CREDENCE CAPITAL

(Investment Club of IIM Lucknow)

Power Sector Report – December 2022

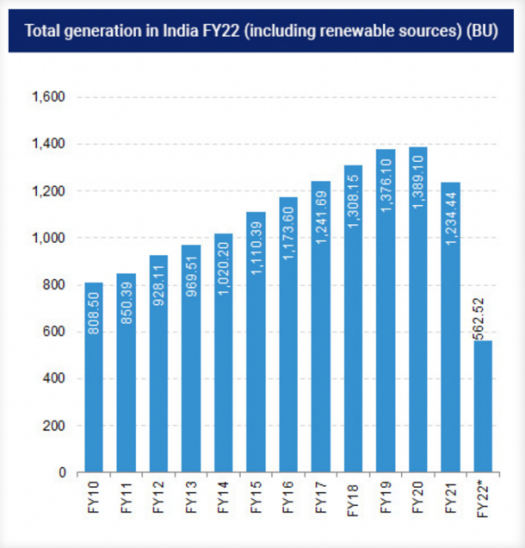
Table of content –

Overview

For sustained economic growth of a country, development of the infrastructure of electricity is a major requirement. Power generation, transmission and distribution forms a crucial sector for the socio-economic development and welfare of nations.

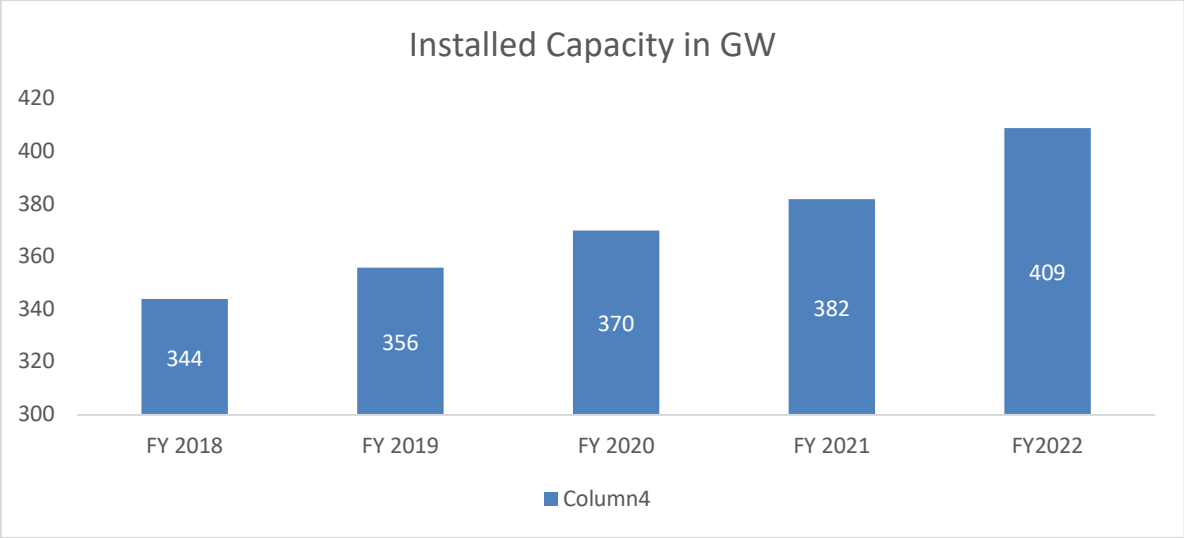
Economic growth at a sustainable rate continues to drive electricity demand of the India. Increased focus on rural electrification, urbanization and industrial growth have been major components of this demand. The Government of India (GoI) has been focussing on providing power to the remote locations which has led to increased capacity addition within the country. The focus on “Power for all” has accelerated the capacity addition. At the same time, the competitive intensity is increasing at both the market and supply sides (fuel, logistics, finances, and manpower).

India’s power sector is one of the most diversified in the world. Sources of power generation range from conventional sources such as coal, lignite, natural gas, oil, hydro and nuclear power to viable non-conventional sources such as wind, solar, and agricultural and domestic waste. India is the third-largest producer and consumer of electricity worldwide, with an installed power capacity of 408.71 GW as of October 31, 2022.



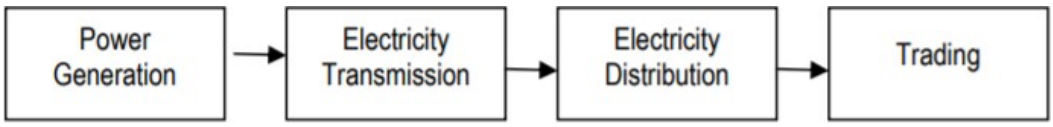
Growing population along with increasing electrification and per-capita usage will provide further impetus. Power consumption is estimated to reach 1,894.7 TWh in 2022. India was ranked fourth in wind power, fifth in solar power and fourth in renewable power installed capacity, as of 2020. India is the only country among the G20 nations that is on track to achieve the targets under the Paris Agreement.

With electricity generation (including renewable sources) of 846.18 BU in India between April-September 2022, the country witnessed a growth of 10.67% YoY. According to data from the Ministry of Power, India's power consumption increased 1.64% YoY in October 2022 to 114.64 BU.



With installed power capacity reaching 409 GW as of Oct 2022, India is now the 3rd largest producer and consumer of electricity in the world. However, the per capita consumption still remains lowerthan most of the countries and there's scope for growth in the sector.

Value Chain of Industry



1. **Generation** – The first stage of the power sector value chain is the generation of power.

Thermal (coal) being the major source of power generation. The generation process involves using mined coal in boiler operations which converts coal to steam which is ultimately used to generate electricity. The generated electricity is transmitted to substations then which sometimes lead to auxiliary loss. Some of the major companies producing thermal power in India are NTPC, Adani Power and JSW Energy.

