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INDUSTRY OUTLOOK

THE POWER SECTOR OF INDIA

Introduction

Power is one of the most critical components of infrastructure crucial for the economic growth and welfare of nations. In India, sources of power generation range from conventional sources such as coal, lignite, natural gas, hydro and nuclear power to viable non-conventional sources such as wind, solar, biomass etc. The Indian Power sector has come a long way from conventional generation, large energy deficits and a low-performing grid by making efforts towards large-scale Renewable Energy (RE) based capacity addition.

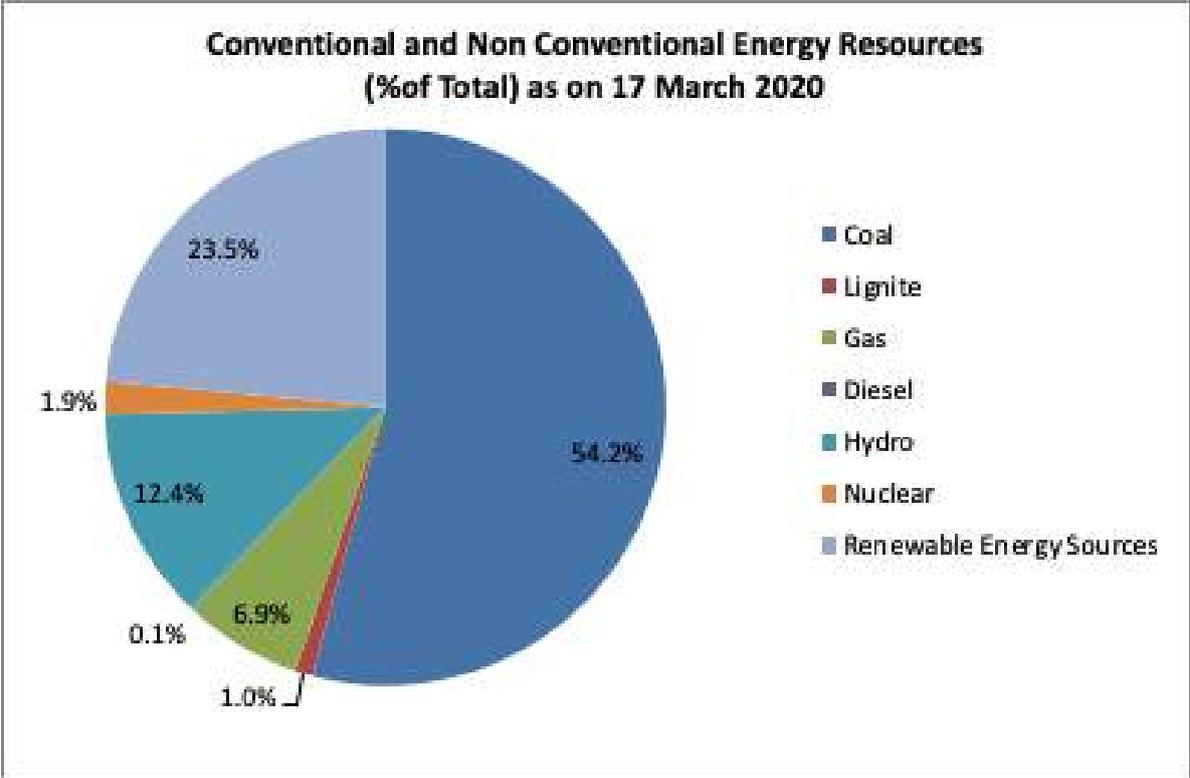
Total Installed Capacity (as on 17 March 2020)

Sl No.	Sector	Megawatt (MW)	%of Total
1	Central Sector	93,097	25.2%
2	State Sector	103,292	28.0%
3	Private Sector	173,039	46.8%
	Total	367,281	100.0%

