



Bangladesh Power Review

Overcapacity, Capacity Payments, Subsidies and Tariffs Are Set to Rise Even Faster

Executive Summary

Bangladesh's current plan to increase power capacity, based on a switch to expensive imported coal and LNG, is putting the country on course for deeper financial stress in the power system, similar to the strains already emerging in other countries. The Covid-19 pandemic will make this situation even worse.

Comparing IEEFA's power demand forecast for Bangladesh to the planned capacity additions envisaged in the Revisited Power System Master Plan 2016 (PSMP) shows that the nation is on course to build far more capacity than it will need.

Bangladesh Is on Course to Build Far More Power Capacity Than Required

Bangladesh will have power capacity to generate 58% more power than needed in 2029-30 if it proceeds with plans to add excessive coal- and LNG-fired power plants.

IEEFA's forecast considers the likely economic impact of Covid-19. We assume reduced GDP growth in FY2019-20 and FY2020-21 of 5% before it rises to 7% a year out to FY2029-30. The IMF has forecast that Bangladesh's GDP growth in calendar year 2020 will drop to just 2% before rebounding in calendar year 2021.

This reduction in economic growth will reduce power demand growth, and demand by 2029-30 will be lower than previously forecast, making the overcapacity situation in Bangladesh worse.

If all the plants planned within the Revisited PSMP were built, the reality is that overcapacity would lead to significantly lower capacity utilisation of the new coal and LNG plants. These expensive assets would lie idle for much of the time, potentially receiving significant capacity payments while generating no power.

In an indication of what might lie ahead, the almost-completed Payra coal-fired power plant is reportedly receiving capacity payments of Tk160 crore (US\$19m) a month whilst half its capacity is idle due to a delayed transmission line connection. The Bangladesh Power Development Board's (BPDB) chairman has stated "In that case the Payra power plant is going to be a burden and would only increase the government's power subsidy".

Bangladesh already has excess capacity that has entailed significant capacity payments to plants lying idle. Overall power capacity utilisation in Bangladesh for

2018-19 was just 43%, while capacity payments to idle plants reached Tk90bn (US\$1.1bn) in 2018-19.

The current power capacity addition plan set out in the Revisited PSMP looks certain to lock in an extremely high level of overcapacity out to at least 2030. This suggests that there will be capacity payments to idle plants for the long term if the planned coal- and LNG-fired power plants come online.

Elsewhere, concerns about overcapacity have led to the cancellation of coal power projects. Egypt recently shelved plans for a huge 6.6GW China-backed coal-fired power plant.

Overcapacity Will Make the Power Development Board's Financial Situation Even Worse

Increased overcapacity and a rise in associated capacity payments will increase the financial burden on BPDB and raise the likelihood of higher government subsidies or power tariffs for consumers. The minister for power has stated that Covid-19's impact on the economy will reduce demand and power revenues and lead to even greater financial losses for the BPDB.

Even before Covid-19, BPDB was making significant losses. In fiscal year 2018-19, the government subsidy required to compensate BPDB for selling power below cost, and to avoid a major loss and cash flow shortfall, rose again to reach Tk80bn (US\$936m). Before the Covid-19 pandemic struck, BPDB expected that the subsidy required in 2019-20 would rise again to Tk90bn (US\$1.1bn). This will now likely need to be even greater.

Although initially replacing expensive oil- and diesel-fired generation, in the longer term imported coal and LNG will also replace cheap domestic gas in the power system. The overall cost of generation will therefore rise, leading to a need for higher subsidies or additional tariff increases, or both, increasing financial stress on government budgets and power consumers.

Three Lessons for Bangladesh from Indonesia

Indonesia's over-commitment to coal-fired power is financially imperilling PLN—the state-owned power utility—and serves as a clear warning for Bangladesh if it continues down its current power development path. Three clear lessons need to be learnt from Indonesia's experience:

1. PLN's misguided reliance on new coal-fired independent power producers (IPPs) has dictated a rapid escalation in government subsidies. In 2018, increased IPP payments, along with higher fuel costs, resulted in a 75% increase in the government subsidy, which reached an entirely unsustainable US\$5bn in 2018 and could reach US\$7.2bn in 2021. With more coal projects set to come online, PLN's IPP payments are set to increase even more, worsening operating losses that would inevitably lead to the need for higher subsidies and/or power tariffs. PLN's government

subsidy is currently 5 times larger than BPDB's and points to a worsening financial situation in the Bangladesh power system unless the country alters course.

2. The latest iteration of Indonesia's power development plan includes a power demand growth forecast for 2019-2028 of 6.4% a year. This is despite the fact that actual power demand growth in 2018 was only 5.1% and the average for 2013 to 2018 was just 4.6% a year. Such misforecasts compound over time and are the basis for planning too much power capacity development, resulting in overcapacity, higher capacity payments, subsidies, and tariffs. A former interim chief executive of PLN publicly acknowledged in July 2019 that the plan for a fleet of new coal-fired power plants should be re-evaluated due to lower-than-expected electricity demand growth. Bangladesh needs to avoid making the same mistake of planning and building excessive capacity additions based on inflated demand growth forecasts.
3. Faced with an unsustainable financial situation driven by misguided reliance on coal, there are now some early signs that Indonesia is about to take modern, clean energy technology more seriously, providing another lesson for Bangladesh. The Indonesian government has stated that renewable energy has now become a national priority and preparations are underway to accelerate renewables development there.

Opportunity for Bangladesh to Shift Its Energy Direction

Early indications are that the coronavirus pandemic is slowing the development of Belt Road Initiative (BRI) projects including the completion of the Payra coal plant and likely the 14 other Chinese backed coal plants proposed for Bangladesh. The delay provides an opportunity to reset energy development policy and redirect resources to support economic fundamentals and energy price stability to enable the realization of 'Vision 2041', a plan to eliminate extreme poverty in Bangladesh; reaching upper middle-income country status by 2030, and high-income country status by 2041.