Plant Load Factor as a percentage of energy sent out by the power plant corresponding to installed capacity in that period. It is measure of the power plant's capacity utilisation. **Formula = Total units generated / Total unit generation of installed capacity**

Although demand for power has grown at only CAGR 5.5% over the last 10 years, installed capacity has grown at a higher CAGR 8.6% over the same period. This has led to reduction in the PLF at which power plants are operating in India. The coal-based plants are specifically impacted due increasing shift to renewable sources of energy. In general, a low PLF hampers the profitability of a plant as it increases the per unit cost of power produced. Factors affecting PLF –

- Quality and cost of coal
- Operational efficiency
- Auxiliary consumption
- Generation requirement and purchase agreements
- Significant capacity addition in the period

In the solar power generation process, solar rays and captures the energy and converts it into electricity. Solar farms require large areas of plain surface with preferable evenness in the ground. States of Karnataka, Telangana, Rajasthan, Andhra Pradesh and Gujarat have the major solar farms in India. Some of the largest companies producing solar power in India are Tata Solar and ReNew Power.

In the wind power generation process, wind is used to provide the mechanical power through the wind blades to rotate the wind turbines and the generators to turn the energy into electricity. Locations situated at a height usually are preferred for setting up of wind mills. Tamil Nadu, Gujarat and Maharashtra are the major states producing wind power in India. Suzlon Energy is one of the biggest wind power generators in the country.

In the hydro power generation process, fast flowing water is used to move turbine, harnessing the energy to generate electricity. India has the fifth largest hydropower capacity in the world. The biggest hydroelectric projects in India are located in Uttarakhand, Maharashtra and Andhra Pradesh. NHPC is one of the largest hydropower generating companies in India

2. **Transmission –** Transmission is the process of delivering generated electricity - usually over long distances to the distribution grid located in populated areas. It facilitates the transmission from the power generation source to the electricity consumption areas. Transformers convert the low voltage electricity into high voltage for efficient transportation and the transmission lines carry them over long distances. India has a connection of transmission lines known as the Grid. About 50% of the power transmitted across the country is through the Power Grid Corporation.

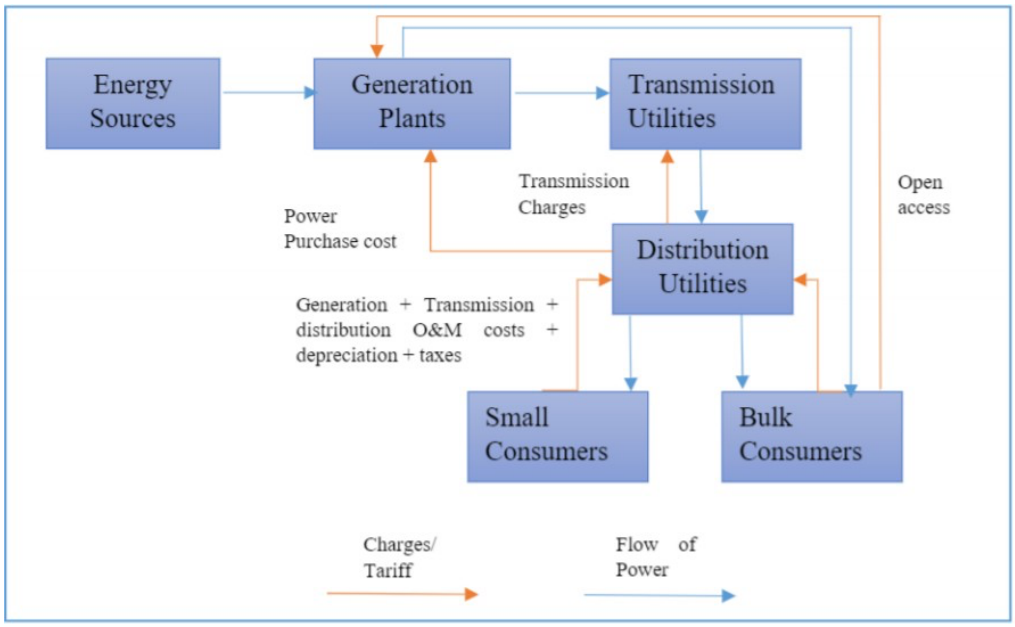
3. **Distribution –** The final step in the value chain, it forms the retail distribution arm of the electricity to homes, offices and factory usage. It involves transmission of electricity from the sub-stations to end customers. While the distribution segment is majorly carried out by the state-run distribution companies (discoms), there has been an increasing participation of private players with presence in Ahmedabad, Kolkata, Delhi and Mumbai.

4. **Power Trading –** Apart from being a utility, power can also be a commodity that is sold in the open market. The participants comprise of state electricity boards, power producers, traders and

open access consumers. Power exchanges were set up in 2008 in India.

There are currently 2 power exchanges operating in India – the Indian Energy Exchange Limited (IEX) and Power Exchange of India Limited. The Indian Energy Exchange Limited (IEX) is the first and largest energy exchange in India providing a nationwide, automated trading platform for physical delivery of electricity and energy certificates.

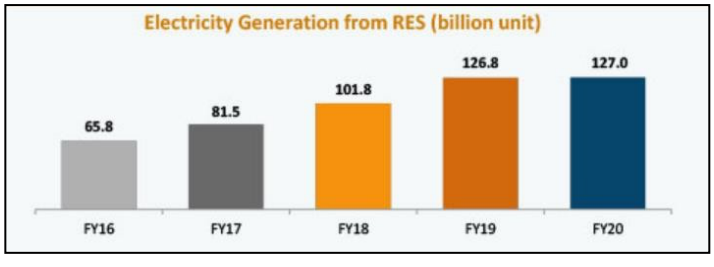
These exchange platform enables efficient price discovery and increases the accessibility and transparency of the power market in India while also enhancing the speed and efficiency of trade execution. Power exchanges allow people to purchase electricity at cheaper rates during peak time demand. They benefit open access consumers belong to various industries such as metal, food processing, textile, cement, ceramic, chemicals, automobiles, information technology industries, institutional, housing and real estate and commercial entities.



