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INDIAN POWER SECTOR

Outlook for thermal power sector revised to Stable

FEBRUARY 2023

Agenda

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Executive summary

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Sharp recovery in demand growth is leading to an improvement in utilisation of thermal assets and improving visibility on new PPAs

Higher tariffs in short-term market, time extension for complying with revised emission norms and realisation of overdues from discoms under LPS scheme are positive developments for the thermal segment

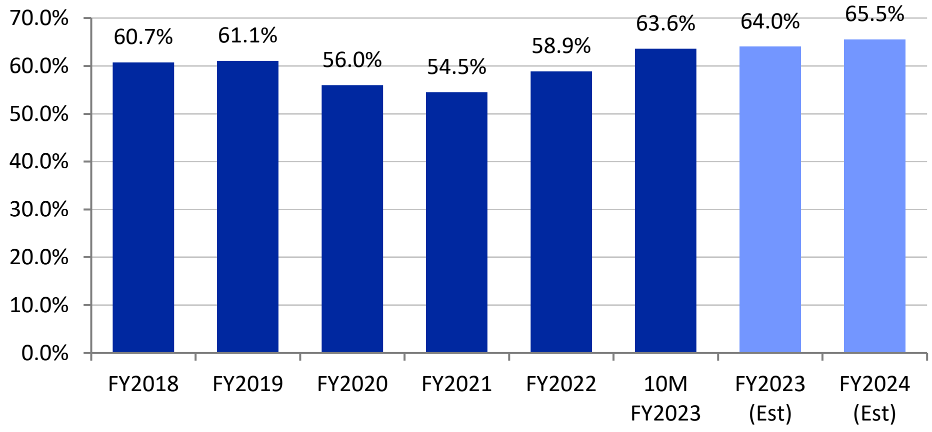
- **ICRA's outlook for thermal power segment has been revised to Stable from Negative**, supported by the healthy improvement in thermal PLF level in FY2023, which is likely to sustain in FY2024 and the reduction in dues from state distribution utilities (discoms). The PLF improvement is driven by the strong recovery in electricity demand growth in the country.
- **The all-India thermal PLF level is expected to improve from 58.9% in FY2022 to 64.0% in FY2023** and further to 65.5% in FY2024, led by a healthy demand growth and limited thermal capacity addition. The full-year demand growth for FY2023 is estimated at 9.5-10%, which is likely to moderate in FY2024, though remaining healthy at 5.5-6.0%.
- **A sustained growth in electricity demand is expected to improve the visibility on signing of new PPAs for the thermal IPPs.** This is evident from the recent medium-term (5-year) PPA tender for 4.5 GW issued by PFC Consulting Ltd. This is a positive for thermal IPPs, as lack of PPAs remained one of the major concerns leading to large stressed capacity in the thermal power sector.
- **The improved demand along with higher tariffs in the short-term market has led to an improvement in profitability for thermal IPPs in FY2023 YTD.** This is offset to some extent by the rise in coal prices (international & e-auction). Also, domestic coal-based projects are using imported coal to mitigate the shortfall in supply from domestic linkage sources as per the directions from the Ministry of Power. Timely pass-through of higher cost to discoms remains key in such a scenario.
- **Discoms in several states are clearing the outstanding dues to the power generating companies** through instalments of 12-48 months with funding support from the PFC and the REC, following the notification of the Electricity (Late Payment Surcharge and Related Matters) Rules, 2022 (LPS) by the Ministry of Power. While this is a near-term positive for generation companies, a sustainable improvement in payments is linked to improving the financial profile of the discoms. This remains a key monitorable from the outlook perspective for the thermal segment.

Outlook

Outlook for thermal power segment revised to Stable

Outlook revised to Stable for thermal power segment with improved PLFs driven by healthy demand growth

Exhibit: All-India thermal PLF trends



Source: ICRA Research, Central Electricity Authority (CEA)

- Healthy growth in electricity demand (10.7% YTD) leading to higher demand for thermal power
- Improved visibility on new PPAs; 4.5 GW medium term PPA tender notified by PFC based on requisition from discoms
- Higher prices in the short-term market; average tariff of Rs. 5.9 per unit in 10M FY23 vs 4.4 in FY22 & LT avg of 3.5/unit
- Realisation of overdues from the discoms under the LPS scheme

- Elevated international coal prices; negative for imported coal-based units without fuel cost pass-through
- Supply side constraints in meeting domestic coal demand

