

Tata Power: “Renewables to Power Growth”

An Exemplar of the Indian Energy Transition

Executive Summary

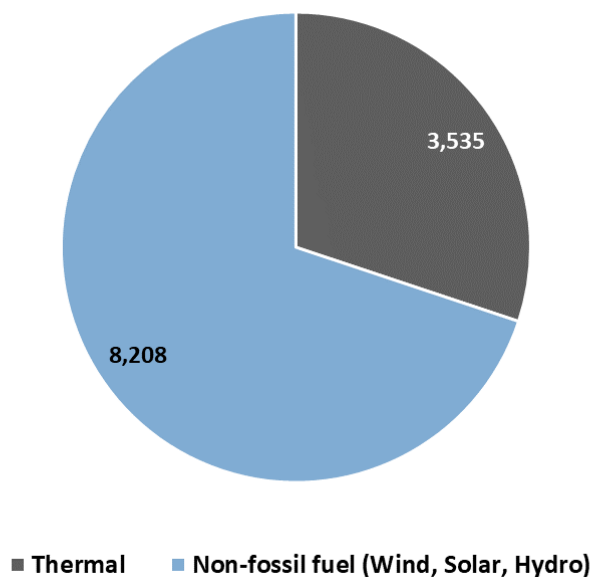
Tata Power recently made it publicly clear that it will not be building any new coal-fired power capacity going forward.

Furthermore, the company has committed to driving the great majority of its power capacity expansion via lower cost renewable energy.

The majority of Tata Power’s thermal capacity is centred on its Mundra coal-fired power plant which is financially unviable and making consistent, significant losses that are dragging back the company’s overall financial performance. Since the Mundra plant was commissioned in fiscal year (FY) 2012-13, thermal power has made up only 3% of net capacity additions whilst wind and solar make up 87% and hydro 11%.

This represents a significant departure from the accepted wisdom of just a few years ago that a major expansion of coal-fired power would be required to serve India’s growing electricity demand.

Figure 1: Renewables and Hydro Will Dominate Tata Power’s Future Capacity Additions (MW)



Source: Tata Power Strategic Intent 2025.

Tata Power’s shift mirrors the transition underway within the Indian power sector as a whole, driven by least cost renewable energy.

Over the first 11 months of FY2018-19, only 20 megawatts (MW) (net) of thermal power has been added in India after taking closures into account. Renewable energy additions over the same period totalled 6,740 MW.

Tata Power’s shift mirrors the transition underway within the Indian power sector, driven by least cost renewable energy.

The dramatic turnaround in the generation growth plan of India’s largest integrated power company is encapsulated in the title of Tata Power’s most recent 2018 annual report, “Renewables to Power Growth”. The introduction to the annual report states that “the Company has embarked on a journey of growth by focusing on renewables, distribution and transmission of power.”

Tata Power is currently a significant player in the coal-fired power, renewables, transmission and distribution sectors. The company also has a presence in electric vehicle (EV) charging infrastructure, solar photovoltaic manufacturing and is India’s largest installer of rooftop solar.

Thermal power at present makes up 70% of the company’s total capacity. This is however, a product of Tata Power’s longer-term history prior to 2013 when renewable energy was still relatively expensive.

This report examines the significant recent shift in Tata Power’s plans for its future which move it away from a reliance on coal-fired power, making the company a leading example of the ongoing transition in the Indian power sector.

The developments exemplifying this include:

- Since FY2012-13, Tata Power has added only 68 MW of thermal power net of decommissioning of old plants. Over the same period, the company has added more than 2,000 MW of wind and solar power and 246 MW of hydro power. Non-thermal power additions consist of 97% of all additions over this period.
- The company’s 4,150 MW imported coal-fired power plant at Mundra represents the majority of its coal-fired power capacity. Higher-than-expected cost of imported coal led to this plant reporting a net loss of US\$-241m in FY2017-18, higher than the US\$-119m loss from the prior year.
- With the Mundra plant’s loss reaching US\$-191m for the first three-quarters of FY2018-19, a bailout of the plant is being planned which will increase the tariff burden on consumers and realise a debt write-down for bank lenders. Tata Power’s CEO has stated that this bailout will only halve the losses at Mundra.
- Tata Power’s renewables operations recorded earnings before interest, depreciation and amortisation (EBITDA) of US\$249m in FY2017-18, an EBITDA

margin of 89% and representing 13.9% of assets deployed. Profit after tax was US\$41m.

- The company’s plan, ‘Strategic Intent 2025’ calls for up to 70% of new capacity additions to come from solar, wind and hydro through to 2025 (Figure 1). By then, Tata Power’s power capacity composition will have significantly transitioned, mirroring the transition encapsulated in the Government of India’s National Electricity Plan (NEP 2018). Tata Power will need to increase its rate of renewable addition significantly in order to reach this target.
- In February 2019, Tata Power Delhi Distribution Ltd (Tata Power-DDL) collaborated with Mitsubishi Corporation and AES India to install India’s first grid-scale battery storage system.
- Tata Power-DDL is also rolling out smart meters across its network and moving into electric vehicle (EV) charging with a vision of integrating EV charging and energy storage with Tata Power’s leading rooftop solar position.
- With more than 40 GW of existing coal-fired power plants under financial stress in India, Tata Power is seeking to only add new coal-fired power capacity via fire-sale acquisition, at 30%-40% of historical investment. It no longer plans to build new coal-fired power plants.
- Tata Power has identified key risks specific to the company that may impact its business including the availability of cheap coal imports, price and exchange rate risk on coal imports, and pressure on the company’s existing generation assets from increasing concern over emissions and water and the possibility of new regulations.

India has helped drive its transition with ambitious renewable energy installation targets including an aim to reach 275 GW of renewable capacity by 2027. Over the same period, net coal-fired power additions are planned to slow significantly.

However, the current Indian fiscal year has seen net coal-fired power additions come close to ceasing altogether – the shift away from new coal-fired power is moving faster than anyone had predicted.

Tata Power is not alone in demonstrating the transition now happening in India’s power system, but it is one of the best examples of that transformation in action.

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Introduction

Tata Power is India’s largest integrated power company with a presence in electricity generation, transmission and distribution. The company also has a presence in electric vehicle (EV) charging infrastructure, solar photovoltaic manufacturing and is India’s largest installer of rooftop solar.

Historically, Tata Power has been dependent on coal-fired power generation, along with other Indian power generators. However, more recently the company has turned away from building new coal-fired power plants and towards renewable energy. Since the end of FY2012-13, 87% of all net power capacity additions have come from solar and wind installations, with most of the rest made up of hydro power additions (11%).

The major change in Tata Power’s generation growth plan is encapsulated in the title of the company’s most recent annual report for fiscal year (FY) 2017-18, “Renewables to Power Growth”.

Within the annual report, Chief Executive and Managing Director Praveer Sinha notes that “The existing model of supply and usage of power will undergo significant transformation with the advent of new technologies and climate change challenges. This will encourage large scale renewables, demand-side services and digitisation”.¹

The introduction to the annual report states that “Tata Power takes pride in being a leader in the renewable energy area. With a view to reduce carbon emissions and safeguard the environment, the Company has embarked on a journey of growth by focusing on renewables, distribution and transmission of power”.²

“...the Company has embarked on a journey of growth by focusing on renewables, distribution and transmission of power.”

Tata Power in Context: Transformation in the Indian Power Market

Tata Power’s shift towards renewables comes within the context of a transforming Indian power system.

India is transforming its national electricity system via a major roll-out of deflationary renewable energy. In doing so, it is improving energy security, reducing reliance on imported fossil fuels, addressing air and water pollution, and lowering emissions intensity.

¹ Tata Power, [Renewables to Power Growth – Annual Report 2017-18](#).

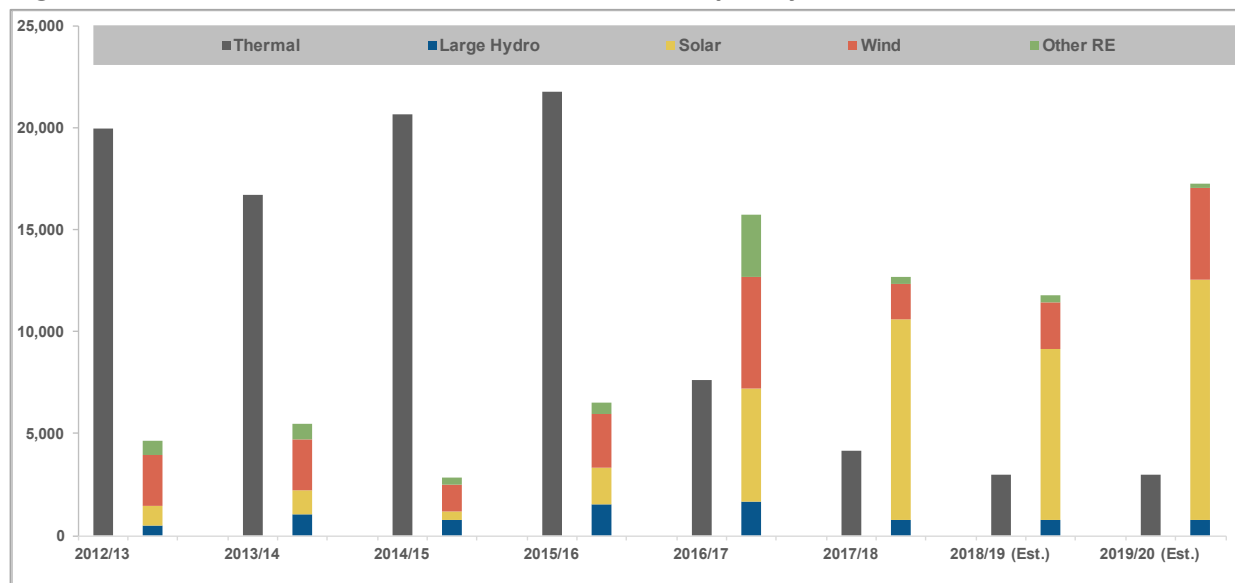
² Tata Power, [Renewables to Power Growth – Annual Report 2017-18](#).

