Industry Snapshot- ENERGY

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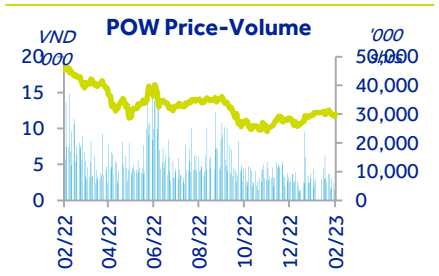
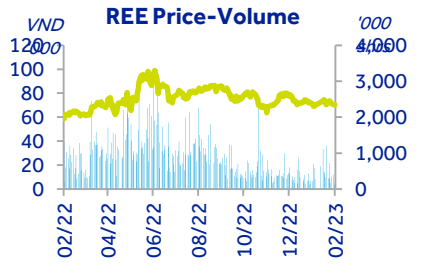
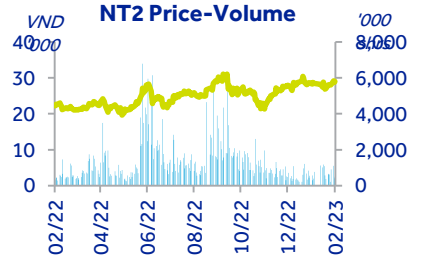
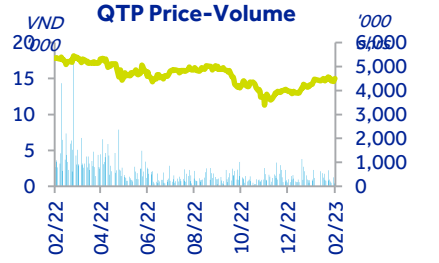
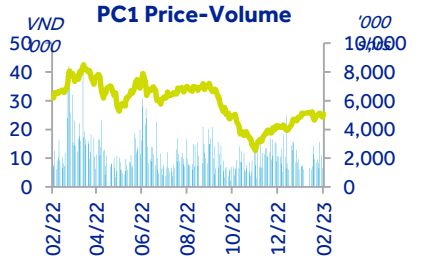










VIETNAM ENERGY INDUSTRY SNAPSHOT

The growth of a nation's economy typically parallels the sustainable development and security of its energy sector. Recognizing the indispensable nature of the energy industry, the Vietnamese government has devoted substantial attention to shape the progress of energy industry to serve as a foundation to fuel the economy forward. Thus, energy sector could be viewed as an attractive proxy to the promising prospects for the long-term development of the Vietnamese economy.

Major events: We would like to review a number of major events in 2022 in order to assist investors with an interest in electricity industry be conscious about the current state:

1. 2022 is the first year of full operation for a number of renewables projects, especially wind power (second year for solar), in order to to evaluate their efficiencies under actual geographical conditions in Vietnam.
2. The National Power Plan VIII (PP8), which serves as a framework for Vietnam national energy development over the period 2021-2030, since the initial draft was submitted in Mar 2022, is still under revision and deliberation after nearly a year. In Dec 2022, the Ministry of Industry and Trade (MoIT) re-submitted the 9th draft PP8 and now awaiting the formal approval.
3. The new price scheme for transitioning renewable energy has been issued. In spite of disappointing investors and falling short of their expectations, the new price mechanism offers some bright points for the next renewable development phase, particularly wind generation with highest retail price for offshore.
4. EVN's report showed that they took an estimated loss of 28,900 bn VND in 2022, and could have incurred even a bigger loss, if had not implemented drastic measures to cut down input costs and optimized the operation of the electricity system, to the extent of rapid surge in fossil fuels input prices including oil, coal and gas, when mobilizing electricity production from thermal group.
5. 2022 is the unusual third consecutive year of La Nina in the Northern hemisphere, which only occurs three times in fifty years.

Outlook: Generally, in the context of long-term effort deteriorating the global greenhouse effect, and the Vietnam's re-commitments at COP27 to reach net Zero carbon emission by 2050, we anticipate attractive interests will shift towards either renewables such as solar and especially wind power, or less carbon-emitting types energy such as gas turbines instead of coal-fired.

Nevertheless, in the short-term, on the basis of being impacted by the law of supply and demand of each region as well as the whole country in circumstantial economy, combined with weather conditions, coal-fired still earns an important position in the energy portfolio as a preparation for the energy-transitioning upcoming.