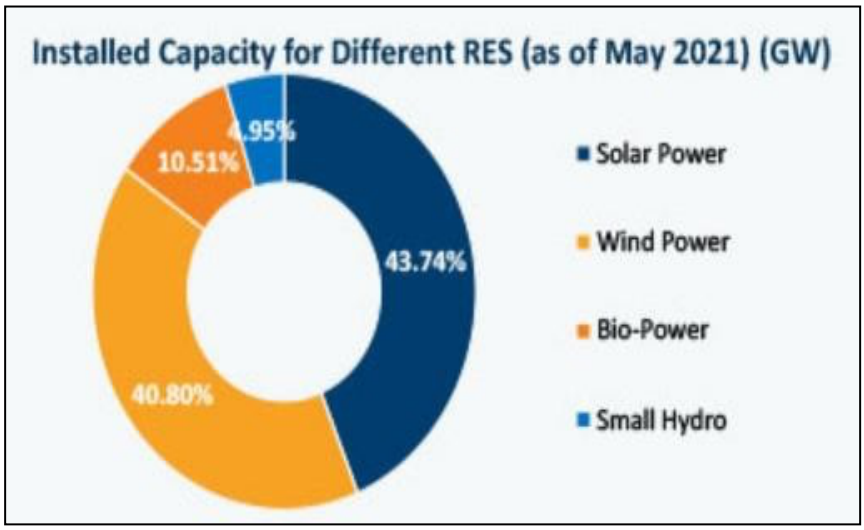
Source: CARE Research

Renewables:

Increasing awareness regarding climate change and several destructive economic events such as oil spills and nuclear disasters have pushed governments across the world to migrate towards renewable sources of energy. As per the British Business Energy, India ranks 3rd on the renewable energy investments and plans. The Indian renewable energy market is very diversified and can be segmented into Hydroelectricity, Wind, Solar, Biomass and Geothermal. The renewable power generation has grown ~17% CAGR between FY16 and FY20, owing the government's commitment to increase clean energy use and undertaking various large-scale projects. In terms of revenue, the CAGR was ~10%.



In June 2021, the PMO announced that the renewable capacity of India increased 250% between 2014 and 2021. As of July 2021, India had ~98 GW of renewable energy capacity, representing 25% of the total capacity. The segmentation is as follows:



While conventional generation continues to constitute the majority, renewable generation share in total generation is increasing every quarter. Renewable sources received the status of 'Must Run' during the 5MFY21 and thus their total contribution increased to 11.8% of the total generation as compared to 10.6% /10.8% in the same period of FY19 /FY20. A major reason behind the 'must run' status was due to the fact that the renewable plant operations can't be shut at will. Further, early and above-normal monsoons have resulted in better hydro generation compared to previous years.

Green certificates are tradable commodities that certify that certain amount of electricity has been generated using renewable energy sources. These certificates do not impact the generation of electricity but only distribution.

Major companies:

- **Tata Solar** is the largest integrated solar power player in the country. It has already installed more than 375MW of rooftop solar projects and continues to expand further.
- **Adani Green** manages both wind and solar projects with an overall capacity of more than 5000MW. In May 2021, it acquired SB Energy Holdings solidifying its position in the market.
- **Suzlon Energy** has the largest installed capacity in wind energy in India with a capacity of 846MW. Its value chain spans across the life of wind energy project – from manufacturing wind turbine generators to providing allied services

Future Prospects:

In 2025, the Indian renewable energy market is forecast to have a value of $49.6 billion, an increase of 77.8% since 2020. The compound annual growth rate of the market in the period 2020–25 is predicted to be 12.2%.

Increasing investments in this segment strengthens its future prospects. The non-conventional energy segment received FDI inflow of US$10 billion between April 2000 and March 2021. By 2028, the investment is expected to be at US$500bn. The central government's prerogative right now is also to

build the capacity through the PLI scheme. The government also wants to develop a 'green city' in every state of the country which will be powered by renewable energy. Environment-friendly power through solar rooftop systems, solar parks on the city's outskirts, and electric mobility-enabled public transport systems will be characteristic to these 'green cities'.

Self-generation is also a major trend in the renewable segment as households & businesses adopt methods to generate their own electricity. These methods include rooftop solar or small wind turbines. The costs, however, can take a few years to equate the benefit, post which these options become a better alternative to buying electricity. This is a relatively new trend and does not pose as much of a threat to the utility companies as of now.

Advantage India –

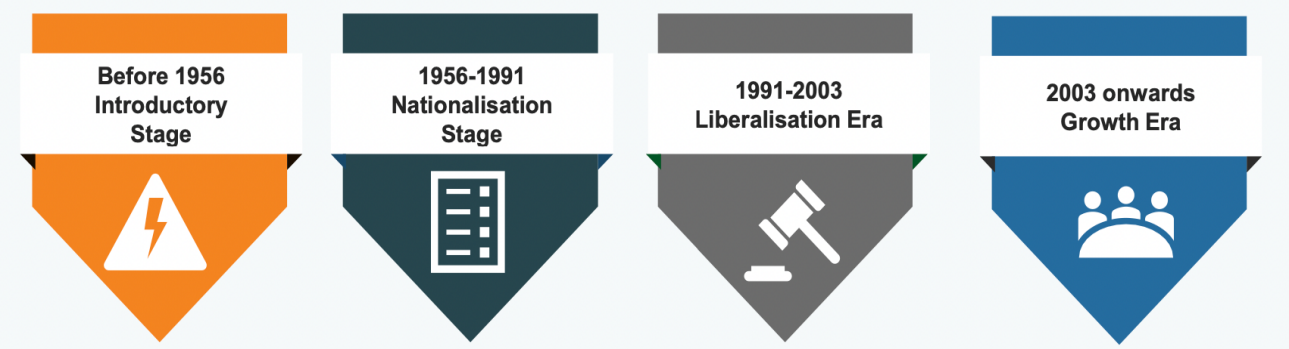
1. **Growing Demand**
   - Expansion in industrial activity to boost demand for electricity
   - Growing population along with increasing electrification and per-capita usage to provide further impetus
   - Power consumption is estimated to reach 1,894.7 TWh in 2022
   - India ranked sixth in the list 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 FY19-23
   - Total FDI inflows in the power sector reached US$ 15.89 billion between April 2000-March 2022
   - As per the National Infrastructure Pipeline 2019-25, energy sector projects accounted for the highest share (24%) out of the total expected capital expenditure of Rs. 111 lakh crore (US$ 1.4 trillion)

