



# Vietnam's EVN Faces the Future: Time to Get Renewables Right

*The Key to Success for PDP 8 Will Be Investment  
in New Renewables Technology and the Grid*

## Executive Summary

Vietnam has previewed its power development plans for the next decade, featuring a well-timed move away from over-reliance on inflexible coal-burning independent power projects (IPPs) and a pivot toward renewables and LNG.

IEEFA has analyzed Electricity of Vietnam's (EVN) financial outlook to understand how the company can manage the dual challenges of meeting its growing fixed payment obligations to independent power producers (IPP) and realizing the goals laid out in the country's latest power development plan, PDP 8.

Given EVN's constrained financial position, the key will lie in embracing flexibility and avoiding lock-in — a scenario where the build-up of high-cost fixed IPP obligations is so rapid it prevents Vietnam's from implementing the cost-effective power market innovations that will certainly emerge over the next five years.

The most dynamic aspect of the PDP pathway will rest on the ability of EVN and the Ministry of Industry and Trade (MOIT) to optimize renewables—the best options for obtaining new sources of financing and a rapid pathway to low-cost capacity. With the right policies to support market development, EVN has a unique opportunity to attract competitively priced investment in the most cost-effective renewables technologies and much-needed grid infrastructure.

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Critical questions remain over EVN's ability to win support for tariff increases and to find a cost-effective way to scale liquefied natural gas (LNG). Implementation risks may be higher than some analysts expect due to global market instability and geopolitical cross currents.

Vietnam's power industry will be widely scrutinized this year as policymakers decide on the sector's size and structure for the next decade. The policy choice in favor of a transition to clean, renewable energy is clear. The Power Development Master Plan for 2021-2030 with a vision to 2045 (PDP 8) will elaborate on the parameters of this transition, establishing the exact room for growth for each

energy type, the accompanying infrastructure, and the role to be played by different market actors.

EVN will be at the center of this decision-making process, with the state utility group's operational and financial capacities not only influencing the shape of PDP 8, but also determining how policies will be implemented.

For the past decade, the Vietnamese government, led by the MOIT and EVN, has been in a race to expand capacity. Electricity consumption has grown by an aggressive 10% annually and the system has been under pressure to keep pace with the economy's rising growth potential. Between 2015 and year-end 2019 alone, Vietnam's installed power capacity grew by 42.3% to 54.9 GW while GDP grew 30.0%.

This pressure for rapid capacity build-up has triggered significant changes in market structure. EVN is financially constrained by limited sources of domestic funding and lacks direct access to international capital markets for low-cost financing. EVN has, therefore, had to rely on international developers with access to low-cost capital to finance power generation, retaining full control only in transmission and distribution activities, at least for now. Over the past five years, EVN's own generation capacity shrank from 61% to 52% of the total system, a ratio we expect to fall even more rapidly in coming years.

**Table 1: Vietnam Power Sector**

	2015	2016	2017	2018	2019
Year-end installed capacity (MW)	38,553	42,135	45,400	48,563	54,880
EVN (MW)	23,580	25,884	27,065	28,159	28,769
EVN (%)	61.2%	61.4%	59.6%	58.0%	52.4%
Total system output (kWh million)	159,678	177,234	192,914	212,895	230,774
CAGR (%)	9.6%				
Total sales (kWh million)	143,682	159,793	174,653	192,360	209,768
CAGR (%)	9.9%				

Source: EVN, IEEFA estimates.

EVN's reliance on foreign-funded coal IPPs to provide baseload capacity has now resulted in the same financial and environmental problems that have undermined the growth of coal globally. Project development in Vietnam has slowed dramatically because of community push-back, opaque deal structures, and growing awareness of the risk of lock-in due to inflexible capacity payment structures. These issues have encouraged MOIT to develop incentives for the adoption of renewable energy.

In 2017, MOIT turned to renewable energy to quickly fill the gap left by unrealized fossil power plants and was proven right. Vietnam's energy mix now has 5.1 GW of solar power, with the government intent on replicating this success in the future.

These shifts in the market's ownership structure and generation mix will have a highly material impact on EVN's financial health and future planning of the system.

The state utility needs to anticipate the rapid build-up of guaranteed IPP obligations. This fixed cost structure is challenging to manage when revenues are reliant on politically sensitive tariffs that are more resistant to adjustments. At the same time, EVN also needs to prioritize a system infrastructure upgrade to manage load more efficiently and help optimize a new energy portfolio consisting of variable renewable energy sources. The latter has been a pain point in the past year.

Building on the last decade's growth trajectory, the preliminary draft of PDP 8 published by MOIT in July put forward an aggressive capacity expansion plan for Vietnam's power system. Total installed capacity is set to more than double to 138GW in 2030 and reach 222GW in 2040.

Unlike previous plans, however, the expansion will be driven primarily by new solar and wind energy projects and gas-fired power plants. These sources combined will make up 47% of the system in 2030, rising to 60% in 2040. Acknowledging the many problems with coal IPPs, PDP 8 cancels and postpones until after 2030 up to 17GW of coal-fired capacity, or nearly half of the pipeline.

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PDP 8 is a step change for EVN. Such ambition will naturally call for new policies. Luckily, the Vietnam market's demand growth potential is well understood by potential partners, thanks to Vietnam's strong track record of attracting investment in new supply chain manufacturing capacity and positive trends in the domestic consumer market.

Less clear is how much of this proposed growth can be funded directly by EVN and its ratepayers, and how much will be financed indirectly by IPPs and other funding partners. Setting realistic tariff and funding expectations will be crucial for both analysts and investors who want to understand EVN's capacity to implement ambitious new system development plans.

## EVN Today – A Financial Scorecard

**Table 2: EVN Consolidated Income**

VND million	2015	2016	2017	2018	2019
<b>Net sales</b>	<b>240,733,913</b>	<b>272,702,522</b>	<b>294,846,997</b>	<b>338,500,266</b>	<b>394,889,987</b>
Cost of sales	(204,486,242)	(233,671,119)	(250,742,125)	(285,341,478)	(343,852,003)
<b>Gross profit</b>	<b>36,247,671</b>	<b>39,031,403</b>	<b>44,104,872</b>	<b>53,158,788</b>	<b>51,037,984</b>
Financial expenses (net)	(17,456,063)	(18,083,814)	(18,435,078)	(25,391,488)	(18,522,849)
Profit sharing from JVs, associates	311,515	427,465	699,186	569,873	498,392
Selling expenses	(5,237,475)	(5,989,331)	(6,525,795)	(6,711,690)	(7,134,349)
General and administration expenses	(9,440,747)	(10,535,903)	(12,068,204)	(13,301,134)	(13,635,568)
<b>Net operating profit</b>	<b>4,424,901</b>	<b>4,849,821</b>	<b>7,774,981</b>	<b>8,324,349</b>	<b>12,243,610</b>
<b>Net accounting profit before tax</b>	<b>4,595,181</b>	<b>5,164,742</b>	<b>8,144,629</b>	<b>9,076,043</b>	<b>12,499,984</b>
<b>Net profit after tax</b>	<b>3,699,242</b>	<b>4,431,569</b>	<b>6,593,474</b>	<b>6,817,761</b>	<b>9,720,033</b>
<b>Margins</b>					
Gross margin	15.1%	14.3%	15.0%	15.7%	12.9%
Net operating margin	1.8%	1.8%	2.6%	2.5%	3.1%
Net profit margin	1.5%	1.6%	2.2%	2.0%	2.5%
<b>% of total sales</b>					
Cost of sales	84.9%	85.7%	85.0%	84.3%	87.1%
Materials				21.0%	23.0%
Amortization and depreciation				21.0%	23.0%
Outside purchasing services (IPPs)				33.4%	39.9%
Financing costs	8.1%	8.2%	7.5%	8.6%	5.7%

Source: EVN. Note: cost of sales details available only for 2018 and 2019.