	Market Cap (VND bn)	2022 Sales (VND bn)	2022 EAT (VND bn)	Trailing PER (x)	Trailing PBR (x)	2022 ROE (%)	2022 ROA (%)	YTD Return (%)	1 Year Return (%)	Div Yield (%)	3 months Value (bn VND)
Coal-fired											
PPC	4,697	5,116	373	12.6	0.9	7.5	6.7	16.9	-32.4	16.9	80
HND	6,700	10,511	571	11.7	1.1	9.1	6.8	1.5	-28.6	12.7	17
QTP	6,750	10,417	770	8.7	1.1	12.5	9.1	10.2	-15.2	11.3	308
Hydropower											
REE	25,056	9,372	2,690	8.9	1.3	15.1	8.2	-2.5	13.4	2.1	2,307
VSH	8,741	3,085	1,264	6.9	1.7	28.0	12.8	16.0	35.1	2.7	299
TBC	2,026	726	324	6.3	1.5	25.0	20.5	7.4	11.6	7.8	9
Gas Turbine											
POW	28,102	28,235	1,894	14.9	0.9	5.9	3.5	10.0	-34.5	0.0	6,084
NT2	8,384	8,786	729	11.4	1.9	16.8	10.5	-0.5	28.4	5.7	1,669
BTP	795	513	78	10.3	0.6	6.5	4.4	-8.4	-23.9	11.5	19
Solar & Wind											
GEG	4,555	2,093	316	17.3	0.9	7.9	2.1	-7.1	-43.5	0.0	784
BCG	3,356	4,532	343	8.5	0.2	3.1	0.8	-5.9	-72.6	7.9	2,342
VN-Index	4,184,680			11.6	1.7						

Source: Bloomberg, FiinPro. Data as of Feb 16th, 2023 except where stated

Industry overview

Capacity

The national installed capacity achieved 79,651 MW by the end of 2022, increasing by 3,031 MW, **+4%** YoY, has outpaced Indonesia to rank 1st in ASEAN since 2021.

Coal thermal continued accounting for the largest share: 33% - 25,820 MW, **+5%** YoY, while gas turbine accounts for 11% - 8,977 MW, **+26%** YoY, both taking for the majority of the growth in 2022 capacity; for example, Song Hau 1 project.

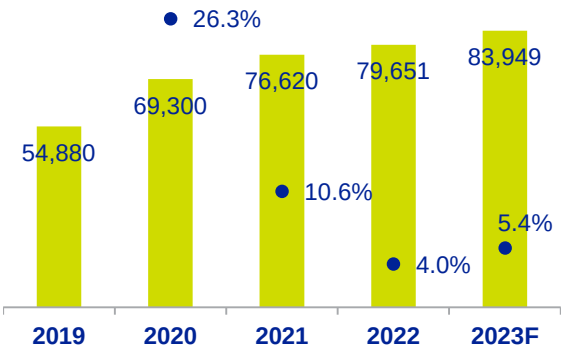
Hydro stands for 28% - 22,349 MW, **+2%** YoY, as the 2nd largest in energy portfolio-mixed.

Compared to last year's increase of 20%, renewables (excluding hydropower) remained unchanged at 26% - 20,670 MW. FIT, which is an incentive policy for renewable energy development with attractive selling prices for a long duration, specifically twenty (20) years of the contract, expired in Nov 2021, resulting in "2022 renewables silence period". Thus, no new projects deployed in 2022 as awaited a new price scheme for transitioning renewable energy.

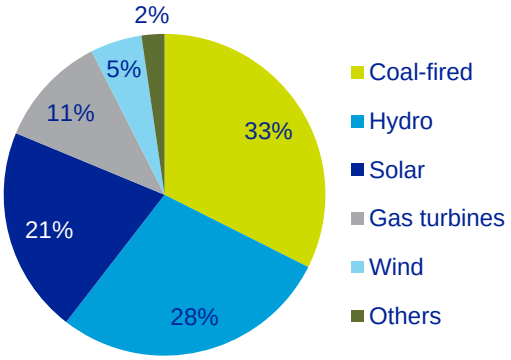
Furthermore, FIT policies accompanied aggressive development of renewables, which is resulting in imbalance in peak-time period, and source structure aspect as well as the transmission system. Initially, the government had aimed to keep solar power proportion around 10% of the total installed capacity. Nevertheless, at the end of 2021, solar power has contributed for 22% - and became the 3rd largest energy source.