There were large reductions in the cost of Indian solar photovoltaic (PV) and wind power in 2017, to the extent that Indian renewables are now cheaper than existing domestic coal-fired power. The Indian fiscal year ending in March 2017 was the first year that combined renewable installations outpaced coal-fired power construction (with net thermal installs falling 65% year-on-year to a decade low of 7.7 gigawatts (GW) (Figure 2).

The following fiscal year, from April 2017 to March 2018, saw India install just a net 4.2 GW of coal-fired power (down another 46% year on year) and more solar PV capacity than all other technologies combined, with a total of 10.4 GW added.

The current fiscal year (to March 2019) has seen India’s renewables ambition increase even further. The government is already looking beyond its initial target of installing 175 GW of renewable energy by 2022, a target many thought highly ambitious at the time it was set, and which was followed by a further target of 275 GW by 2027. The Ministry of New and Renewable Energy is now targeting 40 GW of renewable energy auctions each year until 2028, comprising 30 GW of solar and 10 GW of wind power.³

Figure 2: India Renewable and Thermal Power Capacity Additions (MW)



Source: Central Electricity Authority of India (CEA), MNRE India, IEEFA estimates.

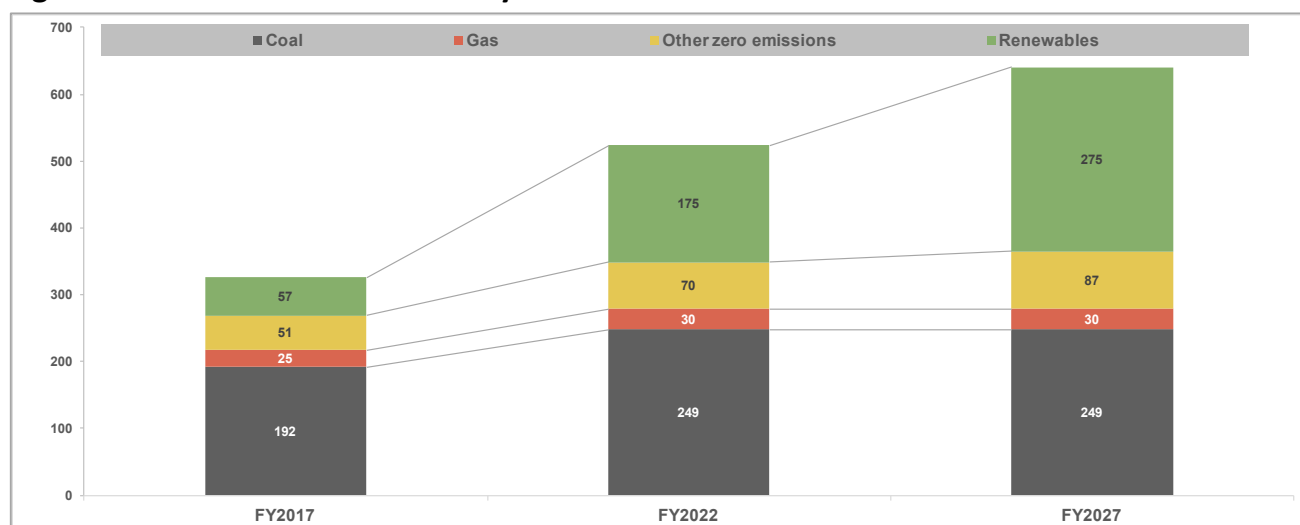
National Electricity Plan

India’s newest electricity sector blueprint - National Electricity Plan (NEP) 2018 - released in January 2018, retained the core target of 275 GW of renewables by 2027 from its draft in 2016 (Figure 3).

³ Economic Times Energyworld, “India to auction 40 GW renewables every year till 2028”, 1st July 2018.

The NEP 2018 includes a target for closing 48.3 GW of end-of-life coal plants. Specifically, the plan forecasts 22.7 GW of coal power plant closures over five years from FY2017-FY2022. This would include 5.9 GW of normal end-of-life retirements and 16.8 GW of closures due to inadequate space for flue gas desulfurization (FGD) equipment. An additional 25.6 GW of coal capacity is slated for retirement in the five years to FY2027.⁴ Over the decade to FY2027, closures will average 4.8 GW per annum.

Figure 3: India’s National Electricity Plan



Source: Central Electricity Authority of India, IEEFA estimates.

Taking the retirements and planned new construction totalling 94.3 GW into account, the NEP 2018 sees India’s coal power capacity reaching 238 GW in 2027, 11 GW lower than the 2016 draft forecast, with the great majority of future capacity additions based on wind and solar energy.

However, FY2018-19 has seen the expansion of thermal power capacity in India slow much faster than previously anticipated, suggesting peak coal capacity in India may be closer than many predicted. The deep financial stress of the thermal power sector has been a major contributor to this slowdown. Over the first 11 months of FY2018-19, only 20 MW (net) of thermal power has been added in India after taking closures into account. Renewable energy additions over the same period totalled 6,740 MW (Table 1).

⁴ India’s National Electricity Plan Annexure 5.4, 5.5, 5.6.

Table 1: Change in India’s Installed Electricity Capacity Since 2017-18 (GW)

Source	Mar-18	Feb-19	Change (GW)
Renewables	69.02	75.76	6.74
Large Hydro	45.29	45.40	0.11
Nuclear	6.78	6.78	-
Thermal	222.91	222.93	0.02
Total Ongrid Capacity	344.00	350.87	6.86

Source: Central Electricity Authority of India, Ministry of New and Renewable Energy, IEEFA calculations.

Thermal Power Sector in Financial Stress

Although Global Coal Plant Tracker estimates 94 GW of TPPs in the development pipeline in India (including 36 GW under construction), the cancellation of 239 GW of planned projects since January 2015 puts this into context. New, non-mine mouth and imported coal-fired power plants are both unbankable and unviable in India.

India’s TPP sector is suffering clear stranded asset risk, making access to capital increasingly problematic.

Stranded assets commonly reflect a myriad of problems including outdated technologies, legal issues around land acquisition, promoter financial distress, a geographical misfit between proposed plant locations and the distance coal supplies must travel, and unviable tariffs.

TPP proposals in India are generally requiring tariffs at increasingly high rates. As per India’s CEA estimates, the tariff for a new emission controls compliant pit-head supercritical coal-fired power plant should be Rs4.39/kilowatt hour (kWh) (for a plant load factor of 60%). With competitive renewable energy power purchase agreements (PPAs) with zero indexation now regularly priced in the Rs2.50-3.00/kWh range, new non-mine mouth coal power plants are struggling for viability across India.

The impact of stalled projects is far reaching. Right now, US\$100 billion of distressed power sector loans are clogging the Indian banking system. The government estimates there are about 40.1 GW of stranded coal-fired power projects, of which 15.7 GW are yet to be commissioned,⁵ and 25 GW of gas-fired power projects that are likewise stranded.⁶

⁵ Ministry of Power/Standing Committee on Energy, [Stressed/Non-performing Assets in Electricity Sector](#), March 2018.

⁶ Economic Times Energyworld, [SBI Chairman says no future for gas-based power plants in the country](#), 4 January 2019.

Tata Power Generation in 2019

As it stands, Tata Power’s generation capacity is dominated by thermal (mostly coal-fired) power – the majority of which is financially unviable. In addition, it now has a significant renewable energy capacity that has been acquired or commissioned in recent years.

Generation Portfolio

Tata Power’s current power generation capacity, at the time of publication, is shown in Table 2.

Thermal power capacity at present makes up 71% of total generation. This however is a product of Tata Power’s longer-term history prior to 2013 when renewable energy was still relatively expensive. The majority of Tata Power’s huge 4 GW Mundra coal-fired power plant was commissioned in FY2012-13. Figure 4 shows the company’s annual net capacity additions since the end of that year.