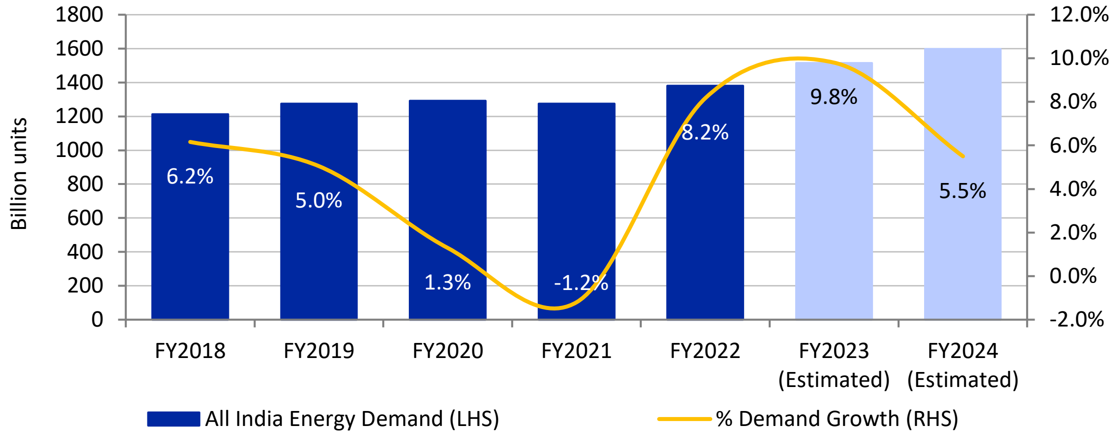
- The all-India average thermal PLF is expected to improve by 63.5-64.0% in FY2023 from 58.9% in FY2022, led by a strong growth in electricity demand. Further, the PLF improvement is likely to sustain in FY2024, given the slower-than-expected capacity addition and expectation of a demand growth of 5.5%.
- A sustained demand growth is likely to improve the visibility on signing of new PPAs for the thermal IPPs. Also, the LPS scheme is a near-term positive for the thermal segment. However, challenges remain due to weak financial position of the discoms and investment requirement to meet tighter emission norms. Also, any shortfall in supply of coal from domestic sources would lead to use of costlier imported coal. Timely pass-through of higher cost to discoms would remain important in such a scenario.

Electricity Demand & Generation

Strong demand growth leading to improved generation from thermal segment

Electricity demand growth remains strong in FY2023

Exhibit: All-India electricity demand trends & outlook



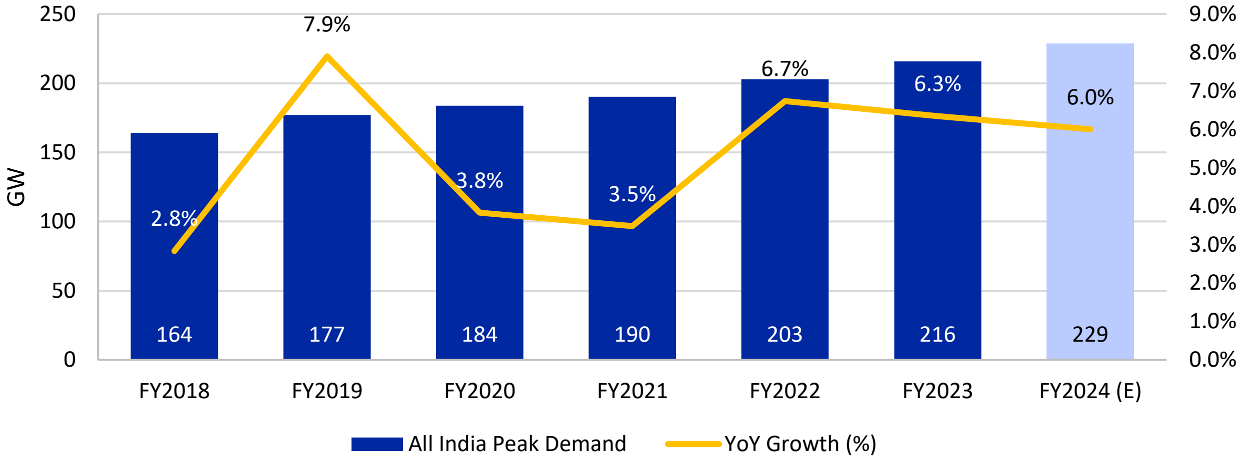
10M FY2021	1050 BU	-3.4% YoY
10M FY2022	1142 BU	8.7% YoY
10M FY2023	1264 BU	10.7% YoY

- The all-India electricity demand increased by 10.7% year-on-year (YoY) during the first 10 months of FY2023 (as per the provisional data from CEA) supported by the sharp growth of 18.5% reported in Q1 FY2023 because of the severe heat wave in North and Central India, along with a low base effect owing to the impact of the second Covid wave in Q1 FY2022. While the growth moderated to 5.8% in Q2 FY2023, it recovered to 7.3% in Q3 FY2023 supported by resilient economic activity and demand for heating with the onset of winter season. The full-year demand growth for FY2023 is expected to remain healthy at ~9.5 - 10.0%. While the electricity demand growth has typically trailed the GDP growth, it is higher than the estimated GDP growth of 7.0% for FY2023. For FY2024, the demand growth is estimated to be in the range of 5.5-6.0% basis the growth prospects of the Indian economy.