The cost of renewable energy in Bangladesh is now declining. In September 2019 a new solar plant became operational with a tariff of US\$65/MWh. The amount of land suitable for renewables in Bangladesh is likely to be more than previously assumed. However, some tough choices over land use may have to be made if Bangladesh is to avoid entrenching a power system dominated by expensive, imported coal and LNG with higher power tariffs and government subsidies.

Power demand is set to decline significantly due to the coronavirus-induced global economic downturn, and many existing power plants in Bangladesh were often standing idle before the pandemic struck. The risk that this overcapacity extends into the long term, due to the planned construction of a fleet of imported coal- and LNG-fired power plants, is only increasing. It is now time for Bangladesh to consider more appropriate, modular renewable energy (without capacity payments) and grid

investments to meet lower demand growth and reduce the overall system cost while improving domestic energy security and resilience.

Increasing Overcapacity Risk

Even prior to the Covid-19 pandemic, Bangladesh was on course to build significantly more power capacity than required. This would place even more financial pressure on the BPDB through further capacity payments to idle plants. Covid-19 is now reducing economic and power demand growth, increasing the overcapacity and financial risks even more.

In November 2018, Bangladesh published a document entitled Revisiting Power System Master Plan (PSMP) 2016.¹ This document included forecasts of power demand growth under low, medium (base) and high demand growth scenarios. It also provides details of the power capacity to be added out to 2041.

The Revisited PSMP forecasts power consumption demand by 2030 to reach 188TWh, 202TWh and 213TWh under the low, base, and high scenarios, respectively. By way of comparison, IEEFA calculates that net power demand for fiscal year 2018-19 was around 62TWh after taking transmission and distribution (T&D) losses into account.

IEEFA has performed its own high-level modelling on power demand growth in Bangladesh out to 2030 (see Annexure I). Our model uses conservative assumptions including a GDP/electricity demand growth multiplier of 1.5 based on recent growth rates. In addition, we conservatively assume energy efficiency gains of 1% per annum and reductions in T&D losses of 0.2% per annum.

IEEFA's forecast considers a likely economic impact from Covid-19. We assume reduced GDP growth in FY2019-20 and FY2020-21 of 5% before increasing to 7% per annum out to FY2029-30. Our modelling results in a net power demand forecast of 160TWh by 2029-30. Due to T&D losses, our model forecasts that 177TWh of power generation would be needed to meet that demand in 2030.

The IMF has forecast that Bangladesh's GDP growth in calendar year 2020 will drop to just 2%.² Bangladesh's knitwear and ready-made garment sector has reportedly already been hit with US\$6bn of cancelled or postponed orders. The sector accounts for more than 80% of the nation's exports.³ Although the IMF's latest forecast sees a significant recovery in Bangladesh's GDP growth in calendar year 2021, this is far from certain at this stage of the pandemic.

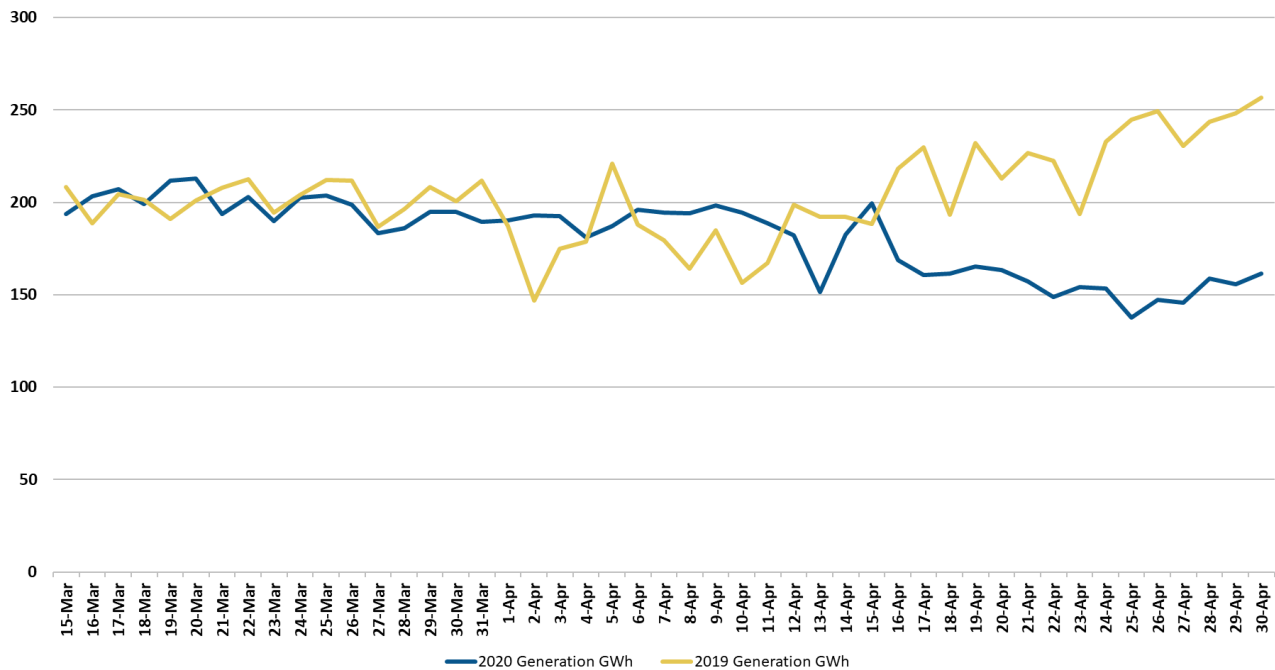
BPDB generation data indicates significantly reduced demand for power due to the coronavirus, compared to a year before. (Figure 1).