According to Decision 2976/QD-BCT, in 2023, there are additional 4,298 MW would be added to the total installed capacity, in which Thai Binh II (1,200 MW) and Van Phong I (1,432 MW) are the two major projects. The rest is comprised of other small hydropower.

Installed Capacity: MW



2022 Capacity Structure



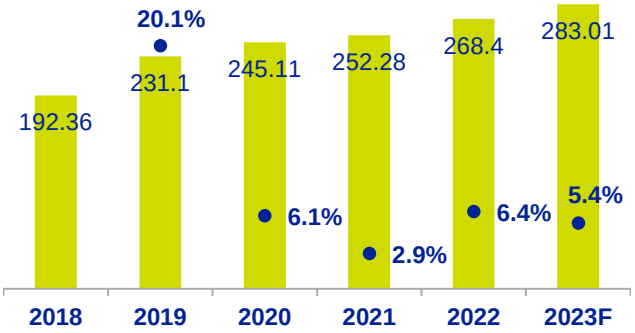
Sources: EVN, ACBS

Output

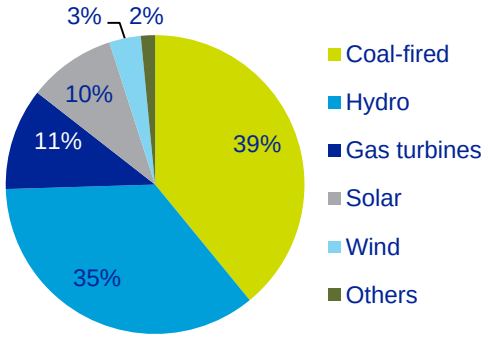
2022 electricity consumption reached 268 bn kWh, **+6%** YoY, in which coal-fired placed 1st source-supplied, 39% - 105 bn kWh, **-11%** YoY; whereas hydro, despite support from La Nina effect, resulting in higher precipitation than many years' average, could generated just 95 bn kWh, ranked 2nd – 35%, **+21%** YoY. Gas turbines contributed 30 bn kWh, accounting for 11%, **+13%** YoY. Solar faced a descent of **-8%** YoY, to 26 bn kWh. Notably, wind power witnessed a hike of **+179%** YoY, reaching 9 bn kWh in 2022.

EVN projected 2023 output will face a modest growth rate of just **+5%** YoY, to 283 bn kWh in the light of bleak economy expressed through one of many economic indicators: the PMI index was falling below 50 (Dec 2022: 46.7 and Jan 2023: 47.4). Even though, it recorded an improvement in Jan 2023 compared to last month, its was insufficient to deliver a vigorously positive signal.

Output: bn kWh



2022 Output Structure



Sources: EVN, ACBS

New Renewable Price Scheme

On Jan 7th, 2023 MoiT has published Decision 21/QD-BCT for the official approval on the final ceiling electricity price for transitioning solar and wind projects which were in late of previous FIT incentive policies – Oct 2021.

	Price: VND / kWh	Price: cent / kWh[1]	Previous FIT price	Change
Terrestrial	1,184.9	5.05	7.09	*-29%*
Floating solar	1,508.3	6.43	8.38	*-23%*
Onshore wind	1,587.1	6.77	8.50	*-20%*
Offshore wind	1,815.9	7.74	9.80	*-21%*

Sources: MoIT, ACBS

This is in line with our previous forecast that new price scheme for renewables would not expand beyond 7.9 – 8.0 cent / kWh, which is currently the applicable retail selling price for electricity set by MoiT in 2019. In addition, the substantial loss by EVN reported in 2022, further strengthened our view that the FITs would be substantially lower than the previous rates.

After this decision and compliance with the instructions in Circular No. 15/ 2022/TT-BCT, EVN and power generators could negotiate and finalize the Purchasing Power Agreement (PPA) for the pending projects / turbines to put those in commercial operation.

Generally, the new price scheme is c. 23% lower than previous FIT on average, which could hamper the development interests for renewables in private sector. However, it also emphasizes wind power expansion, especially offshore, for the next renewables generation in the 2021 – 2030 period.