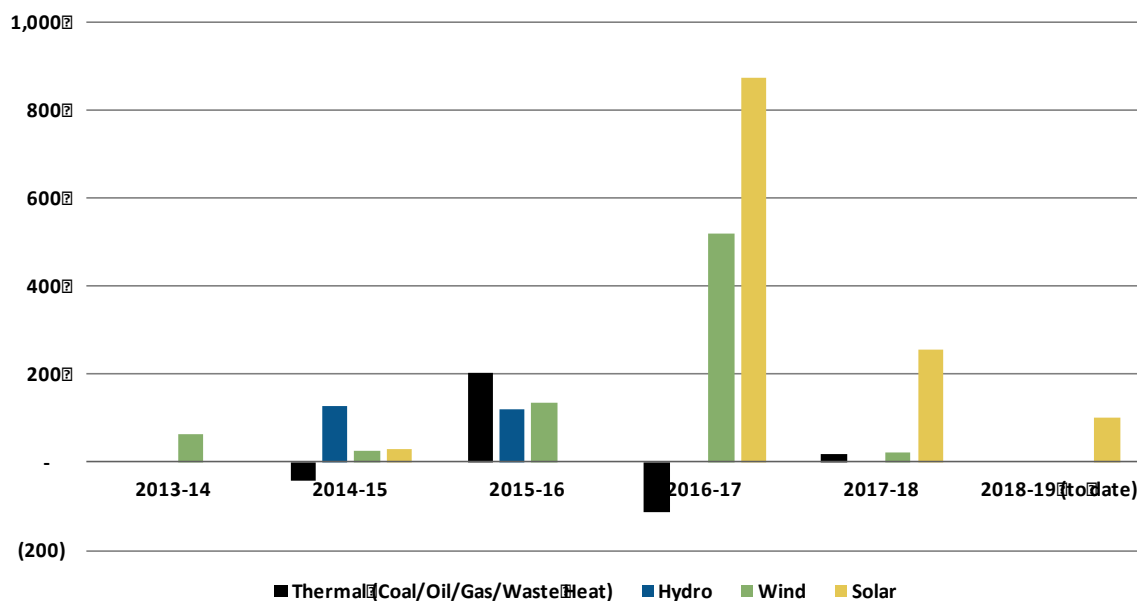
Table 2: Tata Power Generation Capacity as at April 2019

Source	Current Capacity (MW)	%
Thermal (Coal/Oil/Gas/Waste Heat)	7,715	70%
Hydro	593	6%
Wind	1,161	11%
Solar	1,388	13%
Total	10,957	100%

Source: Tata Power.

Since FY2012-13, Tata Power has added only 68 MW of thermal power (after taking decommissioning into account). Over the same period, the company has added more than 2,000 MW of wind and solar power as well as 246 MW of hydro power. Tata Power acquired Welspun Energy’s renewable portfolio of over 1 GW in 2016. In total, non-thermal power additions consist of 97% of all additions over this period.

The company’s refocusing into clean power technology can be explained by the significant cost reductions of renewable energy technology in India and the financial stress within the India thermal power sector in recent years.

Figure 4: Tata Power Net Capacity Additions Since FY2012-13 (MW)

Source: Tata Power.

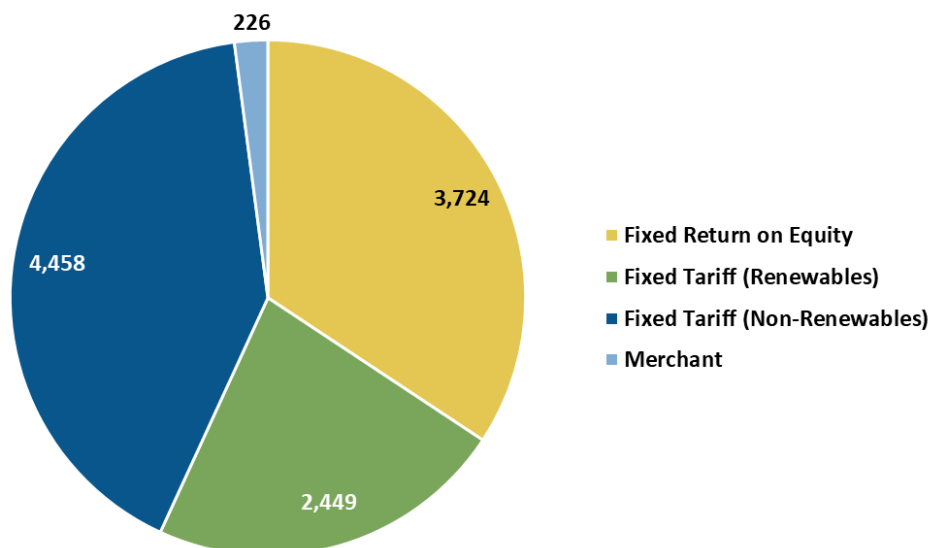
Very little of Tata Power's generation capacity supplies power on a merchant basis (Figure 5). Non-renewable capacity on fixed tariff structure is dominated by the company's 4,150 MW Mundra coal-fired power plant.

Within the capacity on a fixed return on equity, 1,877 MW of capacity reached PPA expiry at 31st March 2019. This capacity consisted of the 1,430 MW Trombay thermal power plant and three hydropower plants summing to 447 MW which are collectively termed 'Mumbai Operations'.

The Trombay thermal power plant consists coal, gas and oil units. In FY2017-18 Tata Power booked an impairment of US\$14m on the 500 MW oil-fired unit given its high variable cost of generation and the low likelihood of obtaining a new long-term PPA. Aside from this, the remaining 1,377 MW of Mumbai Operations capacity has entered into new PPAs in 2019; a 677 MW PPA with Brihanmumbai Electric Supply and Transport (BEST) was approved in January 2019⁷ and a 700 MW PPA with Tata Power's own Mumbai distribution business was approved in March 2019.⁸

⁷ Tata Power, [BEST to extend 677 MW PPA with Tata Power for the next five years](#), 2 January 2019.

⁸ Tata Power, [MERC approves 700 ME PPA between Distribution and Generation Businesses of Tata Power for the next five years](#), 27 March 2019.

Figure 5: Tata Power Capacity by Tariff Model as at March 2019 (MW)

Source: Tata Power Annual Report 2017-18, p. 20.

After a very strong expansion year in FY2016-17 during which 873 MW of solar and 519 MW of wind were added, renewable additions since then have been at a lower annual level. This period since then has seen dramatic tariff reductions in Indian solar and wind power generation through a series of record-breaking reverse auctions which were set at prices that appear to have underestimated the construction, module price, financing and currency risks.

Tata Power has stayed clear of over-aggressive bidding for renewable projects of the type that has rapidly driven down solar and wind tariffs in India since 2017. In the current fiscal year (2018-19) to date, Tata Power has added 200 MW of solar in Andhra Pradesh without adding any thermal power capacity.

International Generation

Not all of the company's generation capacity is located in India.

Tata Power owns 30% of a small 54 MW coal-fired power plant in Indonesia which provides power to a coal mine also 30% held by Tata Power.

The company also holds 26% of the 126 MW Dagachhu Hydropower project in Bhutan and 50% of the Itezhi-Tezhi Hydropower plant in Zambia. In addition, Tata Power ultimately owns 40% of 187 MW Shuakhevi Hydropower development in Georgia. Due to tunnel collapses after construction, the Georgia plant is not currently operational. Power price declines in Turkey, where power was to be exported, have called the viability of this project into question.

Tata Power is also 50% owner of Cennergi Pty Ltd which owns two wind farms in South Africa with a total capacity of 230 MW.

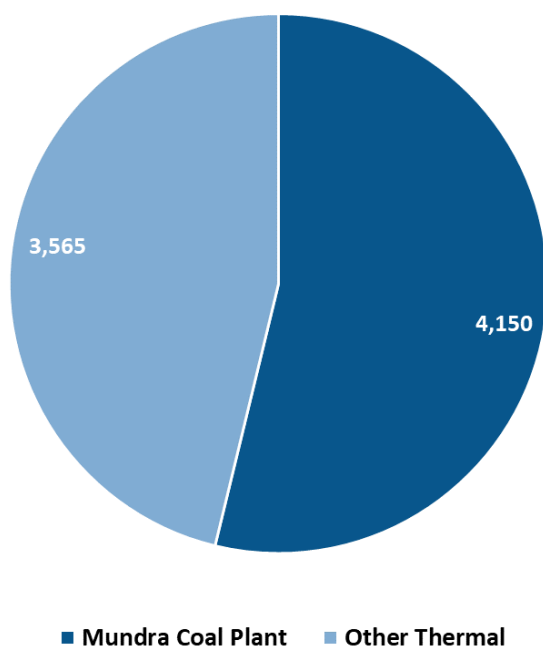
Mundra Coal Plant: Unviable Based on Imported Coal

The majority of Tata Power’s thermal power capacity is financially unviable.

The company’s subsidiary Coastal Gujarat Power Ltd (CGPL) operates a 4,150 MW coal-fired power plant at Mundra, Gujarat (net generation capacity is 3,800 MW after deducting auxiliary power consumption requirements). The plant is fuelled by imported coal. It has PPAs with the state power distribution companies (discoms) of five Indian states: Gujarat, Maharashtra, Haryana, Rajasthan and Punjab.

The majority of Tata Power’s thermal power capacity is financially unviable.

Figure 6: Tata’s Mundra Capacity Relative to its Total Thermal Capacity



Source: Tata Power.

Due to higher-than-expected prices for imported coal, this plant is financially unviable based on its current tariffs and has incurred significant continuous yearly financial losses. By the end of FY2017-18, CGPL had incurred total losses in excess of US\$-1.2bn⁹ and had a further loss of US\$-191m over the first three quarters of FY2018-19.

Table 3 shows Tata Power’s subsidiary’s CGPL stand-alone Profit and Loss statement from its FY2017-18 annual report in Rupees and U.S. dollars. Further

⁹ Coastal Gujarat Power Ltd, [Annual Report FY2017-18](#).

increases in the cost of imported US\$ coal saw CGPL’s per unit fuel cost of coal increase to Rs2.43/kWh – the same short run marginal cost as the record low renewable energy tariff in India. With operational revenue per kWh at only Rs2.58/kWh, CGPL made a loss even before taking interest and depreciation into account.

