

Fallout Assessment

The impact of Covid-19 on India's power demand

National economic activities were hit hard by the pandemic, and the power sector was no exception. The sector deviated from the expected energy supply and peak power demand growth trajectory during the pandemic years, and is now on the path of recovery.

India's power generation capacity, peak demand and energy consumption have been growing rapidly over the past five to six years, except in fiscal year 2021. Multiple factors, such as an increase in the number of electricity consumers, rural electrification, "24x7 power for all" programmes, increased power demand from agricultural and industrial sectors, electrification in the transportation sector, and greater usage of electronic appliances in day-to-day activities, have contributed to the overall increase in power demand. The growth is evident in data collected by the Power System Operation Corporation Limited (POSOCO) and Central Electricity Authority (CEA). The total energy supplied in fiscal year 2017 was 1,135 billion units (BU) compared to 1,396 BU in fiscal year 2022, an increase of 19 per cent. This increase in energy requirement puts stress on the generation and transmission sectors to ensure reliable power supply to consumers.

The power sector experienced positive growth (energy supply and peak power demand) at the all-India level until fiscal year 2020 (the pre-Covid period). The outbreak of the pandemic severely affected the growth, resulting in reduced growth in demand in fiscal year 2021 because of lockdowns and restrictions on human activities across the nation. However, with the easing of lockdowns in a phased manner, energy supply and power consumption are picking up and the growth is now comparable to the pre-pandemic period.

The increased growth in energy requirement might put the onus on fossil-based power plants in the coming days to meet the demand, as these plants generate a majority of the required energy quantum.

A closer look at data sets on peak power demand and energy supplied in the pre-Covid, Covid, and post-Covid periods sheds light on the impact of Covid-19 on the sector.

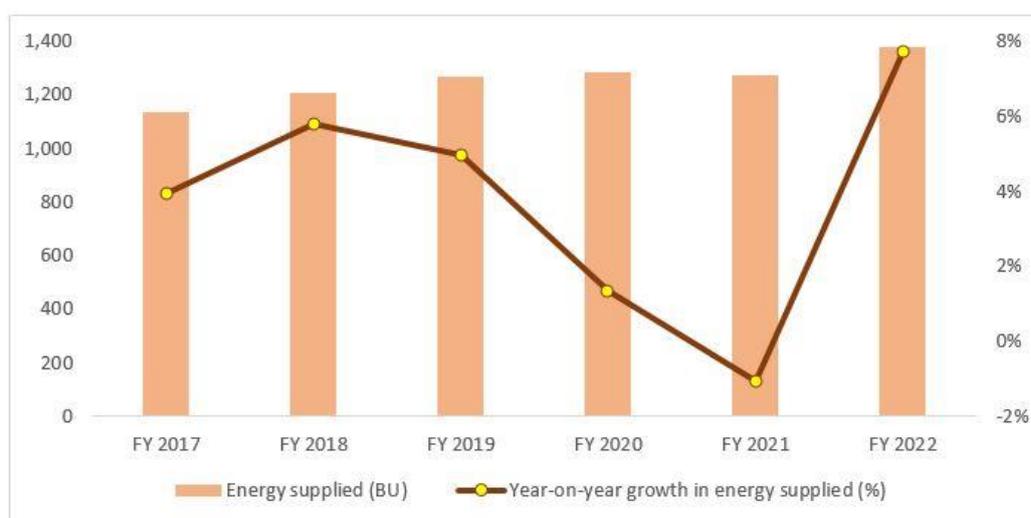


Figure 1: Year-on-year growth in energy supply

Source: CEA LGBR reports from fiscal year 2017 to fiscal year 2022

In fiscal year 2020, the installed capacity in the country was around 370 GW and energy supplied at the national level was 1,284 BU (Figure 1), with a compound annual growth rate (CAGR) of 4.2 per cent between fiscal year 2016 and fiscal year 2020. The peak power demand met was 183 GW (Figure 2), with a CAGR of 5.3 per cent between fiscal year 2016 and fiscal year 2020.



Figure 2: Year-on-year growth in peak demand met

Although a considerable growth in energy supplied can be observed from fiscal year 2017 to fiscal year 2020, a reduction in power demand can be observed in fiscal year 2021 because of the pandemic. With the nationwide lockdown in fiscal year 2021 (particularly in the months of April 2020 and May 2020), the country saw reduced economic (industrial and commercial) activities, which in turn resulted in reduced power consumption.