Source: Ministry of Power

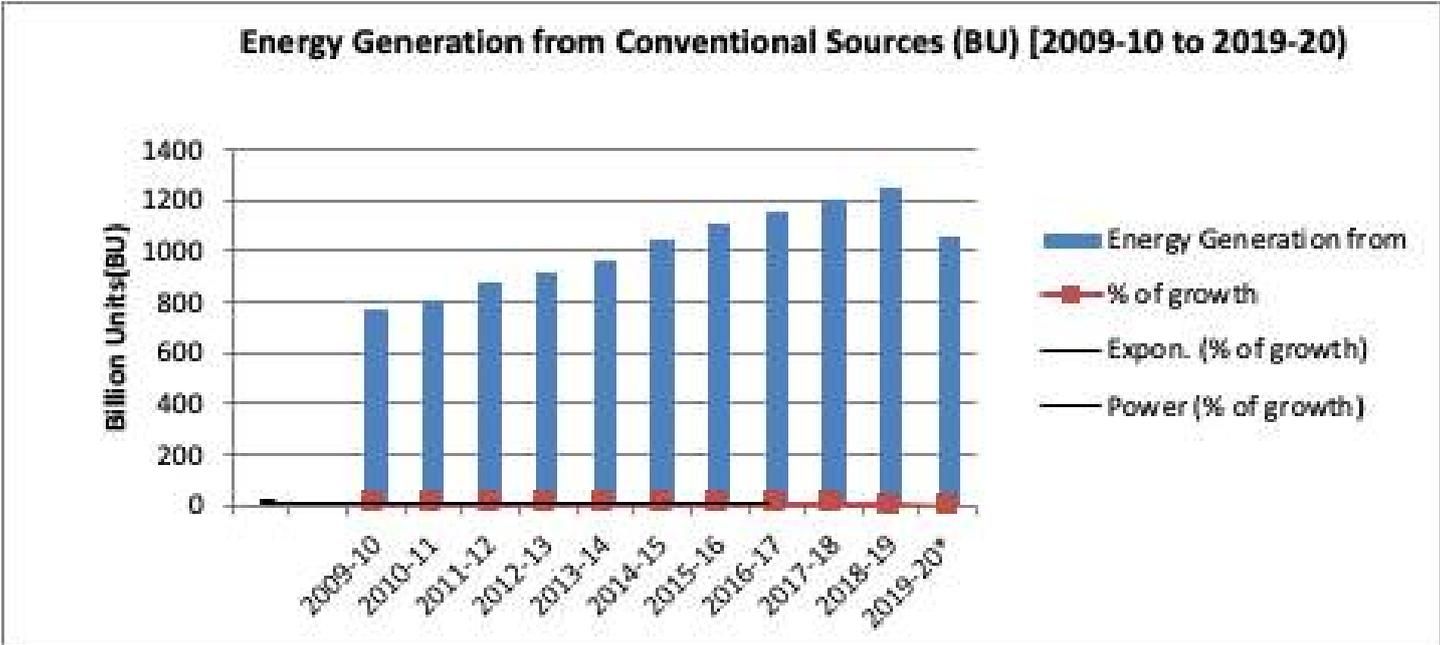


According to the International Energy Agency (IEA), India, with a population of 1.36 billion has seen its energy demand increasing faster as the country continues to urbanize. This growing demand is met through various energy sources, with coal set to remain the largest source of energy supply.



Source: Ministry of Power

Energy Generation from Conventional Sources in India during 2009-10 to 2019-20 (Billion Units)



Source: Ministry of Power

Coal continues to be the largest domestic source of energy supply in India despite government's push for renewable energy (RE)¹. Amid more stringent air pollution regulations, new coal power plants that are more efficient, flexible and relatively lower in emissions will be better positioned for their economic viability. By contrast, old and inefficient plants, which require expensive retrofits to comply with environmental standards, are in a difficult position.

With an installed renewables capacity of 83 GW, plus 31 GW under development and a further 35 GW out for tender, India is among the top-five clean-energy producers globally and is well on course to surpass its original target. In fact, it is now eyeing 225 GW from renewables by 2022 and a target of 40% clean energy by 2030².

Investments

India's investment in solar photovoltaic (PV) was greater than in all fossil fuel sources of electricity generation together. By December 2019, India had deployed a total of 84 GW of grid-connected renewable electricity capacity³. In 2018, India's power sector saw investments of US \$35 billion in the generation subsector led by renewable power generation, another US \$20 billion in the grid network led by transmission⁴. However, Investments in renewable sector (RE) fall 14 per cent to INR 68,550 crore in 2019. India has set an ambitious production target of 175 GW of renewable energy by 2022.

Investments in the RE Sector (INR Crore)

Year	Investment in the RE Sector (INR Crore)
2019	68550
2018	79606
2017	81080
2016	100982

Source: 'Investments in renewable sector fall 14 pc to Rs 68,550 crore in 2019'(19 March 2020) Economic Times <https://economictimes.indiatimes.com/industry/energy/power/investments-in-renewable-sector-fall-14-pc-to-rs-68550-cr-in-2019/articleshow/74718595.cms?from=mdr>

A cumulative renewable energy capacity of 86.75 GW has been installed in the country up to February 2020, and to achieve the balance target of 88.25 GW, an estimated investment of around INR 4,21,861 crore is required at present capital costs.