Source: ICRA Research, Central Electricity Authority (CEA)

Healthy growth in peak demand as well

Exhibit: Trends in all-India peak electricity demand



Peak demand reached all-time high of 216 GW in April 2022 against 203 GW in FY2022 & 190 GW in FY2021

Source: ICRA Research, CEA

- The peak demand reached an all-time high of 216 GW in April 2022, against 203 GW in FY2022 and 190 GW in FY2021, led by the heat wave in northern and central parts of the country. While the peak demand remained lower on a YoY basis in July'22 and August'22, it remained higher in the subsequent months. In fact, the peak demand showed a healthy growth of 9-13% during Nov'22-Jan'23, led by resilient economic activity and winter demand for heating. The peak demand is expected to increase to 225-230 GW in FY2024, with expectations of a sharp rise in demand during the summer season.

Thermal generation reported a 9.4% growth in 10M FY2023 to meet the growing demand

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Exhibit: Source wise generation in 10M FY2023 vs 10M FY2022

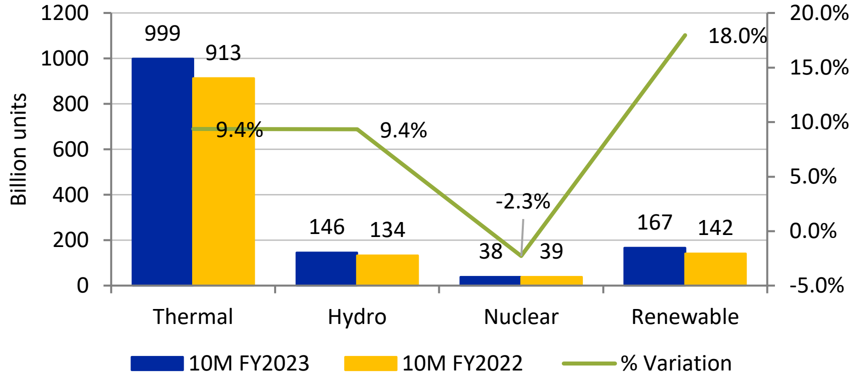
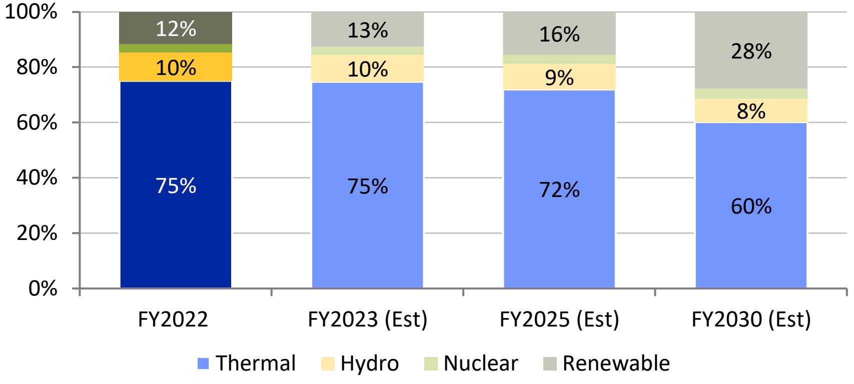


Exhibit: Trends in electricity generation mix



Source: ICRA Research, CEA

- The thermal power generation increased by 9.4% in 10M FY2023 over 10M FY2022, led by the sharp recovery in demand. Also, the generation from hydro segment witnessed an improvement of 9.4%, while the nuclear power generation declined during this period. The generation from RE sources increased by 18.0% during this period, led by the large capacity addition. The overall generation improved by 10.0% during this period.
- Based on the capacity estimates provided in the earlier section, the share of renewable energy-based generation is estimated to increase to 12.5% in FY2023, 13.8% in FY2024 and further to ~16% by FY2025 from the level of 11.5% in FY2022. This would in turn reduce the share of thermal power generation to about 72% in FY2025 from 75% in FY2022. Over the ongoing decade, the share of thermal generation is expected to witness a gradual reduction to reach about 60% by FY2030 with the rising share of RE. Nonetheless, it would continue to maintain a dominant share in the overall electricity generation.

Capacity Addition, Coal Supply and Short-term Tariffs

Limited capacity addition expected in thermal segment; coal stock level showing a gradual improvement