Because EVN is Vietnam's monopoly power system operator, it is important to understand the company's financial performance between 2015-2019 to assess its financial capacity and ability to drive the power sector growth strategy envisioned by PDP 8. With 2019 net sales of VND 394.9 billion (USD 16.9 billion)<sup>1</sup>, EVN is a modestly profitable entity, having managed so far to cover operational and financial costs with mild tariff increases. Net sales growth has been robust with a compound annual growth rate (CAGR) of 13.2% in 2015 to 2019, supported by healthy underlying unit sales growth of 9.9% and effective tariff increases totaling 14.4% during the period.

Over that time, notably in 2019, EVN saw a sharp erosion of its gross margin reflecting a rise in generation costs as new high cost coal-fired IPPs began to reshape EVN's financial performance. This resulted in a 2.8 percentage point drop in the gross margin that will likely continue as more IPP capacity with fixed capacity payments comes online. The hit to EVN's net margin was offset by tariff increases totaling 12.6% that took effect in 2018 and 2019. The shift to greater reliance on IPPs for new capacity was also a factor in the decline in financing costs in 2019, which provided a small cushion for the operating margin as well.

While weak net margins are not unusual in the Asian power utility sector, they are a

<sup>1</sup> Exchange rate 1 USD = 23,361 VND. This exchange rate is used throughout this report.

reminder of the trade-offs typically faced by the power companies in energy growth markets. Vietnam has a good track record relative to its South and South East Asian peers with electrification having already reached 100%.<sup>2</sup> Nonetheless, maintaining profitability and positive cash flow in order to meet credit market norms for eventual bond issuance has EVN walking on a tightrope. If EVN cannot add capacity fast enough, economic growth may not meet its potential, but EVN also has little margin for error if its investment in long-lived power assets fails to produce a cost-effective solution for future power needs.

**Tariff Capacity.** Over the past five years, EVN's average effective tariffs rose 15.0% to VND 1,876 per kWh (USD 0.08 per kWh) to help offset higher financial and operating expenses. This is a meaningful accomplishment because the capacity to raise tariffs is a critical metric in any rating agency's evaluation of a power company's creditworthiness. EVN's tariff adjustments are largely administered by the state, with MOIT having veto power over price increases between 5-10%, and the Prime Minister responsible for approving increases of more than 10%. Since 2015, official tariff levels have been raised only three times, in March 2015, December 2017, and March 2019.

EVN's recent tariff increases have been critical to the company's sustained record of profitability. Two successive increases of effective tariffs totaling 12.6% in 2018 and 2019 boosted total revenues by VND 59.4 trillion (USD 2.5 billion)—an amount that was critical to sustaining EVN's profitability, positive cash flow, and debt coverage ratios. This makes assumptions about EVN's tariff profile particularly important to future expectations concerning EVN's growth profile and near-term risks from the COVID-19 slowdown.

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**Capex Growth.** EVN's capex peaked in 2016 at VND 127.3 trillion (USD 5.5 billion) before falling 61.2% in 2019. This dramatic shift in capital spending reflects a series of policy decisions taken since 2004 to reposition EVN away from being a traditional vertically integrated power company to be the market operator.<sup>3</sup> Future development of new generation capacity has been shifted to developers via IPPs and two state-owned entities — the Vietnam Oil and Gas Group (PetroVietnam) and Vietnam Coal and Mining Group (Vinacomin). EVN also has three generating companies (gencos) that have been identified as spin-off targets.

From a financial perspective, policy decisions taken over the past decade should mean that EVN's future capex burden will reflect its role as the system operator with responsibility for system-level grid operations and development. For this reason,

<sup>2</sup> World Bank. [Sustainable Energy for All Database](#).

<sup>3</sup> World Bank. [Learning from Power Sector Reform Experiences – The Case of Vietnam](#). March 2020

given the need for upgraded transmission and distribution infrastructure, the VND 49.4 trillion (USD 2.1 billion) capex made in 2019 should be viewed as a starting point for estimating EVN's medium-term capex needs, especially in light of the growing diversity of the generation mix.

**Debt Capacity.** EVN's total debt grew by 8.9% between 2015-2019, to VND495,046 billion (USD 21.2 billion), following the 2016 peak in capex. EVN's debt growth was mostly funded indirectly by international sources via government on-lending at below-market terms.

EVN's lack of direct access to adequate international funding is a crucial factor in decisions about its growth strategy. Vietnam can no longer access concessionary funding for low-income countries from multi-lateral development banks thanks to its strong growth track record. Nonetheless, Vietnam is not yet rated investment grade by the credit rating agencies due to structural weaknesses in the banking sector. The absence of a long-term deposit base restricts the banks' ability to provide long-term financing. In addition, Vietnam has limited foreign currency hedging capacity which leaves EVN exposed to foreign exchange risks.

Taken together, the lack of access to the USD bond market and limited availability of attractively priced debt at home, EVN has had little choice but to turn to foreign investors in IPPs. By seeking project sponsors who can access credit enhanced terms, thanks to export credit agencies, project sponsors have provided the necessary funding in exchange for development returns and risk mitigation through long-term power purchase agreements (PPAs).

For EVN, the net effect of this approach is that its limited debt capacity has played an outsized role in dictating Vietnam's power development strategy. EVN's role in developing generation has been restricted, prompting high reliance on IPPs and partnerships with international sources of capital. One consequence of this situation is that rather than raising debt to finance EVN's own asset base, it now faces the risk that if tariff increases cannot keep pace, new debt will be needed to help meet the company's growing IPP payment obligations.

**Table 3: EVN: Balance and Cash Flow Items**

VND million	2015	2016	2017	2018	2019
<b>Balance sheet items</b>					
Total debt outstanding	370,152,351	396,591,441	404,444,512	405,077,268	398,750,367
Financial expenses/debt outstanding	5.3%	5.6%	5.5%	7.2%	5.6%
Debt/equity (x)	2.4	2.4	2.3	2.2	2.2
<b>Cash flow items</b>					
Capex	87,456,028	127,312,625	74,016,256	63,550,735	49,425,195
Net debt flows (proceeds-repayments)	22,397,267	22,318,727	6,074,313	(8,304,421)	(8,237,439)
Funds from operations (FFO)	75,695,666	88,220,064	98,416,620	107,650,350	99,331,610
Cash debt service	75,424,719	55,929,941	63,636,495	82,943,711	74,180,774
FFO/cash debt service	1.0	1.6	1.5	1.3	1.3
FFO adjusted net leverage x	4.9	4.5	4.1	3.8	4.0
Cash and cash equivalents	41,968,868	41,513,150	45,704,037	50,205,261	53,601,031

Source: EVN, IEEFA.

**Financial Metrics.** EVN's debt burden is high, with a debt-to-equity ratio averaging 2.3 times, albeit declining. Thanks to strong revenue growth, the company has been operating cash flow positive and generated net cash in 2017 through 2019.

EVN is currently rated BB stable by Fitch—a sub-investment grade notch in line with Fitch's rating for the Vietnam sovereign.<sup>4</sup> The company's standalone credit profile reflects EVN's mixed credit fundamentals. Although EVN is profitable, low returns on assets and unstable funding options leave the utility vulnerable to unhedged foreign exchange risks. According to Fitch, this vulnerability results in a delicately balanced credit position, leaving EVN exposed in the event of urgent capital spending requirements or a shortfall in collections.

In recent commentary reflecting the first stages of the COVID-19 shock, rating agency Fitch took note of EVN's decision to cut tariffs for some customers by 10% and to cut its 2020 unit sales growth expectations to 4%. Fitch expects EVN to have headroom to manage these cuts without threatening its current rating. However, the agency does expect EVN's debt metrics to suffer in 2020 with funds from operations (FFO) adjusted net leverage rising to 4.5 times or higher if receivables increase.

## EVN's Financial Constraints

PDP 8 decisions will not be taken in isolation. The twin imperatives of managing rapid capacity expansion and optimizing a more diverse power system will require significant ongoing grid investment by EVN. It is therefore critical to understand the pressure EVN will face in debates around PDP 8. Based on IEEFA's analysis, EVN is entering a period of heightened financial risk as the utility's operations shift from dependence on its own internally-funded capacity to external coal IPPs and more guaranteed capacity payments that will result in less operational flexibility.

