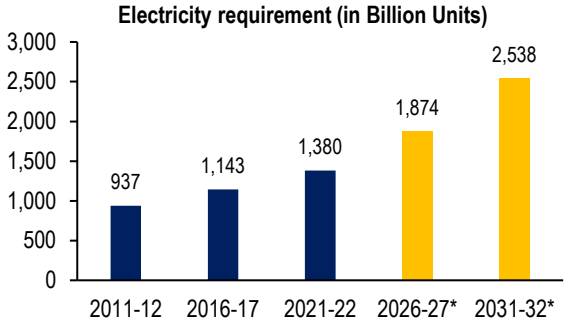
Vital Stats

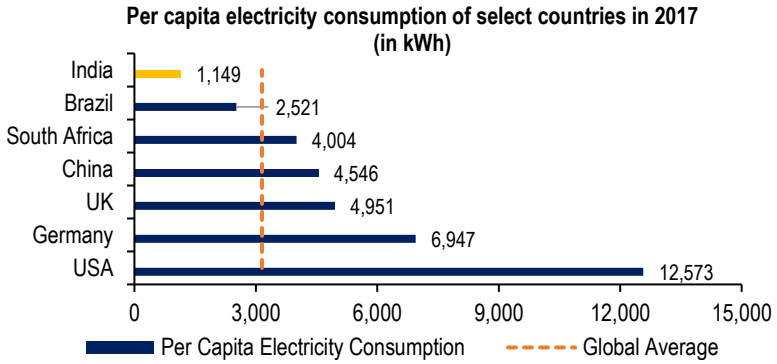
Electricity Sector

The electricity sector has seen some key developments in recent months. Bills have been introduced in Parliament to amend the Electricity Act, 2003 and the Energy Conservation Act, 2001, to provide for reforms in the power distribution sector, and introduce measures such as non-fossil energy use obligation and carbon credits. This month, the Central Electricity Authority (CEA) released the draft National Electricity Plan outlining capacity addition targets for the next 10 years. About 40% of India's greenhouse gas emissions came from the electricity sector in 2016. Hence, from a climate change perspective, the transition to greener energy sources is a focal point. In this light, this note presents some key emerging trends in the electricity sector in India.

Electricity demand projected to double in next decade, per capita consumption would still be low

CEA projects India's electricity demand to increase 1.8 times between 2021-22 and 2031-32. At this rate, India's annual per capita electricity consumption will be about 1,700-1,800 units in 2031-32. As of 2017, India's per capita electricity consumption was significantly lower than most developed countries.





Note: *2026-27 and 2031-32 numbers are projections by CEA.

Generation capacity addition targets for 2017-2022 missed

India missed capacity addition targets for almost all major energy sources for the 2017-22 period (up to March 2022). CEA identified the onset of the COVID-19 pandemic, issues with land acquisition, fund constraints with contractors, and contractual disputes as some key issues leading to delays. No nuclear generation capacity was added during the last five years.

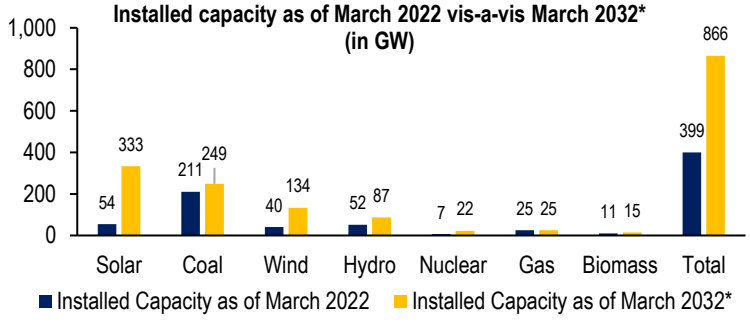
India had targeted renewable energy installed capacity of 175 GW by 2022 (excluding large hydro). Against this target, as of August 2022, the total renewable energy installed capacity stood at 116 GW.

