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46 Gigawatts of Proposed Coal-Fired Power Projects Cancelled in 12 Months, With 600 Gigawatts Cancelled Last Decade

Coal-Fired Project Pipeline Poses US$40bn Risk in Asset Write-Downs

Executive Summary

Despite slower than expected growth in renewable energy installs, India's electricity market has continued to transition over the last three years with coal power becoming largely unbankable.

Between April 2017 and January 2020, India installed 29 gigawatts (GW) of renewable energy capacity with investment of roughly US$30bn in the sector (including grid expansion to support new capacity).

The Government of India's objective of 450GW by 2030 has been aided by significantly low solar and wind tariffs discovered through competitive reverse bidding auctions.

During this same period, 19.9GW of coal-fired capacity was added while 5.6GW of end-of-life coal-fired plants were retired. That leaves just 13.8GW of net coal-fired capacity adds over almost three years—a dramatically lower expansion compared to almost 100GW of capacity additions between financial years (FY) 2011/12 and 2015/16.

The slowing growth in India's coal-fired capacity is reflective of India's strong energy transition and the country's growing low cost renewable energy capacity.

Figure 1: India's Coal-fired Capacity Additions FY2017/18 – FY2019/20 (Apr-Feb)

(GW)	Additions	Retirements	Net Additions
2017/18	8.7	2.4	6.3
2018/19	5.8	2.2	3.6
2019/20 (Apr-Feb)	5.4	1.6	3.8
Total	19.9	6.2	13.8

Source: Central Electricity Authority of India (CEA).

India's Shrinking Pipeline of Coal-Fired Power Projects

There has been a significant reduction in India's pre-construction pipeline of coal-fired power projects in the last 12 months to January 2020, according to Global Energy Monitor's (GEM) recent update of its Global Coal Plant Tracker (Refer to Figure 2).

GEM's Global Coal Plant Tracker (GCPT) categorises coal-fired power projects via the level of regulatory approvals a project has attained. As per GCPT, the status of announced, pre-permitted and permitted project proposals is distinguished from pre-construction stages of project development, to projects with no regulatory approvals (announced), to projects with all the regulatory approvals (permitted). If there has been no progress on the project for two years, GCPT categorises the project as 'shelved'. The project is considered to be 'cancelled' if there has been no progress for four years or the proponents have formally cancelled the project.

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Figure 2: India's Coal-fired Power Plant Pipeline

India (GW)	Jan-20	Change from Jan 2019	Jan-19
Announced	8	-3	11
Pre-permitted	10	-14	24
Permitted	11	-12	22
Announced+Pre-permited+Permitted	29	-28	58
Construction	37	1	35
Operating	229	8	221
Shelved	66	-22	88
Cancelled	538	46	491
Shelved + Cancelled (2010-2019)	603	24	579
Retired (2006-2019)	10	1	9

Source: Global Energy Monitor, Global Coal Plant Tracker, IEEFA calculations.
Note: GCPT tracks units more than capacity of 30MW.

In January 2019, there were 58GW of coal-fired projects in the pre-construction pipeline. This was halved to 29GW by January 2020. Of the 28GW absent from the pre-construction pipeline, 8GW of power projects were commissioned and 1GW had begun construction.

As per GCPT, the last twelve months saw formal and informal cancellations of 46GW of coal-fired power projects (22GW were already under the 'shelved' category as per the GCPT January 2019 update).

India's Coal-Fired Capacity Additions and Retirements

The Government of India's last study on the country's long-term installed capacity was the Central Electricity Authority's (CEA) draft on the optimal generation mix by 2030. It predicted requirements of 266GW of on-grid coal-fired capacity (including lignite) with 450GW of renewable energy capacity by 2030. This assumes net new capacity installations of 61GW in the next decade, in addition to the current operational 205GW of in-front-of-the-meter capacity.