The guaranteed capacity payments associated with new coal PPAs will also distort dispatch decisions and limit EVN's ability to manage variable demand, accentuating

<sup>4</sup> Fitch Ratings. [EVN Standalone Profile Steady Vietnam Tariff Cut Collection Delays](#). April 2020

the challenge of COVID-19 disruptions. To explore EVN's ability to manage this transition, we have created a baseline forecast to test the importance of key variables to EVN's financial health and what policy questions may emerge as EVN implements the program envisioned in PDP 8. Table 4 below presents a baseline forecast of EVN's key income and cash flow items through 2023.

In common with all its peers in South East Asia, EVN faces a challenging 2020 that is expected to result in a net loss for the year due to depressed unit sales growth and the tariff rebate. Total sales in the first six months rose only 2.3% year-on-year<sup>5</sup> versus the usual double-digit growth rate. The short-term impact of tariff rebates is estimated to have cost VND 6.8 trillion (USD 291.1 million) in the second quarter. At the same time, fixed costs related to new IPP generating capacity is forecast to rise 24.8% contributing significantly to a weaker gross margin.

Vietnam has done an excellent job of controlling the impact of the COVID-19 pandemic. Nonetheless, any forecast for the 2021 to 2023 period will naturally be subject to higher-than-normal forecast risk. IEEFA estimates unit sales growth to be constrained at 2.2% in 2020, in line with EVN's latest annual growth forecasts<sup>6</sup> and 9.0% for the subsequent years. These are well below the 10.3% average of the 2015 to 2019 period.

To ensure the forecast's neutral character for the 2021-2023 forecast period, we assumed a fixed effective tariff increase of 3.6% annually and have limited forecast capex to VND 68.4 trillion (USD 2.9 billion) annually, in line with the World Bank's estimates for required transmission and distribution spending.<sup>7</sup>

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<sup>5</sup> EVN. [Operational Report for the First Six Months of 2020](#). 11 July 2020.

<sup>6</sup> EVN. [Assessment of Power Supply Situation in the Last Four Months of 2020 and Preliminary Outlook for 2021](#). 31 August 2020.

<sup>7</sup> World Bank: [Vietnam—Maximizing Finance for Development in the Energy Sector](#). January 2019.

**Table 4: EVN Baseline Forecast**

	2019	2020E	2021E	2022E	2023E
Net sales	394,889,987	396,594,941	455,975,555	516,315,994	584,495,644
Cost of sales	343,852,003	370,650,137	408,675,159	455,345,886	525,495,405
<b>Gross profit</b>	<b>51,037,984</b>	<b>25,944,804</b>	<b>47,300,397</b>	<b>60,970,108</b>	<b>59,000,239</b>
<i>Gross margin</i>	12.9%	6.5%	10.4%	11.8%	10.1%
Net operating profit	12,243,610	(14,948,211)	6,265,592	19,774,259	17,623,515
<i>Net operating margin</i>	3.1%	-3.8%	1.4%	3.8%	3.0%
Pre-tax profit	12,499,984	(14,575,627)	6,649,353	20,169,533	18,030,647
<b>Net profit after tax</b>	<b>9,720,033</b>	<b>(14,539,864)</b>	<b>5,254,041</b>	<b>15,864,405</b>	<b>14,185,850</b>
<i>Net profit margin</i>	2.5%	-3.7%	1.2%	3.1%	2.4%
<b>Net cash flow</b>	3,444,452	(23,557,979)	(2,216,395)	11,306,713	10,960,800
<b>Cash and equivalents</b>	53,601,031	30,043,052	27,826,657	39,133,370	50,094,170

Source: IEEFA estimates.

**IPP Payment Burden.** Before 2020, EVN maintained profitability in the face of high capex levels, largely thanks to aggressive tariff hikes in 2018 and 2019. Over the course of the next three years the picture will change as EVN faces lower capex obligations but higher fixed payment obligations that will put pressure on the utility's core profitability and ability to finance new investment.

The most significant fixed financial obligation during the forecast period is rising IPP payments, which are forecast to grow steadily. We estimate an average 4.4GW will be brought online by IPPs over 2020-2022, and an estimated 6.1GW in 2023, most of it from coal-fired and renewable energy sources.

**Table 5: New Capacity Additions 2020-2023**

	2020E	2021E	2022E	2023E
<b>Total additions (MW)</b>	<b>4,411</b>	<b>5,252</b>	<b>3,400</b>	<b>6,870</b>
EVN	269	50	-	750
IPPs	4,142	5,202	3,400	6,120

Source: IEEFA estimates based on MOIT reports and project announcements.

Estimating EVN's future IPP costs is subject to forecast risk due to limited disclosure of PPA terms and norms for the dispatch of renewables. Under any scenario, however, EVN's gross margin will depend on its ability to integrate IPPs with fixed capacity payments and new renewables with constrained transmission infrastructure. IEEFA estimates that EVN's cost of purchased power will rise 70.5% during the forecast period to VND335.3 trillion to account for 60.1% of EVN's operating costs.

**Table 6: Cost of Sales—IPP Payments**

	2019	2020E	2021E	2022E	2023E
<b>Total cost of sales</b>	<b>343,852,003</b>	<b>370,650,137</b>	<b>408,675,159</b>	<b>455,345,886</b>	<b>525,495,405</b>
Outside purchasing services cost	42.7%	49.3%	53.9%	57.1%	60.1%
Material costs	24.6%	19.7%	17.3%	16.4%	16.0%
Amortization and depreciation expenses	18.7%	17.4%	15.9%	14.3%	12.8%

Source: IEEFA estimates.

Some of this rise in IPP costs is because of changes in the generation mix. Hydro is the lowest-cost power in EVN’s generation mix, but its reliability and thus utilization have declined in recent years due to heightened risks from climate change and human-induced hydrology risks. In the first half of 2020, hydropower accounted for only 18% of the generation mix, down from 25% a year earlier.<sup>8</sup> This shortfall in available generating capacity highlights the growing importance of renewables, with their shorter development time, in filling gaps in Vietnam’s new power pipeline. It will, however, increase the average cost of generation until enough grid capacity is in place to realize system efficiencies.

**Tariff Headroom.** The most sensitive variable in IEEFA’s baseline scenario for EVN is the tariff. This is critical in assessing EVN’s ability to identify the best strategies for implementing PDP 8. The PDP 8 planning documents imply a relatively benign cost pathway for the period, but the data provided cannot be linked to EVN’s current reported financials without further disclosures.

**Table 7: PDP 8—Average Cost of Power Production Estimates**

	2020	2025	2030	2035	2040	2045
USD/kWh	0.070	0.080	0.078	0.080	0.083	0.085
YoY % change		14.3%	-2.5%	2.6%	3.8%	2.4%

Source: IEEFA estimates based on MOIT’s Draft PDP8 (July 2020).

Because EVN is not a publicly listed company, there has been surprisingly little analysis of how partners or investors in Vietnam’s power sector should view EVN’s ability to cover rising operating costs and investment needs via tariff increases. For example, recent World Bank reports envision an eventual tariff threshold of USD 0.12 per kWh, a level that assumes public resistance to sharp tariff increases. That is an assumption that should be revisited in the light of Vietnam’s current socio-political realities and post-pandemic economic revival agenda.

**Fitch: “EVN’s financial profile can be significantly affected if tariffs are not adjusted regularly as it faces major hydrology, currency, and demand risks.”**

<sup>8</sup> EVN. *Operational Report for the First Six Months of 2020*, 11 July 2020.

It is also notable that Fitch refers frequently to tariffs as a potential barrier to upgrading EVN's rating. According to Fitch, EVN's standalone credit profile is "constrained at 'bb' due to the lack of a longer record of tariff adjustments that reflect cost changes". Fitch then links this shortcoming to other concerns, noting that "EVN's financial profile can be significantly affected if tariffs are not adjusted regularly as it faces major hydrology, currency and demand risks, in our view".<sup>9</sup>

Vietnam's recent track record of meaningful tariff increases has created a buffer for EVN and should foster confidence for lenders, but it may be time for a short-term reset of tariff expectations. Vietnam, like many North Asian countries, relies on consumers to subsidize industrial users. While this strategy supports job creation, it also raises social tensions when households are under pressure.