MNRE Target vs Achievement [Megawatt (Mw)]

Financial Year	Target (MW)	Achievement (MW)
FY2019-20	11,852	4,272*
FY2018-19	15,355	8,519
FY2017-18	14,445	11,876
FY2016-17	16,560	11,319

*Up to September 2019.

Source: Economic Times (13February2020) ETEnergyWorld.com <https://energy.economictimes.indiatimes.com/news/renewable/parliamentary-panel-pulls-up-mnre-for-missing-renewable-energy-targets-over-years/74117607>

Some Major Investments

In August 2019, Sembcorp Industries, the Singapore-based energy made an equity infusion of INR 521 crore⁵ into Sembcorp Energy India Ltd. The fund was aimed to expand the Singapore-based company's renewable energy portfolio in India. At the same time, ReNew Power and Shapoorji Pallonji announced they will collectively invest nearly Rs 750 crore in a 150 megawatt (mw) floating solar power project in Uttar Pradesh. The project was initially targeted 21 months to complete once started⁷. Since, it would utilise the same power evacuation lines currently used by hydro power project, the capital expenditure (capex) was estimated to be lower. Besides, it would arrest the evaporation of water from the Rihand reservoir during the daytime. The two companies had won the project after competitive bidding, conducted by the Solar Energy Corporation of India, while state energy regulator UP Electricity Regulatory Authority (UPERC) had approved these proposals.

On the Renewable sector, Tata Power Solar Systems has got a letter of award to build 300 megawatt (MW) plant for NTPC at an all inclusive price of INR 1730 crore following a post-reverse auction held on 21 February 2020. The commercial operation date for the grid-connected solar photovoltaic (PV) project is set for 21 September 2021⁷. This is a domestic content requirement project, where the company will build the project with their own cells and modules. The share price of Tata Power Company jumped 5 percent intraday on April 7 2020, after obtaining the project. The order book of Tata Power Solar now stands at around Rs 8,541 crore, the company said in a filing to the exchanges⁸.

In January 2020, however, Solar power contracts of three major power plant developers with state-run NTPC Ltd have been cancelled due to delays in regulatory approvals, potentially disrupting India's clean energy trajectory by knocking 1,400MW off it. The Power Purchase Agreements (PPAs) of Acme Solar, Azure Power and Shapoorji Pallonji group have been terminated. This comes against the backdrop of termination of wind PPAs of Hero Future Energies, ReNew Power Ventures and Mytrah Energy with NTPC Ltd to supply 300MW each⁹. In February 2020, Global emerging market fund Actis has acquired solar energy assets of 600 megawatt capacity from Acme Cleantech Solutions in a deal worth Rs 3,000 crore¹⁰.



Government Initiatives

India has been addressing energy-related environmental pollution since the 1980s, including air, water, land and waste issues. Reducing the health impacts of air pollution is a key priority. Over the years, the government adopted the National Clean Air Programme (NCAP), which focuses on monitoring and enforcement. In 2015, the government made its intentions to transition to a lower-emission electricity system clear by declaring an ambitious target of 175 GW from renewables by 2022. The government plans to double the share of installed electricity generation capacity of renewable energy to 40 per cent till 2030.

Ujwal Discoms Assurance Yojana (UDAY) 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. Though it was thought to be a game changer, discoms started to face huge losses; and the recent Covid-19 crisis has added a pinch of salt to it¹¹.

The Pradhan Mantri Sahaj Bijli Har Ghar Yojana, shortened into Saubhagya, was flagged off in September 2017, with the objective of electrifying all left-out Indian households. The original completion date of March 2019 has been advanced to December 2018. The scheme covers both urban and rural households. Under it, free electricity connections are provided to below poverty line (BPL) households, while other households have to pay INR 500 for the connection. Under the Saubhagya scheme, all states have declared electrification of all households on March 2019, except 18,734 households in left wing extremism affected areas of Chhattisgarh. At that time, there were 19.1 lakh un-electrified households which were unwilling to get electricity connection¹².