¹ Ministry of Power, Energy and Mineral Resources, Revisiting Power System Master Plan 2016, November 2018.

² IMF, [World Economic Outlook April 2020](#).

³ IMF, [Policy responses to Covid-19](#).

Figure 1: Bangladesh Power Generation 2020 v 2019 (GWh)



Source: Bangladesh Power Development Board.

Overcapacity Set to Continue into the Long Term

Comparing IEEFA’s power demand forecast to the planned power capacity additions in the Revisited PSMP shows that Bangladesh is on course to build much more capacity than will be required.

Under its low-demand growth scenario, the Revisited PSMP sets out almost 84GW of power capacity additions by 2041, not including any renewable energy. The additions are split in to “committed” projects (30GW) and “candidate” projects (54GW). Taking the additions planned between 2020 and 2030 according to the Revisited PSMP (40GW) and assuming that all the expensive, currently operating imported oil- and diesel-fired generation can be retired as new capacity comes online, results in net additions of 33.6GW by 2030 (Table 1).

Assuming current or achievable capacity utilisation rates for each power source, including a conservative 60% utilisation for coal and LNG plants, Bangladesh is on course for power capacity sufficient to generate 281TWh of power in 2029-30 according to the Revisited PSMP. This is 104TWh more than required according to IEEFA’s model of power demand growth to that date.

Based on the Revisited PSMP, Bangladesh will have power capacity to generate 58% more power than needed in 2029-30 (Table 1).

This calculation assumes Bangladesh does not reach its goal of 10% power capacity from renewable energy. Bangladesh is on course for major overcapacity due to the addition of excess coal- and LNG-fired power plants.

Table 1: Power System Master Plan Will Lead to Major Overcapacity

Technology	MW at Jun-19	Additions to 2030	MW at June-30	June-30 Capacity %	Utilisation Rate %	2029-30 TWh Generated
Coal	524	17,533	18,057	34%	60%	94.9
Gas/LNG	10,877	17,283	28,160	54%	60%	148.0
Oil/Diesel	6,140	(5,829)	311	1%	25%	0.7
Solar	30	-	30	0.1%	21%	0.1
Wind	-	-	-	0%	25%	-
Hydro	230	-	230	0.4%	36%	0.7
Nuclear	-	2,232	2,232	4%	80%	15.6
Import	1,160	2,336	3,496	7%	67%	20.5
Total	18,961	33,555	52,516	100%		280.5

IEEFA modelled 2029-30 TWh of generation required to meet demand	177.0
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Power generated in excess of modelled demand based on committed and candidate power additions (TWh)	103.5
Power generated in excess of modelled demand based on committed and candidate power additions (%)	58%

Source: Revisited Power System Master Plan 2016, BPDB Annual Report 2018-19, IEEFA calculations.

Overestimated forecasts of power demand growth are ubiquitous in developing countries and lead to poor power system planning decisions. Indonesia, with its over-inflated coal power addition plan, is a good example and a lesson for Bangladesh.

The latest iteration of Indonesia's power development plan includes a power demand growth forecast for 2019-2028 of 6.4% a year. This is despite the fact that actual power demand growth in 2018 was only 5.1% and the average for 2013 to 2018 was 4.6%.⁴ Such misforecasts are often the basis for planning too much capacity development which can result in higher tariffs, subsidies and capacity payments that are unaffordable.

In July 2019, a previous interim chief executive of Indonesian state-owned utility PLN publicly acknowledged that the plan for a fleet of new coal-fired power plants should be re-evaluated due to lower-than-expected electricity demand growth.⁵

The Revisited PSMP acknowledges that the plan locks in significant overcapacity. While noting that the ideal power generation reserve margin (the power capacity available over and above that required to meet normal peak demand) for most countries is 10-20%, the PSMP states a targeted reserve margin for Bangladesh of 25% during the early 2020s, reducing to 18% by 2030. However, the Revisited PSMP discloses that, under its low demand growth scenario and with power

⁴ IEEFA, [2019 energy plan falls short](#), 4 March 2019.

⁵ IEEFA, [The Case for System Transformation in Indonesia](#), November 2019.

capacity additions as planned, Bangladesh's reserve margin will skyrocket during the 2020s—reaching as high as 69%, representing significant overcapacity.

More Capacity Payments for Idle Power Plants

If all the plants envisaged in the Revisited PSMP were built, the reality is that overcapacity would lead to significantly lower capacity utilisation rates at the new coal and LNG plants. These expensive plants would lie idle for much of the time, potentially receiving significant capacity payments while generating no power.

Indications of further capacity payments for new plants standing idle are already present in Bangladesh. Due to a major project delay, there is not sufficient power transmission capacity to connect the almost-completed Payra coal-fired power plant to the grid. As a result, it is reported that half of the plant's 1,320MW capacity will remain unused until the transmission line is upgraded while it receives capacity payments of Tk160 crore (US\$19m) a month. Commenting on the delay on the transmission line, the BPDB Chairman stated: "In that case the Payra power plant is going to be a burden and would only increase the government's power subsidy."⁶

Even prior to the construction of the Payra coal plant, Bangladesh already had excess capacity that has led to significant capacity payments to plants lying idle. Overall power capacity utilisation in Bangladesh for 2018-19 was just 43%. On some days up to two-thirds of capacity in Bangladesh is unutilised, a situation that has worsened in recent years and led to rising capacity payments to plants that are compensated when not being used. In fiscal year 2018-19 capacity payments to idle plants reached Tk90bn (US\$1.1bn).⁷ This capacity payment figure for unused utilization is greater than Bangladesh's top export industries such as leather, leather products and footwear, valued at US\$1.08bn⁸ and jute, valued at US\$899m⁹.

"In that case the Payra power plant is going to be a burden and would only increase the government's power subsidy."