Limited capacity addition expected in the medium term from thermal segment

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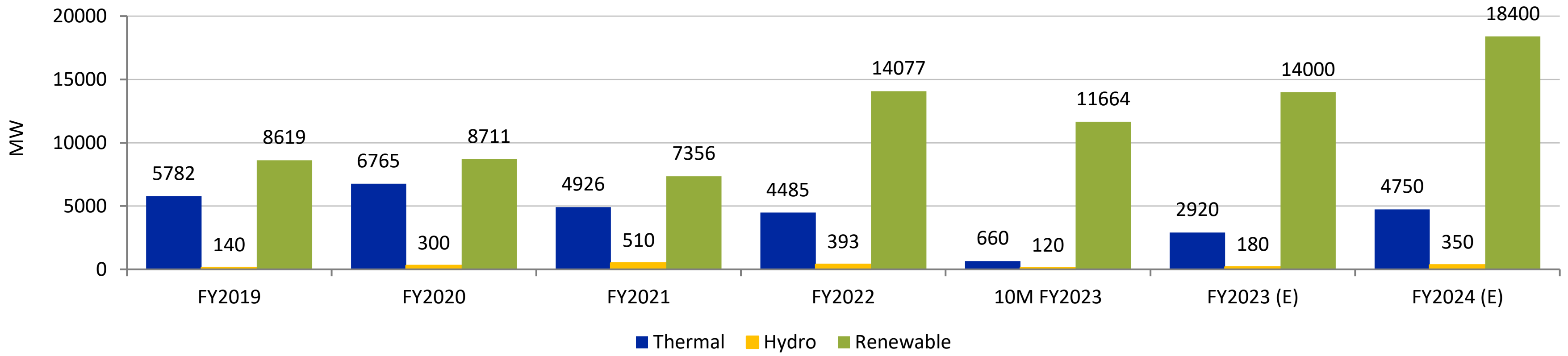
Exhibit: Annual capacity addition in thermal, hydro and RE segments



Source: ICRA Research, CEA

- The capacity addition in the power sector is expected to be driven by the renewable energy segment, given the policy focus and the Government's intent to increase the share of renewable generation in the energy mix.
- The under-construction capacity in thermal segment stands by 28 GW as per the latest data from CEA, mainly driven by the Central and state generation companies. There are no active projects under-construction by the private sector, with most of these projects stuck and no fresh investments. Nonetheless, some of these stressed projects may get revived post acquisition by a stronger sponsor.
- The capacity addition in the current fiscal is likely to remain subdued at ~3 GW and show some improvement to ~5 GW. This along with the healthy demand growth is likely to support the improvement in PLF level of thermal capacity over the medium-term.

Coal stock levels showing a gradual improvement; stocking up before the onset of summer season remains important

Exhibit: All India coal production and supply to power sector

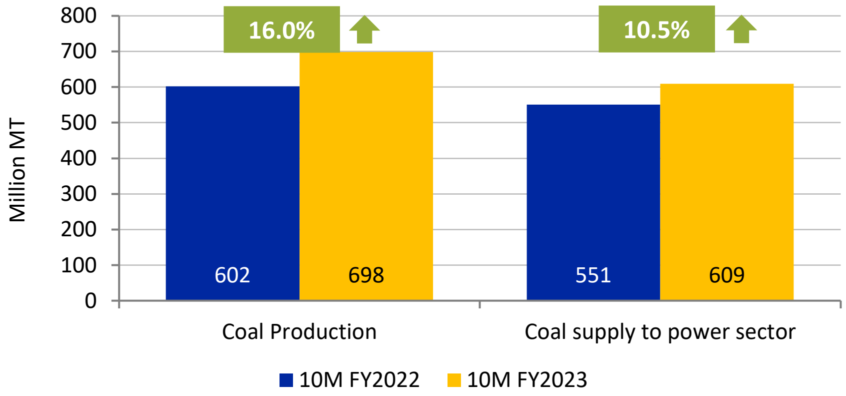
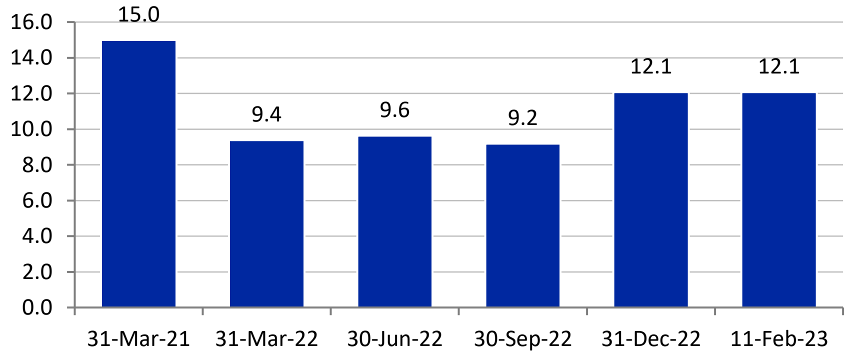


Exhibit: Fuel stock level (in no of days) for domestic coal-based plants at all-India level



Source: ICRA Research, CEA; Production data covers for CIL, SCCL and captive mines

- Domestic coal production by Coal India Limited (CIL), Singareni Collieries Company Ltd (SCCL) and captive mines increased by 16.0% in 10M FY2023 on a YoY basis. While CIL's production increased by 15.2% during this period, production by captive mines increased by 30.7%, thereby supporting a sharper growth in all-India coal production.
- Production growth was driven by higher demand for coal from the power sector amid the sharp recovery in electricity demand and high international coal prices. Supply to the power sector increased by 24.6% in FY2022 and 10.5% in 10M FY2023 on a YoY basis.
- The coal stock level at power plants is witnessing a gradual improvement, though remaining below the normative stock level of ~24 days. Stocking up coal before the onset of summer demand remains important to avoid any loss of availability or higher dependence on imported coal.