EVN had plans for another round of tariff hikes earlier this year, despite an effective increase in tariffs of 12.6% over the past two years, but Prime Minister Nguyen Xuan Phuc was quick to brush that off in February when Vietnam registered its first cases of COVID-19. Not only operating on the premise of no rates increase through 2020, EVN also had to offer a 10% cut in billings to customers during April-July which by late June, amounted to VND 6,800 billion (USD 291 million), or 1.7% of last year's revenue.

As the COVID-19 pandemic continues to unfold in unpredictable ways in Vietnam and globally, the priority of Prime Minister Phuc's government has been to protect jobs, keep factories open and to stand with the public. There has been a consistent focus on efforts to keep inflation below 4%, backstopped by heightened urgency to promote Vietnam's regional cost-competitiveness to foreign investors.

Recent episodes of customer complaints that could reach as high as the top leadership also suggest that EVN will have to manage its cost-revenue narrative carefully to justify future price hikes. Better operational transparency and information disclosure will be critical for EVN to work effectively with an increasingly populist government and customers' heightened awareness of their rights.

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<sup>9</sup> Fitch Ratings. [EVN Standalone Profile Steady Despite Vietnam Tariff Cut Collection Delays](#), April 21, 2020.

**Table 8: EVN Tariff Increase Scenarios**

	2021E	2022E	2023E
<b>Tariff increase assumptions</b>			
Neutral baseline	3.6%	3.6%	3.6%
Front-loaded	6.0%	2.0%	3.0%
Low	2.0%	2.0%	2.0%
<b>Net income (VND million)</b>			
Neutral baseline	5,254,041	15,864,405	14,185,850
Front-loaded	13,543,786	18,848,352	14,887,697
Low	(272,456)	3,445,387	(6,740,153)
<b>Net cash flow (VND million)</b>			
Neutral baseline	(2,216,395)	11,306,713	10,960,800
Front-loaded	8,346,753	15,108,986	11,855,123
Low	(9,258,494)	(4,518,131)	(15,704,010)

Source: IEEFA estimates.

Given these cross currents, IEEFA's baseline forecast for EVN adopts a relatively neutral posture with tariff increases of 3.6% annually in 2021 through 2023. This is roughly in line with the average tariff increase over the previous three years and would result in an average effective tariff of USD 0.089 per kWh at the end of the forecast period. Based on relatively restrained operating cost and investment assumptions, the baseline forecast indicates that EVN would have adequate operational flexibility, but the company would not be well positioned to weather unexpected financial pressure or to take on extensive grid investment.

The sensitivity analysis also highlights EVN's financial risk in the event of a more subdued outlook for the Vietnam economy that might call for tariff increases of only 2% annually in the 2021 through 2023 period. This "low" scenario with tariff increases of only 6% in total is forecast to expose EVN to losses in 2021 and 2023 as new coal, gas and renewable capacity comes into the generation mix. It would also deplete existing cash buffers. By contrast, a more aggressive "front-loaded" tariff increase of 6% in 2021 followed by increases of 2% and 3% would boost EVN's net income and cash position significantly throughout the period, raising an incremental VND 15.3 trillion (USD 653 million) of net cash over the baseline scenario.

**New Sources of Funding.** For investors and developers, the message concerning the IPP payment burden and the tariff outlook is clear. EVN has done well in recent years to balance financial risks with opportunities. Nevertheless, forecast risk for the 2020 to 2023 period is high and questions about funding sit at the center of any forecast of EVN's future performance. High reliance on IPPs solved the problem of lack of direct access to lower cost USD debt for the PDP 7 period, but higher tariffs are essential if EVN is to stay on steady financial footing. This will be crucial for EVN's efforts to achieve a credit rating that would unlock direct access to more affordable USD debt.

EVN's positioning relative to direct financial market access matters in the near-term because efforts to raise capital by divesting stakes in its generation companies (gencos) have stalled. In line with traditional World Bank advice, EVN had hoped to

spin off its gencos to encourage the development of a competitive wholesale power market and provide cash to EVN for capex. This has not worked out as hoped. The planned February 2018 initial public offering of GENCO3, the second largest company by installed capacity, was largely shunned by investors.

To date, the state holds a 99% stake in GENCO3, well above the 51% target set for year-end 2019. The government, however, continues to press ahead with the sale of GENCO2, now scheduled for December 2020. With 4.4 GW of installed capacity and a generation portfolio largely dominated by coal-fired and hydropower, GENCO2 was valued by the state at VND 46.1 trillion (USD 2.0 billion). There are reasonable grounds to doubt the success of this second IPO.

The implementation of PDP 8 will necessarily be influenced by the path of Vietnam's recovery from the COVID-19 pandemic and its associated economic fallout. Consequently, the funding picture for continued investment will depend not just on Vietnam's financial positioning, but also on developments in regional capital markets and how EVN markets its performance potential.

**The implementation of PDP 8 will necessarily be influenced by how well Vietnam recovers from the COVID-19 pandemic.**

EVN's broader funding picture will be influenced by the growing demand for clean energy infrastructure assets. Evidence of this trend is clear in the strong response from developers to EVN's solar and wind feed-in-tariff programs. Although the PPA for the solar FIT was initially judged as "unbankable" by foreign banks, developers see the Vietnam market in positive terms and regard EVN as a steady partner once terms are agreed. This bodes well for Vietnam as regional banks and developers look for markets that are working to meet the standards required for targeted green finance instruments and facilities.

## **The PDP 8 Opportunity**

This picture of stable but constrained growth sets the backdrop as the much-awaited policy shift to PDP 8 will dominate debate over Vietnam's power sector in the next six months. The government has bold energy transition ambitions, and the plan represents a step-change with a generation mix focused on a new commitment to renewable energy alongside LNG-fired IPP capacity, rather than coal-fired generation.

The initial response to the plan has been positive, but the coming months will be critical to how potential project sponsors and investors respond to new opportunities. Based on IEEFA's analysis, three key issues will be critical to ensuring that EVN can become a more effective system operator with a sustainable financial profile:

**New Grid Investment.** The importance of timely investment in transmission and distribution cannot be overlooked, even in systems that are more oriented to

generation-focused planning disciplines. As the IEA noted in its World Energy Investment 2020 report, “Much-needed investment in electricity networks and storage can ensure that tomorrow’s power systems remain resilient and reliable even as they are transformed by the rise of clean energy technologies.”<sup>10</sup>

As EVN continues to bring more renewables into the generation mix, it will be in its own interest to focus on new grid investment. A reliable transmission system would not only help to optimize variable renewables in the generation mix but would also be critical to securing lower power purchasing costs for EVN. As Vietnam transitions to competitive solar and wind auctions as soon as 2021, EVN’s ability to get the best possible pricing will depend on developers’ certainty that dispatch risk has been minimized and future grid design supports the integration of competitively priced renewables.

Meanwhile, the allure of “green” grid investments to support renewables will attract external financing, relieving EVN’s capital access problems and enabling it to rely on investment in cost-effective tactical renewables, including storage.

In this respect, MOIT and EVN appear to be on the right track. Within the past year, their flexible approach to the interpretation of existing legislation has facilitated the country’s first privately-funded and built transmission project in the southeast province of Ninh Thuan in April, albeit on a pilot basis. This was followed by steps to remove legal uncertainty with the June adoption of the Law on Public-Private Partnerships which specifically targets power grids as an eligible area for private sector participation. This reform creates a solid legal basis for future private financing of transmission infrastructure.

Private sector interest in transmission development is clear and will be led initially by entities with direct interests in beneficiary renewable power plants. As acknowledged by an EVN executive at the Vietnam Energy Summit 2020, private developers need much less time than EVN to develop a 500 kV transmission line because they are not constrained by the complex bureaucracy and regulatory burdens of public investment.

