

Power sector

Further surges in electricity consumption demand

February 11, 2020

Positive initial

Recommendations

HND	Buy
Current price	VND 16,500
Target price	VND 22,010

NT2	Buy
Current price	VND 20,450
Target price	VND 23,515

The demand for electricity continued to rise quickly

In 2019, electricity consumption reached 209 billion kWh (up 8.85% YoY). From 2013 to 2019, the average electricity consumption growth was 10.8% per year. We expect Vietnam's electricity demand to grow at an average rate of 8.5% per year in the coming years.

Power shortages should help to increase the mobilized electricity output in power plants

The Ministry of Industry and Trade revealed that many thermal power plants were behind schedule according to the Vietnam Power Development Master Plan 7 – revised (PDP 7) approved by the Government, especially in the Southern region. This delay may lead to power shortages in the near future and the Electricity Regulatory Authority (ERAV) would require existing power plants to operate with higher efficiency.

Environmental conditions for hydro plants were improved after the *El Nino*

According to the US National Oceanic and Atmospheric Administration (NOAA), the *El Nino* ended when the ONI (Oceanic Nino Index – the main index used to observe the *El Nino* – *La Nina* phenomenon) decreased from 0.5 – the level when the *El Nino* happens to 0.3 – a neutral state. The agency also expected the possibility of the stable state maintained until mid-2020 at over 50%. Accordingly, hydropower plants would escape the water shortage caused by *El Nino* and increase electricity generation, reducing prices in the competitive generation market.

Risks of input raw material shortage in thermal power plants stemming from exhausting domestic supplies

Due to the increasing demand of thermal power plants, the supply of domestic coal and natural gas is increasingly exhausted, leading to many plants not being provided with sufficient input materials, affecting the ability to operate and plan electricity generation. The solution proposed by the Ministry of Industry and Trade to solve this situation is to use imported coal to offset the domestic shortage. In addition, the prices of input materials are also a potential risk to the business of power plants.

We recommend to buy Hai Phong Thermal Power (HND) & PV Power Nhon Trach 2 (NT2)

I. Power sector outlook

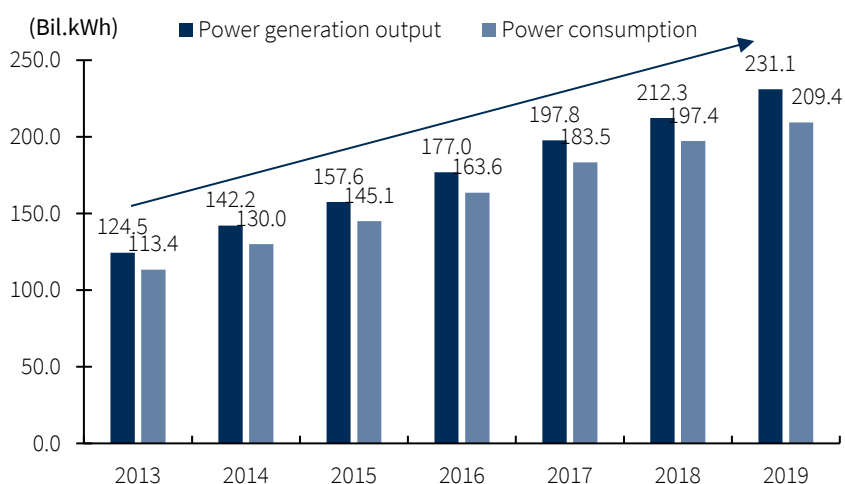
Vietnam's electricity consumption in 2019 was 209.4 billion kWh, an increase of 8.85% over the same period last year

1. The demand for electricity is growing sharply

2019 total electricity output reached 231.1 billion kWh, up 8.86% YoY, power consumption output was 209.4 billion kWh, up 8.85% YoY. The average growth rate of electricity consumption from 2013 to 2019 was 10.8%. The power loss rate on the power grid also decreased from 8.87% in 2013 to 6.5% in 2019.

According to the PDP 7 of the Ministry of Industry and Trade, the estimated national electricity demand growth rates are 10.6% per year from 2016 to 2020, 8.5% per year from 2021 to 2025, and 7.5% per year from 2026 to 2030. We believe the high growth rates are reasonable and in line with Vietnam's average GDP growth rate from 6.5%-7% per year.

