

Sector Note



Power sector

Thermal power rise to swap out hydropower

- The new PDP8 favors toward gas-fired and wind power over 2021-30F period, after focusing on RE power from 2031F onward
- We see gas-fired and coal-fired power using domestic coal to enjoy higher output mobilization under the weakening of hydropower in 2023F.
- We see the return of thermal power and the new RE development phase to be the main sector's theme in 2023-24F, thus, we choose **PC1** and **POW**.

Power consumption growth will stay below PDP8's forecast in 2023F

For 2023F, we expect a more conservative power consumption growth of 6% yoy, 28% lower than the PDP8's low-case scenario amid weak national industrial activities. However, we find expectations of a hotter summer will drive higher power consumption from residential sector during summer days. In 2024-30F period, we see Vietnam's total power consumption will continue to grow in accordance with the base-case scenario of 8.4% CAGR in the PDP8 draft.

Although retail prices have risen since May-23, we see a significant improvement may be premature due to anchored high input price. EVN proposed another 3% rise, if it is approved, it will greatly support EVN financial position in term of full cash flow to make payment for power plants. About the recent power shortage in the North, we do not see a possible short-term solution. In long-term, replenishing new power plants in the North and transmission system is an urgent task.

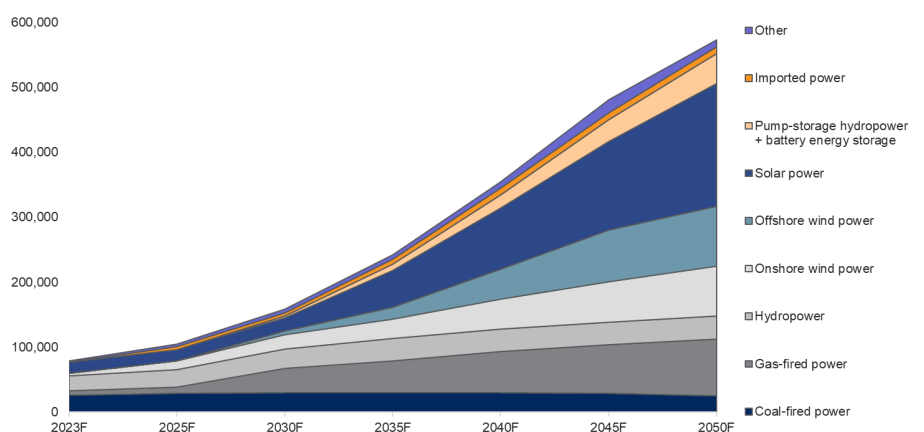
Thermal power output will rise thanks to the weakening of hydropower in 2023F

In 2023-24F, we see gas-fired power output to improve thanks to 1) The weakening of hydropower will leave larger space for other power sources; 2) The excessive RE capacity in the South to be gradually absorbed amid slow new capacity development when Vietnam industrial activities return to growth status from 2024F. For coal-fired power, we see the coal-fired power plants that using domestic coal, especially in the North will be benefited thanks to low price and stable coal input volume. Besides, we expect hotter weather in this region to be the primary factor, supporting these plants to record a positive output mobilization in 2023F.

We like POW, and PC1 while QTP, GEG, BCG, NT2 is in our watchlist

In 2023F, we expect **POW** – leading gas-fired power firm to enjoy positive results thanks to brighter outlook of gas-fired power sector. On the other hand, although there are uncertainties in the new development phase of RE power amid the sector's policy bottlenecks, we are still putting our faith in an official price mechanism to be carried out in this year. Thus, when everything is settled down, we see RE construction segment including power plants EPC and transmission grid build to rise soonest. Therefore, we see **PC1** – the leading EPC wind power contractors will be the first enterprise to ride on this trend.

Figure 1: The new PDP8 favors toward gas-fired and wind power over 2021-30F period, after focusing on RE power from 2030F onward (Unit: MW)



Nguồn: VNDIRECT RESEARCH, PDP8

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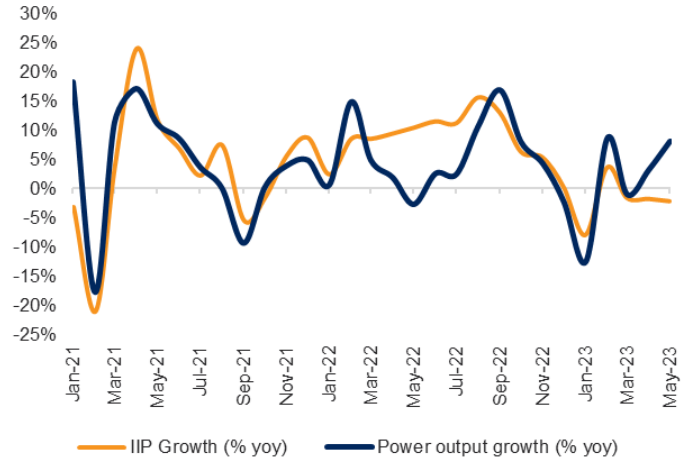
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Thermal power rise to swap out hydropower

Vietnam Power snapshot 5M23: Power consumption surged during hot weather, offsetting weak industrial demand

Figure 2: Power consumption grew at low rate in 5M23 under humble IIP growth

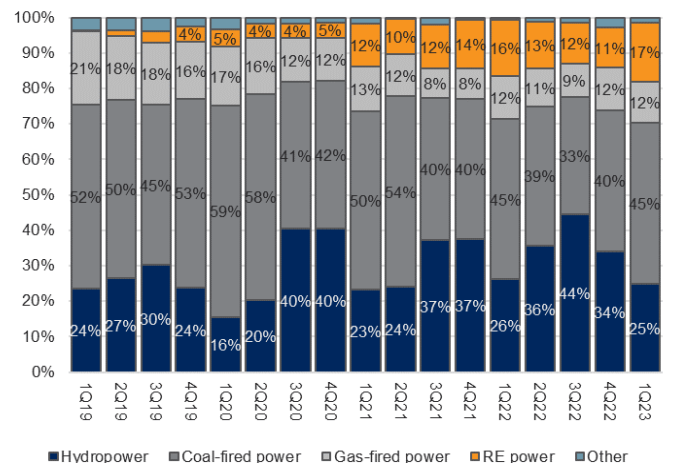
5M23 Vietnam total power consumption grew humbly 1.4% yoy, far lower than PDP8 forecasted level of 9% due to weak industrial power demand. However, in May-23, Power consumption growth accelerated to 8% yoy thanks to demand surge among Residential group under very intense heat waves.



Source: VNDIRECT RESEARCH, EVN, GSO

Figure 3: 1Q23 output mobilization by power sources (Unit: %)

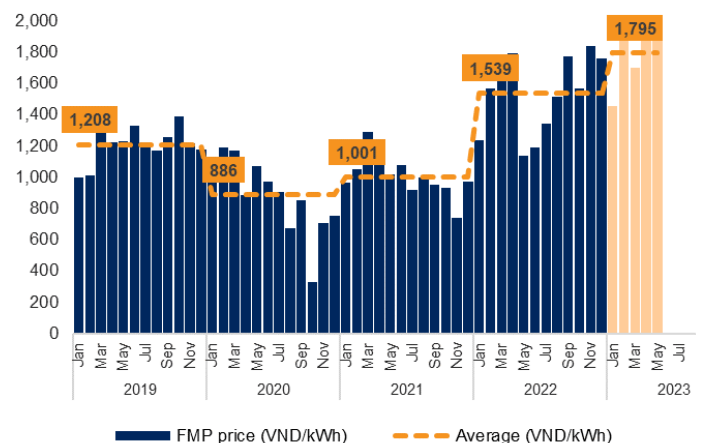
In terms of mobilization structure, coal-fired power mobilization portion improved from low level in 2H22, accounting for 45% total power output thanks to the global coal price downturn since Feb-23. Gas-fired power output weight remained stable, grabbing 12% total output generation. Hydropower output weight was also stable at 25%. Normally, the first quarter is usually the water retention period to serve the upcoming hot weather. Solar power recorded stiff capacity cut down amid excessive situation in the South while power demand remained weak. In contrast, wind power generated solid output thanks to high wind season, making up for total RE output weight to edge up 5% pts to 17%.



Source: VNDIRECT RESEARCH, EVN

Figure 4: FMP in the CGM rose sharply due to higher thermal output mobilization

The Full market price (FMP) in the Competitive Generation Market (CGM) increased 20% yoy to VND1,795/kWh in 5M23, following higher mobilization from thermal power. At the moment, power plants are still bidding in the CGM under the 2022 Power market operation plan, issued by the Ministry of Industry and Trade (MOIT). Accordingly, the system marginal ceiling price (SMP cap) anchored at high level of VND1,602/kWh, favoring thermal power.