Coal imports to increase amid high international coal prices

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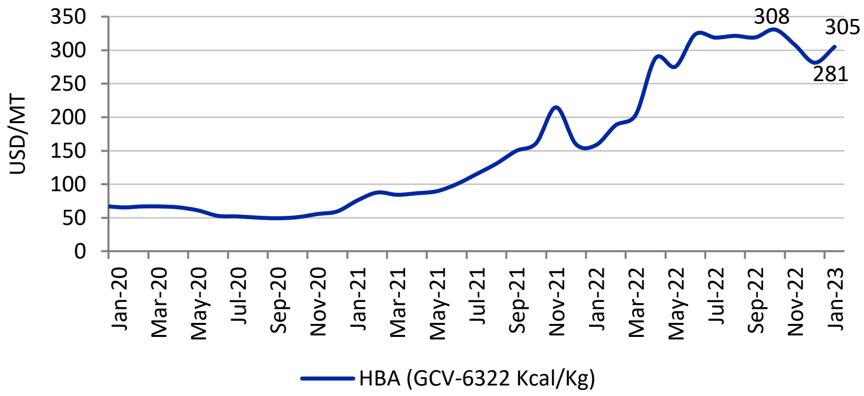
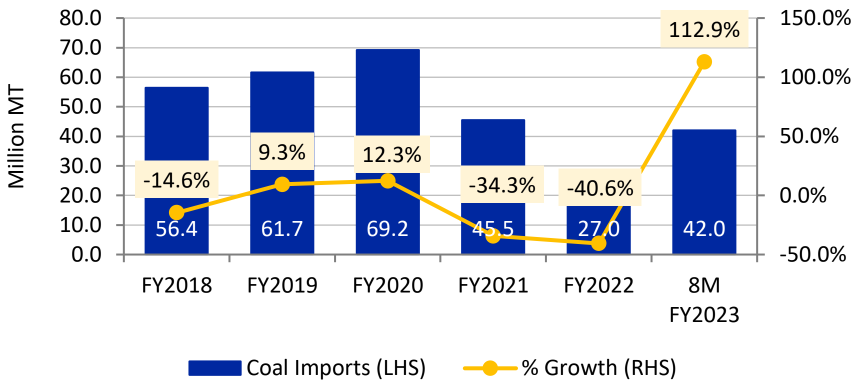
Exhibit: Trends in Indonesian coal price index (HBA)



Source: ICRA Research

Exhibit: Trends in coal imports by power utilities at all India level



Indonesia coal price index continues to remain elevated

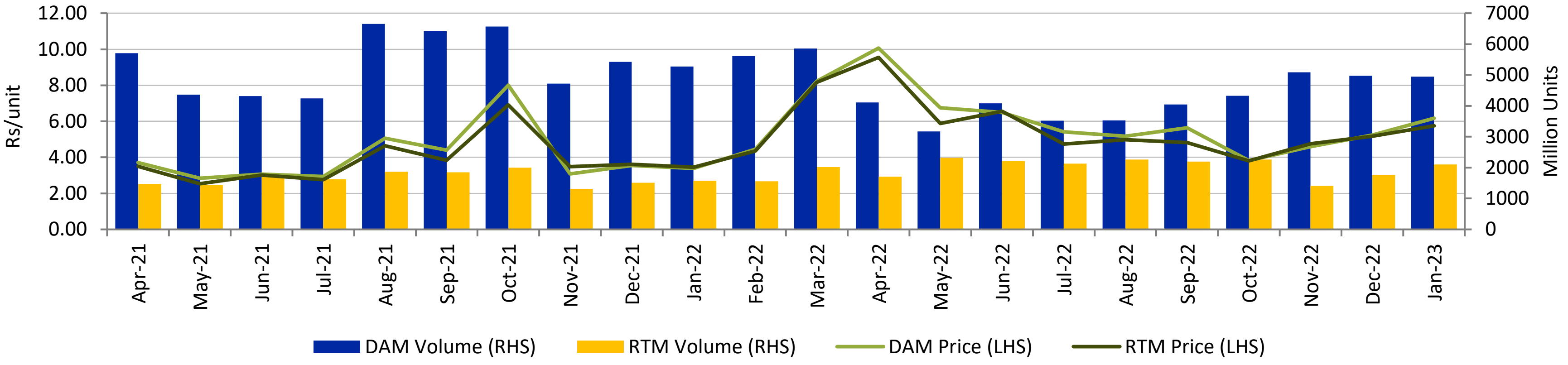
- The international coal prices have stayed elevated since the Russia-Ukraine conflict in February 2022 and the uncertainty in coal prices is likely to persist till geopolitical tensions ease.