Fig 1. Vietnam – Annual electricity production and consumption

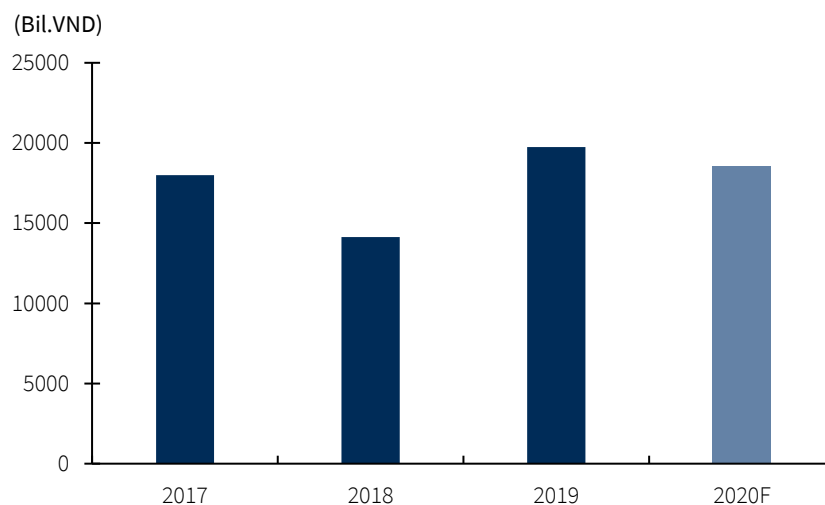


Source: Vietnam Electricity (EVN), KB Securities Vietnam

Investment in building the electricity transmission systems continues to be promoted

With surging demand for electricity, the demand for construction of power transmission systems is also urgently accelerated. In 2019, the total value of construction investment items of EVN reached VND 19,742 billion, the highest in the past three years. In 2020, the value was VND 18,550 billion, 38 projects (7 projects of 500 kV, 31 projects of 220 kV) were started, and 53 projects (19 projects of 500 kV, 34 projects of 220 kV) were finished and operated.

Fig 2. Vietnam – Annual investment in electricity transmission projects



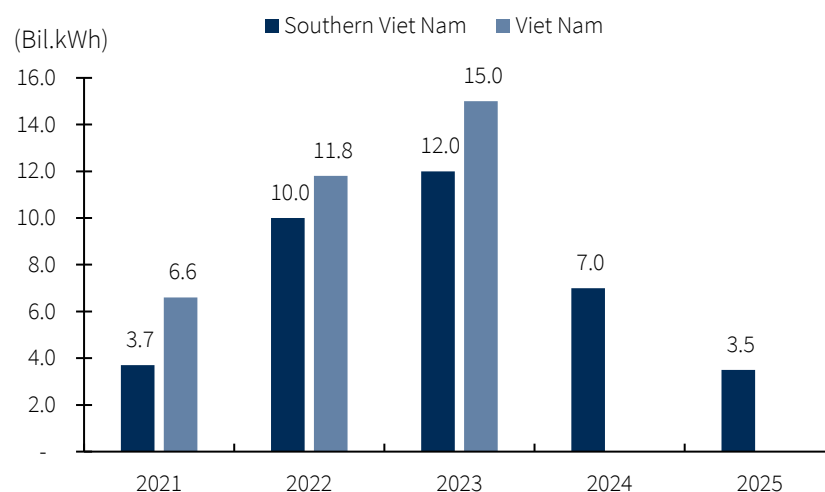
Source: EVN, KB Securities Vietnam

The Ministry of Industry and Trade forecast that Vietnam would have a power shortage of about 6.6 billion kWh in 2021, about 11.8 billion kWh in 2022, and 15 billion kWh in 2023

2. The lack of electricity would help to increase mobilized

According to the PDP 7 revised by the Prime Minister, the power system capacity should increase by 21,651 MW, 38,010MW, and 36,192MW in the period 2016–2020, 2021–2025 and 2026–2030. However, according to a recent report of the Ministry of Industry and Trade, after reviewing the progress of construction of power plants, the total capacity of new power plants, including many Southern coal-fired projects, was lowered by 17,000MW vs the original target mentioned in PDP 7. The Ministry also predicted that Vietnam would have a power shortage of about 6.6 billion kWh in 2021, about 11.8 billion kWh in 2022, and peak at 15 billion kWh in 2023. The power shortage may help existing power plants to be mobilized with larger power output and higher efficiency.