EVN Loss

According to the latest report just sent to the MoIT, EVN took a huge loss of 28,800 bn VND in 2022. Giving more explanation, EVN stated that the loss primarily due to:

1. Rapid hike of fossil fuel prices, including gas, coal, and oil, which are chief input materials for thermal power, as a result of resonance effects between inflation on the ground of quantitative easing policies to cope with COVID-19 and Russia's invasion of Ukraine. To illustrate, the 2022 imported coal price surged by six (6) times to over 400 USD / ton compared to 2021 (around 70 USD / ton), resulting in an increase in the electricity production cost from imported coal of 3,500–4,000 VND / kWh, whereas the average retail price (ARP) was retained at only 1,864 VND / kWh.
2. FIT incentive prices to encourage renewables development, which were higher than average electricity selling prices, furthered the burden on EVN costs to the extent of high input prices strongly affecting the thermal group.

Furthermore, EVN indicated that they underwent a loss of 180 VND per kWh on average – about 10% of ARP: 1,864.44 VND / kWh (excluding value-added tax or VAT) and repeatedly urged the government to re-consider increasing the ARP of electricity or switching to an adjutable system in a manner similar to the gasoline scheme.

[1] USD / VND: 23,450 – Feb 26th, 2023 for reference only

We project that if the situation does not improve, EVN will face liquidity risks and may not be able to pay electricity generators, resulting in harmful effect of electricity supply for socio-economic development seriously.

New Average Retail Price

On Feb 3rd, 2022 Deputy Prime Minister Le Minh Khai has signed Decision 02/2023/QD-Ttg, which officially approved a new electricity retail price basket to replace Decision 34/2017, which was applicable from 2016 to 2020, in the light that EVN has been suffering substantial losses. The maximum increasing rate will reach up to 31% from the current ARP at 1,864.44 VND / kWh (excluding value-added tax, or VAT), which is already higher than the new price floor of 1,826.22 VND per kWh, to the price ceiling of 2,444.09 VND / kWh. As a result, EVN would have a more legitimate basis and be able to raise its ARP in order to compensate for the recent loss.

Unit: VND / kWh	Old price basket	New price basket	Relative change	Absolute change
Price floor	1,606.19	1,826.22	13%	220 VND
Price ceiling	1,906.42	2,444.09	28%	538 VND
Current average price	1,864.44			
Compared to new price ceiling			31%	580 VND

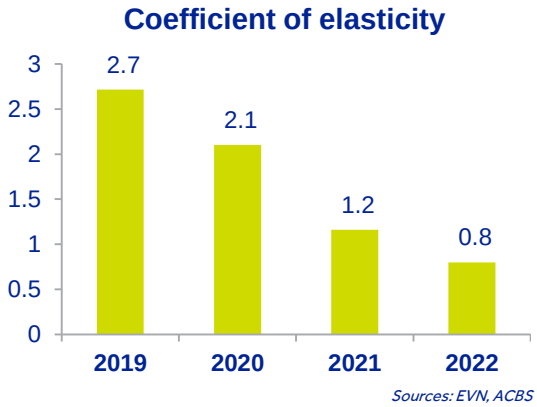
Sources: MoIT, ACBS

Given the new price basket level, we expect the upside rate will not be far from the referenced number at least in 2023, because:

1. The government has stated unequivocally that they prefer to keep the electricity retail price attractive in order to engage both foreign investment as well as domestic production. Thus, the price would not be as high as in many developed countries.
2. In the most recent report, EVN indicated that they experienced a loss of 180 VND per kWh. However, the primary function of EVN is to ensure national security energy for production and daily activities. Profitability is thus not one of the top priorities.
3. An increase in the price of utilities such as electricity, water, or gasoline would have a strong and complicated influence on every aspect of an economy, mostly through the consumer price index and the likelihood of increasing inflation. Therefore, the old ARP remained unchange in three (3) consecutive years to the government's cautious extent.

