assets of KC Thapar Group	21 Nov 2017	155.55
Adani Transmission Limited	Reliance Infrastructure Limited (Mumbai)	Oct 2017	2,932

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

Source: Thomson One Banker, Industry News, VC Circle

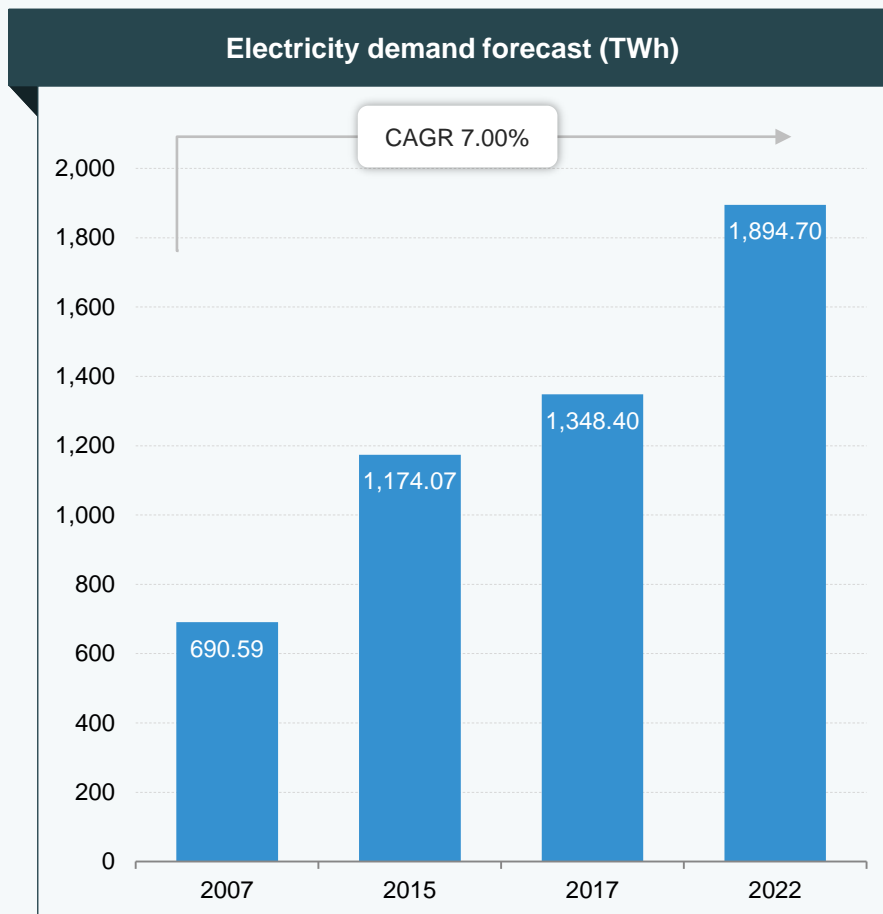
Opportunities



OPPORTUNITIES

Power generation: overall fundamentals will remain strong

- In the current decade (2020-2029), the Indian electricity sector is likely to witness a major transformation with respect to demand growth, energy mix and market operations.
- 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%.
- 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% 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%.
- 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% 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 witnessing a deficit in meeting the peak demand over the last two fiscal years.
- The peak power demand in the country stood at 170.83 GW in FY20.



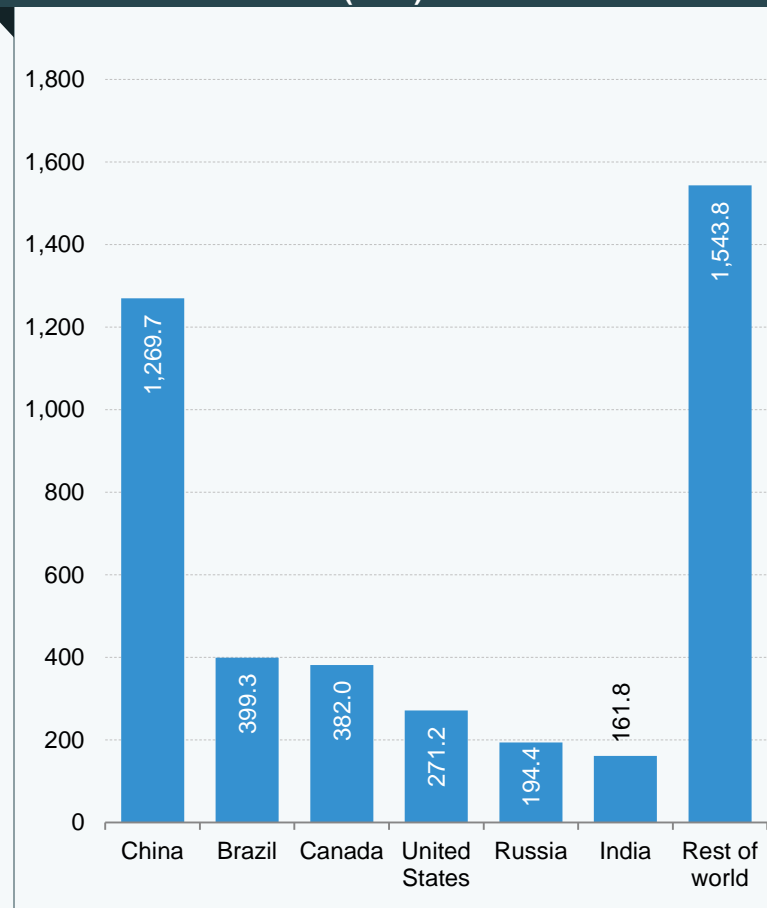
Note: GW - Gigawatt , P – Provisional, *- Until October 2020