The BPDB expects capacity payments to continue rising in the short term.¹⁰ Moreover, the current long-term power capacity addition plan set out in the Revisited PSMP looks certain to lock in a remarkably high level of overcapacity out to at least 2030. The fact that the Payra coal plant is to receive capacity payments while much of its capacity sits unused, suggests that capacity payments to idle

⁶ New Age, [Payra power plant set to become economic burden on Bangladesh](#), 14 March 2020.

⁷ Financial Express, [Extravagance in power generation](#), 8 December 2019.

⁸ Textile Today, [An overview of Bangladesh leather industry](#), 17 December 2018.

⁹ Global Trade, [Global jute market 2019](#), 9 December 2019.

¹⁰ Dhaka Tribune, [Cost of living to rise as power gets pricier](#), 27 February 2020.

plants will continue to rise throughout the decade if more planned coal- and LNG-fired power plants come online.

Elsewhere, concerns about overcapacity have led to the cancellation of coal power projects. Egypt recently shelved plans for a huge 6.6GW China-backed coal-fired power plant due to both overcapacity concerns and a preference for renewables.¹¹

Bangladesh Power: Subsidies and Tariffs Increasing

Rising capacity payments will place even more financial pressure on the BPDB. The BPDB is making significant losses each year which has led to the need for larger government subsidies and power tariff increases. The pandemic-induced economic downturn threatens to reduce BPDB's revenues while the board continues to make capacity payments to generators. The power minister has stated that as a result even larger financial losses will be made.¹²

In February 2020, the retail tariff was increased by 5.3% to Tk7.13 per unit, the first time the retail tariff has been increased since 2017. The wholesale tariff was increased for the first time since 2015 to Tk5.17, an 8.4% increase. More tariff increases should be expected in future.

The decision to raise tariffs followed a submission by the BPDB to the Bangladesh Energy Regulatory Commission in late 2019 that requested either a tariff increase or larger subsidy from the government. A revenue or subsidy increase was required to partially address the huge Tk86bn (US\$1bn) loss that BPDB stated it is on course to post in fiscal year 2019-20, a figure likely to be made worse by the Covid-19 pandemic.¹³

¹¹ ChinaDialogue, [Shelving of huge BRI coal plant highlights overcapacity risk in Pakistan and Bangladesh](#), 1 May 2020.

¹² Daily Prothom Alo, [Power sector braces for huge loss due to coronavirus](#), 17 April 2020.

¹³ Financial Express, [BPDB seeks rise in bulk power tariff or subsidy](#), 23 October 2019.

Table 2: Bangladesh Power Development Board Summarised Cash Flows 2016-17 to 2018-19

Fiscal Year		Tk m	USD m
2016-17	Opening Cash in Hand	66,835	786
	Net Cashflow	(29,434)	(346)
	Cash Received From Govt as Subsidy	39,940	469
	Closing Cash in Hand	77,341	909
2017-18	Opening Cash in Hand	77,341	909
	Net Cashflow	(73,584)	(865)
	Cash Received From Govt as Subsidy	45,059	530
	Closing Cash in Hand	48,816	574
2018-19	Opening Cash in Hand	48,816	574
	Net Cashflow	(78,111)	(918)
	Cash Received From Govt as Subsidy	79,667	936
	Closing Cash in Hand	50,372	592

Source: Bangladesh Power Development Board Annual Reports.

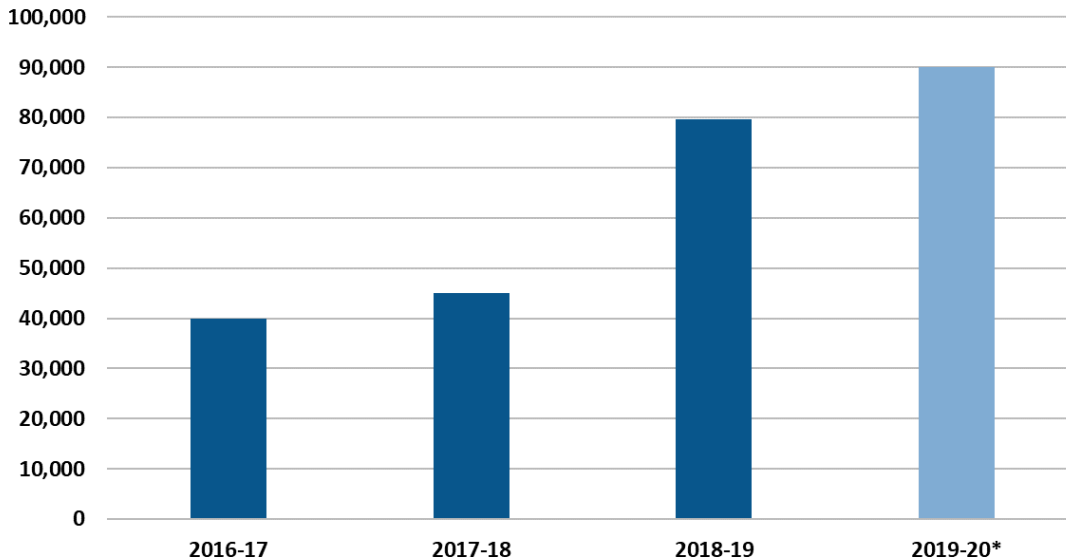
The BPDB has made consistent, heavy losses that need to be subsidised by the government as the tariffs charged for electricity sold are lower than rate at which it generates or purchases power. In fiscal year 2018-19, a Tk80bn (US\$936m) subsidy was received to limit its losses and resolve a significant cash flow shortfall (Table 2).