Coefficient of Elasticity

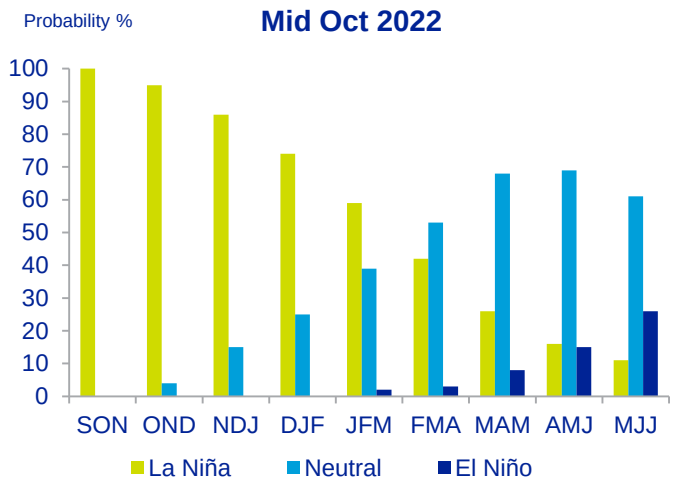
Coefficient of Elasticity describes the growth of electricity production compared to the growth of GDP (i.e. a figure of 1.5 indicates that electricity production must increase by 1.5% to produce a 1% increase in GDP) and according to experts, the lower the number, the greater the country's electricity efficiency. In 2022, only 0.8 was the ratio. As a result, the figure displayed some evidence of a good indicator, along with the extended downward trend beginning since 2019, and even became the "early ripe fruit" in PP8, despite the fact that the official version has not yet been approved.

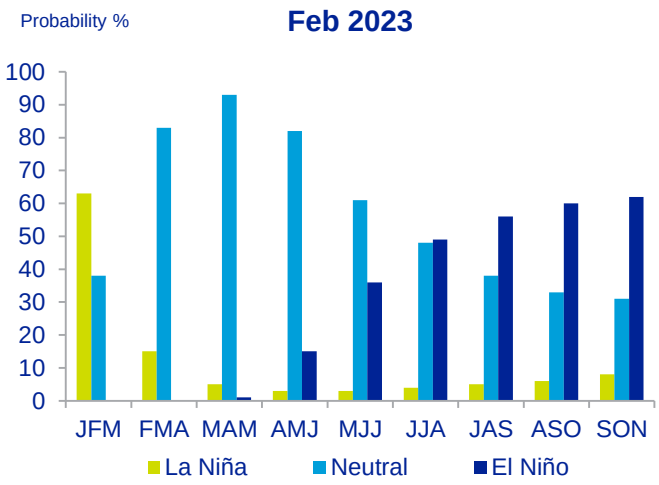


We are afraid, however, that the number is only transient. It does not accurately reflect the entire circumstances and will not last long, since the aftermath of the COVID-19 epidemic still felt in 2022, resulting in gloomy economic prospects. Thus, many industries, particularly energy-incentive, such as steel and cement, must reduce their productivity at the expense of the service sector. In 2022, for instance, the service sector's GDP rose 10% compared to 8% for the total economy. Therefore, we anticipate that if these conditions improve; meaning these industries resume, the coefficient of elasticity will see a "negative increase".

Weather

According to ENSO, the Feb 2023 model-based probabilistic forecast reported higher probability that El Nino cycle would return in 2023 – 2024 period compared to the previous model at Mid Oct 2022. Particularly, the forecast in Feb 2023 stated that there are 35% chance of El Nino happening in May-June-July (MJJ), higher 11% compared to the Mid Oct 2022 one. Thus, we expect that 2023 weather condition, that would have lower rainfall than many year average, would offer advantages for thermal power plants in general including coal-fired and gas turbines over hydro group.





Sources: ENSO, ACBS

JEPT Agreement

A Just Energy Transition Partnership is an agreement between developed and developing countries in which the former provides funding for the latter to transition to green energy. This funding is in the form of grants, low interest loans, and investment provided by both the public and private sector. The program will initially raise 15.5 bn USD committed as part of the JETP agreement to assist Vietnam less dependent on fossil fuel-based electricity generator, and be mobilized over the next three to five years. As a result, the coal-fired capacity has been reduced to 30,200 MW compared to 37,000 MW in previous draft while accelerating renewable energy deployment up to 47% of total installed capacity by 2030.

This could be considered as the big-step forward in bolstering transitioning renewables, further accelerating the friendly environmental energy process, and also assisting Vietnam less leaning on primary coal energy.