Table 3: Coastal Gujarat Power Ltd P&L FY2017-18 and FY2016-17

	Rs ₹ millions	Rs ₹ millions	US\$ millions	US\$ millions
	FY2017-18	FY2016-17	FY2017-18	FY2016-17
Revenue from Power Supply	58,783	56,787	824	796
Other Revenue from Operations	4,784	3,761	67	53
Other Income	285	171	4	2
Total Income	63,853	60,720	895	851
Cost of Fuel	(59,835)	(50,061)	(839)	(702)
Other Expenses	(4,721)	(5,804)	(66)	(81)
EBITDA	(703)	4,855	(10)	68
Finance Costs	(8,234)	(8,323)	(115)	(117)
Depreciation & Amortisation Expenses	(5,168)	(5,029)	(72)	(70)
Impairments	(3,109)	-	(44)	-
Loss Before Tax	(17,214)	(8,497)	(241)	(119)
Total Comprehensive Loss for the Period	(17,198)	(8,484)	(241)	(119)
Generation Sales (Million kWh)	24,599	25,302	24,599	25,302
Fuel Cost/kWh	(2.43)	(1.98)	(0.034)	(0.028)
Operational Revenue/kWh	2.58	2.39	0.036	0.034

Source: Coastal Gujarat Power Ltd Annual Report FY2017-18, Tata Power Ltd Annual Report FY2017-18.

The power plant’s five supercritical units were commissioned during 2012 and 2013. Two further units were planned but have been cancelled. The plant’s funders included the Export-Import Bank of Korea, the Asian Development Bank and the International Finance Corporation (IFC), the private-sector arm of the World Bank.

The IFC provided a US\$450m loan to the project in 2008, maintaining this was consistent with the World Bank’s approach to financing energy projects in developing nations at the time. The IFC received complaints due to the environmental and social impacts of the plant which were later assessed by the independent Office of the Compliance Advisor Ombudsman (CAO) in Washington D.C. The CAO’s audit revealed several gaps relating to the IFC’s supervision and

appraisal of the Mundra project.¹⁰ In February 2019, a landmark judgement was handed down from the U.S. Supreme Court on the case of a group of local farmers and fisherman v. the IFC over environmental damage caused by the Mundra plant. The Supreme Court ruled international organisations like the World Bank Group can be sued in U.S. Courts. The case will now return to lower U.S. courts for litigation.¹¹

Since 2008, the IFC’s approach has changed; it is now focused on the expansion of renewable energy in India and no longer finances coal-fired power plants.¹²

In recent years, lower-than-expected electricity demand growth has led to depressed coal plant utilisation factors across India. In comparison, Tata Power’s Mundra plant has had a relatively high utilisation, reporting a 70% plant load factor (PLF) over the first three quarters of FY2018-19, reflecting Tata’s attempt to deliver on its legal commitments, to maximise asset utilisation and sell excess power into the premium spot market.

This loss-making position has been caused mainly by higher coal prices resulting from an Indonesian government decision that coal export prices must be benchmarked against international prices, with the full 13% royalty applying to the market price. CGPL applied to India’s Central Electricity Regulatory Commission (CERC) for compensatory tariffs that allowed pass-through of the higher coal cost. This was initially granted but challenged by State discoms with PPAs covering CGPL’s output. In 2017, the Indian Supreme Court effectively disallowed the compensatory tariffs placing CGPL and two other Mundra power plants fuelled by imported coal – owned by Adani Power and Essar Power – in extreme financial distress.

Following this Tata Power offered to sell 51% of CGPL to its PPA off-takers, in particular Gujarat’s state discom, for a single rupee in return for agreeing to pay a higher rate for the power produced. The company noted that, with CGPL’s financial situation worsening, it was now in a “critical situation”.¹³ Adani Power made a similar offer for its 4.6 GW Mundra power plant.

Tata Power’s overall exposure to imported coal price fluctuations is partially reduced by the company’s investments in thermal coal mining operations in Indonesia. Tata Power owns a 30% stake in PT Kaltim Prima Coal (KPC) and a 26% stake in PT Baramulti Suksessarana Tbk (BSSR), coal mines in Indonesia which the company considers to be strategic assets to hedge imported coal price exposure for CGPL. In addition, Tata Power owns a 30% stake in another coal mine - PT Arutmin Indonesia, which it has agreed to sell.

Although Tata Power’s vertical integration into coal mining investments have proven profitable due to higher international coal prices, this has clearly not been

¹⁰ IFC, [Frequently Asked Questions: Coastal Gujarat Power Ltd, Mundra](#).

¹¹ Reuters, [U.S. Supreme Court revives Indian power plant lawsuit](#), 28 February 2019.

¹² IEEFA, [Every two weeks a bank, insurer or lender announces new coal restrictions](#), 26 February 2019.

¹³ Nikkei Asian Review, [Tata Power offers to sell western India plant for 1 rupee in salvage attempt](#), 23 June 2017.

enough to offset the huge losses made by its Mundra coal-fired power plant. In its most recent financial results, the company’s Coal and Infrastructure business reported a US\$137m profit after tax for the first nine months of FY2018-19. This was more than offset by the US\$191m after tax loss made by the Mundra coal plant over the same period (see Financial Performance section below).

The inability of Tata Power to find a sustainable path forward for its imported coal-fired power operation has led it to seek opportunities to source low-cost alternatives. During FY2017-18, the company acquired a mining licence to develop a coal mine proposal in Russia at a cost of nearly US\$5m.¹⁴

Bailout on the Cards

As Tata Power and Adani Power failed in their attempts to offload 51% stakes in their Mundra plants for one rupee each, the prospect of a highly favourable central government-led bailout now seems likely, although this is unlikely to stop CGPL from being a loss-making operation.

In July 2018, the Gujarat state government set up a three-person panel to consider options for the unviable Mundra power plants of Tata Power, Adani Power and Essar Power, totalling 9.8 GW. The panel’s recommendations included amendment of the plant’s PPAs to allow pass-through of high coal cost onto consumers and the option to extend PPAs by up to ten years. Lenders to the projects would be required to take a haircut.

GUVNL, the Gujarat state distribution company, applied to CERC to approve an amendment to its PPAs with the Mundra plants along these lines and, in October 2018, the Supreme Court allowed CERC to approve such a measure.

In April 2019, CERC officially approved a tariff uplift for PPAs covering 2,000 MW of Adani Power’s Mundra plant, setting a precedent for the rest of the Mundra coal-fired power capacity of Adani Power, Tata Power and Essar Power.¹⁵ In addition to allowing pass-through of the cost of imported coal up to US\$110/t, Adani will need to share the profits from its Indonesia coal mining operations.

The GUVNL PPA uplift decision is potentially most beneficial to Essar Power’s 1,200 MW Mundra plant whose entire power output is covered by a PPA from that discom. With the Tata Power and Adani Power plants also supplying various other state discoms in addition to Gujarat, those companies are now negotiating similar PPAs to cover their entire electricity output. In February 2019, it was reported that Tata Power has requested more time from CERC to get consent from these other state discoms.¹⁶

¹⁴ Tata Power, [Renewables to Power Growth – Annual Report 2017-18](#), p. 73.

¹⁵ ET Energyworld, [Fuel cost pass-through for Adani plant positive sign for imported coal-based IPPs](#), 15 April 2019

¹⁶ Financial Express, [Tata Power arm seeks more time to get states’ nod for Mundra PPA revision](#), 7 February 2019.

However, although highly favourable to the plant owners whilst placing an additional 30-year burden on consumers, the bailout will not be enough to make Tata Power’s Mundra plant viable. Tata Power’s Managing Director Praveer Sinha has stated the PPA uplifts would only halve CGPL’s losses from the current level of US\$-225m to US\$-240m per year.¹⁷

Mundra, Gujarat: Moving Past Coal?

The unviable nature of the 9.8 GW of total coal-fired power generation at Mundra driven by imported coal price rises has become a key case study for developing nations planning a fleet of new, supposedly-affordable imported coal-fired power stations.

As well as Adani Power’s ownership of the largest of the three coal-fired power plants, Adani has further interests at Mundra in the form of the Mundra Port and Special Economic Zone (SEZ) owned by sister company Adani Ports and SEZ Ltd. The Adani Group of listed companies are also seeking further opportunities for development at Mundra.

One of the most recent moves was the January 2019 signing of a Memorandum of Understanding (MoU) with German chemicals company BASF.¹⁸ The two companies have agreed to evaluate a joint investment opportunity in what would be BASF’s largest investment to date in India, if it were to proceed. However, given BASF’s carbon neutral growth strategy, this potential investment would not be powered by Adani’s nearby coal-fired power station or those of Tata Power or Essar Power. Instead, the plan would involve a co-investment in wind and solar power to make the chemical plant 100% renewable energy powered.

Furthermore, beyond Mundra, the state of Gujarat is moving strongly towards renewable energy. The state has approved what would currently be the world’s largest solar plant when completed – a 5 GW project near the Gulf of Khambhat. A recent tender for 500 MW of solar attracted a bid as low as Rs2.55/kWh whilst all bids were below Rs2.80/kWh.¹⁹

Gujarat has also been selected by the Solar Energy Corporation of India Ltd. (SECI) as the first state to set up an offshore wind project. SECI have agreed to be responsible for the tender process that will auction 1 GW in offshore wind capacity.²⁰

With the Indian government continuing to state its policy is to reduce thermal coal imports in the long term, the non-viability of the Mundra coal-fired power plants is

¹⁷ Economic Times, [After tariff relief, our Mundra losses would come down by 50%: Praveer Sinha, Tata Power](#), 6 December 2018.