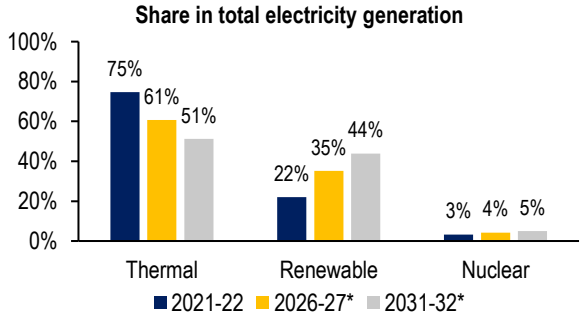
Capacity addition during 2017-2022 (in GW)

Source	Target/Scheduled	Actual	Gap
Solar	88	42	46
Coal	48	31	17
Wind	28	8	20
Hydro	7	3	4
Nuclear	3	0	3
Biomass and Gas	2	2	0
Total	**176**	**85**	**91**

Climate-related targets remain in sight

As per CEA, India will target to add a total of 472 GW of installed capacity during 2022-32. Almost 80% of this would be from two sources – solar (279 GW) and wind (94 GW). These targets are aligned with India's pledge at the COP-26 summit to have 500 GW of non-fossil generation capacity by 2030. These will require investments of about Rs 32 lakh crore. India has also set a goal of meeting at least 50% of its electricity requirement from renewable sources by 2030. CEA projects that India will be close to this goal, if the above capacity addition targets are achieved.





Note: *2026-27 and 2031-32 numbers are projections by CEA.

Saket Surya
saket@prsindia.org

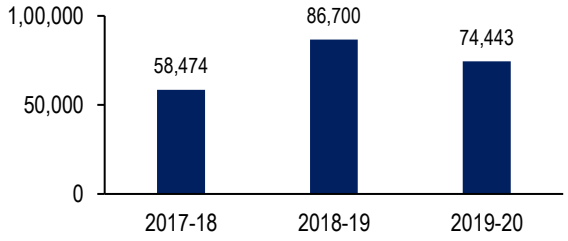
September 30, 2022

Discoms continue to register financial losses, technical and commercial losses remain high

Distribution utilities, mostly either state government-owned enterprises or government power departments, have continued to register financial losses. This is despite government interventions such as the UDAY scheme (2015) for financial and operational turnaround of these utilities. Between 2017-18 and 2019-20, cumulative losses were Rs 2.2 lakh crore. Except in Gujarat, Himachal Pradesh, and Haryana, in all other states, revenue was lower than the cost of supply on a per unit basis.

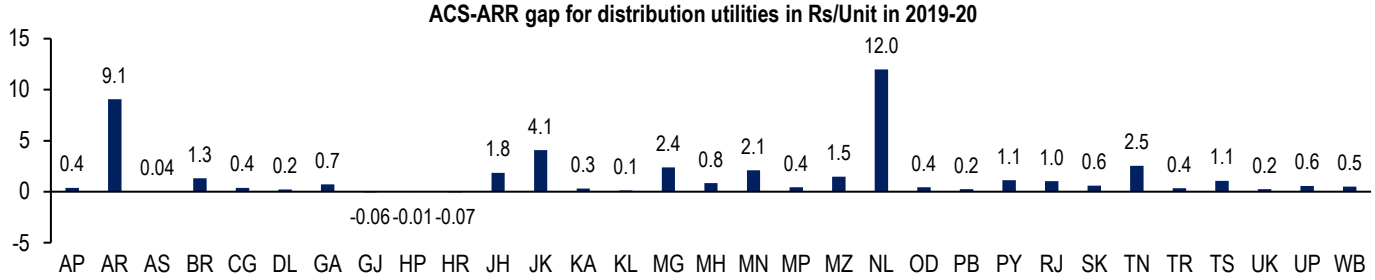
At the national level, aggregate technical and commercial losses were 21% in 2019-20, much higher than countries such as UK and USA (5%-8%). These are losses on account of some unavoidable loss in energy transfer, losses due to sub-optimal conditions of distribution network, theft, inadequate metering, and payment default.