Source: CEA

Renewable energy is fast emerging as a major source of power

- As per the Central Electricity Authority (CEA) estimates, by 2029-30 share of renewable energy generation would increase from 18% to 44%, while that of thermal is expected to reduce from 78% to 52%.
- Wind energy is the largest source of renewable energy in India. It accounts for 42.50% (38.43 GW)* of the total installed renewable capacity (90.39 GW)*. There are plans to double wind power generation capacity to 60 GW by 2022.
- Solar Power is the second-largest source of renewable energy. It accounts for 40.83% (36.91 GW)* of total installed renewable capacity (90.39 GW)*. The Government has set a target of achieving 100 GW by 2022.
- The Ministry of Power aims to achieve 227 GW of installed renewable energy capacity by 2022.
- Around 15 GW of wind-solar hybrid capacity is expected to be installed between 2020-2025.
- In October 2020, Patel Engineering announced that it has won an order worth Rs. 1,564.42 crore (US\$ 211.15 million) to build 2,000 MW Subansiri Lower Hydro Electric project in Arunachal Pradesh.
- In November 2020, Energy Efficiency Services Limited (EESL), a JV of PSUs under the Ministry of Power and Department of New & Renewable Energy (DNRE), Goa, signed an MoU, to discuss roll-out of India's first Convergence Project in the state.
- In December 2020, the foundation stones of India's largest hybrid renewable energy park having 30 GW capacity was laid in Gujarat at Vighakot village in the district of Kutch. The estimated cost of this project is ~Rs. 1.5 lakh crore (US\$ 20.44 billion).

Hydro power generation capacity at the end of 2019 (TWh)

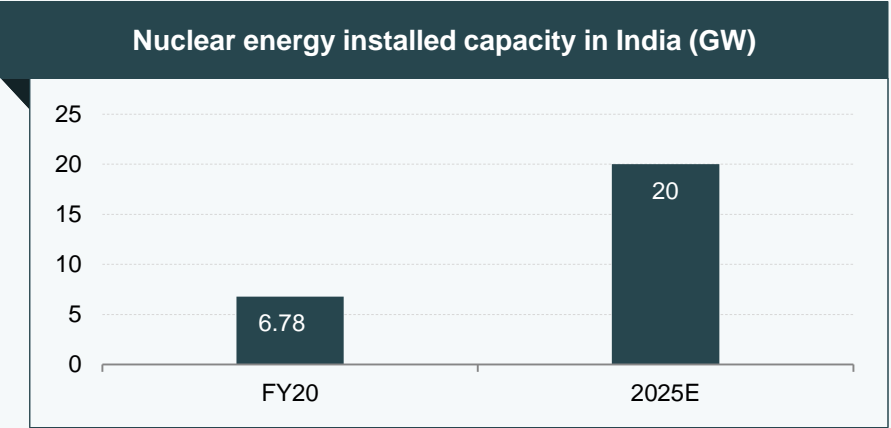


Notes: TWh - Terawatt-hours, Figures mentioned in the graph is as per latest data available, * - as of November 2020, SEIC - Solar Energy Corporation of India

Source: BP Statistical Review World Energy 2020, CEA, News Article

Strong upward momentum in nuclear energy likely in medium to long term

- India has a net installed capacity of 6.78 GW as of October 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.
- On July 23, 2020, NPCIL achieved criticality of a third unit of 700 MWe (Megawatt electric) at its plant in Tapi district based completely on indigenous technology.



Nuclear power plants and reactors under construction in India


Power station	Operator	Capacity (MW)	Expected Operation	Sanctioned Cost (Rs. Crore)
Madras	Bhavini	500	2020	5,677
Kakrapar Unit 3 and 4	NPCIL	1400	2022	11,459*
Gorakhpur	NPCIL	1,400	2025	20,594
Rajasthan Unit 7 and 8	NPCIL	1,400	2022	12,320
Kudankulam Unit 3 and 4	NPCIL	2,000	2025-2026	39,849

Note: GW - Gigawatt, E – Estimates, *- Under revision
Source: Ministry of New and Renewable Energy, Business Monitor International, CEA

Key Industry Contacts



Key industry contacts

	Agency	Contact Information
	Council of Power Utilities	Address: A-2/158, Janakpuri, New Delhi-110058, India Tel: 91 11 25618472, 45652708 Fax: 25611622 E-mail: councilofpowerutilities@gmail.com Website: www.indiapower.org
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	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: www.hpaindia.org
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Glossary

- 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
- Rs.: Indian Rupee
- Wherever applicable, numbers have been rounded off to the nearest whole number

Exchange rates

Exchange Rates (Fiscal Year)

Year	Rs. 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
2020-21	73.51

Exchange Rates (Calendar Year)

Year	Rs. 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
2020	74.18
2021*	73.25

Note: As of January 2021

Source: Reserve Bank of India, Average for the year

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