Furthermore, for the first time the entire subsidy provided by the government in 2018-19 was treated as a grant and taken straight to the profit and loss statement rather than being treated as a loan and taken to BPDB's balance sheet. The government appears no longer to be pretending that it will ever see that money again. As a result, BPDB's total liability for subsidies received over the years remained unchanged on its 2018-19 balance sheet at Tk431.6bn (US\$5bn). The increased 2018-19 subsidy is part of a recent trend of increasing subsidies to BPDB. After falling to Tk28bn (US\$328m) in 2015-16, there have been significant increases since (Figure 2). BPDB expects that the subsidy required in 2019-20 will rise again to Tk90bn (US\$1.1bn).¹⁴

The Minister for Power, Energy and Mineral Resources has maintained that the introduction of a large fleet of new power stations fuelled by imported coal and LNG will bring down the cost of generation, and hence the subsidy required to keep BPDB afloat, because their cost of generation is below the cost of imported oil- and diesel-fired power which they will replace. This is a misleading benchmark that will still lead to expensive power. It would be prudent to include renewable energy benchmarks. To compare costs appropriately across technologies, all costs should be considered, including the cost of new infrastructure needed, fuel prices, exchange rate, and increase in project costs as a result of delays.

¹⁴ Bangladesh Post, [Power subsidy increases 9 times in a decade](#), 20 March 2020.

Figure 2: Bangladesh Power Development Board Subsidies Received (Tk millions)



*Expected 2019-20 subsidy.

Source: Bangladesh Power Development Board Annual Reports.

Where coal and LNG replace oil and diesel in the power system the average cost of generation will decline. However, in 2018-19 oil- and diesel-fired power generation represented only 19% of total power generation for the year (Table 3).

Furthermore, planned power capacity additions according to the 'Revisited' 2016 Power System Master Plan (PSMP) include 17.5GW of new coal-fired power plants and 17.3GW of new plants to be fuelled by gas or imported LNG by 2030 (Table 1).

As well as meeting growing power demand, this new coal- and LNG-fired power will increasingly replace domestic gas-fired power—currently the cheapest source of power in Bangladesh—as its availability diminishes. BPDB's own domestic gas-fired plants had a per unit generation cost of Tk2.5/kWh in 2018-19, well below the expected cost of imported coal- and LNG-fired power. The replacement of domestic gas with imported coal and LNG will see Bangladesh's overall cost of power generation increase in the long term.

The replacement of domestic gas with LNG is not a simple swap. Numerous LNG terminals are planned for re-gasification and storage of LNG, infrastructure that adds to the cost of LNG-fired power. Pakistan is more advanced than Bangladesh in its LNG infrastructure development and has encountered issues that the Bangladesh government may have to tackle if it continues with its plan to rely on LNG imports. Lower-than-expected demand for LNG in Pakistan has resulted in escalating capacity payments to LNG terminal operators¹⁵, something that Bangladesh can ill-afford on top of rising capacity payments to idle power generators.

¹⁵ Dawn, Govt, IPPs gear up for crucial capacity payment talks, 3 April 2020.

Power generation based on imported coal is also made more expensive by the need for new infrastructure in the form of coal import terminals.

Table 3: Bangladesh Power Generation by Source Fiscal Year 2018-19

Capacity	GWh	%
Coal	1,230	1.7%
Gas	48,306	68.5%
Hydro	725	1.0%
Utility scale solar	39	0.1%
Furnace Oil	11,426	16.2%
Diesel	2,022	2.9%
Imports - India	6,786	9.6%
Total Generation	70,534	100%

Source: Bangladesh Power Development Board Annual Report 2018-19, IEEFA calculations.

As a result, it is likely that subsidies or power tariffs (mostly likely both) will need to keep rising in the long term in response to the high expense of power generated from imported fossil fuels.

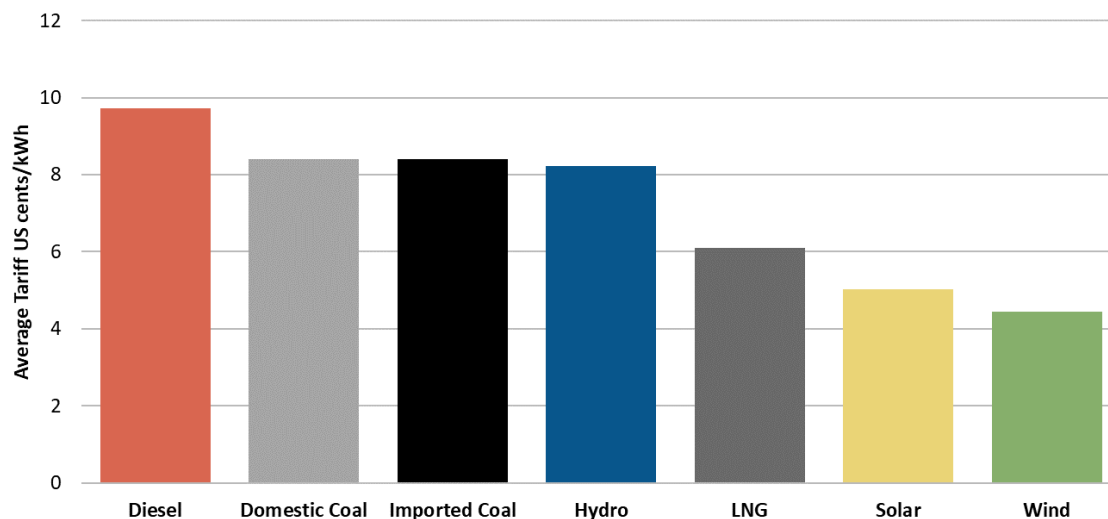
The provision of affordable energy for industry and households should not come at the expense of economic fundamentals. The economic risks of fossil fuel lock-in are making their way on to the public balance sheet. The opportunity cost of absorbing unnecessarily high costs within the power system may come at the expense of underinvestment in pursuing electrification goals or in industries that are key to diversifying Bangladesh's exports.