3. **Policy Support**
   - 100% FDI allowed in the power sector has boosted FDI inflow in this sector
   - Electrification in the country is increasing with support from schemes like Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY), Ujwal DISCOM Assurance Yojana (UDAY), and Integrated Power Development Scheme (IPDS)

4. **Opportunities**
   - In the Union Budget 2022-23, The government allocated Rs. 19,500 crore (US$ 2.57 billion) for a PLI scheme to boost manufacturing of high-efficiency solar modules
   - In order to meet India's 500 GW renewable energy target and tackle the annual issue of coal demand supply mismatch, the Ministry of Power has identified 81 thermal units which will replace coal with renewable energy generation by 2026

Evolution of Indian Power Sector



Before 1965 introductory stage:

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

1956-1991 Nationalisation stage

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

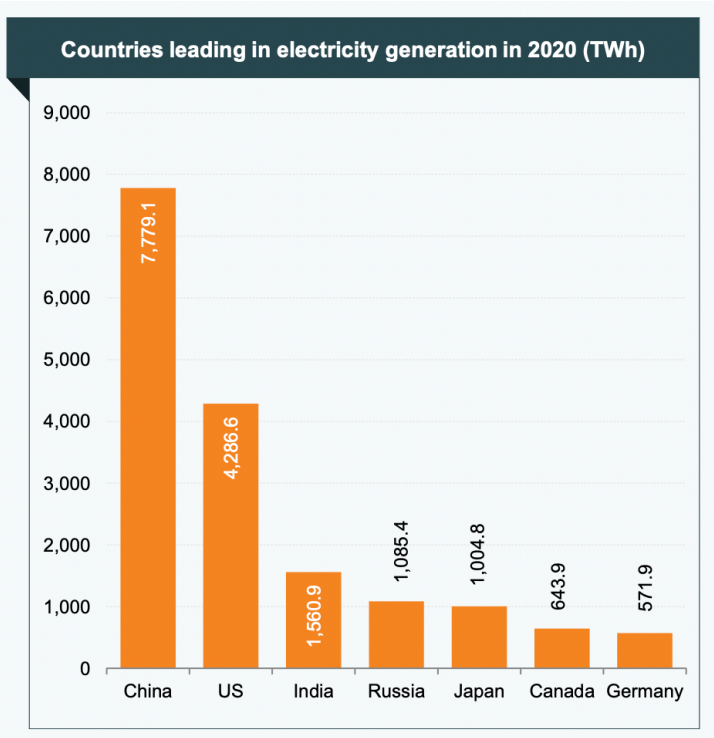
1991-2003 Liberalisation Era

- Legislative and policy initiatives (1991)
- Fast-track clearing mechanism of private investment proposals
- Electricity Regulatory Commissions Act (1998) for establishing central and state electricity regulatory commissions and rationalization of tariffs

2003 onwards growth era

- Electricity Act (2003)
- Implementation of Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) and Integrated Power Development Scheme for rural and urban areas, Implementation of Ujwal DISCOM Assurance Yojana (UDAY) which will be helpful to all villages and tracking it using the Grameen Vidyutikaran App

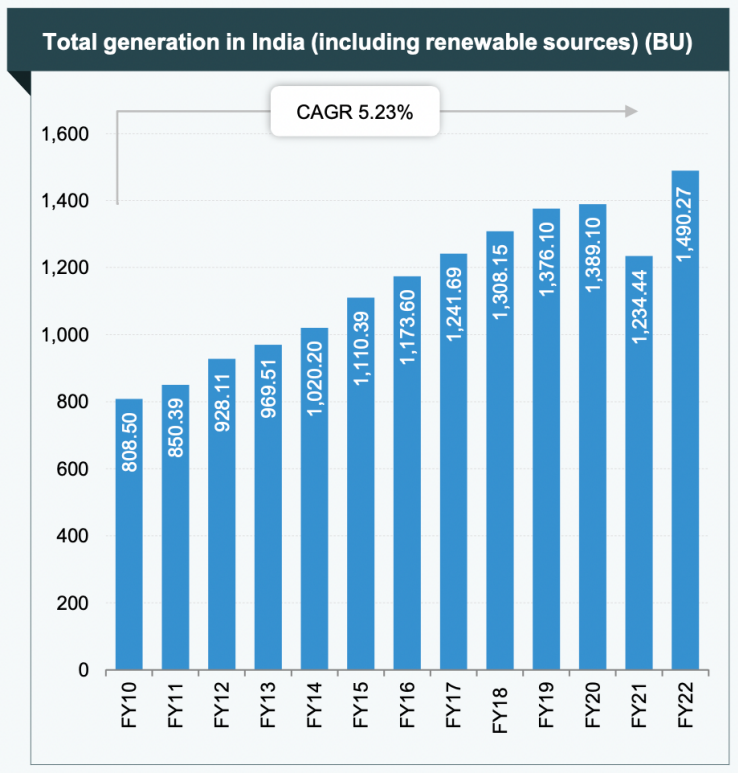
India among top four power generating nations