Both MOIT and EVN seem willing to further capitalize on the private sector’s interest in transmission projects. In a best-case scenario, careful planning and the identification of attractive projects could also mobilize capital from new sources of green finance. This could enable EVN and public-private partnerships (PPP) to tap new sources of funding for much-needed new grid capacity on internationally competitive terms.

**Economic Efficiency.** Vietnam is well positioned to capture economic benefits from supply chain development and competitive energy auction pricing. Industry players generally agree on Vietnam’s existing civil engineering capabilities, prospects for more local sourcing, and the potential for returns to scale. Official announcements related to the management of the renewables sector affirm policymakers will adopt best-practice strategies to ensure renewables become increasingly cost-competitive.

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<sup>10</sup> IEA World Energy Investment 2020.

This optimism is supported by the fact that Vietnam has vast untapped solar and wind potential and the commitment needed to ensure that the incremental 15.6 GW of solar and wind capacity expected by 2025 will attract funds from new and existing investors. It is, however, notable that PDP 8 relies on conservative estimates concerning cost improvements of only 26.8% for offshore wind, 30.5% for onshore wind, and 28.7% for solar over the next 25 years.

**Table 9: PDP 8—Cost Estimates for Renewables**

	Base year price (USD/MW)	Improvement vs base year price		
		2025-2029	2030-2039	2040-2045
Onshore wind (>= to 6 m/s)	1.7	-10.7%	-18.3%	-24.5%
Onshore wind (5.5-6m/s)	2.0	-10.7%	-21.4%	-29.2%
Onshore wind (4.5-5.5m/s)	2.0	-10.7%	-21.4%	-26.7%
Onshore Wind Average	1.9	-10.7%	-20.4%	-26.8%
Offshore wind (fixed foundation)	3.1	-2.3%	-17.3%	-23.2%
Offshore wind (floating)	4.3	-2.3%	-16.1%	-37.9%
Offshore Wind Average	3.7	-2.3%	-16.7%	-30.5%
Large-scale solar	1.1	-10.4%	-20.8%	-29.8%
Rooftop solar		-10.4%	-20.8%	-29.8%
Solar Average		-7.8%	-19.2%	-28.7%

Source: MOIT Draft PDP 8 (July 2020).

IEEFA’s review of the preliminary PDP 8 shows that the potential for renewables cost improvements has been underestimated, creating added upside for EVN if it can find cost efficiencies that are not in the modeled scenarios. This view is based on renewables equipment providers’ demonstrated track record of achieving rapid cost improvements via technological improvements, economies of scale and competitive market policies such as reverse auctions.

The experience of comparable markets, and announcements from key technology suppliers suggest that more cost-competitive outcomes are highly likely. Major Chinese solar module manufacturers have made significant announcements in 2020 indicating that leading manufacturers will be moving from 1-2GW manufacturing facilities to a new standard of 5-10GW. These scale improvements are coming into view just as solar spot module prices have fallen 20% year-on-year.<sup>11</sup>

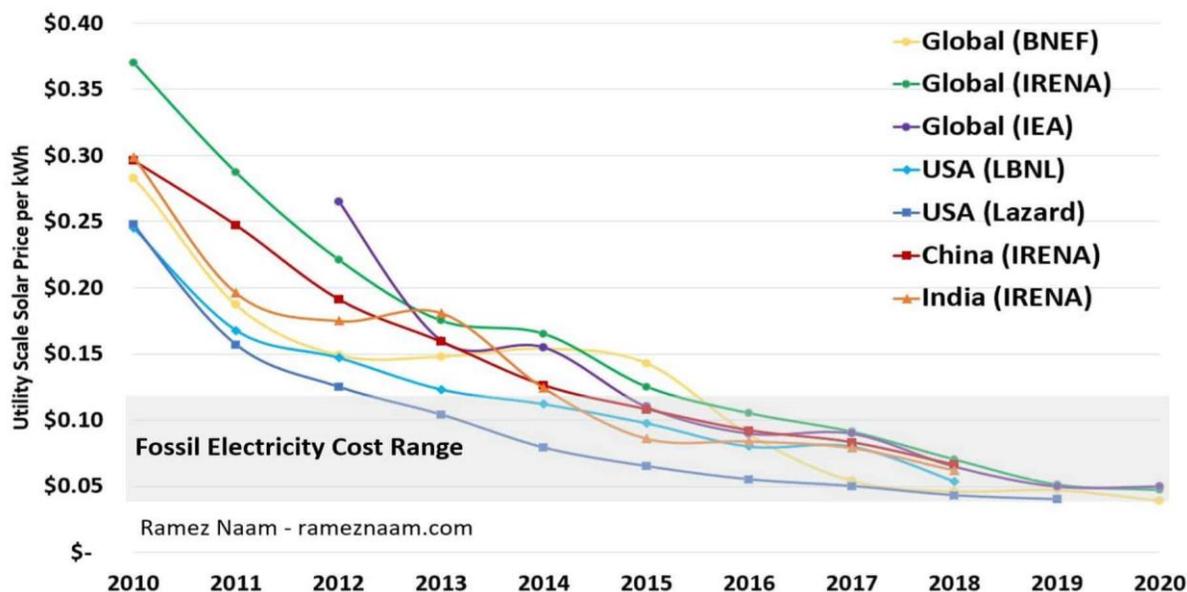
Analysts of the solar power sector have struggled with forecasting errors for more than a decade. Even global organizations such as the IEA and IRENA have consistently lagged market trends. Commentators such as Ramez Naam<sup>12</sup> have shown that greater accuracy requires a focus on learning rates as the solar industry expands and cuts capital costs. This focus on funding costs is one that IEA shares, noting that lower debt funding costs can deliver cost savings on the order of 38% when funding costs can be brought below the 8.0% weighted average cost of capital

<sup>11</sup> IEEFA. [Renewables Continue to Break Records Despite COVID-19 Impacts](#). June 2020.

<sup>12</sup> Ramez Naam. [Solar’s future is insanely cheap](#). 2020.

(WACC) often used in conventional solar modeling exercises.<sup>13</sup> Both are factors from which EVN should hope to benefit.

**Figure 1: Solar Costs Dropped by a Factor of 5 Since 2010**



Source: Ramez Naan. *Solar's Future is Insanely Cheap*. 2020.

New research from Europe on rapid cost improvements in offshore wind reinforces the message that, although offshore wind is often priced at a premium in the early stages of development, auction bids in 2019 were delivering new capacity at USD 0.059/kWh.<sup>14</sup> Recent auction bids in Germany and the Netherlands were regarded as “subsidy-free” because they were in line with existing wholesale market prices. One key element in this notable improvement in reported auction outcomes is a pattern of cost reductions driven by economies of scale that have exceeded the expectations embedded in research from global bodies such as the IEA.

The European researchers found that “offshore wind cost reductions has proceeded more rapidly than was widely anticipated”. They cite a 2016 study using expert surveys to forecast future wind power costs and note that “the prices received in recent auctions have already fallen below the expectations for 2050”.

This research should give EVN and MOIT policymakers more confidence that well-structured competitive auctions and targeted grid investment should enable EVN to align with industry-leading developers in driving down the cost of renewables in the Vietnamese market. Much will depend on how decisions to be made over the next year will set the tone for the renewables market. The preliminary MOIT draft for the solar competitive auction mechanism, which could be implemented next year, suggests that the regulator is looking to find the right balance between (i) trying to

<sup>13</sup> IEA World Energy Investment 2020, p. 81.

<sup>14</sup> Nature Energy. *Offshore wind competitiveness in mature markets without subsidy*. July 2020.

secure lower-cost power through auctions, (ii) managing the risk of grid constraints through sub-station auctions and designated solar park auctions, and (iii) securing rapid addition of capacity by offering guaranteed PPAs for the 1 GW of projects actioned before June 2021.

**System Flexibility.** One challenge that the PDP 8 planning team has clearly worked hard to address is the importance of building a more flexible power system with market structures that will enable EVN to optimize a more diverse generation mix. Moving from baseload-oriented planning to operating a more flexible system will require new management tools and system services. The preliminary PDP 8 document accurately highlights the importance of taking system level operating costs into account, including full generation and transmission costs, environmental impacts, and system services such as storage. There is also a much-needed recognition of the importance of diverse energy sources and the risk associated with dependence on imported fuels.