¹⁸ BASF, [BASF to partner with Adani to evaluate investment in acrylics value chain in Mundra, India](#), 17 January 2019.

¹⁹ Mercom India, [UPC Solar Quotes Lowest Tariff of Rs2.55.kWh in Gujarat’s 500 MW Solar Auction](#), 19 February 2019.

²⁰ CleanTechnica, [India Plans First Ever 1 Gigawatt Offshore Wind Tender for Gujarat](#), 16th February 2019.

proving to be an important lesson for other nations seeking increased power capacity to meet growing electricity demand. These plants may have made sense when they were originally planned, at a time when demand was expected to grow very quickly and renewable energy was still relatively expensive. However, these power plants have been left behind since they were completed by the huge progress made by wind and solar in India.

Furthermore, companies are increasingly looking to embrace renewable energy as a way to access international capital markets whilst also reduce their carbon emissions such that, even in a place as well appointed with coal-fired power capacity as Mundra, major companies are now planning developments powered 100% by renewable energy.

Tata Power Coal Plants Planned and Shelved

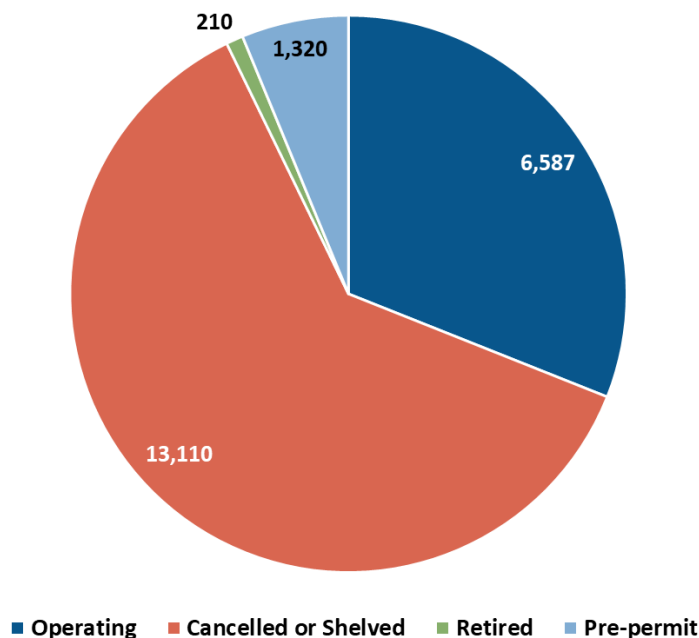
Prior to the commissioning of the Mundra power plant and subsequent heavy financial losses, the company had been planning other new coal-fired power plants, including some to be fuelled by imported coal.

In March 2019, a National Green Tribunal panel was set up to investigate the environmental impact of Tata Power’s proposal to convert unit 6 (500 MW) of its Trombay Thermal Power Plant from oil to imported coal. This proposal actually dates back to 2012 when the environmental impact assessment was submitted. The conversion received initial environmental approval in 2014. However, with the imported coal-fired Mundra plant in deep financial strife and no apparent progress on the Trombay conversion since then, the Global Coal Plant Tracker database considers this project to have been shelved.

This is far from the only Tata Power coal-fired power proposal to have been shelved this decade. Since 2010, another 13 GW of such projects have been cancelled or shelved – twice the current coal-fired power capacity of the company (Figure 7).

Among the projects to have been cancelled or shelved are units 6 and 7 of the Mundra plant (1,660 MW). Another proposal to be fuelled by imported coal was the 2,400 MW Coastal Maharashtra Project which was halted in 2012 due to a rise in imported coal cost. Another imported coal project – the 2,000 MW Tata Begunia proposal was reported to be cancelled as recently as January 2017.

Figure 7: Tata Power Coal-Fired Power Plant Development Status Since 2010 (MW)



Source: Global Coal Plant Tracker.

Four Tata projects in Jharkhand that were announced towards the beginning of this decade did not survive through 2015 and all appear cancelled: the 1,320 MW Danbhum project, the 1,000 MW Latehar project, the 1,980 MW Tiruldih project and Phase 2 of the existing Maithon power plant (1,320 MW).

In addition, Tata Power has 1,320 MW of coal-fired power in the pre-permit phase of development outside of India. This relates to the Long Phu-2 coal-fired power project in Soc Trang, Vietnam. The Long Phu-2 proposal was approved in 2013 and in 2014 the scheduled completion date was moved forward to 2019. Thereafter in 2016, the completion date was pushed back again to the end of 2020. Since then there appears to have been no progress and this may prove to be another imported coal-fired project development that grinds to a halt. Meanwhile, Vietnam is accelerating its renewable energy plans.

This is not Tata Power's only attempt to build a coal-fired power plant overseas. The company was due to bring online a 1,320 MW plant in Myanmar before 2020. Faced with strong local public opposition, there appears to have been no progress on this proposal since 2014 and it is considered shelved by the Global Coal Plant Tracker database.

Financial Performance

In its most recent full year results for FY2017-18, Tata Power saw its consolidated revenue from operations increase 6.3% to US\$4.1bn. The increase was mainly due

to higher revenue from its renewables portfolio and higher fuel costs being passed through for its regulated business.²¹

Table 4: Tata Power Consolidated P&L FY2017-18 and FY2016-17

	Rs millions	Rs millions	US\$ millions	US\$ millions
	FY2017-18	FY2016-17	FY2017-18	FY2016-17
Revenue from Operations	293,312	275,876	4,111	3,867
Other Income	4,327	5,859	61	82
Total Income	297,639	281,735	4,172	3,949
Cost of Fuel	(100,099)	(86,924)	(1,403)	(1,218)
Other Expenses	(129,643)	(129,863)	(1,817)	(1,820)
Regulatory Expense	(4,099)	(3,014)	(57)	(42)
EBITDA	59,471	56,075	834	786
Finance Costs	(37,230)	(33,650)	(522)	(472)
Depreciation & Amortisation Expenses	(23,981)	(19,556)	(336)	(274)
Impairments Reversal/(Charge)	12,096	-	170	-
Profit Before Tax	29,152	14,471	409	203
Total Comprehensive Income for the Period	27,731	9,669	389	136

Source: Tata Power.

Earnings before interest, tax, depreciation and amortisation (EBITDA) increased 6.1% to US\$834m, held back by the increased cost of fuel due to higher coal prices. Cost of fuel rose 15.2% over the prior year to reach US\$1.4bn.

Profit before tax more than doubled to US\$409m driven by a reversal of impairment of the Mundra Cash Generating Unit (representing the Mundra coal-fired power plant, shipping assets and investments in Indonesian coal mines combined) as increased imported coal prices favoured Tata Power's mining coal investments. This impact was partially offset by higher finance cost and depreciation.

Meanwhile, the Mundra imported coal-fired power plant itself (CGPL) saw its after-tax loss increase in FY2017-18. CGPL's reported coal cost for the year rose 24% to US\$61.5/t, pushing out the fuel under-recovery to Rs-0.84/kilowatt hour (kWh). This increase in fuel cost caused the power plant to make an after-tax loss of US\$-241m (Table 3), higher than the US\$-119m loss from the prior year.²²

Tata Power's most recent financial results for the current fiscal year show the company's thermal power operations continue to drag down performance.

²¹ Tata Power, [Renewables to Power Growth – Annual Report 2017-18](#).

²² Tata Power, [Analyst Presentation Q4 FY18](#), 2 May 2018.

Table 5: Tata Power Consolidated P&L – Nine months Through to Q3 FY2018-19 and Q3 FY2017-18

	Rs millions	Rs millions	US\$ millions	US\$ millions
	Q3 FY2018-19	Q3 FY2017-18	Q3 FY2018-19	Q3 FY2017-18
Revenue from Operations	223,284	196,234	3,130	2,751
Other Income	2,092	3,686	29	52
Total Income	225,376	199,920	3,159	2,802
Cost of Fuel	(84,009)	(71,462)	(1,178)	(1,002)
Other Expenses	(88,535)	(75,736)	(1,241)	(1,062)
Regulatory Expense	(4,092)	(3,674)	(57)	(51)
EBITDA	46,648	45,362	654	636
Finance Costs	(30,613)	(28,537)	(429)	(400)
Depreciation & Amortisation Expenses	(17,897)	(17,140)	(251)	(240)
Gain/(Loss) on Sale of Investment	18,972	-	266	-
Profit Before Tax	29,745	14,661	417	206
Total Comprehensive Income for the Period	26,103	8,571	366	120

Source: Tata Power.

Although revenue from operations for the first nine months of FY2018-19 has risen 13.8% over the prior year, EBITDA is essentially flat at US\$654m due to further increases in the cost of fuel expense, again driven by higher coal prices. Tata Power's cost of fuel has risen by a further US\$176m (17.6%) over FY2017-18.

Tata Power's most recent financial results show the company's thermal power operations continue to drag down performance.

Profit before tax so far in FY2018-19 has risen to US\$417m, however this included a one-off gain of US\$266m from sale of investments. After stripping this gain out, profit before tax was down 26.5% to US\$151m.²³

The CGPL coal-fired power plant at Mundra has seen even worse financial results than the prior year so far in FY2018-19. After the first three quarters, the plant's operating loss has already exceeded the prior year, reaching US\$-17m as fuel under-

²³ Tata Power, FY2018-19 Third Quarter Financial Results, 28 January 2019.

recovery reached Rs-0.92/kWh. The after-tax loss has already reached US\$-191m for the first three quarters.²⁴

The performance of the Mundra power plant has clearly been a significant drag on overall performance and Tata Power’s share price. Figure 8 shows the company’s share price performance over the last ten years relative to the S&P BSE Sensex Index and to peers NTPC, the Indian central state-owned power utility, and Adani Power. All three companies generate power predominately from coal-fired power plants and they have all significantly underperformed the market over ten years.