The most effective way to address this looming issue is to prioritise the power generation source that can limit the cost of power generation in Bangladesh as it is increasingly doing globally—renewable energy.

The cost of renewable energy is now declining in Bangladesh. In September 2019 a new solar plant became operational with a tariff of US\$65/MWh. With proper backing and commitment from the Bangladesh government, the cost of renewable energy would decline even further as has been seen in other parts of South Asia. In India, renewable energy tariffs are now below the cost of power generation based on domestic coal, let alone imported coal. Meanwhile the start of Pakistan's roll-out of renewable energy has quickly seen wind and solar become the cheapest sources of new power generation in the country (Figure 3).

The idea that new unsubsidised coal is the least-cost source of power generation around the world is now dead. It will be difficult for the government continue to justify the continued use of imported thermal coal in the face of cheaper, more economic options.

Figure 3: Average of Recent Determined Levelised Power Tariffs in Pakistan



Source: Pakistan's National Electric Power Regulatory Authority.

There is a prevailing belief that Bangladesh does not have the land available for a major roll-out of wind and solar power installations, although some evidence suggests there are more suitable sites available than previously thought.¹⁶

A 2019 study found the maximum installable capacity was: Onshore wind 16GW, offshore wind 134GW, solar PV rooftop 35GW, solar PV utility 156GW, and floating PV 31GW.¹⁷

Although the area of suitable land for wind and solar power is likely to be more than previously assumed, some tough choices over land use may have to be made if Bangladesh is to avoid going down the path towards a power system dominated by expensive, imported coal and LNG with higher power tariffs and government subsidies.

With neighbouring India well ahead in its transition towards renewable energy, importation of ever-cheaper wind and solar power from Indian states could be part of the long-term solution. This would be far cheaper than importing coal-fired power from Adani's Godda power project which is made more expensive by the use of coal imported into India and the cost of transmission to Bangladesh.

Bangladesh Following Indonesia Down a Path to a Dead End

Another country that has so far failed to capitalise on the declining cost of renewables is Indonesia—a country whose over-commitment to coal is financially imperilling its state-owned power utility and serves as a clear warning for

¹⁶ Daily Star, [Coastal belt holds wind power prospects: study](#), 11 November 2018.

¹⁷ UTS Institute for Sustainable Futures, [100% Renewable Energy for Bangladesh](#), 29 August 2019.

Bangladesh if it continues down its current power development path.

PLN, Indonesia's state-owned power utility, has seen its misguided reliance on new coal IPPs lead to the need for rapidly escalating government subsidies. PLN's delayed 2018 financial results revealed that increased IPP payments, along with higher fuel costs had led to the need for a 75% increase in subsidy from the government. The subsidy reached an enormous US\$5bn in 2018.¹⁸

PLN simply cannot afford its current strategy of relying on more coal IPPs. With more of these projects set to come online, PLN's IPP payments are set to increase further still. IEEFA has forecast that government subsidy payments to PLN may reach US\$7.2bn in 2021.¹⁹ Further reliance on government subsidies is unsustainable and it seems inevitable that power tariffs will have to increase. However, this may be a difficult sell to power consumers while PLN refuses to reform and if it continues to ignore the growing benefits of ever-cheaper renewable energy technology.

PLN is now expecting that its 2020 revenues will be 15% lower than originally forecast due to the Covid-19 pandemic. It now also wants to delay debt repayments and is postponing power projects that have not yet secured funding.²⁰

PLN is on course for increased losses as more coal power plants are added despite Indonesia being the world's largest exporter of thermal coal. Yet having built under the false premise that coal is cheap, it's clear that Indonesia has suffered from increased losses while electrification goals have not been met.

A key difference for Bangladesh is that its planned fleet of coal IPPs and joint ventures will need to be fuelled by more expensive imported coal. Elsewhere in South Asia, imported coal-fuelled power plants have been under severe financial stress.

The first imported coal-based power plants built in Pakistan have already shown signs of financial stress. The Sahiwal coal plant has hit trouble due to tariff payment arrears and the expense of imported coal.²¹ The cost of importing coal has been significantly increased by the depreciation of the Pakistan rupee. The poor financial situation meant the 1,320MW plant was reportedly on the brink of closure only nine months after starting operations.²² The 1,320MW Port Qasim coal-fired plant was reportedly in financial difficulty within a year of becoming operational for the same reasons. In addition to the expense of imported coal, the plant was suffering from payment receipt arrears of US\$133m according to its chairman.²³ With power

¹⁸ IEEFA, [PLN's fractured finances require real leadership](#), 30 May 2019.

¹⁹ IEEFA, [PLN in Crisis – Time for Independent Power Producers to Share the Pain?](#), April 2020.

²⁰ Reuters, [Indonesian utility PLN cuts revenue target, seeks to delay debt payments](#), 22 April 2020.

²¹ Express Tribune, [CPEC's first power project mired in financial difficulties](#), 10 May 2019.

²² The News, [Sahiwal coal-fired power plants feared closure on non-payment of dues](#), 3 April 2019.

²³ Dawn, [Why is Pakistan opening up new coal power plants, even as the world says goodbye to coal?](#), 24 June 2019.

demand growth lower than expected, Pakistan is now suffering with its own power overcapacity issues.²⁴

Major Indian imported coal-based power plants have been struggling financially for years. At Mundra in Gujarat state, almost 10GW of coal-fired power plants fuelled by imported coal is financially unviable without an expected bailout that will allow the plant owners to pass on the cost of imported coal to distribution companies and hence consumers. IEEFA estimates the bailout will cost the distribution companies almost US\$9bn over 30 years. Gujarat now appears to have recognised its over-reliance on imported fossil fuels and is prioritising lower-cost domestic renewable energy projects at an accelerated pace.²⁵

Even Indonesia may now be about to re-prioritise renewable energy. Indonesia's official plans for power capacity additions to meet rising demand have had similarities to Bangladesh's Power System Master Plan—a major focus on expensive coal and a lack of ambition on renewable energy development. However, faced with an unsustainable financial situation driven by misguided reliance on coal, there are now some early signs that Indonesia is about to take modern, clean energy technology more seriously, providing another lesson for Bangladesh.