Industry Risk

The Covid-19 outbreak has left private sector power generators out in the cold. Over the last couple of days, at least six state-run power distribution utilities (discoms) asked private sector gencos, with whom they have entered into power purchase agreements (PPA), to shut down and not expect any payment till further notice. The discoms of Uttar Pradesh, Punjab, Haryana, Telangana, Madhya Pradesh, and Dadra and Nagar Haveli (a union territory) have invoked the 'force majeure'¹³ clause for an indefinite period. According to the Punjab State Power Corporation Ltd (PSPCL), the decision has been taken in view of a "drastic reduction in demand" due to the shutdown of industrial units. What is unique in this notice is that discoms are absolving themselves from paying even the fixed charges or the cost of installing a power project, which includes repayment obligations to lenders. All PPAs come in two parts: fixed and variable. A buyer may be absolved from payment of variable cost but payment of fixed charges is mandatory, unless and until the contract is scrapped altogether¹⁴.

India has an abundance of sunlight throughout the year but can't convert it into grid electricity without Chinese gear. Solar power parks are dependent on Chinese imports. A whopping 80% of solar cells and modules, which absorb sunlight to generate electricity, used in India are imported from China-based manufacturers, including Trina Solar, Jinko Solar and China Solar. Amid the Covid-19 crisis, an increase in solar module prices would pose further challenges. A further increase would lead to decline in electricity demand in commercial and industrial activities as well as project delays. According to a KPMG¹⁵ report, about 62 GW thermal, 11 GW RE and transmission projects under construction likely to get delayed with sustained lockdown and would impact debt servicing and project viability.

Due to regulated prices and the other bump, India's distribution companies (discoms) lose around Rs 360 (\$4.63) on every megawatt-hour of electricity they deliver — equivalent to roughly 10 per cent of the retail price. Spread that across a market generating more than 1.5 billion megawatt hours a year, and the losses quickly mount up. Total debt in the sector now amounts to Rs 4.3 lakh crore (\$56.4 billion)¹⁶. Collection delays, industrial and commercial defaults due to business discontinuity will put more pressures on discoms and a cascading adverse effect on payment to generators.

Power Discoms will have to clear dues of renewable energy producers, the decision was taken by the MNRE and conveyed to the State/Union Territory governments, NTPC, SECI on 1 April 2020. MNRE noted that Discoms have been given ample relaxation in the 28 March 2020 order, stating that procurement from REs is just a fraction of the total power sourced and that Discoms can easily pay the RE generators¹⁷.

There are other challenges also appearing amid Covid-19 crisis. For instance, forty thermal power units with a capacity of 30 gigawatt (GW) mostly from Northern India; have stopped lifting coal as demand has declined sharply during the lockdown, which has led to an increase in stocks at pitheads by nearly 20 million tonnes to about 75 million tonnes. Most of the power plants refusing to lift coal are from Haryana, Punjab, Uttar Pradesh and Rajasthan. Coal India Ltd (CIL) CIL's subsidiary Central Coalfields is the worst hit as almost all its power consumers are refusing to accept supplies and make payments. Power demand has declined 30 per cent since the lockdown began, forcing nearly 65 GW of coal-fired plants to back down, with further decline in the capacity utilization¹⁸.



Further, India could face over 21.6 per cent of 3 gigawatts (GWs) of solar power and wind energy projects being delayed due to the nationwide lockdown¹⁹. While wind projects would be impacted by labour disruption in the peak season, solar photovoltaic (PV) installations are likely to take a setback as the industry is heavily dependent on Chinese PV module import, which have been disrupted due to coronavirus. With over 3 GW of wind projects under construction scheduled for 2020 completion, supply and labour disruptions from the current lockdown could delay 400 megawatts (MW) into 2021. Gujarat delivered 58 per cent or 1.4 GW of newly added wind capacity in India in 2019 and is one of the worst-hit states in terms of coronavirus infections. On the solar front, Karnataka (2.0 GW), Tamil Nadu (1.6 GW) and Rajasthan (1.7 GW) were the top three states accounting for 55 per cent of solar PV installations in 2019; who are likely to be severely affected²¹. Accordingly, solar PV and wind installation developers' cash flows will also likely to be affected.