Figure 8: Tata Power Share Price Performance Since the Start of the Decade



Tata Power – orange, NTPC – green, Adani Power – blue, S&P BSE Sensex Index – purple.

Source: Thomson Reuters.

NTPC’s power plants are fuelled almost entirely by cheaper domestic coal and its plants have recorded higher utilisation rates than the Indian average. Its share price performance is the better of the three companies. Tata Power and Adani Power’s coal-fired capacity is predominantly imported coal-fuelled. Whilst Tata Power is growing its renewable energy, Adani Power has no wind or solar capacity (the Adani Group’s renewable energy investment is done through sister company Adani Green Energy). Adani Power, without renewables and even more reliant on imported coal than Tata Power, has the worst share price performance of the three.

The financial highlights of Tata Power’s consolidated renewable energy businesses (Table 6) demonstrate that the company’s future reliance on clean energy technology will allow it to be more profitable than its current configuration which is seeing performance dragged back by its coal-fired power operations.

²⁴ Tata Power, [Analyst Presentation Q3 FY19](#), 28 January 2019.

At the end of FY2017-18, Tata Power had an installed renewable energy capacity in India of 2,064 MW (Walwhan Renewable Energy Ltd – 1,010 MW, Tata Power Renewable Energy Ltd – 675 MW and parent company – 379 MW) which generated an average utilisation rate of almost 19%. The average tariff for the consolidated renewables of the company was over Rs6/kWh, reflecting the early adoption of renewable energy (much of which was installed by Welspun Energy, and acquired by Tata Power in 2016) and prudent bidding for new projects in the face of rapid decline in renewable energy tariffs. The record low renewable tariff in India is Rs2.43/kWh.

Tata Power’s renewables business has achieved a healthy EBITDA of US\$249m representing 13.9% of deployed assets and an EBITDA ratio of 89%, reflecting renewable energy’s more infrastructure-like returns profile as opposed to traditional power assets. Profit after tax of US\$41m contrasts with the significant losses at Tata Power’s largest coal-fired power asset at Mundra.

Table 6: Tata Power Consolidated Renewable Energy Financial Highlights

	FY2017-18	FY2016-17	FY2017-18	FY2016-17
	Rs million	Rs million	US\$m	US\$m
Installed Capacity (MW)	2,064	1,838	2,064	1,838
Generation Sales (Million units)	3,238	2,133	3,238	2,133
Utilisation Rate (%)	18.9%	n.a.	18.9%	n.a.
Gross Revenue	19,940	12,880	280	181
EBIDTA	17,770	11,290	249	158
EBITDA Margin (%)	89%	88%	89%	88%
Profit After Tax	2,930	3,900	41	55
Assets Deployed	128,230	112,050	1,797	1,571
Debt	92,210	84,590	1,293	1,186
Equity	58,570	54,600	821	765
EBITDA / Assets (%)	13.9%	10.1%	13.9%	10.1%
Average tariff per unit (Rs/kWh)	6.158	6.038		

Source: Tata Power Annual Report 2017-18, p. 72, IEEFA calculations.

Figure 9 demonstrates the value creation possible by a power utility making an early transition to focus on expansion via renewable energy. NextEra Energy Inc. of the U.S.A. is the largest operator of wind and solar power in the world. The company’s wind capacity has quadrupled over the last decade. It also owns Florida Power and Light (FPL), one of the largest electricity utilities in the U.S. which is making a significant expansion into solar power.²⁵

²⁵ NextEra Energy Inc, FPL announces groundbreaking ‘30-by-30’ plan to install more than 30 million solar panels by 2030, make Florida a world leader in solar energy, 16 January 2019

Figure 9: NextEra Energy Inc. Share Price Performance Since the Start of the Decade



NextEra Energy Inc – orange, NRG – green, Southern Company – blue, S&P 500 – purple.

Source: Thompson Reuters.

In January 2019, NextEra Energy was named as the world’s most admired company in the electric and gas utility sector by Fortune magazine. The company has outperformed the S&P 500 since the beginning of the decade, over a period when other large U.S. power utilities that are yet to commit to energy transition, such as NRG and Southern Company, have significantly underperformed.

Key Risks for Tata Power

Tata Power identified key risks specific to the company that may impact its business at the end of FY2017-18:²⁶

- The availability of cheaper imported coal sourcing options in order to contain the losses at CPGL’s Mundra plant.
- Risk to the Mumbai generation business due to PPA expiration in 2019.
- Risk to the Mumbai business due to regulatory changes regarding the distribution business.
- Volatility of exchange rates and coal prices which could impact the valuation of its mining operations.
- Pressure on the company’s existing generation assets from civil society concerns over emissions and water with the possibility of new regulatory requirements.
- Balancing growth and balance sheet leverage.

²⁶ Tata Power, *Renewables to Power Growth – Annual Report 2017-18*, p. 71

- Sub-scale, one-off and high-risk investments.
- Delay in offloading non-core assets.

Tata Power has since made new PPA agreements which cover the capacity of the Mumbai generation business.

These are risks that are far more likely to impact Tata Power’s legacy coal and hydro power generation assets rather than its wind and solar farms. In particular, risks around affordable coal import options, coal price and exchange rate volatility, and civil society pressure present far more risk to the company’s older-technology assets.

Tata Power also identifies balance sheet leverage and high-risk investments as potential issues. The current financial stress in India’s coal-fired power sector, and the large investment needed to construct new large coal-fired power stations, means these are also more likely to arise in thermal projects than the smaller, modular renewables investments the company has made and will seek to continue going forward.

The company has identified a need to divest from non-core (non-power) investments in order to reduce balance sheet leverage and free up resources for its planned strategic expansion in its core power business²⁷. During the quarter ended 30th June 2018, Tata Power sold investments in Tata Communications Ltd and Panatone Finvest Ltd, with a resultant gain on the sale of US\$266m booked into the financial accounts of the FY2018-19 (Table 5).

Tata Power’s Growth Plans

The company’s most recent annual report makes clear that, within its power generation business, its growth will be driven by renewable energy.

Company CEO Praveer Sinha has stated that: “The key growth areas for the Company have been identified as Renewable Generation, Transmission, Distribution and New and Value-Added Businesses including Rooftop Solar, Smart Metering, Micro Grids in Rural areas and setting up of Electric Vehicle-Charging Units”.²⁸

Tata Power’s longer-term growth plan is known as “Strategic Intent 2025” (Figure 10). This plan calls for customer and transmission line expansion as well as a target to reach 22,500 MW of generation capacity by 2025.

With a new CEO now leading Tata Power, IEEFA expects that the ambition of this strategic plan will be reviewed and enhanced in the near future.

²⁷ Tata Power, [Renewables to Power Growth – Annual Report 2017-18](#), p. 67

²⁸ Tata Power, [Renewables to Power Growth – Annual Report 2017-18](#), p. 3

Figure 10: Tata Power’s Strategic Intent 20 25



Source: Tata Power.

The plan calls for 40-50% of the company’s generation capacity to come from non-fossil fuel source by 2025 (up from 30% currently). Assuming 50% is achieved, this means that 70% of new capacity will come from solar, wind and hydro (Figure 1).

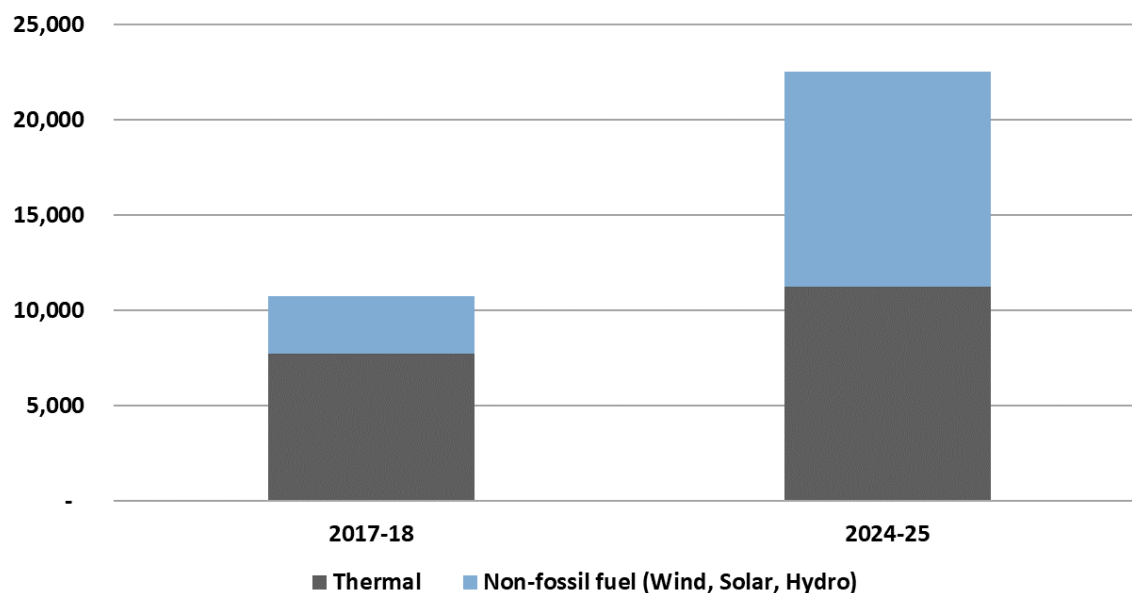
By 2025, Tata Power’s power capacity composition will have transitioned (Figure 11), mirroring the transition encapsulated in India’s NEP 2018 (Figure 2).