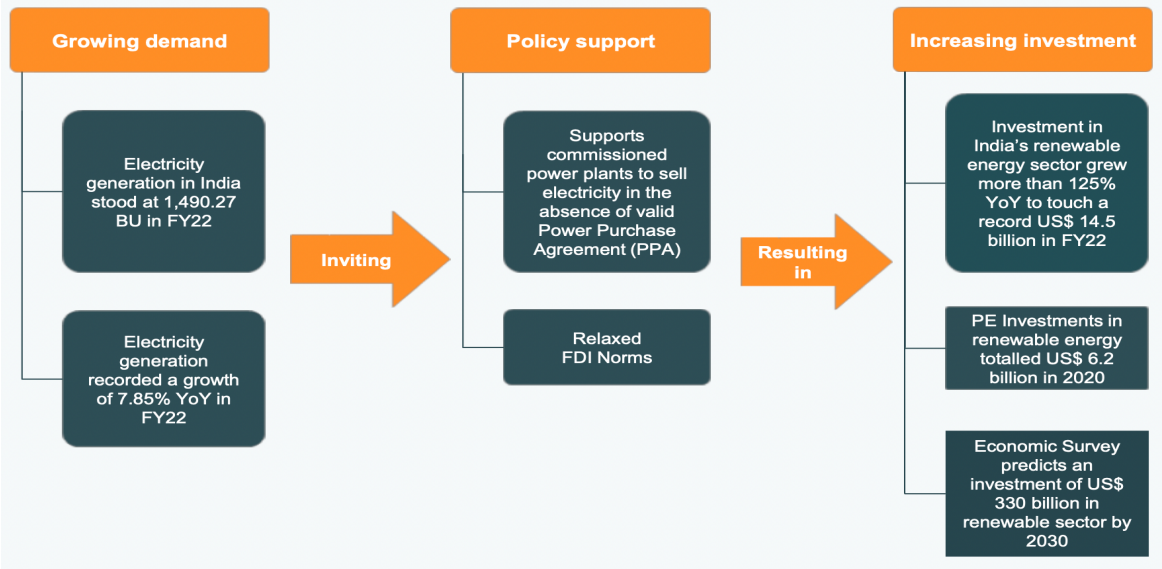
- With a generation capacity of 404.13 GW, India is the third-largest producer and consumer of electricity in the world
- Although power generation has grown more than 100-fold since independence, growth in demand has been even higher due to accelerating economic activity
- India's energy firms have made significant progress in the global energy sector. According to the S&P Global Platts Top 250 Global Energy Rankings 2021, Reliance Industries Ltd. and Indian Oil Corp. Ltd. ranked 3rd and 6th, respectively
- In June 2021, the Export-Import Bank of India (Exim Bank) announced that it has extended a line of credit (LOC) worth US$ 100 million to the Sri Lankan government for the purpose of

funding projects in the solar energy sector and assuring that the country's 70% power requirements are met by renewable energy sources by 2030

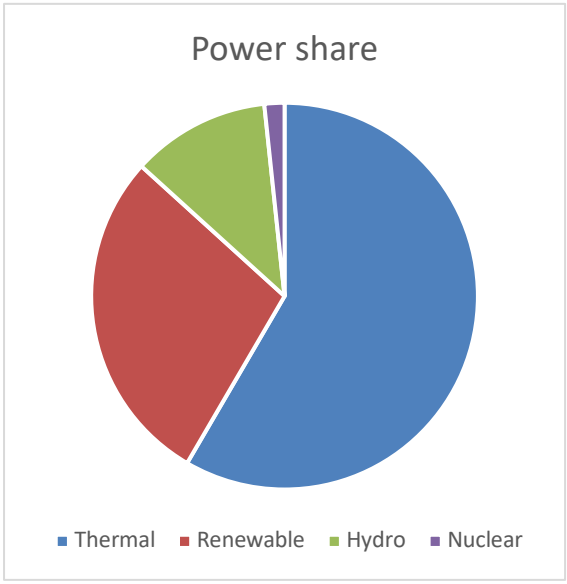
Growth over the years

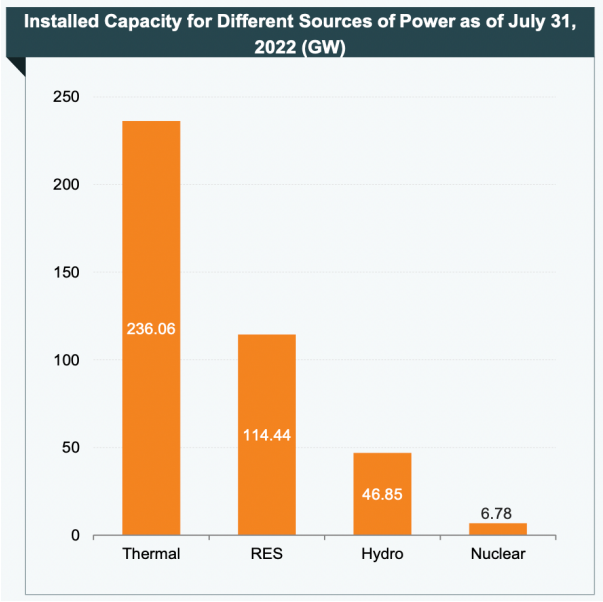


- With electricity generation (including renewable sources) of 430.97 BU in India in the first quarter of FY23, the country witnessed a growth of 16.79% YoY
- During FY10-22, electricity generation in India increased at a CAGR of 5.23%
- ICRA expects renewable energy capacity addition of 16 GW in FY23
- Under the Union Budget 2022-23, the government allocated Rs. 19,500 crore (US$ 2.57 billion) for a PLI scheme to boost manufacturing of high-efficiency solar modules
- For FY23, electricity generation target from conventional sources was fixed at 1,459.37 BU, comprising of 1,257.39 BU of thermal energy, 150.66 BU of hydro energy, 43.32 BU of nuclear energy, and 8 BU to be imported from Bhutan
- According to data from the Ministry of Power, India's power consumption increased 3.8% YoY in July 2022 to 128.38 BU
- The Nathpa Jhakri Hydro Electricity Station of Satluj Jal Vidyut Nigam (SJVN) has set a new monthly power generation record, increasing from 1,213.10 million units to 1,216.56 million units on July 31, 2021