Fig 3. Vietnam & Southern Vietnam – Forecast power shortage



Source: Ministry of Industry and Trade (MOIT), KB Securities Vietnam

Table 4. Vietnam – Forecast capacity shortage vs PDP 7

Year/Period	New operating capacity (MW)		Difference (MW)
	Adjusted PDP7	After reviewing	
2019	6,230	3,650	2,580
2020	4,571	3,230	1,341
2021-2025	38,010	30,485	7,525
2021	9,435	4,520	4,915
2022	10,290	3,890	6,400
2023	7,185	6,635	550
2024	5,250	8,170	(2,920)
2025	5,850	7,270	(1,420)
2025-2030	36,192	34,382	1,810
2026	6,482	7,792	(1,310)
2027	5,660	6,270	(610)
2028	7,890	8,340	(450)
2029	8,950	7,310	1,640
2030	7,210	4,670	2,540

Source: MOIT, KB Securities Vietnam

Solar power is one of the solutions to help solve the electricity shortage

One of the solutions to quickly handle electricity shortage issues is to call investors outside EVN to invest in renewable energy projects, especially solar power. Solar power projects have many advantages such as short project implementation time; ease of installation, decreased equipment costs; low financial costs – especially from foreign credit institutions, and high electricity selling prices to EVN (9.35 cent per kWh before June 30, 2019). In 2019, a record number of solar power projects were completed with a total capacity of nearly 5,000 MW, accounting for 9% of the total installed capacity of the power system. According to estimates of the ERAV, the total capacity of renewable electricity connected to the grid in 2020 should continue to be large, at about 2,000 MW. However, this type of power generation has many disadvantages such as unstable generation, uneven power distribution (power focused too much on an area may lead to transmission line overloading), and high land area occupancy. Although the total capacity of solar power accounted for nearly 9% of the total installed capacity of the whole system, the output was only 4% of the whole system output.

3. Environmental conditions improved, which helps to increase power plants' efficiency

Many hydro plants faced water shortage due to *El Nino*

By the end of 3Q.2019, due to the impact of *El Nino*, many hydropower plants across the country had to face drought and water shortage. The amount of water hit a record low in many years, seriously affecting the capacity of hydropower plants and increasing pressure on thermal power plants.

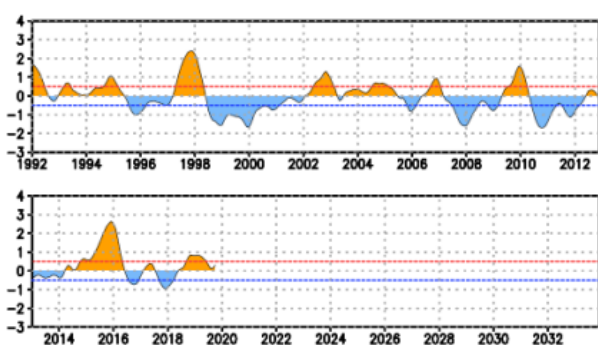
- Electricity produced from hydro plants reached 59.98 billion kWh, down 18.3% over the same period in 2018
- Electricity produced from coal-fired power plants reached 88.05 billion kWh, up 35% over the same period in 2018

- Electricity produced from gas power plants reached 36.98 billion kWh, equal to the same period in 2018
- Renewable energy reached 3.51 billion kWh, accounting for 1.54% of total system output.