Furthermore, although Tata Power is intending to add some thermal capacity during the period to 2025, it is intending to do this via acquisition of existing plants at fire-sale prices rather than constructing new ones. At a recent Coaltrans India conference in New Delhi, Rajit Desai – Tata Power’s head of engineering, procurement and construction (EPC) – confirmed the company was not seeking to develop any new greenfield coal-fired power plants.²⁹

With many existing coal plants financially stressed and available for sale, Tata Power has indicated it would seek opportunities for acquisition under the right circumstances (including plant quality, coal supply and PPA arrangements). CEO Praveer Sinha has stated that: “You have such a large number of stressed assets and they are coming at such low cost. There is no reason for anyone to set up greenfield or brownfield projects.”³⁰

²⁹ Reuters, [Coal going from winner to loser in India’s energy future: Russell](#), 20 February 2019.

³⁰ Business Standard, [We’d surely look at more stressed assets, but we’d be choosy: Tata Power](#), 13 February 2019.

Figure 11: Tata Power’s Expected Capacity by 2025 (MW)

Source: Tata Power.

In November 2018, Resurgent Power – a joint venture between Tata Power (26%), and ICICI Bank and international investors (74%) – closed a deal on the acquisition of 75% of Prayagraj Power’s stressed 2 GW Bara Thermal Power Station in Uttar Pradesh, giving Tata Power an equity share of 390 MW of the plant’s capacity.³¹ The plant has a long-term PPA and fuel supply agreement in place. Praveer Sinha has indicated that further acquisitions of existing coal plants would be made through Resurgent Power.

Although Tata Power will be looking to acquire existing thermal power projects at fire-sale prices, it will still be faced with risks faced by the Indian thermal power fleet. The company will only consider acquisitions with certainty over coal source and logistics as well as power purchase agreements with off-takers. However, they may be faced with risks over existing or future environmental regulations concerning air pollution etc. as well as water supply issues – risks not faced by its renewable energy portfolio.

Renewables and Beyond

According to its ‘Strategic Intent’, Tata Power will invest in up to 11 GW of renewables and hydro up to 2025, and it has been indicated by CEO Praveer Sinha that the bulk of this will be in solar.

With foreign capital flowing into India to invest in its renewables boom, the company has shifted its renewable assets under a subsidiary which could help attract infrastructure/equity investors that do not wish to be linked to the

³¹ Tata Power, [Renascent Power Signs Share Purchase Agreement to acquire 75.01% stake in Prayagraj Power Generation Company Limited](#), 14 November 2018.

company’s coal-fired power assets.³² The world’s major investors, including pension funds and insurance companies, are increasingly turning away from coal in the face of increasing pressure from all sides of society to address climate change.³³ Once renewable energy installations have been commissioned, the technology, performance and construction risks are greatly reduced. Global infrastructure and pension fund investors could look to buy in, allowing Tata Power to recycle capital and realise capital gains as projects are de-risked.

Showing good commercial discipline, the company has recently been more selective in the renewable projects it bids for, particularly in the face of rapid tariff declines. Its recent project awards include a 150 MW solar project in Maharashtra from June 2018³⁴ and a 250 MW solar project in Karnataka awarded the following month.³⁵

However, Tata Power will need to increase its renewables installation rate significantly if it is to meet its Strategic Intent target of reaching up to 11.3GW of non-fossil fuel power capacity by 2025.

Aside from utility-scale, ground-mounted solar, Tata Power is already India’s largest installer of rooftop solar. This position has been built from utilising large, commercial roof spaces, but the company is now expanding into residential rooftop solar. With the company already offering this product in Delhi, Mumbai, Ajmer and Bhubaneswar, so far in 2019 the company has quickly expanded to Gandhinagar, Bengaluru, Cochin, Chennai, Chandigarh, Hyderabad, Kolkata and Guwahati. In a recent interview, Praveer Sinha noted that the company’s rooftop solar business is targeted as a growth sector, stating: “In 3-5 years, the rooftop solar business could become big and account for 10-15% of our business, from less than 5% now.”³⁶

“In 3-5 years, the rooftop solar business could become big and account for 10-15% of our business, from less than 5% now.”

The Indian government is now implementing the second stage of a program targeting 40 GW of rooftop solar installation by 2022 with a US\$1.6bn investment across the remainder of 2019. This stage offers up to 40% subsidy on residential solar systems depending on size, and distribution companies will be offered

³² Bloomberg, [Tata Power Plans \\$5 Billion Push to Boost Renewable Capacity](#), 14 May 2018.

³³ IEEFA, [Over 100 Global Financial Institutions Are Exiting Coal, With More to Come](#), 27 February 2019.

³⁴ Tata Power, [Tata Power Renewable Energy wins 150 MW Solar PV project in Maharashtra](#), 11 June 2018.

³⁵ Tata Power, [Tata Power to develop 250 MW Solar Project in Karnataka](#), 11 July 2018.

³⁶ Economic Times, [Mundra unit losses may halve on tariff revision: Praveer Sinha, MD & CEO, Tata Power](#), 20 February 2019.

performance-based incentives dependent on the penetration of rooftop solar in their networks.

India has a long way to go to reach the 40 GW rooftop target, with current cumulative installations at 3.3 GW. However, in 2018, rooftop installations showed 66% year-on-year growth, reaching 1.7 GW for the year. Ashish Khanna, CEO of Tata Power Solar recently stated that India is about to see a rooftop solar boom, but that the major acceleration “will come once we have quality battery back-up systems, say, within the next 2-3 years. This will provide real, round-the-clock reliable power.”³⁷

Tata will offer loans to rooftop solar customers in order to plug a financing gap that has helped limit the rollout of rooftop installations in India. This will be done via Tata Cleantech Capital, a joint venture between Tata Capital and the International Finance Corporation – the private sector arm of the World Bank.³⁸

IEEFA expects India’s annual rooftop installation rates to reach 2.4 GW annually by FY2021, with the corporate PPAs in the commercial and industrial (C&I) market a key area of opportunity.

Meanwhile, in February 2019 Tata Power was involved in an Indian energy landmark announcement when it revealed its collaboration with Mitsubishi Corporation and AES India on the installation of the nation’s first grid-scale battery storage system.³⁹

The 10 MW system, connected to Tata Power’s Delhi Distribution Ltd’s network, will enhance grid stability, load management and flexibility. This is expected to be the first of a growing wave of battery storage systems set to enter India’s market to help integrate more renewable energy. The CEO of AES has stated that the market for energy storage in India is about to take off, representing a US\$50bn investment opportunity.⁴⁰

The market for energy storage in India is about to take off, representing a US\$50bn investment opportunity.

Later in February 2019, SECI issued three new renewable energy tenders, one of which is for 1.2 GW of solar plus 3,600 MWh of energy storage. This appears to be a significant step in driving forward the roll-out of large-scale energy storage. Soon

³⁷ The Hindu BusinessLine, [Rooftop solar needs a helping hand](#), 26 February 2019.

³⁸ Financial Express, [Tapping sunshine: Tata Power aims to grow solar rooftop business four-times in four years](#), 16 October 2018.

³⁹ Tata Power, [Tata Power Collaborates with AES and Mitsubishi Corporation to Power Up South Asia’s Largest Grid-Scale Energy Storage System in India](#), 13 February 2019.

⁴⁰ Bloomberg, [AES Sees \\$50 Billion Opportunity in Indian Energy Storage](#), 13 February 2019.

after, in March 2019 SECI also released a notice of interest for 200 MW of solar with 300 MWh of battery storage for Andhra Pradesh state.⁴¹

As well as increasing stabilisation and flexibility, Tata Power Delhi Distribution Ltd, which was headed by Praveer Sinha before he became Tata Power CEO, is also seeking to smarten its network. The company has begun a roll-out of smart meters with the aim of covering all consumers with the new meters by 2025.⁴²

In addition to grid-scale batteries, Tata Power Delhi Distribution Ltd – a joint venture of Tata Power and the Delhi government - is also keen to move into electric vehicle (EV) charging. India is looking to promote the use of electric vehicles in order to address its energy security issues, as India is one of the nations’ most dependent on fossil fuel imports.⁴³ In addition, Delhi has one of the world’s most significant air pollution problems and the local government has set an ambitious target that would see 25% of all new vehicle sales to come from EVs by 2023 in order to reduce transport emissions.⁴⁴

The push into Delhi is not Tata Power’s first move into EV recharging infrastructure. In September 2018, the company signed an MoU with state-owned Hindustan Petroleum Corporation Ltd (HPCL) for the set-up of EV charging points at HPCL retail outlets and other locations across India.⁴⁵

Tata Power began its move into EV charging in August 2017 with the installation of Mumbai’s first EV charging station. The sector is among the ‘New and Value Added Businesses’ that the company makes clear it is targeting for growth in its most recent annual report. Added value could also come from integrating businesses that Tata Power is already an Indian leader in. CEO Praveer Sinha has noted an opportunity for the company in the integration of solar rooftop, energy storage and EV charging.⁴⁶

In the same interview, Praveer Sinha made it clear that Tata Power is already thinking about future technologies that are yet to become mainstream in India, such as floating solar and offshore wind. India has set an offshore wind target to reach 30 GW by 2030. The Ministry of New and Renewable Energy issued a call for expressions of interest to develop a 1 GW offshore wind project off the west coast in April 2018. The strong interest included responses from international companies

⁴¹ PV-Tech, [Indian solar tendering rolls on with another major co-located storage issuance](#), 11 March 2019.