Losses of distribution utilities (in Rs crore)



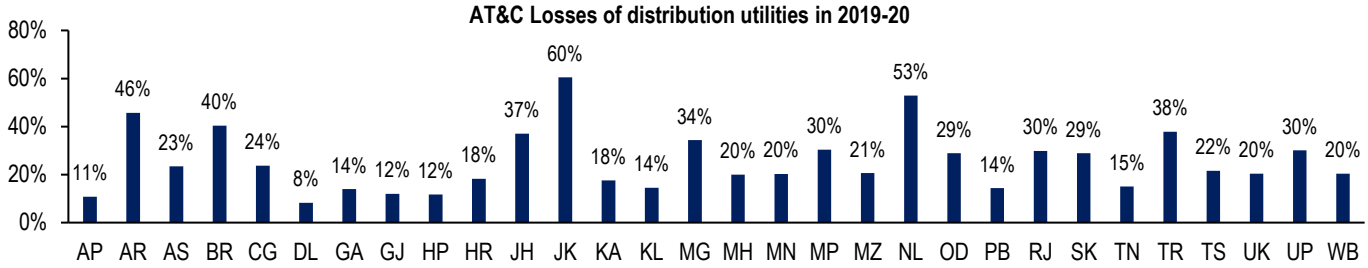
Losses above are reported based on actual government subsidy received, and after excluding: (i) revenue grants received under the UDAY scheme, and (ii) regulatory income.

ACS-ARR gap for distribution utilities in Rs/Unit in 2019-20



Note: ACS: Average Cost of Supply, ARR: Average Revenue Realised.

AT&C Losses of distribution utilities in 2019-20

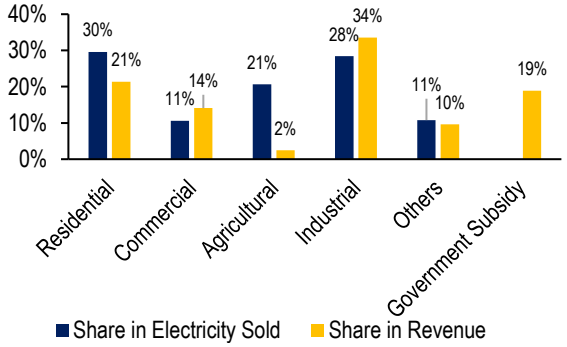


Note: AT&C: Aggregate Technical & Commercial, depicts the percentage of electricity input in the grid for which discom did not receive any payment.

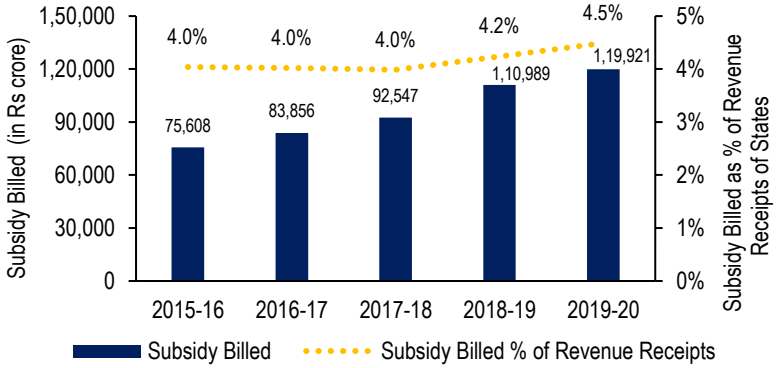
Cross-subsidy and government subsidies keep electricity affordable for some consumers

Government subsidy and cross-subsidy from industrial and commercial consumers attempt to keep electricity affordable for residential and agricultural consumers. For example, in 2019-20, while 21% of the total electricity supply was sold to agricultural consumers, their share in the total revenue was only 2%. Industrial consumers contributed about 34% of the total revenue, whereas their share in the electricity sale was 28%.

Consumer category-wise share in electricity sold and revenue in 2019-20



Subsidy billed by distribution utilities (in Rs crore)



Between 2015-16 and 2019-20, power subsidies by state governments have ranged around 4%-4.5% of their revenue receipts. In 2019-20, in terms of rupees, the highest subsidies were billed in: (i) Madhya Pradesh (Rs 16,722 crore), (ii) Rajasthan (Rs 12,921 crore), and (iii) Karnataka (Rs 11,864 crore).

Sources: Draft National Electricity Plan September 2022, National Electricity Plan 2018, Growth Of Electricity Sector In India From 1947-2020, India Electricity Statistics 2021, Executive Summary reports of various months, Installed Capacity reports of various months, Central Electricity Authority; India Energy Dashboard, NITI Aayog; Reports on Performance of Power Utilities of various years, Power Finance Corporation; State Budget Documents; PRS.