Modeling all these variables is difficult and working on a 25-year time horizon can increase the risk of forecasting errors. To provide just one example of an opportunity that was overlooked in the PDP 8 modeling, it is worthwhile to consider the benchmarks that were used for estimating solar capacity factors.

IEEFA's review suggests the PDP 8 planning document may have used conservative assumptions about the likely capacity factors of new solar units. Estimates for the South, the Central South, and Central Highlands—with the best solar resource in Vietnam—appear to imply an estimated capacity factor of roughly 19%, while the outlook for the Middle Central, the Central North, and the North are clustered in the 14 to 16% range.

**As market operators  
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the generation mix.**

These estimates reflect a cautious approach to variable renewable intermittency that is not supported by trends in markets as diverse as Germany, California, Tamil Nadu, or South Australia. IEEFA research found that as market operators learn to optimize renewable capacity, it is not uncommon to see renewables climb steadily in the generation mix to reach the 30% to 50% range. The key to this, which is acknowledged in PDP 8, is steady progress on grid balancing, the development of cost-effective storage options, and gas-peaker generators to provide extra power at periods of high demand.

The good news for EVN is that any step taken to realize more value from variable renewables will be a plus for EVN's operating cost profile. Power systems structured to optimize the use of variable renewables, with their deflationary cost characteristics, can deliver cost savings for market operators that can tilt the generation mix and displace higher-cost baseload capacity.

The preliminary PDP 8 document includes a targeted list of recommendations that should serve as a to-do list for policymakers and EVN over the coming year. The list mandates a greater focus on system flexibility post-2025, with steps related to tariff support for storage and ancillary services, a transmission link from the Central South to the North, and new measures to encourage large-scale solar and rooftop solar in the North to address daytime peak demand.

One final opportunity acknowledged in PDP 8 is to make tactical use of Vietnam’s existing grid interconnections with neighboring Laos and China to import power at the margin. Importing low-cost electricity could give EVN breathing room from capacity build-up, and more importantly would enable Vietnam to avoid the risk of premature baseload lock-in, including large scale LNG-fired power plants, while still meeting medium-term generation targets.

**Table 10: Potential Sources of Imported Power**

	Current (MW)	2023-2025	2026-2030	Capacity 2030 (MW)	2030 GWh
<b>North</b>	<b>700</b>	<b>630</b>	<b>402</b>	<b>1,732</b>	<b>7,075</b>
China	700			700	3,360
Laos hydro		630	402	1,032	3,715
<b>Central North</b>		<b>445</b>	<b>145</b>	<b>590</b>	<b>2,006</b>
Laos hydro		445	145	590	2,006
<b>Middle Central</b>	<b>250</b>	<b>1,099</b>	<b>1,020</b>	<b>2,369</b>	<b>8,655</b>
Laos hydro	250	199	420	869	2,955
Laos wind		600		600	1,380
Xekong coal		300	600	900	4,320
<b>Highland</b>	<b>322</b>	<b>-</b>	<b>667</b>	<b>989</b>	<b>3,264</b>
Laos hydro	322		667	989	3,264
<b>Total</b>	<b>1,272</b>	<b>2,174</b>	<b>2,234</b>	<b>5,680</b>	<b>21,000</b>

Source: MOIT Draft PDP 8 (July 2020).

While MOIT and EVN will naturally prioritize domestic capacity and cost optimization, the planners rightly understand that imported power could, under certain circumstances, enhance EVN’s market reach with cost-competitive regional developers. The Laos wind project identified in Table 10 will be developed by Bangchak Corporation PLC, an experienced Thai energy and renewables company, that has already participated in Vietnam’s renewables market.<sup>15</sup> Lower cost power from Laos means that Vietnam can benefit from cheaper and less controversial imports of renewable power. The price of wind power from Laos is capped at USD 0.069 per kWh, or almost 20% lower than the domestic rate.<sup>16</sup>

## **EVN’s Politics of the Possible – The 2020 Watch List**

The financial uncertainties that emerge from our analysis of EVN underscore the nature of the risks and opportunities for MOIT and EVN. Vietnam’s growing

<sup>15</sup> IEEFA. [Thai firm to build 600MW wind farm in Laos](#), 29 July 2020.

<sup>16</sup> VnExpress. [Vietnam caps price of wind power to be imported from Laos at 6.95 cents](#), 21 May 2020.

economy needs clean, affordable power and the ability to integrate new energy technology in a cost-competitive way over the longer term. The key to this is to embrace flexibility and to avoid lock-in – a scenario in which the build-up of high-cost fixed IPP obligations is so rapid that it constrains Vietnam's ability to benefit from the cost-effective power market innovations that will certainly emerge over the next five years. MOIT has demonstrated considerable insight in working with the market on the development of the first-round solar and wind FIT programs. Similar pragmatism may be needed as the policies and market responses framed by PDP 8 progress.

As PDP 8 takes its final form in coming months, analysts and investors will benefit from monitoring two critical issues—one strategic and one practical—that will determine the medium-term direction of Vietnam's power sector reforms.

**Plan vs. Roadmap.** Perhaps the most common mistake analysts make when tracking developments in Asian power markets is failing to differentiate between the formal policies and regulations that define current market activity and the plans that are used to shape policy choices. Whether it is China's five-year plans or Indonesia's RUPTL, investors have often struggled to find the correct way to translate these comprehensive planning exercises into reliable assumptions about market developments. To state the obvious, some plans are more likely than others to become immediate market developments.

Taking into account the many dynamic factors defining the COVID-19 market environment, analysts may be best served if they assess PDP 8 as a directional roadmap, rather than as a rigid master plan with fixed milestones. Experience with PDP 7 has shown that sectoral master plans in Vietnam are best understood as being aspirational in nature. They are significant because they serve the administrative purpose of laying the legal basis for project approvals. But, when market conditions change, revisions are to be expected. If the past three years have been any indication, provincial and central authorities are willing to revise power master plans as long as the new investments make socio-economic sense.

**Analysts are best served if they assess PDP 8 as a directional roadmap, rather than as a rigid master plan with fixed milestones.**

Given the burden of COVID-19 recovery and dramatic shifts in the technology pipeline, adaptability will be a strategic asset for EVN. For investors and analysts focusing on EVN's role in developing Vietnam's power market, near-term forecast risks are set to remain high given uncertainties around the tariff outlook and capex funding options. But the picture may well prove to be quite different for project

developers and investors with a long-term commitment to the Vietnam power sector.

The behavioral differences between investors with a short-term view versus a long-term view will foreshadow which players emerge as leaders in the Vietnamese power market. To date, the players best positioned to align with EVN for the longer term have been renewables developers and investors with ready access to capital markets and existing banking relationships that can now tap into growing sources of green financing for clean energy. By contrast, foreign developers reliant on traditional fee-heavy project finance structures for large-scale fossil fuel IPPs may struggle to gain traction as the PDP 8 roadmap evolves.

**The LNG Funding Question.** While new sources of green financing may provide support for EVN’s PDP 8 renewables and grid investment requirements, it is less clear how the funding for the remaining coal pipeline will progress. The more significant long-term question for PDP 8 is how the proposed LNG projects will develop. PDP 8’s aggressive embrace of LNG comes at a time when there are little clear information concerning Vietnam’s LNG development policies. Based on the preliminary PDP 8 data and IEEFA research, it appears that as much as 12,800 MW of LNG-fired combined-cycle gas power has been approved as part of the PDP 7R and PDP 8 roadmap for the coming seven years.