⁴² Mercom India, [Tata Power Distribution Company to Begin Installation of Smart Meters in Delhi](#), 10 July 2018.

⁴³ IRENA, [A New World: The Geopolitics of the Energy Transformation](#), January 2019.

⁴⁴ Bloomberg, [Tata Power Seeks to Tap Delhi EV Charging](#), 22 January 2019.

⁴⁵ Tata Power, [Tata Power and HPCL sign MoU for setting up commercial-scale EV Charging Stations across India](#), 27 September 2018.

⁴⁶ The Hindu BusinessLine, [Future of Tata Power: In conversation with Praveer Sinha](#), 20 June 2018.

with experience in offshore wind, but IEEFA expects this to progress cautiously until offshore wind tariffs fall to competitive levels (by 2025).⁴⁷

In Context: Tata Power and its Peers

Tata Power is not alone in moving away from the construction of new coal power plants. Even the largest operator of coal-fired power in India (and one of the largest in the world) has begun to turn away from new coal-fired power.

NTPC, the Indian central state-owned power utility, operates 47 GW of thermal power plants, the great majority of which are coal-fired. Despite being perhaps the only Indian utility with any chance of accessing capital for new coal-fired power development given the high financial stress in the sector, NTPC cancelled 13 GW of coal-fired power projects during 2018.

In February 2018, NTPC shelved the 1,600 MW expansion of Kaniha stage 3 Unit 1 and 2 in Talcher, Odisha. This was on the back of surplus generation capacity in the state and its uncompetitive cost structure, as the shift to renewable generation across the country accelerates.

In June 2018, NTPC decided to drop its 4 GW greenfield coal-fired Pudimadaka Ultra Mega Power Project. The plant was planned in 2011 and a PPA signed with the government of Andhra Pradesh. The project had several failed attempts to organise a domestic coal linkage over the years and was even denied a captive port to handle imported coal by the Ministry of Defence when it pursued that option.

In July 2018, NTPC confirmed it has no intention to pursue two other planned coal power plant developments – the 1,980 MW Nabinagar-2 and 1,600 MW Katwa thermal power generating units in Bihar and West Bengal, respectively. The plants originally had arranged PPAs with multiple states including West Bengal, Jharkhand, Odisha, Sikkim and Bihar. Odisha’s energy minister had requested to cancel the PPA with the Nabinagar plant as the lower cost of renewables and the move to power surplus meant demand growth was insufficient to justify these expansions.

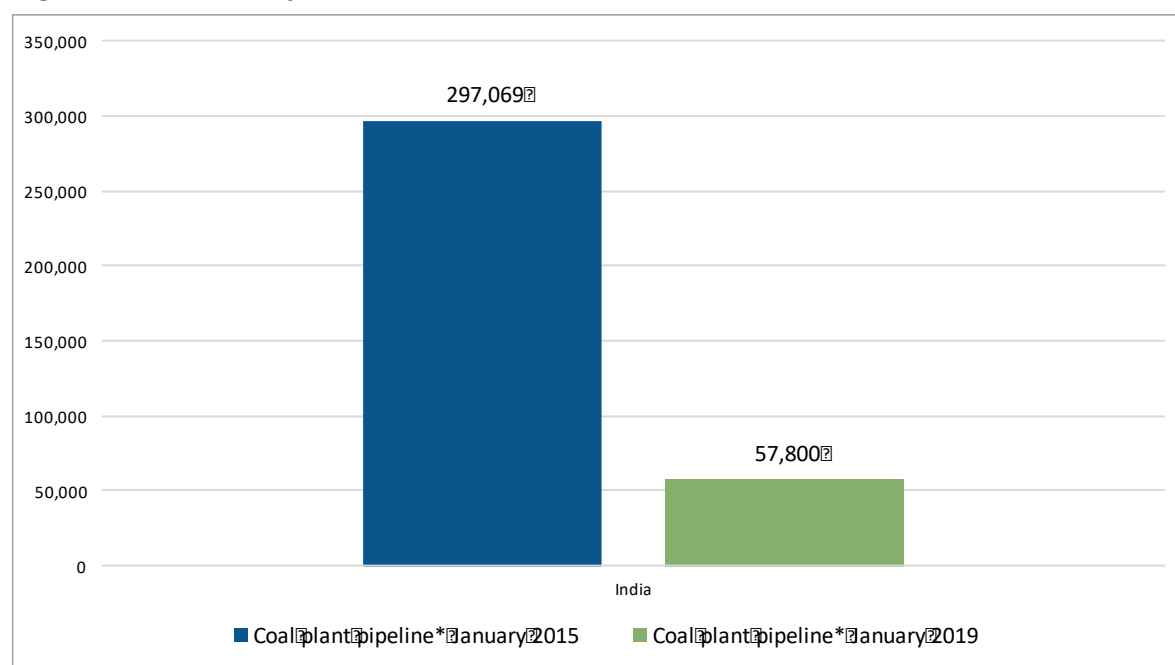
IEEFA notes that NTPC may be finding it difficult to justify investment in greenfield coal plant developments, particularly when coupled with constraints including fuel access, the high tariffs required, and the long development delays being experienced.

The latest Global Coal Plant Tracker data shows how far the overall pipeline of new coal-fired power plants in India has collapsed since as recently as 2015. From almost 300 GW of coal plants in development at that date, the total is now less than one fifth of that size at under 58 GW, and this remainder will continue to decline (Figure 12).

⁴⁷ IEEFA, *Offshore wind power, the underexplored opportunity that could replace coal in Asia*, 30 August 2018.

With more than 40 GW of financially stressed coal-fired power plants in India, NTPC is considering the acquisition of existing plants under the right circumstances,⁴⁸ rather than building new ones. In December 2018, NTPC acquired the 720 MW Barauni coal-fired power plant in Bihar, an existing project which also has units under construction.⁴⁹ With a strong balance sheet, banks are more likely to lend to NTPC than to any other operator of coal-fired power in India given the sector’s stressed position.

Figure 12: Indian Pipeline of Coal Power Plants in 2015 and 2019 (MW)



*Coal plants that have been announced, in the pre-permit stage and that have been permitted but not yet begun construction.

Source: Global Coal Plant Tracker.

In addition, NTPC will continue to develop new renewable energy projects. In October 2018, the company participated in a reverse auction bidding process for solar project tenders for the first time. It won tenders for two solar projects totalling 160 MW.⁵⁰

In contrast to Tata Power, Adani Power is currently pursuing a new coal-fired power plant project to be fuelled by imported coal. This is despite the financial disaster that has beset both Adani Power’s and Tata Power’s imported coal-fired power stations at Mundra.

⁴⁸ Economic Times, [NTPC may bid for 8-9 stressed private power companies](#), 17 October 2018.

⁴⁹ Economic Times Energyworld, [NTPC acquires 720 MW Barauni thermal power plant in Bihar](#), 16 December 2018.

⁵⁰ NTPC, [NTPC wins 160 MW solar capacities in UPNEDA’s 500 MW solar tender](#), 10 October 2018.

Adani Power is a significant private operator of coal-fired power but, unlike Tata Power, does not develop or own renewable energy installations. Its sister company, Adani Green Energy - separately listed in India - is the vehicle through which solar and wind is developed by Adani.

Adani Power is seeking funding for its Godda imported coal-fired power project in Jharkhand state.⁵¹ The company maintains that the plant is to be run on coal imported from its sister company Adani Enterprises’ Australian Carmichael coal mining project – a proposal yet to attract any investors willing to fund it and that is struggling with finalising all of its environmental approvals after nine years in development.

Unlike its Mundra plant located close to a port, the Godda site is inland and would require imported coal to be railed 700km to the plant. Given the financial stress within the thermal power sector in India, Adani Power may find it difficult to secure the necessary funding to build this plant, especially given the very high net debt of the company (US\$7.4bn as at 31 March 2018).

With even coal-fired power fuelled by domestic coal struggling to compete with renewables, and often in deep financial stress, it will be increasingly difficult to find investors prepared to back Indian coal plants fuelled by more expensive imported coal.

Conclusion

India has helped drive its energy transition with ambitious renewable energy installation targets including an aim to reach 275 GW of renewable capacity by 2027. Over the same period, net coal-fired power additions are planned to slow significantly.

However, the current Indian fiscal year has seen net coal-fired power additions come close to ceasing altogether – the shift away from new coal-fired power is moving faster than anyone had predicted.

This important development is encapsulated in Tata Power’s recent confirmation that it no longer intends to build any new coal-fired power stations. Any future thermal power additions will be via the acquisition of existing plants whilst the overall capacity growth strategy is dominated by renewable energy.

Moreover, the company is already planning a twenty-first century power system with intentions to integrate rooftop solar, energy storage and EVs within smart electricity distribution networks.

Tata Power is not alone in demonstrating the transition now happening in India’s power system, but it is one of the best examples of that transformation in action.

⁵¹ Adani Power, [Clarification provided to Bombay Stock Exchange](#), 15 January 2019.

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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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