National Power Plan VIII

According to the latest PP8 draft – 8129 / TTr – BCT for nationwide electricity development approval of 2021 – 2030 period, given vision to 2050, there are three (3) scenarios:

- **Primary or 1st** is equivalent to the assumption of 6.8% GDP growth in 2021 – 2025 period, and 6.4% in 2026 – 2030 period.
- **High load-based or 2nd** is equivalent to the assumption of 7.5% GDP growth in 2021 – 2025 period, and 7.2% in 2026 and 2030 period.
- **3rd** is similar to the **2nd** but given accommodation for 6,200 MW coal-fired projects which is likelihood of cancellation due to lacking capitals and potential investors. Therefore, those projects would be supplanted by LNG gas thermal instead of.

Capacity

Coal-fired generation is expected to reach the maximum capacity in 2030 with only 36,127 MW – accounting for 27.5%, reducing nearly 20,000 MW compared to the 1st draft in Mar 2021. There are only eleven (11) remaining projects – 13,945 MW, which would be deployed until 2030 in which four (4) BOT projects – 6,620 MW, which suffer the likelihood of being unable to seek for alternative investors. Therefore, MoIT has built the 3rd scenario to deal with it by expanding more LNG gas turbine thermal.

After a period of rapid development, spurred by attractive incentivized FIT policies, solar power has surpassed its targeted capacity of just 8,736 MW; thus capacity is expected to be stagnant until after 2030 as storage and transmission capacity has not kept pace with the rapid development.

Wind power would supplant solar become the leader in renewables. Capacity is expected to surge at least three (3) times, from 4,126 MW – 2021 to nearly 12,000 MW – 2030, accounting for 9% in primary scenario. In addition, in the 3rd scenario, it would reach over 28,000 MW (including offshore); fold seven (7) times compared to currently capacity.

Scenario	1st		2nd		3rd	
Capacity: MW	2025	2030	2025	2030	2025	2030
Pmax	59,342	86,479	61,357	93,343	61,357	93,343
Coal-fired	30,067	36,127	30,067	36,327	30,067	30,127
Domestic gas turbine	9,176	14,930	9,176	14,930	9,176	14,930
LNG	3,500	15,400	3,500	18,500	3,500	24,500
Hydro	25,829	27,353	26,795	28,946	26,795	28,946
Onshore	11,196	11,905	13,616	13,925	13,616	21,480
Offshore	-	-	-	4,000	-	7,000
Solar	8,736	8,736	8,736	8,736	8,736	8,736
Garbage / Biomass	980	1,230	980	1,230	1,180	2,270
Pumped Hydro Storage		1,500	50	2,700	50	2,700
Import	3,853	4,076	4,453	5,000	4,453	5,000
Rooftop	7,755	7,755	7,755	7,755	7,755	7,755
Total	**103,763**	**132,212**	**107,799**	**145,049**	**107,999**	**156,444**

Sources: MoIT, ACBS

*Further details about in energy sector and projects in appendix.

Output

Coal thermal groups contribute the largest energy output volume in all three (3) scenarios, accounting from 31 – 42% until 2030. Thus, it indicates that in the short-term, Vietnam still has to lean on coal-fired to facilitate sustainably economic development. However, the rate would be lessened over long term period as the government's effort to achieve net carbon-neutral.

Notably, LNG turbine output would hike considerately from 0 to at least 88 bn kWh in 2030 with totally 16 projects would be deployed, starting with NT3 & 4 (POW) at Nhon Trach – Dong Nai.

Moreover, wind power is projected to supply about 31 bn kWh - 5.6% to 80 bn kWh - 13.4% of the national electricity demand in 2030.