At the same time, India's National Electricity Plan 2018 identified 48GW of operational coal-fired capacity to be retired by FY2026/27, due to reaching their operatable end-of-life period, or in some cases, due to the units not having enough space to implement emission control equipment.

On 17th March 2020, the Minister of State (MoS), Ministry of Environment, Forests and Climate Change (MoEFCC), Babul Supriyo provided data on India's coal-fired power project pipeline and suggested that 62GW of coal-fired power plants are under various stages of construction. However, GEM's data clarifies that only 37GW of plants are currently under construction and 27GW of projects are under various stages of pre-construction development stages.

Given the severe financial stress in the thermal power sector and the unrelenting competition from ever cheaper renewables, India's net new coal capacity additions will likely be only half that projected in CEA's optimal generation draft report of two years back. IEEFA projects only 30GW of net new additions in the coal-fired sector by FY2029/30.

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As it stands today, without subsidy support from the government (or via NTPC), construction of new non-mine-mouth capacity will be financially risky and unviable.

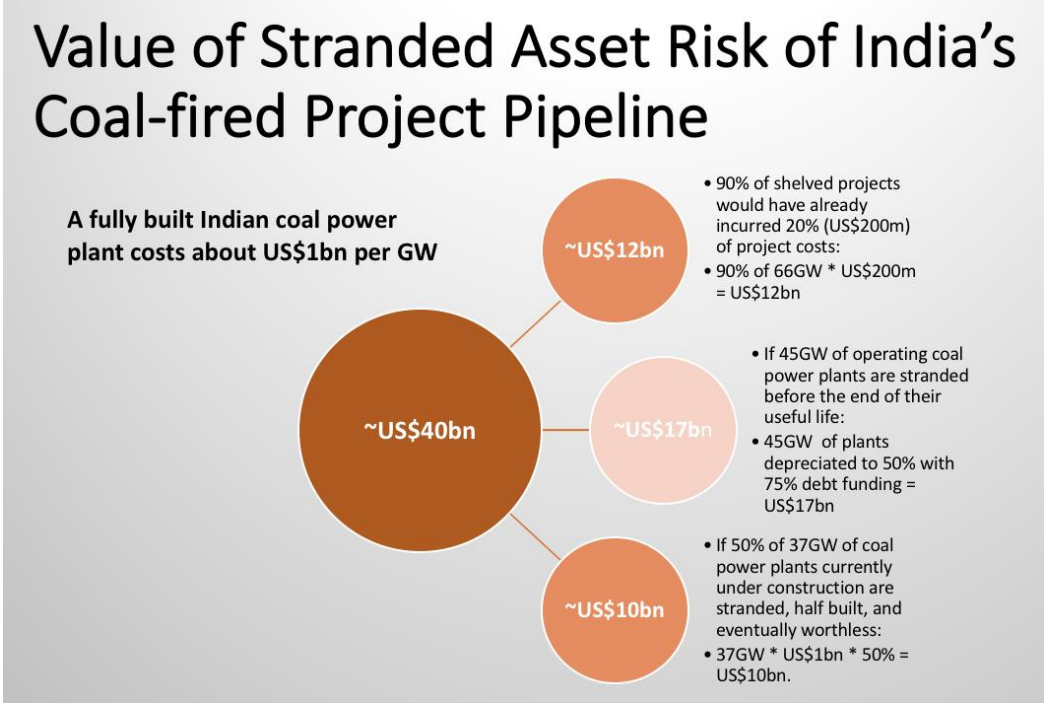
NTPC and Tata Power, two of India's largest thermal power operators, have decided not to undertake any new development of coal-fired power projects; for NTPC this will occur beyond the completion of its existing 10.8GW plants already under construction. Instead, both developers have committed to pivot more of their investment spending into renewable energy over the coming decade.