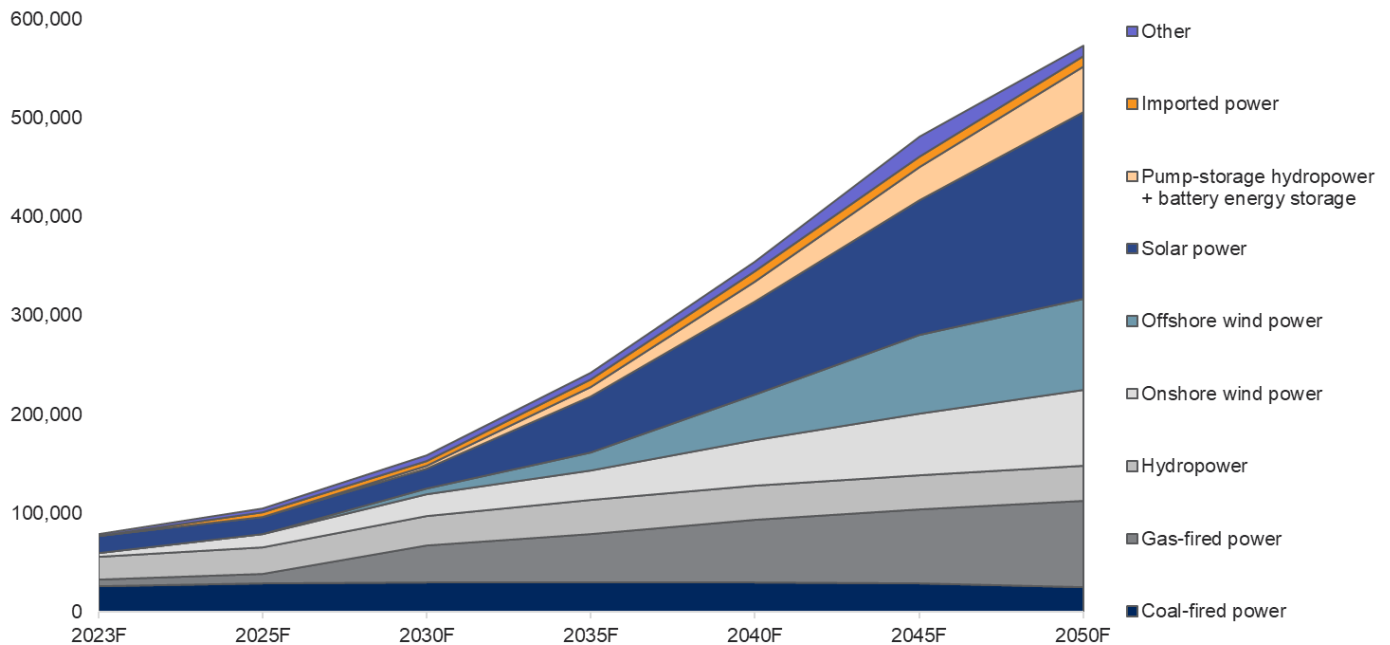


Source: VNDIRECT RESEARCH, GENCO3

Power Development Plan 8 opened up a new chapter for Vietnam power sector

On 15 May 2023, the Power Development Plan 8 (PDP8) was officially approved, opening up a new chapter for Vietnam power sector.

Figure 5: The new PDP8 favors toward gas-fired and wind power over 2021-30F period, after focusing on RE power from 2030F onward (Unit: MW)

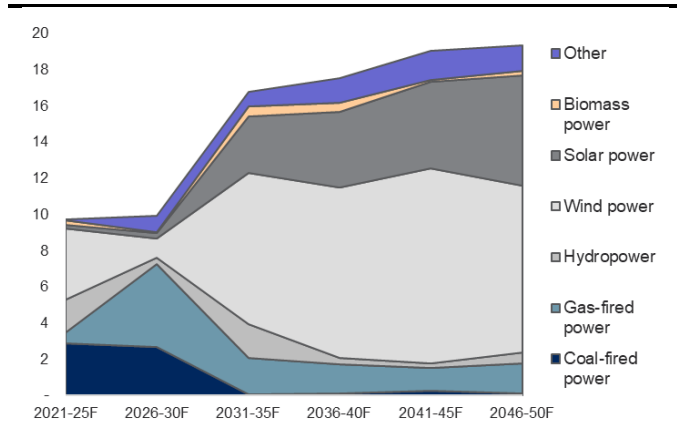


Source: VNDIRECT RESEARCH, PDP8

- **Coal-fired power:** The PDP8 finally removed total 13,220MW of coal-fired power plants, putting an end to the coal-fired era.
- **Gas-fired power:** Gas-fired power will become the major spearhead over 2021-30F period with CAGR of 26%, the highest growth among peers and accounting for 27% total capacity.
- **Wind power:** Wind power will become the main target in both short and long term. Onshore wind power will grow at 25% CAGR over 2021-30F. Besides, there will be the first 6,000MW offshore wind power on board in 2030F, before surging 15% CAGR in 2030-50F.
- **Solar power:** Solar power will postpone under excessive growth over 2020-21 period. However, the PDP8 still encourages unlimited growth of solar power for self-use purposes.
- **Hydropower** capacity grow at 1% CAGR over 2021-50F period as the energy sources potential has reached its limit. On the other hand, the PDP8 has boldly taken into account other flexible power sources including pump-storage hydropower, battery energy storage and biomass. We believe these additional sources will strengthen Vietnam's power system reliability in long-term.

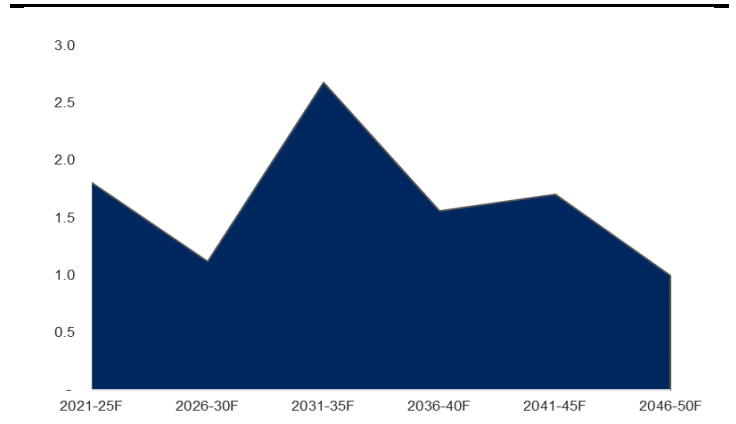
Higher capital requirement in order to actualize green ambition

Figure 6: Capital requirement reached higher level under the strong energy transition, allocating major on wind power (Unit: US\$bn)



Source: VNDIRECT RESEARCH, PDP8

Figure 7: Capital needs for power grid development accounting for about 11% of the total Power sector investment in 2021-30F and 7% 2031-50F (Unit: US\$bn)



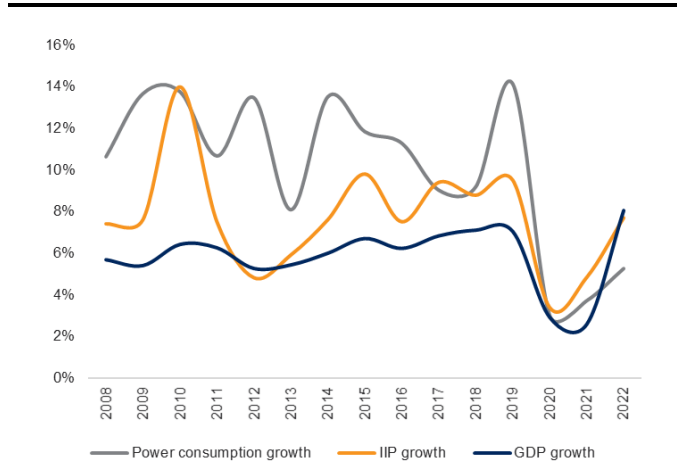
Source: VNDIRECT RESEARCH, PDP8

The PDP8 has concluded a “sufficient and green” plan, but it may be more difficult to implement than the amended PDP7 with strong emergence of gas-fired and RE power. In the base-case scenario, total investment demand for power capacity reach US\$98bn in 2021-30F, equivalent to US\$9.8bn/year, allocating majorly on gas-fired power (30%) and wind power (35%).

In 2031-50F period, total capital for capacity development will reach US\$363bn, equivalent to US\$18.2bn, with wind power requiring the most of 63% total capital, follow by the comeback of solar power (18%). Capital needs for power grid development account for 11%-7% of total sector investment in 2021-30F and 2031-50F period, respectively.