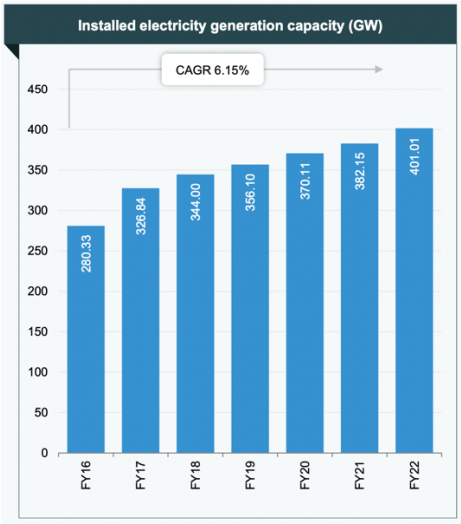
Sources of power with shares in total installed capacity





- Thermal: Coal, Gas & Lignite and Diesel are the three sources of thermal power generation. India has large reserves of coal. As of July 31, 2022, the total installed coal thermal power capacity in India stood at 204.08 GW. As of July 31, 2022, India's gas thermal power capacity stood at 24.86 GW, and lignite thermal power capacity stood at 6.62 GW. India's diesel thermal power capacity was 0.51 GW, as of July 31, 2022
- Renewable: Solar 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 make use of India's potential. There are plans to set up four solar power plants of 1 GW each. As of July 2022, India had 114.44 GW of renewable energy capacity (excluding large hydro). ICRA expects renewable energy capacity addition of 16 GW in FY23
- Hydro: With a large swathe of rivers and water bodies, India has enormous potential for hydropower generation. As of July 31, 2022, India's hydro power generating capacity stood at 46.85 GW. By 2022, it is expected to witness total installed capacity addition of 6.82 GW
- Nuclear: As of July 31, 2022, India had 6.78 GW of installed nuclear capacity. With one of the world's largest reserves of thorium, India has huge potential in nuclear energy generation. By 2022, it is expected to witness total installed capacity addition of 3.30 GW

Generation capacity has increased at a healthy pace



- Installed capacity has increased steadily over the years, posting a CAGR of 6.15% between FY16-FY22
- Coal-based power installed capacity in India stood at 204.08 GW in July 2022, and is expected to reach 330-441 GW by 2040

Recent Trends and Strategies

1. Control generation costs

- Companies are developing captive coal fields to reduce price volatility and ensure uninterrupted supply of fuel to control generation costs.
- Most of the power companies are now located near the 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 has coal reserves in Indonesia
- Essar Power has 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 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 have coal-fired, gas-fired and hydroelectric capacity. This helps them diversify and reduce dependence on a single source

4. Additional revenue streams

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

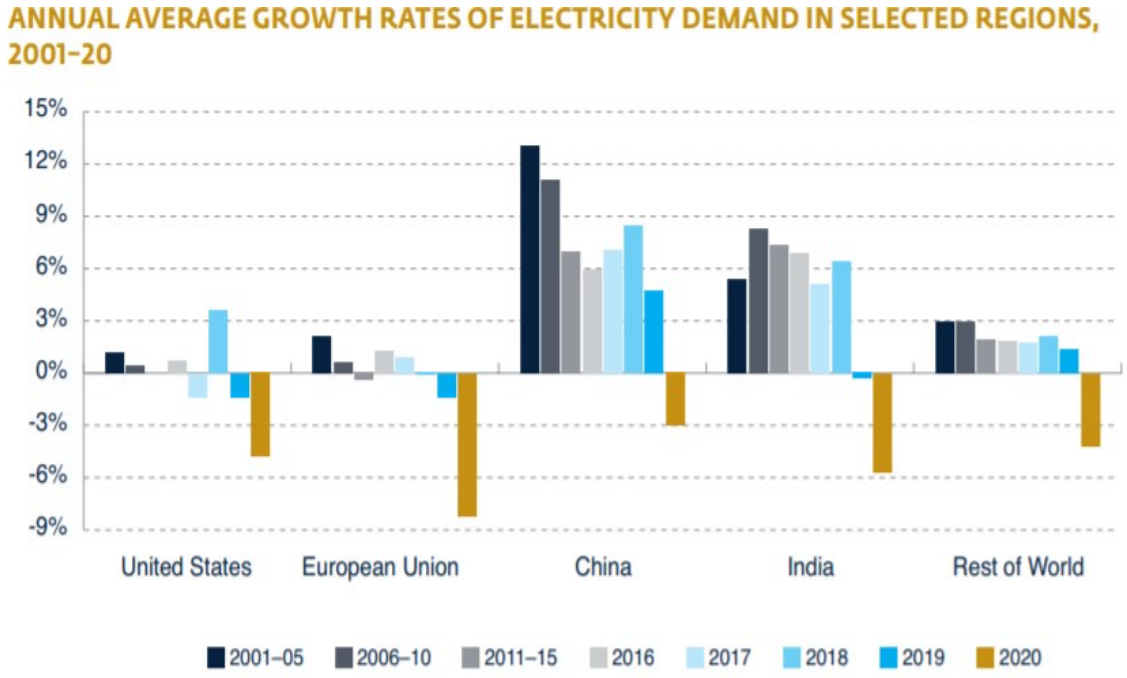
5. Digital India

- 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

6. **Aatmanirbhar Bharat**

- In September 2021, Bharat Heavy Electricals Limited (BHEL) successfully commissioned India's largest floating Solar PV plant. Located at NTPC Simhadri in Andhra Pradesh, the 25 MW floating SPV project covers an area of 100 acres.