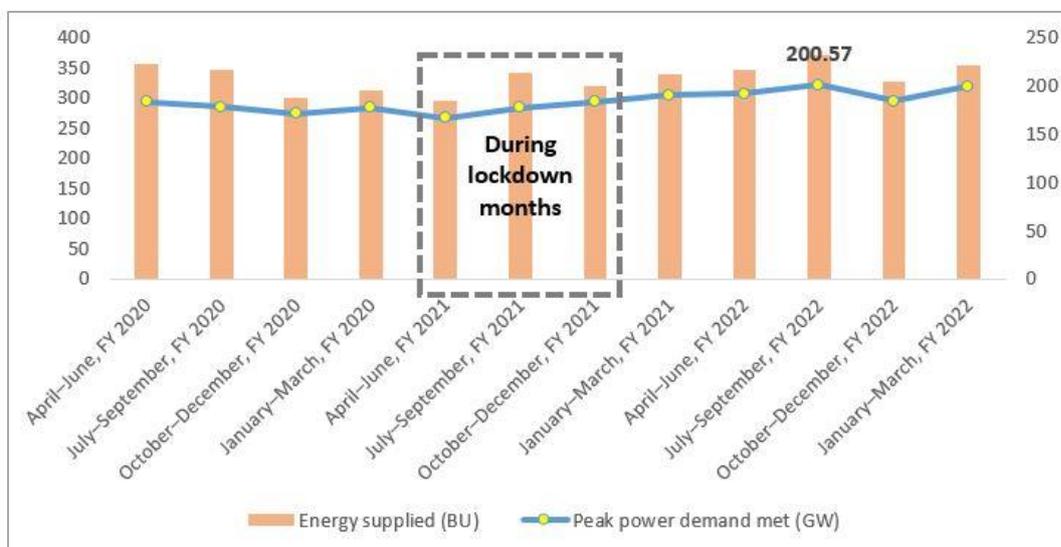


Figure 3: Quarter-wise energy and peak power demand met

Source: Monthly reports, POSOCO

To illustrate the power reduction at the national level during the pandemic, quarterly energy supplied and power demand met are presented in Figure 3. The energy supplied in the first quarter of fiscal year 2021 (April–June 2021) was 295 BU, as against 355 BU supplied during the first quarter of fiscal year 2020. The peak power demand met in the first quarter of the pandemic year, especially

during the lockdown period, was 166 GW, as against 183 GW in the same quarter of the pre-pandemic year. This shows a reduction in peak demand met of about 17 GW, and energy supply of about 60 BU across the nation in the first quarter of fiscal year 2021, compared with the first quarter of fiscal year 2020. As the Covid-19 restrictions were eased in a phased manner from the second quarter of fiscal year 2021, a slight reduction in peak power demand met and energy supplied of 1 GW and 6 BU, respectively, was observed when compared with data from the same quarter in fiscal year 2020.

Economic activities started to pick up across the nation with the lifting of restrictions, which in turn led to an increase in energy consumption and peak power demand requirement. This can be observed from the third quarter of fiscal year 2021, where energy and peak power demand growth increased and returned to pre-Covid levels. In the first quarter of fiscal year 2022, the energy supplied and peak power demand met reached 345 BU and 192 GW, respectively, showing a positive growth of 15 per cent and 13 per cent when compared with the first quarter of fiscal year 2021. Similarly, the second quarter of fiscal year 2022 experienced positive growth for energy supplied (12 per cent) and peak demand met (8 per cent) compared with fiscal year 2021. Thus, the power sector regained its pre-pandemic rhythm in fiscal year 2022.

Interestingly, the peak power demand in the post-pandemic year reached its all-time maximum level in the country, 200.57 GW, on 7 July 2021 at 12:00 p.m. A record energy supply of 371 BU was observed in the second quarter of fiscal year 2022, compared with the previous three years for the same quarter. With this, the CAGR of peak power demand increased to 5.1 per cent in the current fiscal year of 2022. If this growth continues in July 2022 of fiscal year 2023, then the peak power demand may reach around 210 GW, emphasising the need for additional energy generation in July 2022.

The energy generated on 7 July 2021 (24 hours) was 4.6 BU at the all-India level. The source-wise energy generation in fiscal year 2021 at the all-India level was 1381.86 BU (Figure 4). Despite the decrease in energy requirement in the pandemic year (fiscal year 2021), the majority (3/4th) of the energy was generated from fossil fuel-based plants (75 per cent). The energy sector contributes to 75 per cent of the total greenhouse gas emissions in the country because of the excessive use of coal. To reduce the dependency on coal-fired power plants and achieve the target of 50 per cent energy generation from clean energy sources by 2030, as per its COP26 commitments, the Government of India has set an ambitious target to install 500 GW of renewable energy capacity by 2030.



Figure 4: Source-wise energy generation in fiscal year 2021

India has witnessed an increase in energy supply in fiscal year 2022, with a 6.3 per cent growth over the previous year. This rapid growth may be the result of high demand arising from electrification in

the transportation and agricultural sectors and increased industrial and commercial activities under the Atmanirbhar Bharat initiative. These factors, along with the ongoing summer season, might lead to an increase in energy consumption and peak power demand. To address future challenges and supply secure and stable energy round the clock, proper power system planning is required in all sub-sectors. Also, considering the current coal crisis, India needs to speed up the expansion of renewable energy installed capacity and storage facilities to reduce the intermittency of renewable energy generation and de-stress thermal power plants. An increase in renewable energy capacity reduces the power purchase cost and carbon footprints. Overall, growth is a good sign for the sector and might boost development and capacity-building activities in the generation, transmission and distribution sectors.