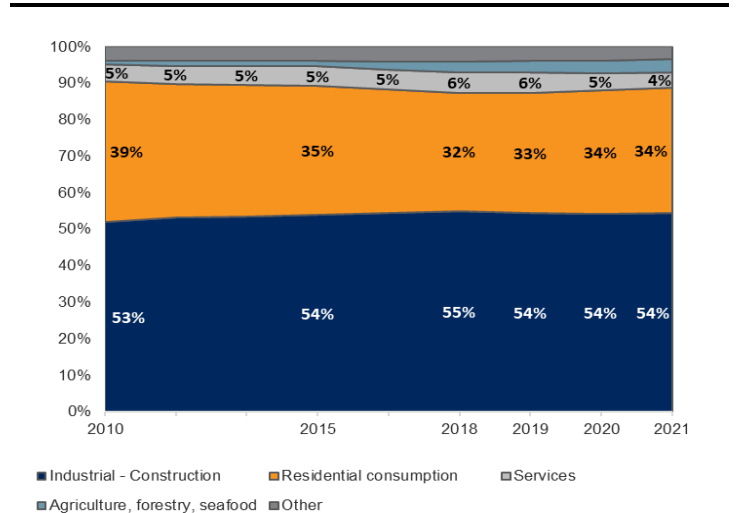
We see power consumption growth will stay below the PDP8 forecasted level in 2023F

Figure 8: Power consumption growth went below GDP growth for the first time in 2022, due to low production among power-intensive segment (Unit: %)



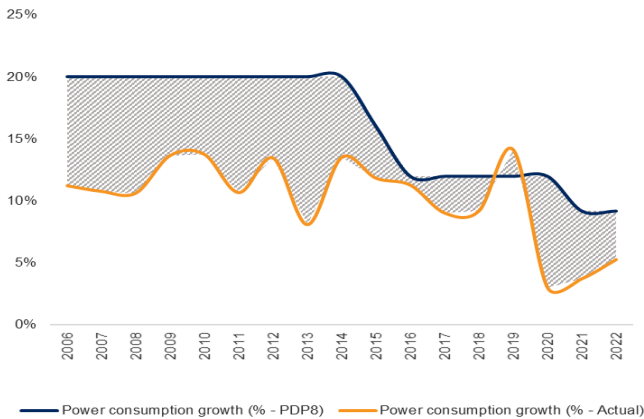
Source: VNDIRECT RESEARCH, PDP8

Figure 9: From 2010-21, Industrial – Construction groups accounted for 53-54% of total power consumption, followed by Residential of around 34% (Unit: %)



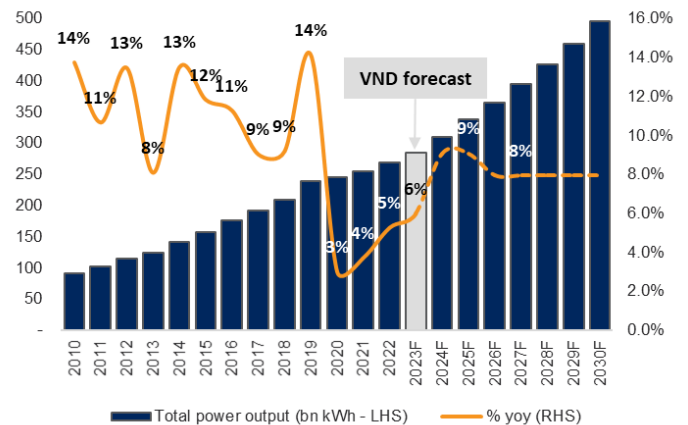
Source: VNDIRECT RESEARCH, EVN

Figure 10: Previous PDP’s power demand growth forecast stayed lower than the actual in 2006-14, after bringing out a more accurate number from 2015



Source: VNDIRECT RESEARCH, EVN, GSO

Figure 11: We expect 2023F power output to grow at 6% yoy, lower than PDP8 level of 9.1% yoy. For 2024-30F period, power demand will grow in accordance with PDP8 base-scenario



Source: VNDIRECT RESEARCH, PDP8

From 2010-21, Vietnam total power demand made up of average 53% from Industry – Construction sector, 39% from Residential consumption - Service sector, and the remained from Agriculture and other activities. Moving to 2022, Vietnam total power consumption growth reached 5.3% yoy, below GDP growth for the first time, and far lower than the PDP8’s low case forecast of 8.4% yoy. For 2023F, we expect a more conservative power consumption growth of 6% yoy, equivalent to the 2023F market operation plan level, issued by MOIT, and lower than the low-case scenario noted in the PDP8 draft as:

- We see the domestic construction sector will be greatly hit by weaker demand from property market, lingering through at least the rest of 2023F. Thus, we expect steel and cement sectors to be hampered accordingly. However, we anticipate buzzing public investment activity this year, which somewhat lifts demand for these industries and offsets the output loss from the property market.
- On the other hand, we find expectations of a hotter summer will drive higher power consumption from Residential sector, somewhat offsetting the low industrial power demand in 2023F as the El Nino phase came back from May-23.

Figure 12: Power capacity growth by power sources in 2023F

MW	2022			2023F		
	Capacity	% yoy	%weight	Capacity	% yoy	%weight
Hydropower	22,345	1%	28%	23,981	7%	28%
Coal-fired power	25,820	7%	33%	28,452	10%	33%
Oil-fired power	1,579	0%	2%	1,579	0%	2%
Gas-fired power	7,398	3%	9%	7,398	0%	9%
Solar power	16,567	1%	21%	17,019	3%	20%
Wind power	4,667	17%	6%	6,305	35%	7%
Biomass	356	0%	0%	386	8%	0%
Other	619	0%	1%	619	0%	1%
Total	79,351	4%		85,739	8%	

Source: VNDIRECT RESEARCH, MOIT

Figure 13: Output growth by power sources in 2022-24F

billion kWh	2022			2023F			2024F		
	Output	%yoy	%weight	Output	%yoy	%weight	Output	%yoy	%weight
Hydropower	95	21%	35%	77	-19%	27%	96	25%	31%
Coal-fired power	105	-11%	39%	128	22%	45%	127	-1%	41%
Gas-fired power	30	12%	11%	33	11%	12%	37	14%	12%
RE power	35	10%	13%	43	23%	15%	43	2%	14%
Others	4	193%	2%	4	3%	2%	6	45%	2%
Total	268	5%		285	6%		310	9%	

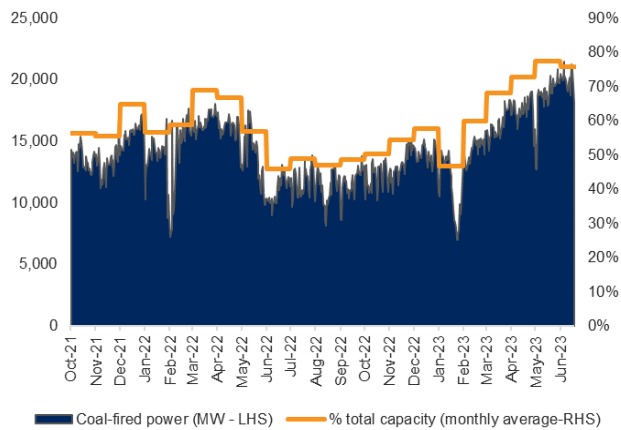
Source: VNDIRECT RESEARCH

We compare actual power consumption growth versus Power Development Plan (PDP) forecast to see the efficiency as well as the implementation of Vietnam power system. The actual output growth was lower than the forecasted level in 2006 to 2014, under the PDP6. However, the gap narrows from 2015 (PDP 7) as forecasted output growth brought out a more accurate number, before deviating due to unexpected Covid-19 from 2020. Therefore, in 2024-30F period, we see Vietnam total power consumption will continue to grow in accordance with the base-case scenario of 8.4% CAGR in the PDP8 draft.

Coal-fired power: Vibrant mobilization to offset weak hydropower output

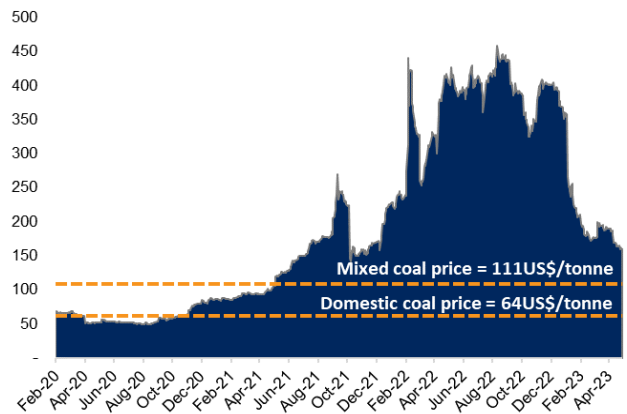
We see coal-fired power, especially in the North to be benefited the most in the upcoming hot weather amid the unfavorable hydrology of hydropower as well as the region's power shortage. We see QTP and HND are some of the heavy-weighted contestants to ride on this trend

Figure 14: Coal-fired power capacity mobilization reached a gradual high level from the start of 2023, underpinned by demand spike in the North, while hydropower recorded humble power generation



Source: VNDIRECT RESEARCH, EVN

Figure 15: In 2023F, most of Vietnam's coal power plants have to use mixed coal at higher prices, which not only affects higher ASP but also the plant's efficiency (Unit: US\$/tonne)



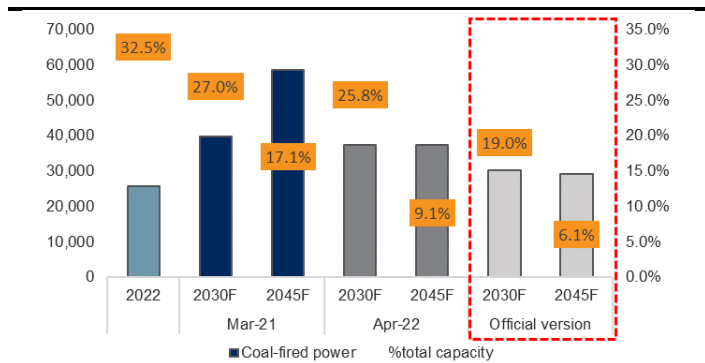
Source: VNDIRECT RESEARCH, GENCO3, Bloomberg

In 1H23, coal-fired power capacity recorded an increasingly high portion, reaching 84% total capacity in June-23, backed by the demand surge from residential groups during hot weather, as well as the retreatment of hydropower output. Besides, thanks to sufficient coal supply in 1H23, several outstanding listed coal-fired power firms have recorded a solid output improvement, especially during 2Q23 such as QTP, HND and we expect the trend to linger for the rest of 2023F.