Indonesia is currently not on track to achieve its target of 23% of power generation from renewable energy by 2025. However, the country's new energy and mineral resources minister has stated that renewable energy has now become a national priority.²⁶

Other Developing Country Coal Power Markets Shifting Towards Renewable Energy

While there are early signs that Indonesian commitment to deflationary renewable energy may be about to increase, other developing nations are ahead in switching focus from imported coal to modern, clean energy.

Facilitated by the fact that wind and solar are now the cheapest form of new power generation (Figure 3), the Pakistan government has drafted a new renewable energy policy that sets significantly more ambitious targets for clean energy. The policy targets 30% renewable energy capacity by 2030.²⁷ As well as attracting power investors to Pakistan that would not be interested in investing in coal-fired power, the new policy may also attract major renewable technology manufacturers. Global wind energy giant Vestas is reportedly considering a manufacturing plant in Pakistan to capitalise on the nation's increased renewable energy ambitions.²⁸

²⁴ ChinaDialogue, *Shelving of huge BRI coal plant highlights overcapacity risk in Pakistan and Bangladesh*, 1 May 2020.

²⁵ IEEFA, *Gujarat's Electricity Sector Transformation*, August 2019.

²⁶ IEEFA, *Racing Towards 23% Renewable Energy*, February 2020.

²⁷ Alternative Energy Development Board, *Alternative and Renewable Energy Policy 2019*, 2019.

²⁸ Ewwind, *Wind turbines manufacturer Vestas studies its implementation in Pakistan*, 8 February 2020.

Meanwhile, Pakistan has clearly pivoted away from thermal coal imports which have become ever more expensive as the Pakistan rupee has weakened, making fossil fuel imports a growing economic burden. Several coal plant proposals have been revised to either use cheaper domestic coal or have been cancelled altogether. In addition to the expense, the energy security implications of fossil fuel imports will also have driven Pakistan's new renewable energy policy.

Vietnam has long been the thermal coal mining industry's great hope for increased demand but the increasing difficulty in securing finance for coal power projects has now put this in significant doubt. Most of the coal power projects in Vietnam's project pipeline have not reached financial close.²⁹ The country's National Steering Committee for Power Development has recommended that plans for coal power expansion should now be scaled down, advising that 15GW of long planned coal plants be scrapped.³⁰

In addition, renewable energy development in Vietnam has taken off. The nation added more than 4GW of solar power within a 12-month period up to the end of June 2019. The average construction period for those solar plants was just 275 days.³¹ Vietnam is also developing wind energy and has begun construction of its first offshore wind installation.

In Kenya, the Chinese-financed Lamu coal power project close to a World Heritage site on the Kenyan coast has also stalled. An IEEFA analysis found that the proposed plant would prove to be very expensive and hinder rather than spur economic growth.³² Since then, the African Development Bank has withdrawn from the proposal and, in June 2019, Kenya's National Environmental Tribunal halted the project amid significant local opposition to its construction.³³ In the meantime, wind power is now replacing diesel in the Kenyan power system with more renewable projects to come.³⁴

Local opposition to proposed coal power plants is a significant, common factor that is impacting coal power proposals across the developing world. It continues to be a significant factor in Vietnam, Pakistan, and Indonesia with air pollution a major concern. Local opposition to coal plants appears to now be having an impact in Bangladesh. The 350MW Gazaria coal power project has reportedly been cancelled, with the Rural Power Company Ltd citing local opposition.³⁵

²⁹ Bloomberg, [Banks Shunning Coal Financing Bodes Badly for New Plants in Asia](#), 25 February 2020.

³⁰ Bloomberg, [Coal's Sell-By Date Just Moved Closer](#), 12 March 2020.

³¹ Rystad Energy, [Vietnam overtakes Australia in commissioned utility PV](#), 4 July 2019.

³² IEEFA, [The Lamu coal plant will hinder, not spur, economic growth](#), 10 June 2019.

³³ BBC, [Kenya halts Lamu coal power project at World Heritage site](#), 26 June 2019.

³⁴ QZ, [Africa's largest wind power project is now open in Kenya](#), 22 July 2019.

³⁵ Financial Express, [Chinese loans: Govt to drop coal plant project](#), 20 March 2020.

Opportunity for Bangladesh to Change Energy Direction

China is increasingly the lender of last resort for coal power projects as South Korea³⁶ and Japan³⁷ move away from financing coal power in developing countries. Consequently, a coronavirus-induced slowdown of China's Belt and Road Initiative (BRI) will delay Bangladesh's coal plant development plans.

Early indications are that the coronavirus pandemic will slow the development of BRI projects including the completion of the Payra coal plant in Bangladesh.³⁸ There are 14 more Chinese-backed coal plants proposed for construction in Bangladesh. With the pandemic now looking like it will last many months, such delays are likely to extend through the year and possibly into 2021.

However, there were signs that BRI development had slowed even before the coronavirus struck. In 2019, overseas financing by two key Chinese policy banks was the lowest since 2008. During the year, the Export-Import Bank of China and China Development Bank issued only three loans to energy projects totaling US\$3.2bn, down 71% on the prior year.³⁹ Most of Bangladesh's coal power proposals remain unfunded.⁴⁰

Non-BRI coal power projects in Bangladesh were also delayed before the pandemic struck. The Japan-financed, 1,200MW Matarbari coal project has been delayed by at least a year and is now revealed to be costing Tk10,893 crore (US\$1.3bn) more than expected.⁴¹

Bangladesh faces significant, long-term overcapacity, and the prospect of increasing subsidies, power tariffs and capacity payments for idle plants if coal and LNG plants are built as planned. With power demand growth set to be dragged down by the coronavirus pandemic, there is now an opportunity to reset the nation's power development policy and pivot towards renewable energy (without capacity payments) along with grid investment to improve system strength and allow the addition of more renewables to the grid. In addition to grid upgrades and modernization to reduce system losses, domestic renewable energy can also reduce overall system costs while enhancing energy security and resilience.