Scenario	1st		2nd		3rd	
Output: GWh	2025	2030	2025	2030	2025	2030
Coal-fired	165,953	234,424	168,041	234,702	167,549	185,854
Domestic gas-fired	26,544	49,185	26,707	52,133	26,816	52,406
LNG	16,687	88,493	17,708	105,043	16,973	118,490
Hydro	91,848	97,135	94,936	100,482	94,937	100,476
Wind	29,469	31,117	34,453	49,663	34,533	79,511
Solar	26,634	26,634	26,708	26,708	26,708	26,708
Garbage / Biomass	4,532	6,346	4,545	6,444	5,702	11,624
Import	15,410	16,193	16,788	18,790	16,789	18,791
Total	**378,327**	**551,290**	**391,339**	**595,457**	**391,339**	**595,457**

Sources: MoIT, ACBS

System

There are 10,800 km - 12,500 km of 500kV transmission lines and around 16,000 km 220kV need to be added up to the national grid system. The government's analysts expect that it would not be necessary to build extra 500kV after 2030 to transmit electricity between various regions as a result of regional self-sufficiency. In addition, the MoIT anticipated the maximum energy volume transferred between regions would not pass over 20 bn kWh per year.

2021 - 2030	Substation: unit		Grid: km			
1st scenario	News	Overhaul	News	Overhaul	2020	CAGR
500kV	46,550	35,550	10,884	1,324	8,527	13%
220kV	70,525	33,497	15,599	6,500	18,477	8%
2nd scenario	News	Overhaul	News	Overhaul	2020	CAGR
500kV	50,250	37,800	12,560	1,324	8,527	15%
220kV	79,775	35,747	16,381	6,484	18,477	9%

Sources: MoIT, ACBS

Capital Investment

There is huge investment capital required to address the PP8 plan, estimated around 290,000 bn VND per year in which:

2021 - 2030 Investment Capital / Year	USD: bn	VND: bn	USD / VND
Source	10.8	254,340	23,550
Grid	1.5	35,325	23,550

Sources: MoIT, ACBS

We expect in the short-term, thanks to the El Nino, which determine preference for thermal power against hydroelectricity, that generally thermal power generation will relatively outperform hydro, which was preferential in 2022. Thus, thermal group is anticipated to post a strong result in 2023 – 2024 period. However, the net profit among thermal sector would be diminished partially attributable to remaining high level of input fossil fuels price and gloomy economic prospects.

In the long run, based on the PP8's orientation, we expect there would be significant growth in wind power and gas turbine as well as transmission system. Thus, it would

be ideal to focus investments and seek out companies which have primary operations in these referenced energy sectors including PC1, POW, QTP or REE.

Energy Subsector Outlooks	
Coal-Fired	
Short Term Outlook: POSITIVE	**Long Term Outlook: NEGATIVE**
Coal-fired power still bears an essential part of the overall power generation portfolio, accounting for above one-third of the total output volume. While there will be a shift towards cleaner alternatives given technologies, costs and environmental effects associated with coal power, this process will not take place overnight and coal will remain a key energy producer for some time.	Due to Vietnam's reinforcement commitments to reduce carbon emissions at COP27, new coal-fired plants are expected not to develop after 2030 and face curtailment risks in the long term as cleaner sources become more readily available, cheaper and transmission / storage issues are addressed.
Gas Turbine	
Short Term Outlook: NEUTRAL	**Long Term Outlook: POSITIVE**
Gas powered thermals are expected to be an alternative to coal-fired to maintain the balance between macro economic growth and environmental sustainability. However, unstable gas prices, anchored to oil prices, are expected to linger to the end of 2023, due to the continued destabilization of the global market with the Russian invasion of Ukraine, which would hinder gas thermal plants net profits.	Gas-fired is anticipated to keep growing both in capacity and output amount to comply with PP8 and replace coal-fired electricity as an solid foundation source to ensure stable and national security energy. Hence, its outlook would be relatively brighter compared to coal-fired besides its lessen carbon-emitted.
Hydropower	
Short Term Outlook: NEGATIVE	**Long Term Outlook: NEUTRAL**
The La Nina period is forecasted to end shortly at the beginning of 2023 and supplanted by El Nino in 2023-2024 period with accelerating probability, thus; hampering the output and profit growth in that period.	Hydropower sector is not projected to have huge growth potential in both capacity and output due to diminishing resources for exploitation. Hence, the performance is expected to vary with the La Nina – El Nino cycles rather than capacity expansion and output growth.
Solar	
Short Term Outlook: NEGATIVE	**Long Term Outlook: NEUTRAL**
Solar power has developed rapidly from 2019-2021 and has already reached its targeted production capacity of 2030. As a result, according to PP8, solar capacity is expected to be stagnant until after 2030 as the current transmission and storage capabilities have not kept pace with the solar capacity development.	After 2030, solar power scale is expected to expand continually given expected upgrades to the transmission and storage capabilities, thereby returning to the race for capacity and output growth together with Wind power.
Wind	
Short Term Outlook: NEUTRAL	**Long Term Outlook: POSITIVE**
According to PP8, Wind power is expected to be at the forefront of new renewable energy project developments; whereas solar power is projected to halted until after 2030. However, the new renewable price scheme, despite the preferential press towards wind energy, still deflated investors' interests in conjunction with lower selling price, c. 20%, compared to previous FIT.	With the orientation shifting towards renewable energy generation, the wind power segment is expected to be an attractive investment channel in Vietnam; additionaly bolstering the outlook for the wind segment are the constraints on both solar and hydro, paving the way for wind to take center stage in renewable energy development.