**Table 11: LNG Project Pipeline**

Name of Project	Location	Capacity (MW)	Op. Year	Sponsor	Project Details
Nhon Trach 3 & 4	Dong Nai	1,500	2023-2024	PetroVietnam	Both plants are to use LNG imported via Thi Vai terminal.
Son My 2	Binh Thuan	2,200	2023	AES Group (US)	Plant to use LNG imported via Son My terminal. Project developed under 20-year BOT model.
Bac Lieu	Bac Lieu	3,200	2023-2027	Delta Offshore Energy (Singapore)	Fully integrated project with FSRU, gas pipeline and power plant. First fully foreign owned and independent power plant.
Son My 1	Binh Thuan	2,000	2027	EDF (France), Sojitz, Kyushu (Japan), Pacific Corporation (Vietnam)	Plant to use imported LNG via Son My terminal. Project developed under 20-year BOT model.
Long Son (Phase 1)	Ba Ria – Vung Tau	1,200	2025-2026	Not yet defined	Plant to use LNG imported via the Long Son LNG terminal.
Ca Na (Phase 1)	Ninh Thuan	1,500	2025-2026	Trung Nam Group (Vietnam)	
Ke Ga (Phase 1)	Binh Thuan	1,200	2024	Energy Capital (US), KOGAS (Korea), Excelerate (US)	Fully integrated project with FSRU, gas pipeline and power plant.
<b>Total Planned Capacity</b>		<b>12,800</b>			

Source: MOIT, IEEFA research. Note: Includes only projects that have been added to the master plan, except for project Ke Ga (Phase 1) which received preliminary in-principle approval from Prime Minister Nguyen Xuan Phuc.<sup>17</sup> Project details are subject to change.

<sup>17</sup> Cong Thuong Newspaper. [Binh Thuan aims to become a national energy center](#). 31 July 2020.

This embrace of LNG comes at a time when 80% of Vietnam's offshore gas output is used for power generation. Domestic natural gas production has been expected to peak by 2026, although the recent announcement of a new offshore gas discovery by ENI may extend this forecast.<sup>18</sup>

Vietnam's pivot towards LNG-fired capacity was confirmed earlier this year by the country's political leadership in Resolution 55. Despite clear signs of policy commitment, it is notable that many fundamental questions about how the links in the LNG value chain will evolve in Vietnam have yet to be answered. At a time when the global gas market is facing existential questions about long-term market structures, this is not a minor issue. As a result, the full cost of integrating a large commitment to LNG into Vietnam's energy and power markets is not yet fully understood domestically, or by regional analysts.

Vietnam's LNG sector is in the early stages of its development. There are currently two LNG terminals under construction, both located in the southern coastal province of Ba Ria-Vung Tau. Hai Linh LNG terminal, which is wholly privately owned and operated, is expected to enter operation in 2021 with an initial capacity of 2-3 MMTPA. It is the first LNG import and regasification facility in the country.<sup>19</sup> The Thi Vai LNG terminal, owned by PVGas, the natural gas arm of state-owned oil and gas group PetroVietnam, is expected to come online in 2022 with an initial capacity of 1 MMTPA, and an additional 3 MMTPA in 2023.

**Despite rapid progress,  
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Despite rapid progress on the LNG terminals, there is neither a comprehensive master plan nor a centralized management model for Vietnam's LNG industry. LNG terminals and gas-fired power projects are currently governed under two separate sectoral master plans and recently integrated LNG-to-power projects proposals are scattered across the country. This underscores the need for systematic planning of "LNG hubs" to ensure that investment in the LNG terminals is linked efficiently to downstream power plants and industrial consumers.

PetroVietnam's role in the LNG sector is uncertain. Under the PDP7R framework, PetroVietnam was given tasks such as developing the LNG importing model and partnering with domestic and foreign investors in LNG infrastructure development. This has not materialized in practice, however. Citing examples from Bangladesh, Pakistan, Malaysia, and Thailand, PVGas has made the case that it should become the "LNG aggregator" to handle supply sourcing and distribution in the early stage of the

<sup>18</sup> Offshore Energy. [Eni confirms gas potential in discovery offshore Vietnam](#). July 2020

<sup>19</sup> S&P Global Platts. [Vietnam's first LNG terminal Hai Linh to conduct test run late 2020](#), 10 June 2020.

LNG market development. PVG as has been granted the exclusive rights to import LNG via its Thi Vai terminal to fuel the group's gas-fired power plants, but it remains unclear if those rights will apply elsewhere.<sup>20</sup>

Despite the lack of policy clarity, there has been a surge of interest in integrated LNG-to-power project investments from foreign developers, most of which are US-linked. The first of the projects to have been granted an investment license is LNG Bac Lieu, a USD 4.0 billion project involving a floating storage regasification unit (FSRU), a gas pipeline, and a 3.2 GW power plant, to be developed by Singapore-based Delta Offshore Energy. Meanwhile, AES of the USA is developing the 2.2 GW Son My 2 power plant project in Binh Thuan province and is negotiating to develop the Son My terminal with PVGas.

This apparent disconnect between planning and execution raises questions about EVN's ability to manage the cost of LNG-fired IPPs. Building the necessary LNG infrastructure is destined to be costly. If history is any guide, MOIT will need to drive an extremely hard bargain with gas suppliers and should push back against the fixed contract terms that financially constrained US developers may seek.

The next question is how much of the cost of the associated infrastructure—regasification, storage, and transport—will be passed through to EVN?

Investors will need to pay close attention to this issue. Disclosures in the preliminary PDP 8 documents suggest that EVN's LNG prices will only include a pipeline transportation charge but not a charge for the cost of LNG infrastructure. Recent IEEFA research into China's gas market development experience suggests that this may not be a realistic expectation and that the development of China's gas market may not favor high-cost American LNG producers over the long term.<sup>21</sup>

**MOIT will need to drive an extremely hard bargain with gas suppliers and should push back against the fixed contract terms.**

The complex cost structure of U.S. LNG, which includes anything from feedstock costs, liquefaction fees and shipping costs to regasification and pipeline transportation fees, means that any moderate increases in these cost components could easily make U.S. LNG uncompetitive against cheaper pipeline imports, domestic gas or other global LNG suppliers.<sup>22</sup>

At this stage, the regulatory and market realities that will determine EVN's ability to pay for a major shift toward gas-fired power capacity remain in flux. As a result, it will be crucial to track developments in the global LNG market. Many American

<sup>20</sup> Allens. [Report: Vietnam LNG Sector Update](#). September 2019.

<sup>21</sup> IEEFA. [US LNG Buildout Faces Price Resistance from China](#). July 2020

<sup>22</sup> Ibid.

developers, with some faith in strong backing from the U.S. government, hope that Vietnam could become a captive market that would offer them the promise of demand growth with less pricing pressure than China.

## Appendix 1: Highlights from PDP 8 (First Draft)

On July 8, MOIT's Institute of Energy unveiled the first draft of the Power Development Master Plan for 2021-2030 with a vision to 2045 (PDP 8) for public consultation. The Draft elaborates on the guidelines previously set out by the Vietnam Communist Party Politburo in Resolution 55 issued in February. This includes a sensible shift away from reliance on coal-fired power in favor of a rapid development and efficient utilization of RE sources and gas-fired capacity.