In 2023F, most of Vietnam's coal-fired power plants must run with higher portion of mixed coal, thus, as international coal prices anchored at high level, mixed coal prices recorded a higher value than the domestic coal price. Although imported coal prices have declined from 2022 peak, we see coal prices maintain at this level for the rest of 2023F with additional demand from China during its recovery phase. However, in the context of serious power shortage in the North, we see ASP spike might not be significant problems.

Coal-fired power: Long-term outlook faded after drastic cut in the PDP8

Figure 16: The official PDP8 removed total 13,220MW, putting an end for the coal-fired era



Source: VNDIRECT RESEARCH, PDP8

Figure 17: We note down some of the outstanding projects to remain for 2021-30F period, some of the top developers still be benefited including GE2, TKV, PVN

Power plant	Capacity (MW)	Progress	Investor
Na Duong II thermal	110	2021-25	TKV
An Khanh - Bac Giang	650	2021-25	NA
Vung Ang II thermal	665	2021-30	Kepco - Mitsubishi
Van Phong I thermal	1432	2021-25	Sumitomo Corp
Long Phu I thermal	1200	2021-25	PVN
Quang Trach I thermal	1200	2021-25	GENCO 2

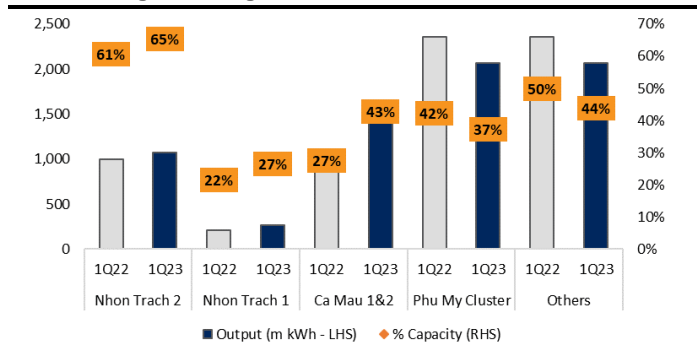
Source: VNDIRECT RESEARCH, PDP8

The official PDP8 finally removed total of 13,220MW, putting an end to the coal-fired era. Moreover, the new plan has also taken into account 6,800MW of coal-fired power that facing difficulties in capital arrangement by increasing reserves from higher portion of wind and gas-fired power.

Under the official PDP8, coal-fired power will increase 2% CAGR over 2023-30F then decrease -1% CAGR over 2030-50F, accounting for 19% and 4% national capacity in 2030-50F, respectively. However, we see some of the key projects in the North are necessary for development in order to secure the region's system safety including Quang Trach I, Vung Ang II. Besides, Van Phong I (1400MW) will come online from 4Q23F, strengthening national power systems.

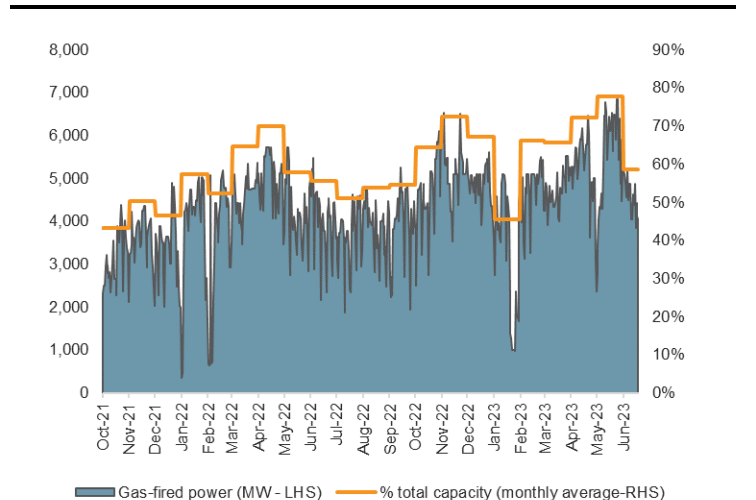
Gas-fired power: Increasing power demand to absorb the excessive capacity in the South

Figure 18: Some of the high efficiency gas-fired power plants still recorded a solid output mobilization amid overall sector decline in 1Q23 due to gas shortage



Source: VNDIRECT RESEARCH, Company reports

Figure 19: Gas-fired power mobilized capacity improved from 4Q22, thanks to lower ASP as well as the enhancement of South-to-North transmission trend



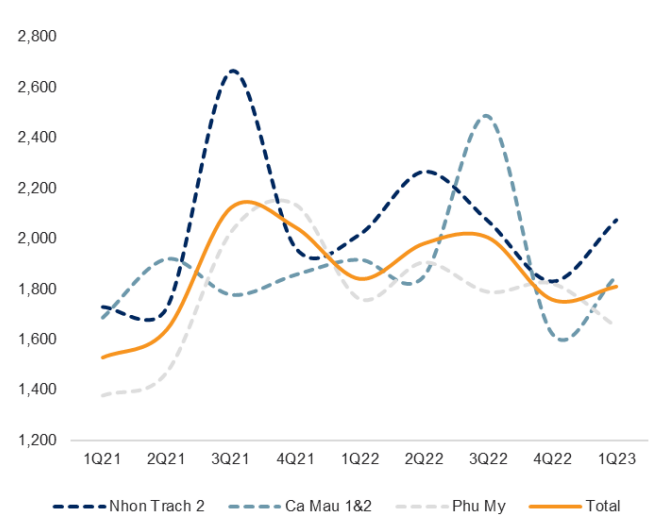
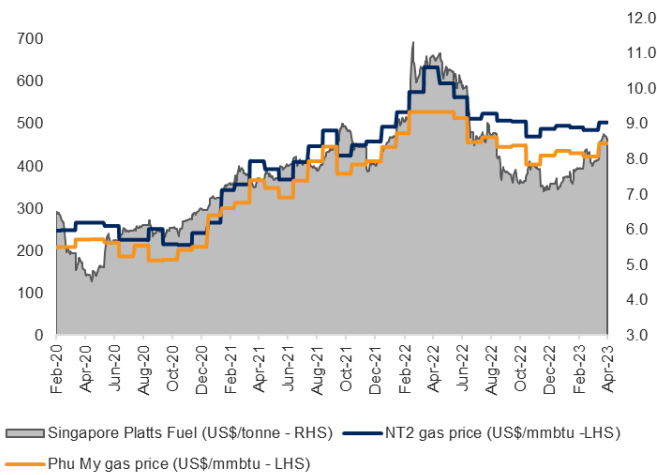
Source: VNDIRECT RESEARCH, EVN

In 1Q23, some of the gas-fired power plants recorded positive output mobilization including Nhon Trach 2, and Ca Mau 2 thanks to the plant's high efficiency, but overall, total gas-fired power output still suffered a modest reduction due to weaker power demand, particularly among industrial zone in the South. From 2Q23, we see the improvement of gas-fired power thanks to lower output generation from hydropower and the more intense South-to-North transmission trend to support the power shortage situation.

For 2023-24F, we expect a positive gas-fired power output growth, underpin by 1) Vietnam power consumption to increase 9% CAGR in 23-30F; 2) Unfavorable condition from hydropower group, creating larger space for thermal power mobilization; 3) The excessive RE capacity in the South to be gradually absorbed amid slow new capacity development; 4) The impact from Industrial and Construction power to be more severe when Vietnam industrial activities return to its growth stage.

Figure 20: Gas price retreated from 2022 peak but the downtrend slowdown in 4M23 amid anchored high FO price while exploiting cost for domestic gas fields increased gradually. ...

Figure 21: ... Thus, gas-fired power ASP has also dropped from high level in 2022 to around VND1,800/kWh in 1Q23 (unit: VND/kWh)



Source: VNDIRECT RESEARCH, Bloomberg, Company reports

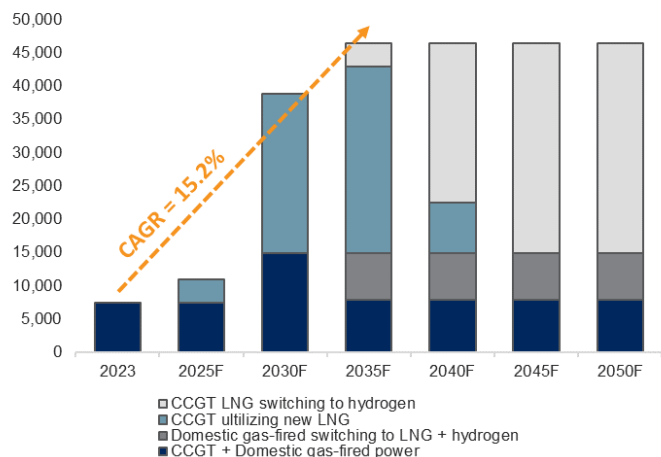
Source: VNDIRECT RESEARCH, Company reports

Gas price recorded a solid decline, anchoring on the downtrend of the Singapore FO. Its price cut down from 2022 peak of at most US\$700/tonne to below US\$400/tonne level in May-23. Accordingly, although the price is still far beyond the 5-years average, we consider this as a sign of optimism, enhancing the competitiveness of the energy source.