Covid-19 impact:



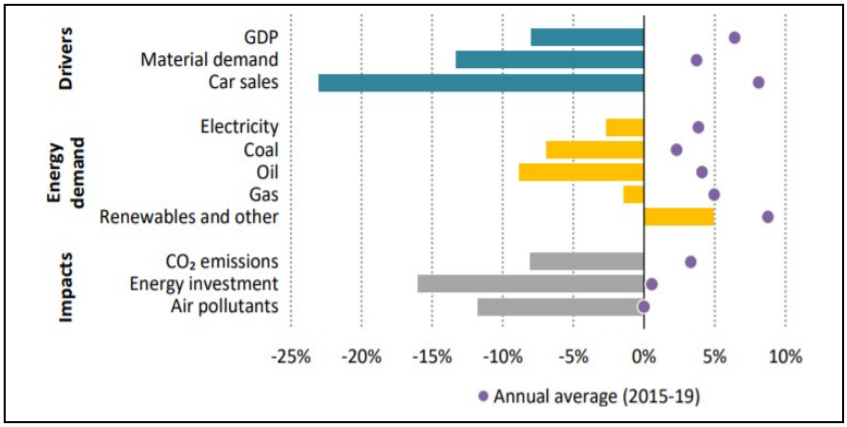
Source: IEA 2020. All rights reserved.

Prior to the pandemic, India's demand for energy was projected to increase by almost 50% between 2019 and 2030. Now, the projection has reduced to 35%. India's 40-day lockdown in 2020 resulted in a 30% fall in the energy demand, according to International Energy Agency.

India's electricity demand was majorly impacted due to the pandemic. Despite electricity being an essential service, the operations went on uninterrupted, however there were major issues on the demand and execution side. While the power demand was on rise from the essential services, hospitals and residential segments, the industrial and commercial activity had dropped significantly. Covid-19 impacted the supply chain, labour availability and overhead costs to maintain the security and safety required at workplace. By the end of August 2020, the demand hadn't restated to the pre-Covid levels. During the third quarter of FY21, increased economic activity led to a positive YoY increase in electricity demand of 4.4%.

The generation mix of renewables and non-renewables were also impacted. Thermal plants were running at a low capacity due to low industrial demand. However, the share of renewables on the grid had increased due to their "must-run" status, showcasing the resilience of renewable power under the current circumstances. India added 2,320 MW of solar capacity amidst COVID-19 pandemic from

January to September 2020.



Policy Support and Initiatives

1. **National Policy on Biofuels – 2018**
   - In May 2018, the Government of India approved the National Policy on Biofuels 2018
   - Benefits of this policy were related to health, clean environment, employment generation, reducing 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 the 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. As of March 2021, 2.82 crore households have been electrified under this scheme
   - The total financial outlay of the project was Rs. 16,320 crore (US$ 2.19 billion) while the gross budgetary support (GBS) was Rs. 12,320 crore (US$ 1.65 billion)

5. **UnnatJyoti by Affordable LEDs for All (UJALA) and Street Lighting National Programme (SLNP)**
   - As of August 24, 2022, over 36.86 crore LED bulbs, 72.18 lakh LED tube lights and 23.59 lakh energy-efficient fans have been distributed across the country, saving around 48,411 million kWh per year and around Rs. 19,332 crore (US$ 2.47 billion) in cost savings

6. **Loans**
   - In February 2022, a parliamentary standing committee recommended the government to take steps to increase the loan limit for renewable energy sector under priority sector lending. The current limit stands at Rs. 30 crore (U$ 3.93 million)
   - In December 2021, West Bengal got a loan approval for US$ 135 million from the International Bank for Reconstruction and Development (also called the World Bank) to improve the operational efficiency and reliability of electricity supply in select regions in the state

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**
    - In the Union Budget 2022-23, the allocation for the Solar Energy Corporation of India (SECI), which is currently responsible for the development of the entire renewable energy sector, stood at Rs. 1,000 crores (US$ 132 million)

9. **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) per unit for developers using domestic and imported solar cells and modules, respectively, in August 2018
    - Solar tariffs in India have reduced from around Rs. 7.36/kWh (US 10 cents/kWh) in FY15 to Rs. 2.45/kWh (US 3.2 cents/kWh) in July 2021

10. **Boost to manufacturing**
    - To create potential for domestic manufacturers and developers, the Government will auction 40 GW of renewable energy projects, including 30 GW solar and 10 GW wind, every year until 2028
    - > 70% of equipment used for generation of wind power is manufactured in India

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
    - As of August 2022, over 48.23 lakh smart metres have been deployed under the National Smart Grid Mission (NSGM), with a further 58.81 lakh to be deployed

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)

and more such policies such as Direct Benefit Transfer (DBT) Scheme, Vision '24x7 Power for all', Green Energy Corridor Project, National Electricity Policy 2021, PLI Scheme.

Major Companies in the power sector

Generation	Transmission	Distribution
Adani Green	Power Grid	State Discoms
Adani Power	JSW Energy	Tata Power
NTPC	Tata Power	Torrent Power
JSW Energy	Torrent Power	
NHPC		
Tata Power		
Torrent Power		

1. Adani Power Limited and Adani Green Energy Limited

Adani Power Limited is engaged in power generation by coal-based thermal power plants and coal trading. It has seven power projects with aggregate 12,450 MW power generation capacity spread out across Gujrat, Maharashtra, Rajasthan, Karnataka and Chhattisgarh. Adani Group aims to become the world's largest solar power company by 2025 and the biggest renewable energy firm by 2030.