FOOTNOTES

1. Amid the Covid-19 crisis, The Coal India-arm South Eastern Coalfields Ltd (SECL) in Chhattisgarh's Korba district has sent about 50 employees to home quarantine. The religious event was held on April 3, in which people – all belonging to a minority community – participated by defying the health guidelines and also curfew-like lockdown imposed by the Chhattisgarh government. Among the other participants, about 50 were working with a coal mining project of SECL. Taking note of it, the SECL management issued an order asking the employees not to report on duty and stay in the 28-day home quarantine starting April 6 2020. Moneycontrol (7 April 2020) <https://www.moneycontrol.com/news/india/coronavirus-pandemic-coal-india-arm-secl-sends-50-employees-to-home-quarantine-5115261.html>
2. <https://www.weforum.org/agenda/2020/01/india-new-hotspot-renewable-energy-investors/>
3. 'India 2020 Energy Policy Review (2019) International Energy Agency (IEA) Report.
4. 'India 2020 Energy Policy Review (2019) International Energy Agency (IEA) Report.
5. i.e. around USD 101.6 million. See 'Sembcorp invests ₹521 crore in Indian renewable business'(17 August 2019) Livemint <https://www.livemint.com/companies/news/sembcorp-invests-521-crore-in-indian-renewable-business-1565983687006.html>
6. 'Pallonji, ReNew Power to invest Rs 750 cr in UP solar power project'(6 August 2019) Business Standard https://www.business-standard.com/article/companies/shapoorji-pallonji-averts-crisis-pays-rs-3-000-cr-dues-to-lenders-120040201479_1.html
7. 'Tata Power Solar bags 300 MW project from NTPC'(7 April 2020)ETEnergyWorld.com <https://energy.economicstimes.indiatimes.com/news/renewable/tata-power-solar-bags-300-mw-project-from-ntpc/75023271>
8. 'Tata Power share price jumps 5% on bagging Rs 1,730-crore NTPC project'(7 April 2020) Moneycontrol <https://www.moneycontrol.com/news/business/stocks/tata-power-share-price-jumps-5-on-bagging-rs-1730-crore-ntpc-project-5115391.html>
9. '3 developers call off NTPC's solar contracts over regulatory delays'(29 January 2020) Livemint <https://www.livemint.com/industry/energy/3-developers-call-off-ntpc-s-solar-contracts-over-regulatory-delays-11580234698050.html>
10. 'Actis buys 600 MW Acme solar assets for Rs 3,000 cr(28 February 2020) Economic Times <https://economictimes.indiatimes.com/industry/energy/power/actis-buys-600-mw-acme-solar-assets-for-rs-3000-cr/articleshow/74345817.cms?from=mdr>
11. While UDAY's focus was on discom debt, structural and infrastructure bottlenecks remain unaddressed. On the cost side, long term power purchase agreements with power generators does not allow discoms to revise prices. On the revenue side, discoms are constrained by the inability to change politically-sensitive electricity tariffs. Inadequate subsidy payments by states, electricity theft and unmetered electricity to the agriculture sector limit discom revenues. See 'Why the lights dimmed on UDAY'(18 March 2020) Livemint <https://www.livemint.com/news/india/why-the-lights-dimmed-on-uday-11584513638778.html>
12. '7.28 lakh households 'unwilling' to take electricity connections remain unelectrified: Govt in Lok Sabha'(14 March 2020) Financial Express <https://www.financialexpress.com/economy/7-28-lakh-households-unwilling-to-take-electricity-connections-remain-unelectrified-govt-in-lok-sabha/1897387/>
13. Force majeure refers to a clause that is included in contracts to remove liability for natural and unavoidable catastrophes that interrupt the expected course of events and restrict participants from fulfilling obligations.
14. 'Six power distribution utilities invoke force majeure clause, tell private sector generators not to expect payment'(2 April 2020) The HinduBusiness Line.
15. 'Potential Impact of Covid-19 on the Indian Economy'(April 2020) KPMG.
16. 'Economic Times (3 April 2020).
17. 'DISCOMs to continue paying renewable energy producers during Covid lockdown: MNRE'(2 April 2020) HinduBusinessLine <https://www.thehindubusinessline.com/news/discoms-to-continue-paying-renewable-energy-producers-during-covid-lockdown-mnre/article31234062.ece>
18. 'Forty Thermal Power Units Stop Lifting Coal as Demand Sees Sharp Drop'(7 April 2020) ETEnergyWorld.com <https://energy.economicstimes.indiatimes.com/news/coal/forty-thermal-power-units-stop-lifting-coal-as-demand-sees-sharp-drop/75023213>
19. 'India's renewables installation could fall by a fifth due to lockdown: Wood Mackenzie'(7 April 2020) ETEnergyWorld.com.
20. *ibid.*
21. *ibid.*

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