We are already seeing leadership from the Government of Bangladesh to regain control of its power sector by replacing the 350MW Gazaria Coal fired power plant

³⁶ Climate Change News, [South Korea to implement Green New Deal after ruling party election win](#), 16 April 2020.

³⁷ The Straits Times, [Japan public financier to stop approving loans for coal projects](#), 26 April 2020..

³⁸ Reuters, [Coronavirus slows China's Belt and Road push](#), 18 February 2020

³⁹ Boston University Global Development Policy Center, [China's Global Energy Finance 2019](#), February 2020.

⁴⁰ IEEFA, [China at a Crossroads: Continued Support for Coal Power Erodes Country's Clean Energy Leadership](#), January 2019.

⁴¹ The Business Standard, [Matarbari Power doesn't bother to disclose Tk10,000cr cost hike](#), 21 December 2019.

with grid upgrades to reduce system losses in the rural electricity system.⁴² A flexible approach to unnecessary China-funded coal power proposals may be possible if governments engage more proactively with China on a preference for renewables.⁴³ Proposals promoting fossil-fuels could be supplanted by more appropriate grid and renewables projects rather than simply being cancelled. Setting a precedent for renegotiation, the power minister advised power division officials to negotiate with the Ministry of Finance and donor agencies for support because of the huge financial losses in the power sector.⁴⁴

Globally and regionally in South Asia, renewable energy is already less than two-thirds the cost of imported fossil fuels. Bangladesh is well-positioned to take advantage of deflationary renewable energy to reduce overall system cost and provide affordable energy to households and industry.

Less reliance on imported fuel avoids the ups and downs of volatile commodity markets can give valuable price stability to enable the realization of 'Vision 2041' of Prime Minister Sheikh Hasina, which aims to accelerate growth in high-value agriculture, trade and industry, education and healthcare, and transport and communication. Domestic renewable energy can provide Bangladesh with more resilience to external shocks, improve its competitiveness and thus improve growth potential.

Given likely falls in solar module prices of 5-10% over the coming decade, not only will renewable energy soon be the cheapest form of new power generation in Bangladesh, it will also be quick to build while not adding to air pollution or carbon emissions. Affordable energy over the medium and long term remains essential for Bangladesh to sustain rapid economic growth. Bangladesh should reprioritise its power system development and redirect resources at technologies that can deliver the price stability and competitiveness required to realize the goals of 'Vision 2041'.

Global capital in Asia is fleeing the thermal coal industry while the pool of renewable energy investors is growing in number and volume. Bangladesh, as a net importer of fossil fuels, stands to be a leading beneficiary of this transition to renewable energy. The heavy financial and environmental burdens perpetuated by importing and burning fossil fuels must surely now give Bangladesh the impetus it needs to embrace the sustainable benefits of renewable energy.

⁴² Financial Express, [Chinese loans: Govt to drop coal plant project](#), 20 March 2020.

⁴³ Panda Paw Dragon Claw, [The puzzle of China's missing solar and wind finance along the Belt and Road \(Part 1\)](#), 19 April 2020.

⁴⁴ United News of Bangladesh, [Covid-19: Nasrul asks officials to ascertain power sector loss](#), 27 April 2020.

Annexure

IEEFA Bangladesh Power Demand Forecast to 2030

GDP Growth (%)	7.0%
Electricity to GDP multiplier pre-EE	1.50
Electricity Demand Growth (%)	10.5%
Energy Efficiency (%)	-1.0%
Electricity to GDP multiplier	1.36
Reduced grid T&D losses	-0.2%

Year ended June	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Gross Production (TWh)	57.3	62.7	70.5	74.9	79.6	87.0	95.1	103.9	113.6	124.1	135.6	148.2	162.0	177.0
Gross Production Growth (%)		9.4%	12.4%	6.3%	6.3%	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%
T&D Losses (TWh)	7.3	7.4	8.4	8.8	9.2	9.9	10.6	11.4	12.2	13.1	14.1	15.1	16.1	17.3
T&D Losses (%)	12.7%	11.9%	12.0%	11.8%	11.6%	11.4%	11.2%	11.0%	10.8%	10.6%	10.4%	10.2%	10.0%	9.8%
Reduced Grid losses				-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%
Real GDP Growth (%)	7.3%	7.9%	8.1%	5.0%	5.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Electricity Multiplier (x)				1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Electricity Growth (%)				7.5%	7.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%
Energy Efficiency				-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
Net Demand (TWh)	50.0	55.3	62.1	66.1	70.4	77.1	84.5	92.5	101.3	111.0	121.6	133.2	145.8	159.7
Net Demand Growth (%)		10.5%	12.3%	6.5%	6.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%

Source: IEEFA, based on company financial reports.

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

About the Authors

Simon Nicholas

Simon Nicholas is an energy finance analyst with IEEFA in Australia. Simon holds an honours degree from Imperial College, London and is a Fellow of the Institute of Chartered Accountants of England and Wales. He has 16 years' experience working within the finance sector in both London and Sydney at ABN Amro, Macquarie Bank and Commonwealth Bank of Australia.

Sara Jane Ahmed

Sara Jane Ahmed is an energy finance analyst for IEEFA in the Philippines. She is the author of several studies on island grid transition to renewables, coal stranded asset risk, rooftop solar and auctions. She is a former investment advisor specializing in originating and structuring energy opportunities in emerging markets.

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