For 2023-24F, we see the Brent oil price to locate at a lower level of US\$85-80/barrel, supporting lower gas price. Thus, we see gas-fired power ASP is getting more competitive and vastly cheaper than new imported coal-fired power plants. Furthermore, the price gap between gas-fired and coal-fired power has gradually shrunk due to the anchored high coal price. We see lower ASP to partly support on mobilization status of gas-fired power in the context of EVN prioritize to optimize electricity purchasing cost amid its tough financial condition.

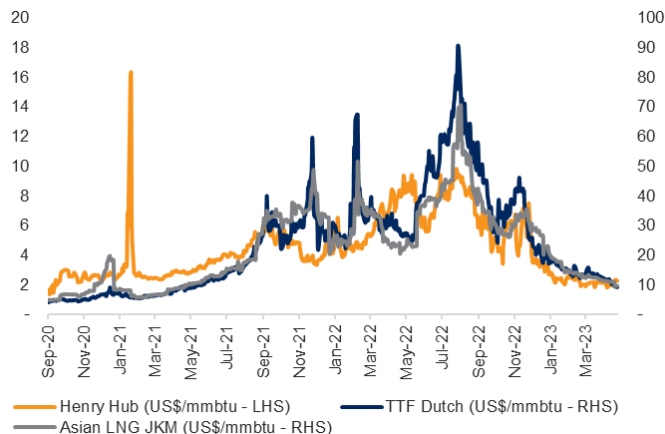
Gas-fired power: The long-term spearhead under clear orientation from the Government

Figure 22: For gas-fired power, the energy sources will become the major spearhead over 2021-35 period with CAGR of 15.2%



Source: VNDIRECT RESEARCH, PDP8

Figure 23: Benchmark international LNG/gas prices significantly drop from Jan-23, supporting the negotiation process of upcoming LNG project's PPA and GSA contract



Source: VNDIRECT RESEARCH, Bloomberg

Figure 24: Outstanding gas-fired power projects that included in the PDP8 with high chance to build in 2021-35F period

	Capacity (MW)	Progress	Investor
LNG power plant			
Nhon Trach 3&4	1,600	2021-30	PVPower
LNG Hiep Phuoc I	1,200	2021-30	Hai Linh Company Limited
LNG Bac Lieu	2,400	2021-30	Delta Offshore Energy
LNG Quang Ninh I	1,500	2021-30	PVPower - Colavi - Tokyo Gas - Marubeni
LNG Thai Binh	1,500	2021-30	TTVN Group - Tokyo Gas - Kyuden
LNG Nghi Son	1,500	2021-30	Millennium (USA)
LNG Quynh Lap	1,500	2021-30	Bidding
LNG Quang Trach	1,500	2021-30	EVN
LNG Hai Lang	1,500	2021-30	T&T Group - Hanwha - Kospo - Kogas
LNG Ca Na	1,500	2021-30	Bidding
LNG Son My II	2,250	2021-30	AES Group
LNG Sơn Mỹ I	2,250	2021-30	EDF - Sojitz - Kyushu - Pacific Group
LNG Long Son	1,500	2031-35	PGV - TTC - TV2 - Mitsubitshi - GE - GTPP
LNG Long An I	1,500	2021-30	VinaCapital - GE
LNG Long An II	1,500	2031-35	VinaCapital - GE
Domestic gas-fired power plant			
O Mon III, IV (Lo B)	2,100	2026-27	PVN
O Mon II (Lo B)	1,050	2027	Vietracimex - Marubeni
Dung Quat I, II, III (CVX)	2,250	2028	NA
Mien Trung I, II (CVX)	1,500	2028	PVN

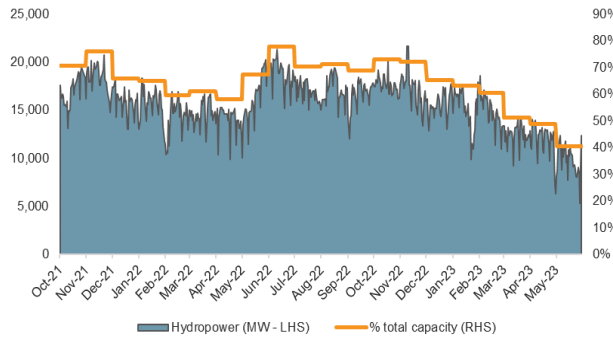
Source: VNDIRECT RESEARCH, PDP8

For gas-fired power, the energy sources will become the major spearhead over 2021-30F period with CAGR of 26%, the highest growth among peers and accounting for 27% total capacity. Similar to coal-fired power, in order to fasten clean transition, gas-fired power also has to convert a part of its input to hydrogen combustion after 20 years. From 2030-50F period, gas-fired power development will slow down at 4% CAGR and accounting for total 15% in 2050F.

We see the gas-fired power in general and LNG-to-power specifically contains several promising name that own new development projects including Nhon Trach 3&4 (POW), LNG Long Son (PGV, TV2) and O Mon III, IV (PVN). Moreover, in earlier phase, we see enterprises participating in the infrastructure development for these projects will benefit the soonest such as TV2, GAS.

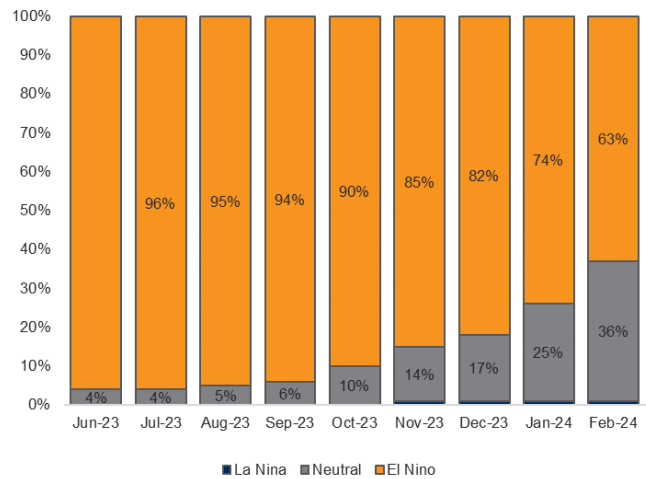
Hydropower has officially exited its favorable weather phase from Mar-23, leaving room for other power sources

Figure 25: According to EVN, mobilized capacity from hydropower dropped sharply in 1H23 due to recorded low water level among several lakes and reservoirs



Source: VNDIRECT RESEARCH, EVN

Figure 26: La Nina phase has ended from Feb-23, while El Nino phase officially occurred from May-23, bringing more intense heat waves and prolonged drought for Vietnam (Unit: %)



Source: VNDIRECT RESEARCH, IRI

Figure 27: According to EVN, the upstream water level of rivers and hydropower reservoirs nationwide is recording a sharp decrease over the same period, especially in the Northwest and South Central and Highlands regions (Unit: % yoy)

	Northwest					North Central			South Central					Highlands					South East					
	Son La	Hoa Binh	Thac Ba	Ban Chat	Lai Chau	Ban Ve	Quang Tri	Trung Son	Vinh Son	A Vuong	Song A Tranh 2	Song Vinh	Song Bung 2	Buon Srah	Tua Srepok 3	An Khe	Pleik rong	Ialy	Don Duong	Dong Nai 3	Se San 4	Ham Thuan	Tri An	Thac Mo
Jan-23	-2.0%	5.0%	3.0%	-0.8%	-3.7%	-0.3%	-0.1%	-1.1%	0.0%	0.1%	0.2%	0.0%	-0.2%	0.0%	-0.2%	0.0%	-0.1%	-0.4%	0.1%	-0.2%	-0.3%	-0.8%	-4.5%	-0.4%
Feb-23	-2.6%	5.2%	0.7%	-1.4%	-4.7%	-1.9%	0.0%	-4.3%	-0.04%	0.1%	0.5%	0.01%	-0.3%	0.0%	-0.4%	-0.04%	-0.3%	-0.5%	0.2%	-0.3%	0.1%	-0.7%	-5.6%	-0.5%
Mar-23	-2.9%	1.6%	-1.5%	-2.6%	-2.8%	-3.7%	0.1%	-5.3%	-0.03%	-0.1%	0.6%	-0.04%	-0.1%	-0.1%	-0.5%	0.01%	-0.6%	-0.5%	0.2%	-0.3%	-0.5%	-0.6%	-7.2%	-0.6%
Apr-23	-6.3%	3.8%	-3.0%	-4.6%	-4.6%	-4.6%	-0.3%	-2.5%	-0.04%	-2.3%	-2.3%	-0.75%	-0.2%	-0.8%	-0.4%	-0.11%	-1.5%	-0.4%	0.0%	-0.7%	-1.0%	-0.8%	-11.5%	-1.0%
May-23	-12.8%	4.0%	-7.8%	-5.7%	-3.5%	-6.9%	-0.6%	-4.0%	-0.04%	-2.9%	-4.3%	-1.5%	-0.4%	-0.8%	-0.4%	0.0%	-1.4%	-1.2%	-0.2%	-1.3%	-0.6%	-0.9%	-9.0%	-2.6%
Jun-23	-11.9%	-2.5%	-11.5%	-6.9%	-5.4%	-9.8%	-0.9%	-2.9%	-33.4%	-2.2%	-5.2%	-2.0%	-1.4%	-0.4%	-0.6%	-33.3%	-0.4%	-0.4%	-0.5%	-1.1%	-33.4%	-0.9%	-0.6%	-2.9%