Coal imports to go up in FY2023

- Coal imports are expected to increase in FY2023 amid the recovery in electricity demand and the directive issued by the MoP to domestic coal-based power plants to import and blend coal to offset any shortfall in domestic coal supply. Timely pass-through of additional fuel cost to discoms remains important in this scenario.

Spot power tariffs show a sharp increase in FY2023 over historical trends

Exhibit: Trends in spot power tariff and volumes in day-ahead market and real-time market on Indian Energy Exchange



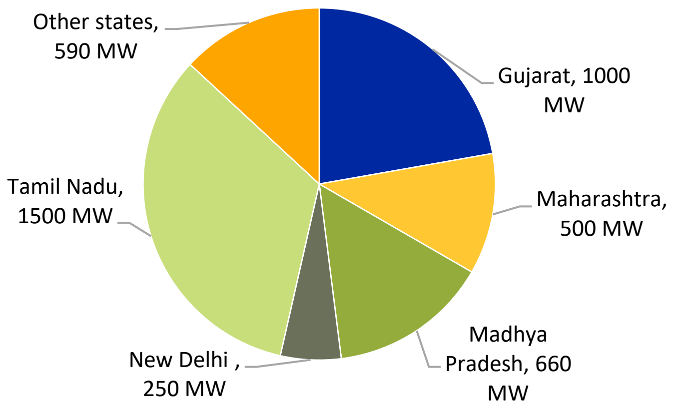
Source: ICRA Research, IEX; DAM: Day ahead market; RTM: Real time market

- The average spot power tariffs in the day-ahead market (DAM) of the Indian Energy Exchange (IEX) remained high in 10M FY2023 at Rs. 5.9 per unit against the long-term historical average of Rs. 3.0 - 3.5 per unit and Rs. 4.4 seen in FY2022, owing to the sharp revival in electricity demand along with the supply-side constraints arising from the high international coal prices impacting utilisation of imported coal-based units and the subdued domestic coal stock level.
- The prices have moderated gradually post Q1 FY2023 following the improved coal availability and higher supply from RE and hydro stations. While the average spot tariffs fell below Rs. 4.0 per unit for the first time in FY2023 in Oct'22, it again increased to over Rs. 5.0 per unit in Dec '22 and to over Rs. 6.0 per unit in Jan'23 with the sharp increase in demand. The benefit of higher short-term tariffs is partially offset through higher coal prices (imported & e-auction coal).

Key Policy Updates & Dues from Discoms

Tender notified by PFC Consulting for a 4.5 GW medium-term PPA

Exhibit: Expected off-taker mix for the 4500 MW medium-term PPA tender issued by PFC Consulting



Source: ICRA Research, CEA

The 4.5 GW medium-term PPA tender notified by PCL is a positive for thermal IPPs that do not have long-term or medium-term PPAs. The lack of PPAs remained a major concern for the thermal IPPs, leading to large stressed capacity in the sector. A sustained demand growth is expected to improve the visibility on new PPAs for thermal IPPs.

- PFC Consulting Limited (PCL), authorised by the Ministry of Power, Government of India to aggregate power on behalf of state distribution utilities, has issued a request for selection (RfS) for procurement of 4500 MW for a period of five years through tariff-based competitive bidding, by sourcing coal from allocated linkage under this bid through arrangement with Coal India Limited (CIL)/ Singareni Collieries Company Limited (SCCL).
- The power supply under the proposed PPA is scheduled to commence from April 2023, with the delivery point being the inter-connection of the project with the Central transmission network.
- As seen in the exhibit here, discoms in five states have shown interest to procure power through this bid to the extent of 3910 MW, with Tamil Nadu leading the requirement at 1500 MW followed by Gujarat at 1000 MW and the balance split between Madhya Pradesh, Maharashtra and New Delhi. The tendered capacity at 4500 MW is higher considering the expected requirement from other states.
- The bid parameter under this tender would be the tariff quoted, comprising fixed and variable charges. The variable charge component would include the cost of fuel and transportation. The fixed charges shall be revised annually to reflect 20% of the variation in WPI. The variable charges will be linked to the coal price notified by CIL/SCCL and the transportation charges notified by Indian Railways.

FGD installation deadline extended further by 24 months

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Exhibit: FGD implementation progress as on November 30, 2022

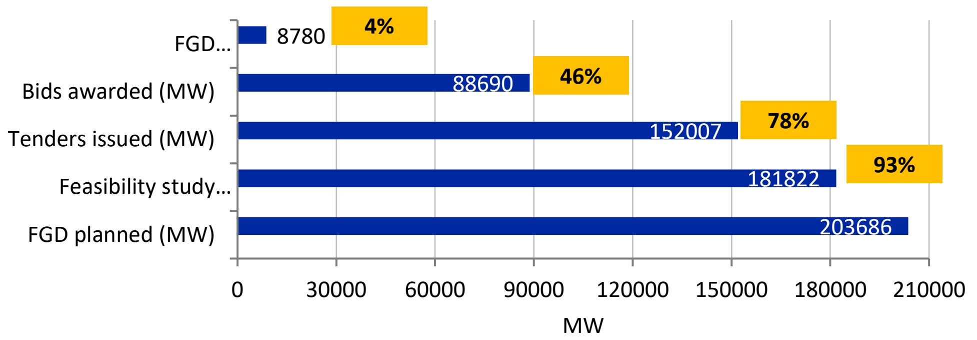


Exhibit: Revised timelines for FGD implementation'