2. National Thermal Power Corporation (NTPC) Limited

NTPC Limited is engaged in the generation and sale of electricity. The main business activity of the company is the electric power generation by coal-based thermal power plant. The company also provides consultancy, project management and supervision, re-gasification, oil and gas exploration and coal mining. Total installed capacity – 66,900 MW. NTPC is working on diversifying on their fuel mix and non-fuel-based generation should comprise 30% of their portfolio. It was also ranked "Top 50 companies to work in India" multiple times.

3. Power Grid Corporation

Power Grid Corporation of India Limited is a transmission company engaged in the power transmission business with planning, implementation, operation and maintenance of inter-state transmission system and operation of national and regional load dispatch centres. The company's provides consultancy. The transmission segment includes extra high voltage/high voltage (EHV/HV) networks and grid management with transmission lines of 1,69,397 ckm with 4,45,806 MVA transformation capacity.

4. Tata Power –

Tata Power is India's largest integrated power company, with significant presence in solar, hydro, wind and geothermal energy space. Tata Power, together with its subsidiaries & joint entities, has a generation capacity of 13,061 MW of which 32% comes from clean energy sources. The company accounts for 52 per cent of total generation capacity in the private sector. It is India's largest rooftop solar company.

5. NHPC –

NHPC Limited is the largest organisation for hydropower development in India, with capabilities to undertake all the activities from conceptualization to commissioning in relation to setting up of hydro projects. NHPC Limited has also diversified in the field of Solar & Wind power. NHPC Limited presently has an installation base of 5551.2 MW from 22 power stations. The plants are present across Northern, Eastern and North-Eastern regions of India.

6. JSW Energy –

JSW Energy Ltd. Is a leading private sector company generating thermal, hydropower and solar power. They are present in various Indian states and have investments in South Africa. They currently generate 4559 MW of power. They operate in various areas: Generation, Transmission and Trading.

7. Torrent Power –

Torrent Power has presence in the power generation, transmission and distribution of electricity. It also manufactures and supplies power cables as well. It's distribution areas includes parts of Gujrat, Maharashtra and Uttar Pradesh comprising more than 3.65 m customers annually. It has a portfolio of coal based, gas based and renewable power plants with an aggregate generation capacity of 3879 MW. The T&D losses faced by Torrent Power in its license area are amongst the lowest in the country.

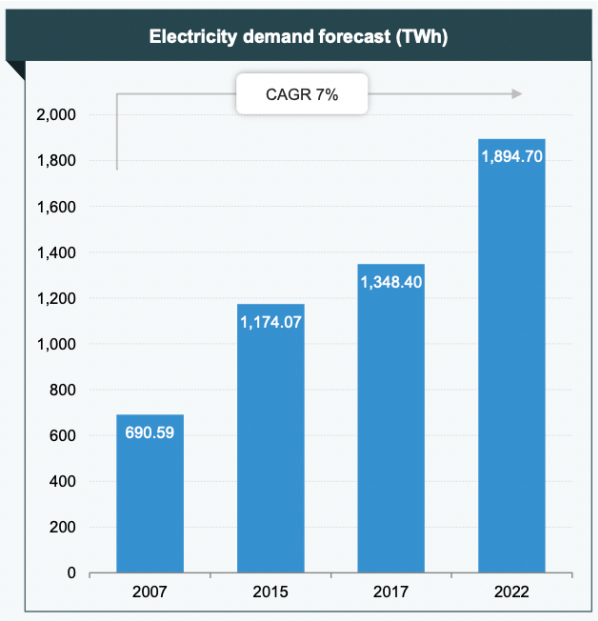
Valuation metrics:

1. As revenue is regulated based on the Power Purchase Agreement (PPA's) and the cost are based mainly on the operational cost and cost of coal, discounted cash flow (DCF) forms the most important method for valuation.
2. EV/EBITDA is used to understand the value of the business. Since the power sector is highly capital intensive and with long gestation periods, the capital expenditure could be huge. The ratio isn't impacted by a change in the capital mix and hence can be used for evaluation.

3. EV/MW gives the value of the plant with respect to the installed capacity of the plant.
4. P/E gives a quick idea to the equity investors the return they can generate on their investment.

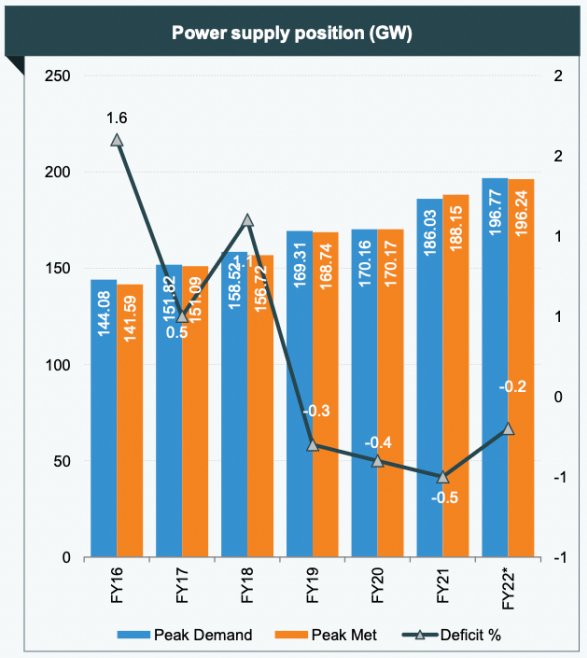
Opportunities

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 stand 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 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
- In November 2021, Energy Efficiency Services Limited (EESL) stated that it will partner with private sector energy service companies to scale up its Building Energy Efficiency Programme (BEEP)

Market with enormous 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 210.79 GW on June 9, 2022.

Read more about the power sector at:

https://www.ibef.org/industry/power-sector-india