However, the ONI from June to August 2019 was 0.3 and the neutral state is expected to maintain by 2020 (possibility of 50%)

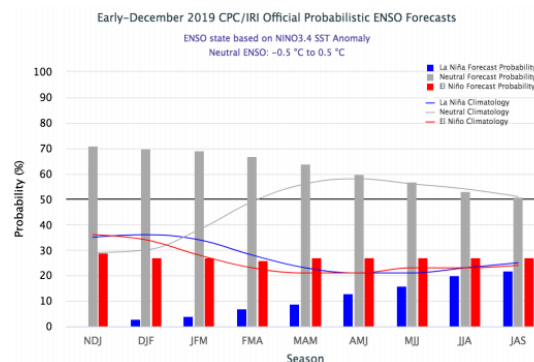
According to the NOAA, the *El Nino* ended when the ONI (Oceanic Nino Index – the main index used to observe the *El Nino* – *La Nina* phenomenon) from June to August 2019 decreased from 0.5 – the level when the *El Nino* happens to 0.3 – a neutral state. The agency also expected the possibility of the stable state maintained until mid-2020 at over 50%. Accordingly, hydropower plants would escape the water shortage caused by *El Nino* and increase electricity generation, reducing the electricity prices in the competitive market and eliminating pressure on thermal plants.

Fig 5. NOAA – Annual ONI



Source: NOAA, KB Securities Vietnam

Fig 6. NOAA – Possibility of weather phenomenon



Source: NOAA, KB Securities Vietnam

II. Operation and valuation of listed companies

1. Debts of power plants are decreasing quickly

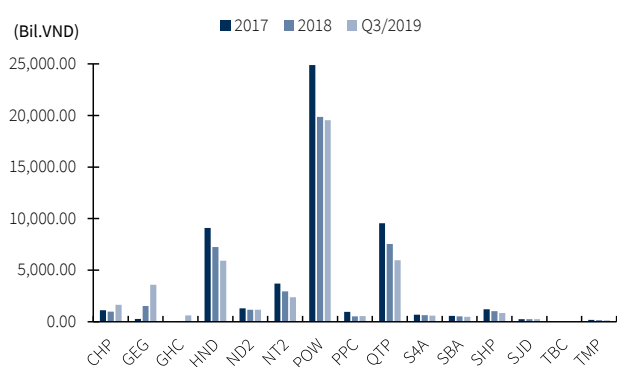
The common feature of most power generators is that they require a large amount of initial capital to invest in fixed assets, 70% of which is borrowed from domestic or foreign banks. With such a capital structure, most of the power plants will suffer losses in the first years of operation due to high interest expenses, business results will be gradually improved as the principal debt balance decreases over the years. This can be seen in some typical companies like PVPower (POW: HOSE), PV Power Nhon Trach 2 (NT2: HOSE), Pha Lai Thermal Power (PPC: HOSE), Hai Phong Thermal Power (HND: UPCOM), and Quang Ninh Thermal Power (QTP: UPCOM). After all debts and interest expenses are paid off, the remaining cash flows into the company will be very large and help it to increase dividend payout ratios.

According to our calculations, the total principal balance of some listed power companies will plunge to VND 36.56 trillion by the end of 2019 and VND 24.25

billion by the end of 2020 vs VND 44.44 trillion by the end of 2018.

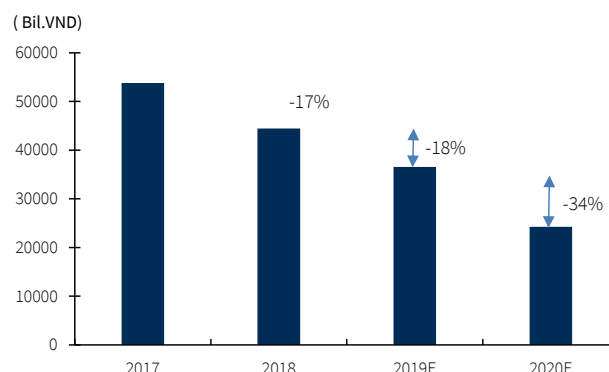
In addition, some businesses will reduce depreciated expenses or and foreign exchange losses, which will considerably help to improve the company's performance.