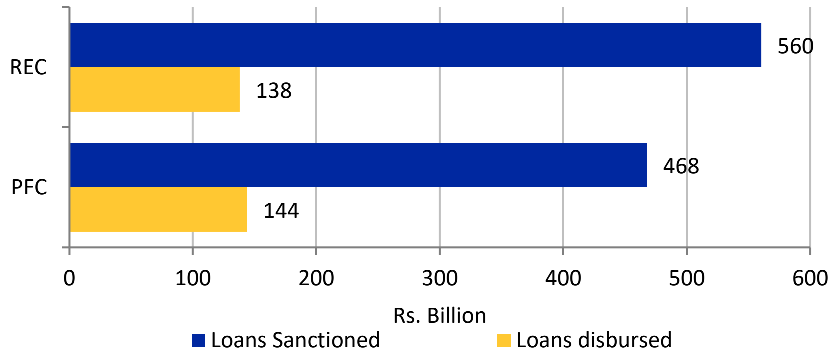
Category	Location/Area	Timeline	
		Non-retiring units	Retiring units
A	Within 10 km radius of national capital region (NCR) or cities with 1 million plus population	Dec 31,2024	Dec 31,2024
B	Within 10 km radius of critically polluted areas or non-attainment cities	Dec 31,2025	Dec 31,2027
C	All remaining units	Dec 31,2026	Dec 31,2027

Source: ICRA research, CEA

- While it has been nearly seven years since the notification on revised emission norms dated December 7, 2015 by the Ministry of Environment & Forests and Climate Change (MoEF), Government of India, the overall progress in complying with these norms has remained slow.
- As on November 30, 2022, the bids for supply and installation of the FGD system required to meet the SOx norms were awarded only for 46% of the identified capacity, while the FGD system was commissioned only for 4% of the coal and lignite-based capacity.
- The timeline has been further extended by 24 months by the MOEF vide its notification dated September 05, 2022, providing relief to the thermal power plants, especially in the private sector, given the challenges faced by these plants in securing funding and equipment to comply with the emission norms. This was earlier extended by 2 years in March 2021.
- The amended rules notified in March 2021 had specified a penalty mechanism for the first time, for the operation of non-compliant thermal power plants beyond the revised timelines. Considering a capital cost of Rs. 0.60-0.70 crore per MW towards FGD system, the total capital investment required for FGD implementation by the identified capacity is estimated at Rs. 1.0-1.2 lakh crore.

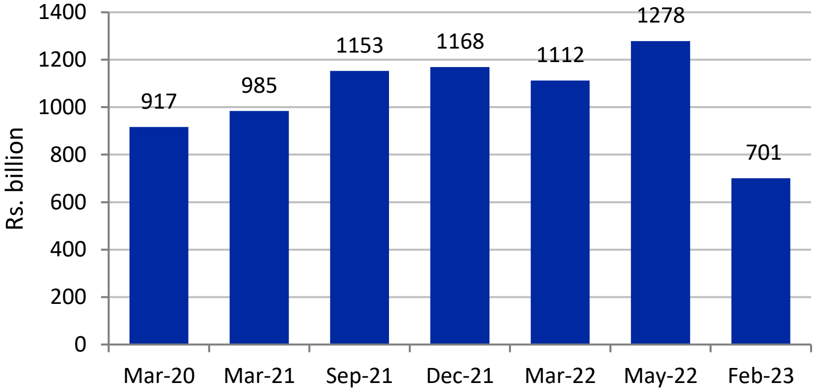
Funding secured from PFC & REC by discoms to clear overdues to gencos through instalments under the LPS scheme

Exhibit: Funding sanction by PFC and REC to discoms to clear their overdues in installments



Source: ICRA Research, Loans disbursed as of December 2022; Q3 FY2023 results announced by PFC and REC

Exhibit: Trends in dues from discoms to power generating companies



Source: ICRA Research, PRAAPTI Portal; Data for Feb-23 is as on February 21, 2023

- The Ministry of Power (MoP) on June 3, 2022 notified the Electricity (Late Payment Surcharge and Related Matters) Rules, 2022, with the objective of ensuring regular monthly cash flows to generating companies and instilling payment discipline on discoms. The rules offer a one-time relaxation to discoms wherein the amount outstanding, including principal and the late payment surcharge (LPS) on the date of notification of the scheme, will be frozen without further imposition of LPS and the same will be repaid by discoms through monthly instalments of 12 to 48 months.
- The discoms in several states including Andhra Pradesh, Telangana, Karnataka, Jharkhand, J&K, Rajasthan and Madhya Pradesh etc have received sanctions from PFC and REC aggregating to Rs. 1.0 trillion to clear the outstanding dues to the power generating companies through instalments of 12-48 months. This is enabling a reduction in the receivable position for the power generating companies at all-India level, which had increased to Rs. 1.3 trillion as of May 2022 as per the data from PRAAPTI portal. While this is a near-term positive for gencos, a sustainable improvement in payments can only be achieved by improving the financial profile of the discoms.