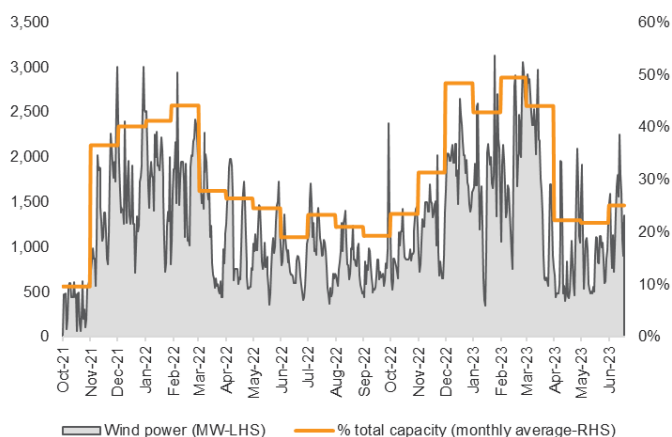
Source: VNDIRECT RESEARCH, EVN

According to EVN, the upstream water level of rivers and hydropower reservoirs nationwide is recording a sharp decrease over the same period bring down lower capacity mobilization. We see hydropower has officially exited its favorable weather phase from Mar-23, leaving room for other power sources. According to the International Research Institute (IRI), the ENSO weather index officially switched to the El Nino phase from May-23. The El Nino phase will bring out hotter weather and more intense drought, thus, we expect hydropower output to normalize from high-base 2022, hindering business results of hydropower plants. In long-term, hydropower capacity will grow at 1% CAGR over 2021-50F period as the energy sources potentially has reach its limit.

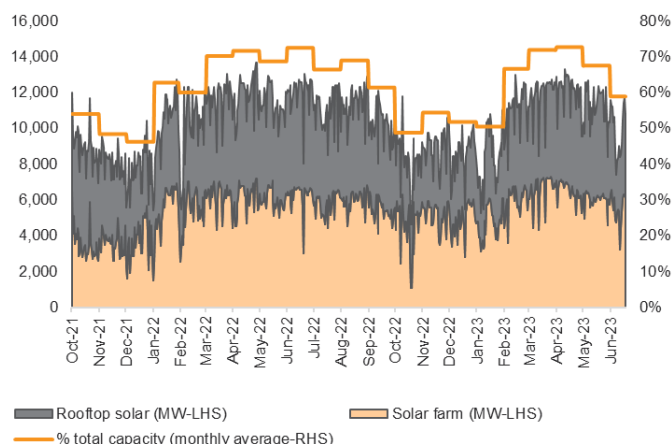
Renewable energy: Unresolved policy bottleneck

Figure 28: Wind power enjoyed positive mobilization in 1Q23, supported by good monsoon season after dropped from Apr-23

Figure 29: Solar power mobilization has improved since the beginning of the year, reaching 60-70% total capacity



Source: VNDIRECT RESEARCH, EVN



Source: VNDIRECT RESEARCH, EVN

According to the daily capacity mobilized data from the National Load Dispatch Centre (NLDC), we see RE power have an annual cycle, while wind power usually records solid output mobilization during 1Q and 4Q period, solar power recorded a stable output throughout the years and slightly drop in 4Q to leave room for wind power mobilization.

For 2023-24F, we see the excessive capacity in the South to be gradually absorbed, underpin by higher power consumption growth when the electricity demand for Industrial group return to its growth state. Besides, we see the upgrade of transmission grid to help mitigate capacity cut down situation among RE power plants. However, we do not see a strong improvement in RE power output we see the main outlook for RE developers coming from the ability to expand its portfolio.

Renewable energy: Transitional projects are quickly being put into operation

Figure 30: List of transitional projects that finished COD and officially generating power onto the grid, these plan selling at a temporary price of 50% transitional prices, amid the final prices is being negotiated with Ministry of Industry and Trade (MOIT)

Power plant	Power type	Capacity (MW)	Investors	Note
Finish COD				
Nhon Hoi Phase 2	Wind	30.0		
Tan Phu Dong 1	Wind	100.0	GEG	
Hiep Thanh	Wind	64.5		
Huong Linh 7	Wind	16.8	SCI	
Huong Hiep 1	Wind	25.5	Tan Hoan Cau Group	
Phu My 1	Solar	64.8	BCG	
Phu My 3	Solar	23.8	BCG	
Thien Tan 1.2	Solar	85.4	T&T Group	COD 37.8/85.4MW
Thien Tan 1.3	Solar	41.3	T&T Group	COD 6.3/41.3MW
Trung Nam Thuan Nam (172MW)	Solar	172.1	Trung Nam Group	Approval of acceptance and completion for 85.5/172.1MW

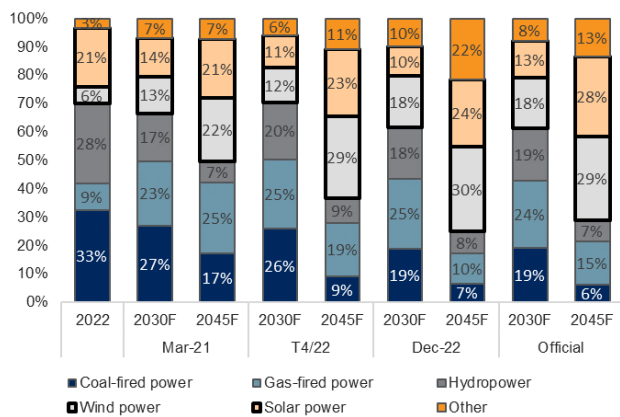
Source: VNDIRECT RESEARCH, EVN

Updated to 16 Jun 23, 68/85 transitional renewable energy projects with a total capacity of 3791.86MW have submitted documents to the EVN for further negotiation of electricity prices. EVN and RE investors have completed the price negotiation and initialed the PPA contract with 55/59 projects; in which the MOIT has approved temporary prices for 51 projects. There are **11 transitional RE projects** that have submitted documents for recognition of commercial operation date (COD), of which 10 projects/parts of projects with a total capacity of 541.52MW have completed COD procedures and started selling on the grid with temporary price of 50% transitional price.

We see the new development phase to enhance competitiveness in healthier manner

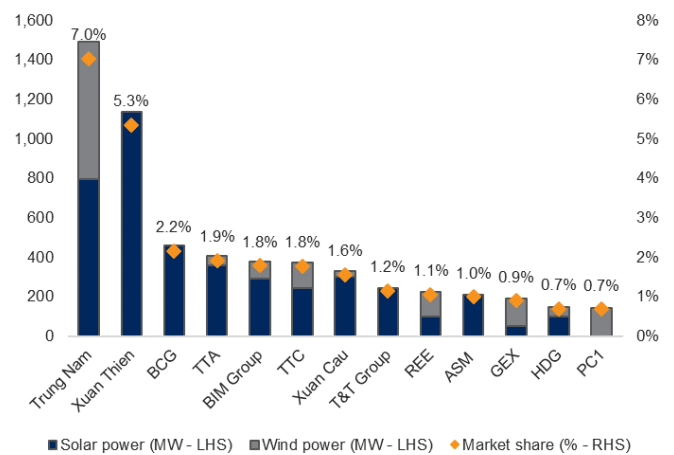
The new development phase of RE power is shaping up as authorities are simultaneously setting up a pilot mechanism for DPPA and the draft decree on power plants' investor selection.

Figure 31: The official PDP 8 continued to enhance a larger portion of RE power in 2023-45F (Unit: MW)



Source: VNDIRECT RESEARCH, PDP8

Figure 32: Enterprises with advantages of scale, prices negotiation and capital raising ability will stay ahead in upcoming period



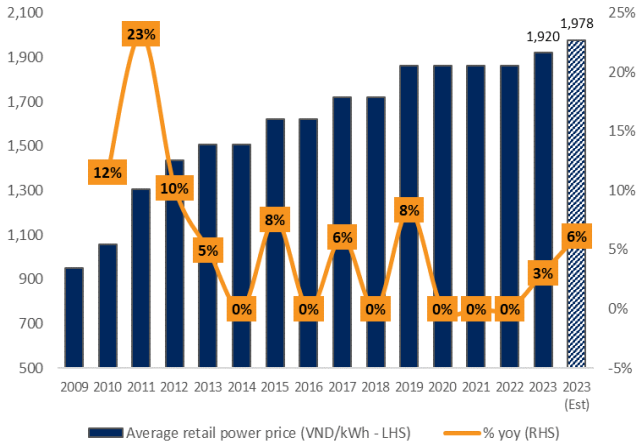
Source: VNDIRECT RESEARCH, Company reports

RE power will become the main Vietnam power sources in long-term, with wind power and solar power accounting for the largest portion in 2050F. However, at the moment, the development process is still at a stalemate under no clear price mechanism. Vietnam is piloting a direct power purchase (DPPA) scheme and planning to encourage its application for initial 1,000MW RE capacity. Besides, the government also requested for a breakthrough solution to encourage rooftop solar development for self-consumption purposes, as well as refining the auction mechanism for RE power in the meantime. Although it is currently difficult for investors to judge whenever policies will be enacted, we see the government's vision being formed in a more clarity manner about the next development phase of renewable energy. We still expect an attractive yet competitive price mechanism to continue encouraging qualified investors to participate in this field.