Appendix 1

		# projects	Project name	Capacity: MW	Note
Coal-fired		**33**		**27,012**	
Cancellation		**11**		**13,220**	
	State Corporation	***10***		***12,020***	
	EVN	**3**		**3,600**	
		1	Quang Trach II	1,200	
		2	Tan Phuoc I	1,200	
		3	Tan Phuoc II	1,200	
	PVN	**1**		**1,980**	
		1	Long Phu III	1,980	
	TKV	**3**		**2,840**	
		1	Cam Pha III	440	
		2	Hai Phong III	1,200	
		3	Quynh Lap I	1,200	
	BOT	**3**		**3,600**	
		1	Quynh Lap II	1,200	
		2	Vung Ang III	1,200	
		3	Long Phu II	1,200	
	Unassigned	***1***		***1,200***	
		1	Quang Ninh III	1,200	
Remaining		**11**		**13,945**	
	Processing	***7***		***7,325***	
		1	Quang Trach I	1,403	
		2	Van Phong I	1,432	
		3	Vung Ang II	1,330	
		4	Thai Binh II	1,200	
		5	Long Phu I	1,200	Negotiating for new EPC
		6	Na Duong II	110	
		7	An Khanh Bac Giang	600	
	Investor-seeking	***4***		***6,620***	
		1	Quang Tri	1,320	
		2	Song Hau II	2,120	
		3	Nam Định I	1,200	
		4	Vinh Tan III	1,980	

Appendix 2

	# projects	Project name	Capacity: MW
Domestic gas turbine	**10**		**7,900**
O Mon B field	**4**		**3,810**
1		O Mon I	660
2		O Mon II	1,050
3		O Mon III	1,050
4		O Mon IV	1,050
Ca Voi Xanh	**5**		**3,750**
1		Dung Quat I	750
2		Dung Quat II	750
3		Dung Quat III	750
4		Mien Trung I	750
5		Mien Trung II	750
Quang Tri (Bao Vang)	**1**		**340**

Appendix 3

	# projects	Project name	Capacity: MW	Note
LNG gas turbine	**16**		**26,124**	
Projected in PP7	**11**		**19,524**	
1		Nhon Trach 3&4	1,624	Expected COD in 2025
2		Hiep Phuoc I	1,200	
3		Bac Lieu	3,200	
4		BOT Son My I	2,250	
5		BOT Son My II	2,250	
6		Long An I	1,500	
7		Long An II	1,500	
8		Long Son	1,500	
9		Ca Na	1,500	
10		Hai Lang	1,500	
11		Quang Ninh I	1,500	Expected COD in 2027
Added in PP8	**5**		**6,600**	
1		Thai Binh	1,500	
2		Nghi Son	1,500	
3		Quynh Lap	1,500	
4		Quang Trach II	1,500	
5		Cong Thanh	600	

Appendix 4

	# projects	Project name	Capacity: MW
Solar power	**26**		**2,420**
Waiting to COD	**6**		**453**
1		Phu My 1	65
2		Phu My 3	24
3		Thuan Nam	172
4		Thien Tan 1.2	80
5		Thien Tan 1.3	32
6		Thien Tan 1.4	80
Processing	**5**		**273**
1		Ngoc Lac	45
2		Krong Pa 2	39
3		Phuoc Thai 2	100
4		Phuoc Thai 3	50
5		Duc Hue 2	39
After 2030	**12**		**1,634**
Cancellation	**3**		**60**

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