Rating Trends in Thermal Power Segment

Credit rating movement in ICRA-rated portfolio in thermal power segment

Exhibit: Rating distribution for ICRA-rated portfolio in thermal power sector

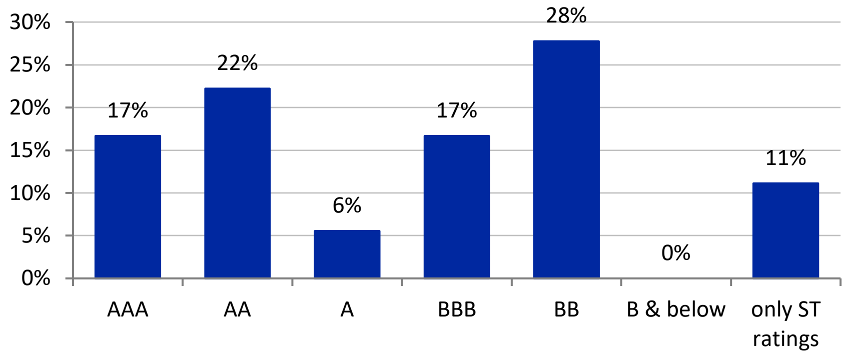
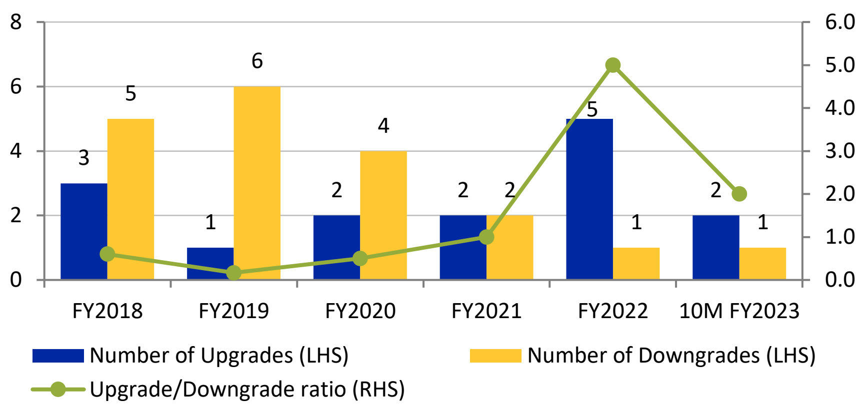


Exhibit: Trends in rating upgrades and downgrades for power sector ratings



Source: ICRA Research

- The thermal power portfolio is spread across the rating categories, with the Central PSUs and thermal IPPs promoted by strong sponsor groups occupying the AAA & AA categories followed by under-construction projects in the BBB category. The ratings in the BB category constitute entities facing challenges due to lack of PPAs/cost overruns / payment delays among others.
- While the downgrades outpaced the upgrades till FY2020, the number of upgrades improved in FY2022 & FY2023 YTD led by recovery of overdues from discoms with funding support under the Atmanirbhar package, improved demand scenario leading to higher off-take & tariffs and successful implementation of debt restructuring for one thermal asset.

Key rating actions in FY2023 YTD

Company Name	Previous Rating	Revised Rating	Remarks
Aravali Power Company Private Limited	[ICRA]AA- (Stable) / [ICRA]A1+	[ICRA]AA (Stable) / [ICRA]A1+	Significant improvement in the receivable and liquidity position of the company owing to clearance of past dues and timely inflow of current dues from all the discoms. Timely progress on the FGD capex is another upgrade factor.
R K M Powergen Private Limited	[ICRA]B+ (Stable)	[ICRA]BB (Stable)	Improved performance of the thermal power plant led by higher demand and a sharp increase in tariffs in the short-term power trading market, which improved its credit metrics and liquidity position. Further, the signing of a medium-term PPA has improved the company's revenue and cash flow visibility over the medium term
Dhariwal Infrastructure Limited	[ICRA]BBB+ (Stable) / [ICRA]A2	[ICRA]BBB+ (Positive) / [ICRA]A2	Improved revenue visibility with the signing of a new medium term PPA at a remunerative tariff and reduction in debt
OPG Energy Private Limited	ICRA]BBB- (Negative) / [ICRA]A3	ICRA]BB (Negative) / [ICRA]A4	Inability of the company to pass-through the increase in the cost of natural gas, through the tariff under its PPA with C&I customers

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Thank You!