In the early phase, we see infrastructure enterprises including plant contractor and transmission grid contractor such as PC1, PVS, FCN to benefit the soonest thanks to high workload under PDP8. Besides, we see some of the top listed RE players, who contained strong price implication, financial background and operation experiences will stay ahead in this phase including BCG, GEG, REE, PC1.

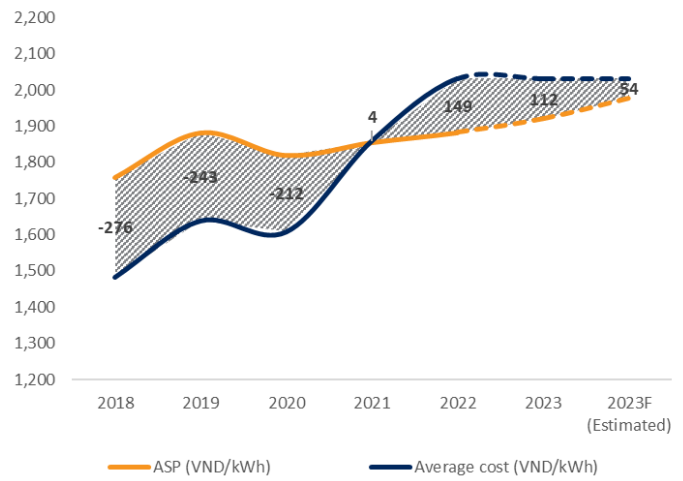
Retail prices have risen since May-23. However, a significant improvement may be premature

Figure 33: Vietnam average retail prices increased 3% to VND1,920/kWh. If the proposal of another 3% rise is approved, average prices will reach VND1,978/kWh, increasing 6%.



Source: VNDIRECT RESEARCH, EVN

Figure 34: We see it might be early to expect a strong improvement as the 2022 cost gap is relatively large, especially when input prices (gas, coal) recorded no significant gap down.



Source: VNDIRECT RESEARCH, EVN

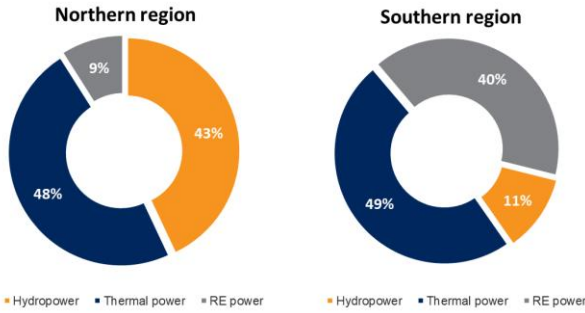
Despite several efforts to reduce costs, the solutions fell short of covering mobilization price under the sharp rise of input price such as imported coal, gas price and oil price. EVN recorded a net loss of VND26,235bn in FY22, and the situation is still under pressure in 1H23 amid the 3% rise in retail prices. At the moment, there is only hydropower price still stay below retail price level, despite the fact that this power sources accounts for only 33% of total system capacity. The remaining 67% come from high-priced power sources including thermal and RE power.

We see the new retail price, if officially rises for another round, will greatly support EVN financial position in term of fullness cash flow to make payment for power plants as well as larger space to mobilize from higher price power sources. However, as hydropower – the cheapest sources among peers recorded a low output generation, while thermal power ASP showing minimal sign of slowing down, we see it might be too soon to expect a severe improvement in EVN financial situation.

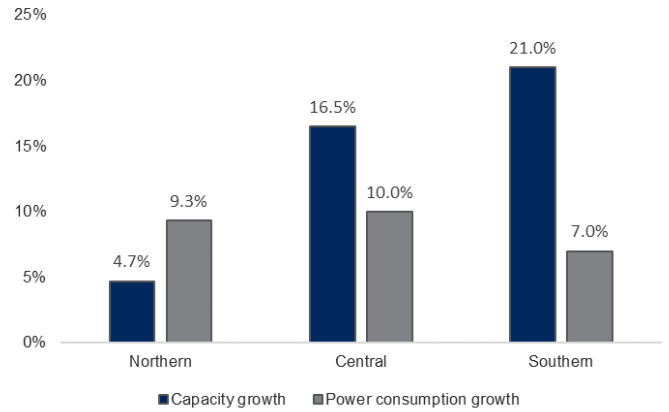
Power shortage – A prolonged risk need to be urgently addressed

Figure 35: Dominate portion of hydropower capacity (43%) in 2022 has caused a serious power shortage in the North, amid significant lower water level

Figure 36: In the 2016-20 period, power consumption in the North recorded the highest among regions, but capacity growth rate was significantly lower



Source: VNDIRECT RESEARCH, EVN



Source: VNDIRECT RESEARCH, PDP8


The Northern region is currently experiencing a “nightmare summer” with continuous power outages, caused by a rapid spike in residential demand due to more intense heatwave, especially in the context of the region’s main power sources – hydropower has been suffering from low water levels among several lakes and reservoirs.

In short-term, the government has used several temporary solutions that somewhat mitigate the extreme situation in the Norths including 1) Maximum South – North transmission; 2) Securing sufficient input sources including coal, gas and oil and optimize mobilizing from thermal power; 3) Urgently putting into operation transitional RE projects. However, we see this to be band-aid solutions that do not address the fundamental of the problems. In longer-term, we see that capacity development as well as transmission grids development to synchronize with the extremely rapid expansion of power sources in the South are necessity to thoroughly improve the problems.

Our top picks including PC1, POW

Figure 37: Investment ideas

No	Ticker	1-year TP (VND/share)	Rating	Investment thesis
1	POW	17,800	ADD	<p>(1) We believe that POW – a leading gas-fired power company will benefit from the strong gas-fired power development trend under the clear orientation in the PDP8. POW is currently the investor of one of the key gas-fired power projects, the first LNG-to-power plant in Vietnam – Nhon Trach 3&4 (1,600MW), as well as participating in a joint venture (30%) in another LNG-to-power project LNG Quang Ninh (1,500MW). While Nhon Trach 3&4 is expected to come into operation in 2024-25F, LNG Quang Ninh is planned to deploy in 2025-30F.</p> <p>(2) For 2023-24F, we forecast a NP’s CAGR growth of 15% thanks to 1) We see the electricity demand to spike among residential groups will support higher thermal power mobilization amid unfavorable hydrology; 2) The recent downtrend in Brent oil and FO price from high-base 2022 to drive lower power price, supporting the mobilization for high price power sources such as gas-fired power. Besides, the rapid slump in LNG price to boost faster PPA, GSA negotiation process for Nhon Trach 3&4; 3) We see some of the one-off profit to bring out more positive profit results including compensation for Vung Ang 1 unit 1 incident and the divestment of EVN Viet Laos JSC; 4) We see the return of unit 1 Vung Ang 1 (600MW) from 3Q23 will provide more positive results after a long period of repair.</p>