Fig 7. Vietnam listed power companies – Principal loans



Source: FiinPro, KB Securities Vietnam

Fig 8. Vietnam listed power companies – Principal loan growth

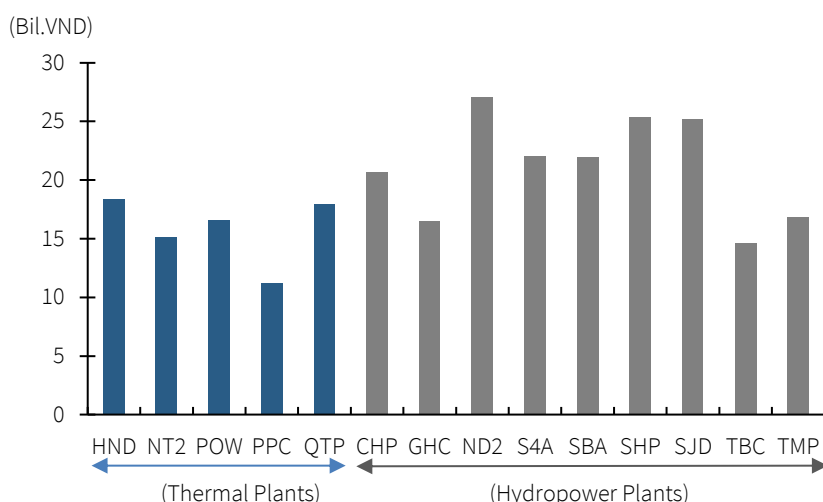


Source: FiinPro, KB Securities Vietnam

2. Operation efficiency

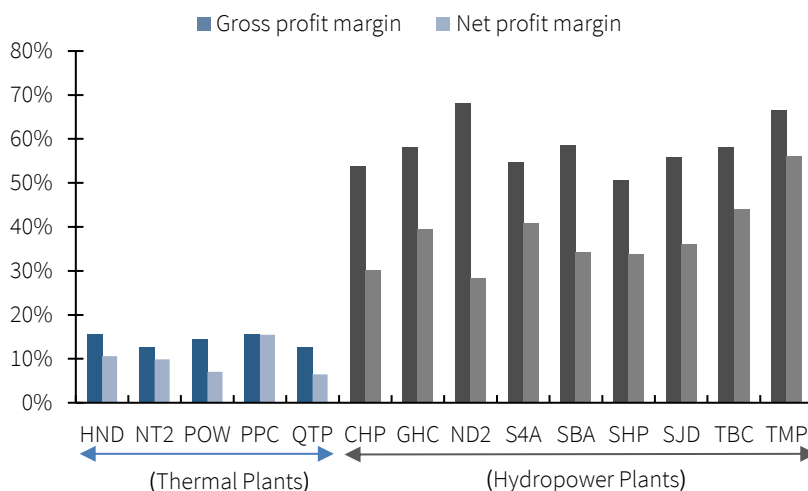
The investment unit cost (IUC) of power plants changed drastically as it depends on many factors such as equipment and material prices, exchange rates, and location of the plant. In general, the IUC of hydro and thermal plants is increasing, while declining for renewable power plants. At present, the current average IUC in a power plant is about VND 30–35 billion per MW.

Fig 9. Vietnam – IUC of listed power companies



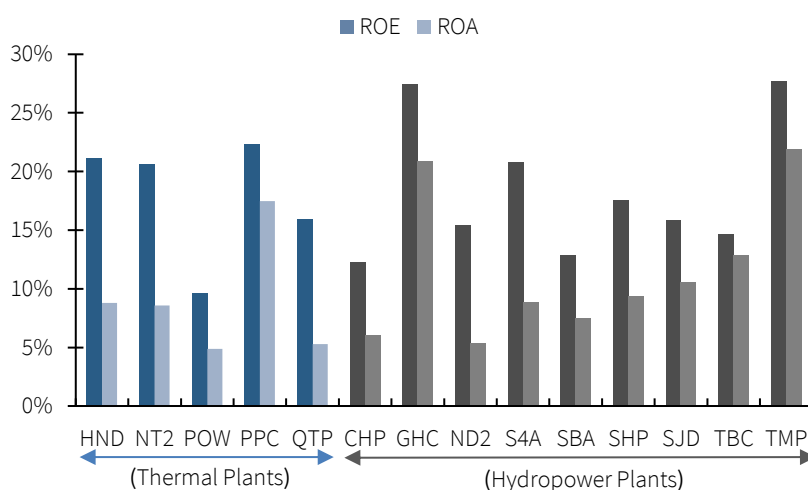
Source: FiinPro, KB Securities Vietnam

Hydropower plants often have very high gross and net profit margins, much higher than thermal power companies, because the cost of goods sold of hydropower plants does not include the cost of raw materials as in thermal power plants. Currently, gross and net profit margins of hydro plants are 58% and 38% vs 14% and 10% in thermal power plants.