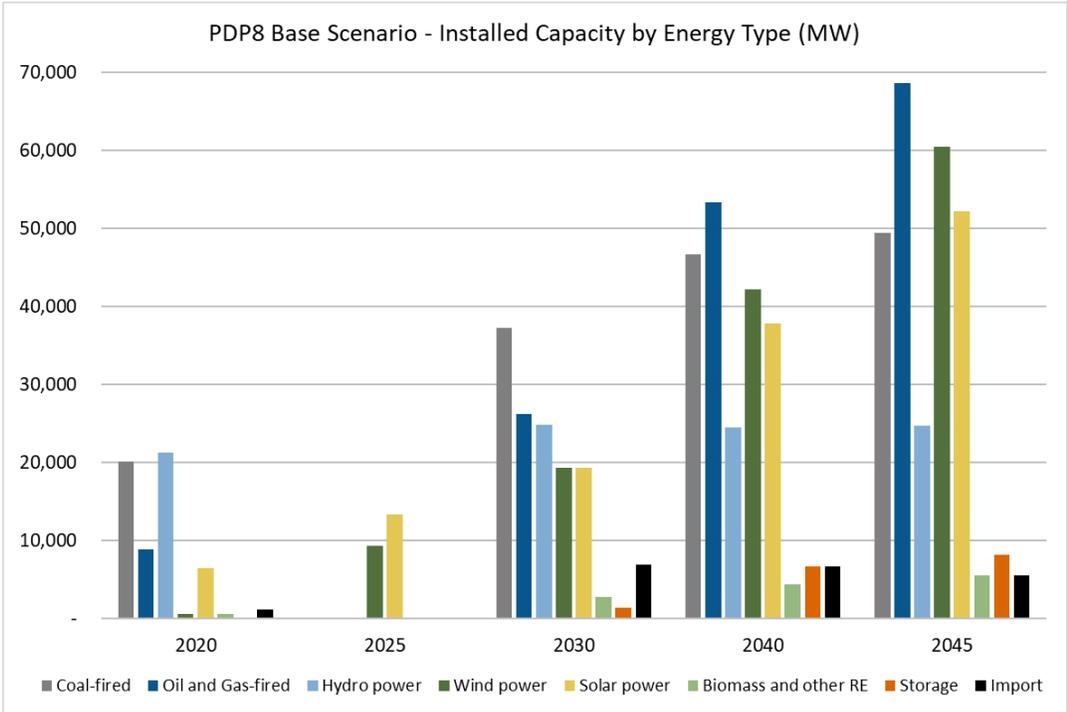
Eleven scenarios were devised for consideration and scored against a set of criteria including ability to meet policy agenda, total system cost, carbon emissions level, transmission infrastructure upgrade requirements, and source diversification. The chosen Base Scenario includes the following highlights:

**Cancellation of new coal-fired capacity and higher technical standards.** There shall be no additional coal-fired power plants during 2026-2030. Of the 17 GW of pipeline projects in PDP7R, 9.5 GW (7 projects) will be cancelled and 7.6 GW (6 projects) will be pushed back until after 2030. The country will, however, still carry on with the development of 18 GW of projects (15) from now until 2026. Nevertheless, new coal units from 2021 must have at least super-critical technology, progressing to ultra-super critical technology after 2025, and after 2035 only advanced ultra-super critical technology will be considered.

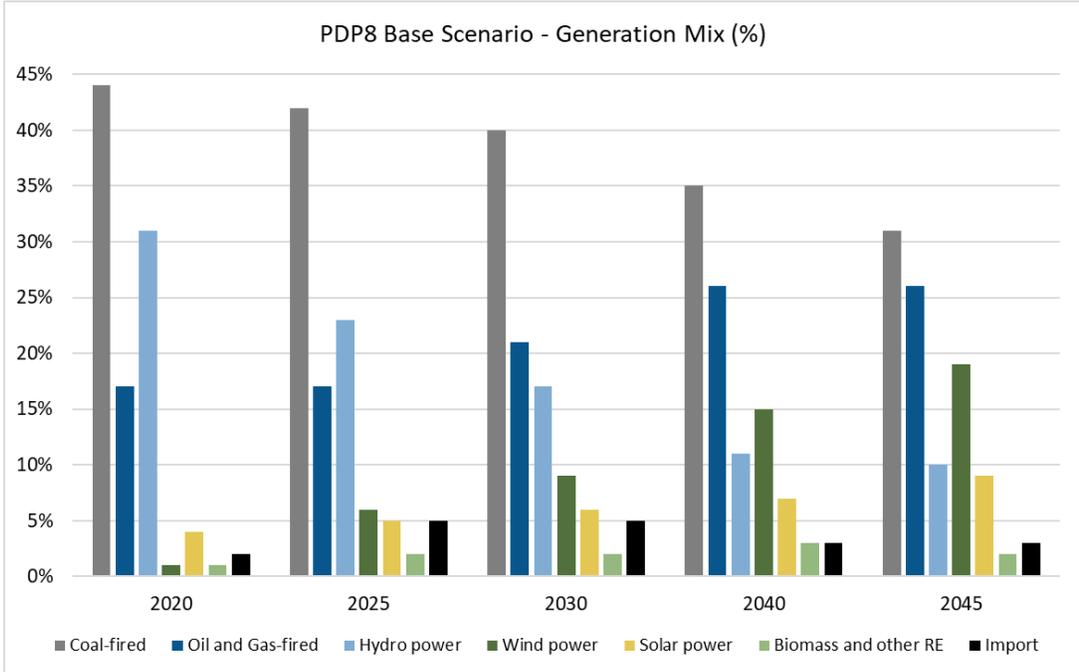
**Gas-fired capacity will grow rapidly and dominate installed capacity by 2040.** PDP 8 gives a prominent role to internal combustion engine (ICE) and combined cycle gas turbines (CCGT) on the basis that they can support peak load demand and intermittent renewable energy. The drafting team sees a total potential of 108 GW of LNG-fired capacity for Vietnam, spread across the northern and southern regions. Given Vietnam's limited natural gas reserves, all new gas-fired capacity will have to be fueled by imported LNG.

**Solar and wind for the central and south.** Tapping the country's abundant renewable energy potential, wind and solar power installations will grow aggressively to make up 28% of total system capacity in 2030, and 41% in 2045, surpassing coal-fired capacity. Development is recommended in the central and southern regions where the potential is highest. This will also drive demand for new transmission links to the north, from 2025.

**Electricity imports from neighboring Laos and China to peak in 2030.** Imports of electricity from Laos and China are expected to grow from current 2% of total output to 5% in 2030 (at 6.5 GW connected capacity) before declining to 3% by 2045 as renewable energy sources mature.



	2020	2025	2030	2040	2045
<b>Total installed capacity (MW)</b>	59,100	103,200	138,100	222,500	274,800



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## **Appendix 2: Solar Auction Mechanism (Draft)<sup>23</sup>**

On 19 March 2020, MOIT submitted Proposal 1968/TTr-BCT to the Prime Minister, presenting its framework for a competitive auction mechanism for solar power projects. With targeted additional capacity of 4 GW by 2025, and 5.6 GW during 2026-2030, three auctions programs were proposed to run concurrently:

### **Option 1: Project-based auction**

- Auction over 1.6 GW of already-determined projects
- Implementation timeline: until June 2021
- Auctioning principles: Competitive bidding below ceiling price (USD 0.077 per kWh for floating SPPs, and USD 0.071 per kWh for ground-mounted SPPs) and evaluated from low to high bids until reaching 1 GW capacity target.
- 20-year PPA, with guaranteed payment in case of an EVN offtake failure.

### **Option 2: Substation auction**

- Auction of SPPs with capacity from 10 to 100 MW
- Implementation timeline: 2020-2021 (pilot phase), July 2021 onwards (official)
- Auctioning principles: Investors to proposed projects and power prices and bid for MOIT's List of substations and transmission lines.

### **Option 3: Solar parks auction**

- Auction of utility-scale floating SPPs and ground-mounted SPPs with capacity over 100MW
- Implementation timeline: 2020-2021 (pilot phase), July 2021 onwards (official)
- Auctioning principles: provincial governments and EVN to determine SPPs and handle site preparation, connection infrastructure and project access, before putting the projects up for competitive bidding by investors.

On July 1, 2020, the Office of the Government gave in-principle approval of MOIT's proposal. MOIT is expected to submit a detailed proposal to the Prime Minister, after consolidating comments from related ministries, in the following months.

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<sup>23</sup> Lexcomm Vietnam. [Vietnam's Latest Solar Policy Developments in relation to Proposed Solar Auction Mechanisms](#), March 2020

## About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

## About the Authors

### Melissa Brown

Melissa Brown, Director, Energy Finance Studies, Asia, is a former securities analyst at JP Morgan and Citigroup. She has played a leading role in various Asian investment organizations focused on mainstream and sustainable investment strategies for public and private equity investors over the past 25 years.

### Thu Vu

Energy Finance Analyst Thu Vu is a former public policy analyst and risk consultant covering regulatory developments in renewable energy and energy efficiency in Vietnam. She has worked for the Financial Times (UK) and business advisory firms based in Asia.

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