2	 PC1	33,600	ADD	<p>(1) We anticipate that FY23–24F will be a profitable break period for PC1, following a series of new business expansions in multiple industries within the company's ecosystem, including, Nickel mineral mining, Residential property, and Industrial park. We expect a solid EPS growth of 35% CAGR over FY23-24F from the low-base FY22. We see the company major risks of interest rate hike and exchange rate loss will ease from 2H23F, supporting the bottom line.</p> <p>(2) Moreover, we expect PC1 - leading EPC wind power contractor will be benefited soonest from the announcement of the PDP8 as well as the official RE price mechanism in near future. We believe high workload under the PDP8 plan, underpin by the strong intensive for transmission grid update after the serious power shortage in the North and capacity cutdown in the South will help PC1 signing a strong back-log in the future.</p>
3	NT2	33,000	ADD	<p>(1) In FY23F, NT2 will go through a large overhaul schedule, usually around 45 days. We see output lost will result in lower revenue and gross profit of 16% yoy and 23% yoy, respectively, after recover 13% yoy and 28% yoy, respectively in FY24F.</p> <p>(2) We see the main outlook for NT2 is not about growth ability but a healthy financial performance and strong dividend policy. NT2 has paid entirely its long-term debt from 2021, and at the moment, the company record a very strong cash flow and healthy financial situation. We are looking forward a more intense cash dividend payment from NT2 of at least 15%/year.</p>
4	QTP	NA	NA	<p>(1) We see QTP will set a same trend as NT2, including gradual drop in debt and healthy dividend flows. Besides, we expect a strong EPS growth in FY2024F when Quang Ninh 2 no longer recorded depreciation cost.</p> <p>(2) We expect thermal power plants in the North such as QTP will record vibrant mobilization in the FY23-24F, thanks to 1) Power shortage in the North will be unable to solve anytime soon in the following years, while additional power sources stay at low growth rate, 2) QTP is benefited from ideal location, near coal mine and records low transportation cost, besides, the plants has ensured a sufficient coal price contract from TKV – the company major shareholder.</p>
5	BCG	12,100	ADD	<p>BCG's 1Q23 net revenue dropped sharply by 44% yoy to VND701.3bn due to lower construction revenue recognition from Tracodi, as well as the frozen real estate market. However, we still see promising growth potential for BCG both short and long-term thanks to (1) Lower interest rates reduce interest expense; (2) Large amount of property handover from launched projects. We expect BCG will hand over parts of Hoi An D'Or project and Malibu Hoi An in FY23F, bringing revenue of VND2,495bn (+130% yoy), while project deliveries can record revenue of VND2,012bn (-19% yoy) in FY24F; (3) Renewable energy is the foundation for long-term growth. We forecast that BCG's power revenue will reach VND1,186bn (+11% yoy) in FY23F and VND1,643bn (+38%yoy) in FY24F. BCG has a pipeline of about 670 MW waiting for the new pricing mechanism for RE projects to continue implementation.</p>
6	GEG	NA	Not-rated	<p>(1) GEG is among top RE companies with total capacity of 456MW, including 81MW small hydropower, 245MW solar power and 130MW wind power. Besides, Tan Phu Dong 1 (100MW) officially came online on June with temporary price equal to 50% transitional prices for nearshore wind of VND908/kWh. At the moment, GEG with MOIT is negotiate for the final price and the company expects official price of VND1,815.9/kWh, the upper band of transitional prices. We see the operation of Tan Phu Dong 1 will bring a more sufficient cash flow to fulfill its high debt obligation. In 2024F, GEG plan to add in its portfolio 1 wind power project (VPL2 Ben Tre – 30MW) and Duc Hue 2 solar (49MW), cement its leading position among top RE player in the market.</p> <p>(2) We see GEG could improve its financial position thanks to strong shareholders (TEPCO – Japan, and DEG - Germany) and can raise green bonds which is cheaper than domestic loans.</p>

Source: VNDIRECT RESEARCH

Figure 38: Peer comparison

Company name	Ticker	Price	Target price	Recom.	Mkt Cap	P/E(x)		P/BV(x)		EV/EBITDA (x)		ROE (%)	
		Bloomberg	LC\$			LC\$	US\$m	TTM	FY23F	Current	FY23F	TTM	FY23F
Gas-fired power peer													
PVPower	POW VN Equity	13,650	17,800	ADD	1,356.4	19.1	11.2	0.9	0.9	4.9	2.4	7.3	8.5
GENCO 3	PGV VN Equity	18,600	NA	NR	1,182.2	12.1	12.3	1.6	1.5	6.8	6.3	12.8	14.3
PetroVietnam Nhon Trach 2 JSC	NT2 VN Equity	31,200	33,000	ADD	381.1	9.6	10.4	2.0	2.0	5.1	NA	20.9	19.8
Ba Ria Thermal Power JSC	BTP VN Equity	13,000	NA	NR	40.3	9.8	NA	0.8	NA	9.6	NA	7.7	NA
<i>Average</i>						12.7	11.3	1.3	1.4	6.6	4.3	12.2	14.2
<i>Median</i>						10.9	11.2	1.3	1.5	5.9	4.3	10.3	14.3
Coal-fired power peer													
Vinacom - Power Holding Corp	DTK VN Equity	11,600	NA	NR	336.1	11.5	NA	0.9	NA	4.6	NA	8.3	NA
HAI Phong Thermal Power JSC	HND VN Equity	15,800	NA	NR	335.2	14.4	12.0	1.3	1.2	5.2	NA	8.7	14.6
Quang Ninh Thermal Power JSC	QTP VN Equity	17,000	NA	NR	324.6	10.0	7.9	1.2	1.2	4.1	NA	12.4	16.2
Pha Lai Thermal Power JSC	PPC VN Equity	16,200	NA	NR	220.4	11.4	6.1	1.0	NA	16.6	NA	9.0	15.7
<i>Average</i>						11.8	8.7	1.1	NA	7.6	NA	9.6	15.5
<i>Median</i>						11.4	7.9	1.1	1.2	4.9	NA	8.9	15.7
Hydropower peer													
Vinh Son - Song Hinh Hydropower	VSH VN Equity	44,000	NA	NR	441.0	7.8	NA	1.9	NA	5.5	NA	27.0	NA
Hua Na Hydropower JSC	HNA VN Equity	17,600	NA	NR	175.7	7.1	NA	1.2	NA	4.4	NA	19.0	NA
Thac Ba HydroPower JSC	TBC VN Equity	36,300	NA	NR	97.8	7.2	NA	2.2	NA	4.8	NA	32.0	NA
<i>Average</i>						7.4	14.5	1.8	NA	NA	NA	26.0	NA
<i>Median</i>						7.2	NA	1.9	NA	NA	NA	27.0	NA
RE power peer													
Gia Lai Electricity JSC	GEG VN Equity	16,200	NA	NR	221.3	16.9	17.8	1.7	NA	11.4	NA	5.7	6.4
Multi-segment peer													
REE Corp	REE VN Equity	64,300	77,000	HOLD	1,115.1	9.6	10.8	1.7	1.4	7.7	7.5	18.6	15.3
Ha Do Group JSC	HDG VN Equity	38,700	40,200	HOLD	401.7	8.2	10.0	1.7	1.6	6.0	NA	22.6	16.0
PC1 Group JSC	PC1 VN Equity	27,350	33,600	ADD	313.8	21.8	9.9	1.4	1.2	9.5	9.9	6.8	13.4
Bamboo Capital Group JSC	BCG VN Equity	9,220	NA	NR	208.7	41.8	NA	0.7	NA	30.3	NA	1.5	NA
<i>Average</i>						20.3	10.2	1.4	1.4	13.4	8.7	12.4	14.9
<i>Median</i>						23.0	10.0	1.3	1.4	14.8	9.3	10.8	14.8

Source: VNDIRECT RESEARCH, BLOOMBERG (Data as of April 12, 2023)

Figure 39: FY23-24F forecasted financial summary of stocks under our coverage

	POW		PC1		REE		NT2	
	FY23F	FY24F	FY23F	FY24F	FY23F	FY24F	FY23F	FY24F
Revenue (VNDbn)	32,394	40,536	9,446	10,280	8,366	9,758	7,516	7,836
% growth	14.8%	25.1%	13.4%	8.8%	-10.8%	16.6%	-14.5%	4.3%
Gross margin (%)	11.9%	12.8%	20.5%	20.8%	40.0%	39.2%	11.7%	13.9%
EBITDA margin (%)	17.9%	18.7%	22.6%	22.4%	43.6%	41.7%	19.8%	21.5%
Net profit (VNDbn)	2,204	2,575	452	705	2,208	2,631	712	898
% growth	7.0%	16.8%	0.6%	55.8%	-17.9%	19.1%	-2.3%	26.1%
EPS (VND/share)	941	1,100	1,673	2,606	7,123	8,485	2,475	3,120
BVPS (VND/share)	28,147	35,592	24,370	27,642	65,199	74,032	16,406	18,119
Net cash/share (VND/share)	(1,188)	(2,755)	(29,788)	(25,722)	(19,897)	(12,917)	5,455	10,143
D/E	0.8	1.0	2.1	1.7	0.7	0.6	0.5	0.5
Dividend yield (%)	0.0%	0.0%	0.7%	0.7%	2.0%	2.2%	8.6%	8.5%
ROAE (%)	6.8%	7.3%	6.9%	9.4%	10.9%	11.5%	15.1%	17.2%
ROAA (%)	3.6%	3.5%	2.0%	3.0%	6.3%	7.1%	9.8%	11.9%

Source: VNDIRECT RESEARCH, BLOOMBERG (Data as of April 12, 2023)

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RECOMMENDATION FRAMEWORK

Stock Ratings

Definition:

Add	The stock's total return is expected to reach 15% or higher over the next 12 months.
Hold	The stock's total return is expected to be between negative 10% and positive 15% over the next 12 months.
Reduce	The stock's total return is expected to fall below negative 10% over the next 12 months.

The total expected return of a stock is defined as the sum of the: (i) percentage difference between the target price and the current price and (ii) the forward net dividend yields of the stock. Stock price targets have an investment horizon of 12 months.

Sector Ratings

Definition:

Overweight	An Overweight rating means stocks in the sector have, on a market cap-weighted basis, a positive absolute recommendation.
Neutral	A Neutral rating means stocks in the sector have, on a market cap-weighted basis, a neutral absolute recommendation.
Underweight	An Underweight rating means stocks in the sector have, on a market cap-weighted basis, a negative absolute recommendation.

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