Stranded Asset Risk in Coal-Fired Power Sector

Given the massive stranded asset risk in India's coal-fired power sector, IEEFA expects the vast majority of currently shelved projects (66GW) to be terminated. Moreover, a significant number of the 37GW of projects currently under

construction but long delayed also face stranded asset risk with the ongoing underperformance of India's coal-fired fleet which has been operating at sub-optimal utilisation rates of 55-60% for the last three years. Additionally, the under construction projects are equally exposed to systematic risk in the sector arising from a lack of coal availability, the lack of new power purchase agreements (PPAs) and payment delays from debt-ridden state-owned power distribution companies (discoms).

IEEFA estimates the stranded asset risk value of India's coal-fired project pipeline as follows:



Source: IEEFA estimates.

The Reserve Bank of India has long been working to try to resolve the US$40bn of stranded assets in the coal-fired power sector, as well as the near US$20bn of mostly stranded gas-fired power generation assets. However, the bank's resolution process seems to be abnormally favouring the promoters more than the lenders. Banks have taken a 60-80% haircut on their lending whilst developers have protected themselves through financial structures such as special purpose vehicles designed to isolate a firm from financial risk.

Gujarat recently completed a trial whereby the state operated its coal-fired power plants at average capacity utilisation rates of 40%, so as to provide peaking power to balance ever higher variable renewable energy. There are economic implications of adopting such a model nationally—using coal plants running at half the design rate—as it makes energy materially more expensive per unit of electricity produced. While it is important that India maximise the value of its existing investments, it is yet to be established that widespread repurposing of existing coal plants to provide peaking power is economically viable and sensible.

India is yet to experience the growing global capital flight from coal mining or thermal coal-fired power plants on environmental, social and governance (ESG) grounds. But the country is seeing capital flight by its domestic financial institutions for economic reasons—coal-fired power plants are increasingly unable to compete with low cost, intermittent renewable energy infrastructure.

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When combined with the near US$40bn of non-performing assets being worn by discoms, the US$60bn of financial stress in the thermal power generation sector has created a massive liquidity crunch in the energy and hence financial sectors. This is paralysing the banking sector's capacity to lend to the renewable energy sector, and therefore stymieing India's renewable energy goals.

Conclusion

The last decade has seen a staggering 600GW of Indian coal-fired power project proposals cancelled. The failure of these proposals has caused losses of private as well as public capital and resources, but only a fraction of the losses that would have been incurred if they had proceeded.

Under the leadership of Prime Minister Narendra Modi, the Government of India has embraced the enormous opportunities emerging from low cost renewable energy, including the additional energy security benefits from a reduced reliance on imported expensive fossil fuels, as well as providing some initial progress against the chronic air pollution increasingly choking North India.

A rapid expansion of domestic wind and solar infrastructure is driving sustainable investment and employment prospects. At the same time, renewables are providing part of the solution to growing water stress and air pollution issues eroding quality of life and the sustainability of economic growth.

To date, 126 globally significant financial institutions have declared coal exclusion, divestment or restriction policies, including 15 new or tighter policies announced in the first 10 weeks of 2020 alone.

IEEFA believes coal power project cancellations in India will continue to snowball in line with international trends, a clear reflection of the need to address the rising threat of climate change.

In IEEFA's opinion, India must look to retrofit and reconfigure its existing thermal power plants to improve flexibility so that they act as a balance in support of the increasing reliance on low cost but intermittent renewable energy—increasingly the mainstay of India's future power grid.

With the dramatic fall in liquified natural gas (LNG) prices likely to be a long term realignment, India should also evaluate the opportunities for gas peaking power plants to compliment more battery storage. A long term bankable time-of-day pricing signal and smart metering are two prerequisites to provide the right system to incentivise financing of these new investments.

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About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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Energy Finance Analyst Kashish Shah has a master's degree in economics from the University of Sydney and an engineering degree from NMIMS University in Mumbai. He has worked in the Global Analytics Division of the Royal Bank of Scotland with a focus on regulatory policies. Kashish has research experiences in India's public sector in his work for a member of Indian Parliament and a University of Sydney-based research group.