Fig 10. Vietnam – Gross and net profit margin of power plants in the last 4 quarters


Source: FiinPro, KB Securities Vietnam

Hydro plants also have higher ROE and ROA than thermal power plants. Specifically, hydro plants have average ROE and ROA of 20% and 13.5%, vs 16.1% and 7.6% of thermal power plants. The average ROE and ROA of power generators in Vietnam are quite high, reaching 18% and 11.1% on average compared to their regional peers with average ROE and ROA of 10.03% and 3.64%, respectively.

Fig 11. Vietnam – ROE & ROA of listed power companies in the last 4 quarters


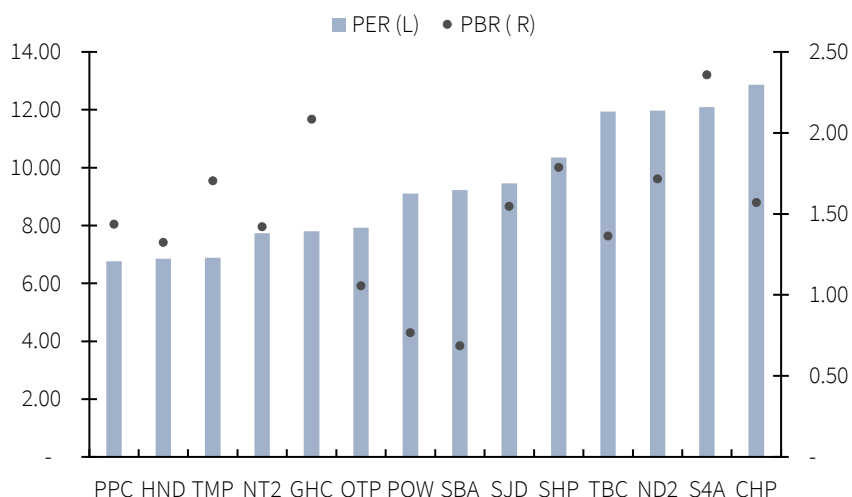
Source: FiinPro, KB Securities Vietnam

3. Valuation

Vietnamese power generators have relatively low P/E valuation compared to other companies in the region. Specifically, the average P/E of Vietnam businesses is 9.35 times, much lower than the P/E of 14.7 times of other businesses in the region. Meanwhile, P/B of Vietnam power plants is about 1.49 times, a bit higher than the regional P/B valuation of 1.33 times. This can be

explained by the fact that the ROE of Vietnamese power producers is higher than that of other enterprises in the region.

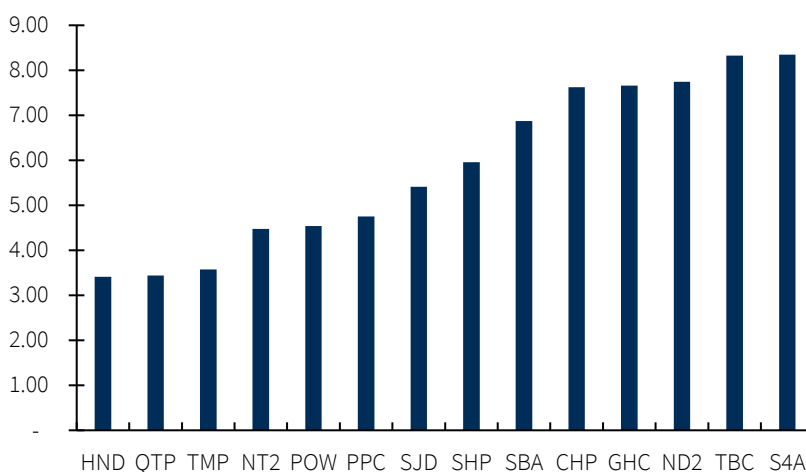
Fig 12. Vietnam – P/E & P/B of listed power companies



Source: FiinPro, KB Securities Vietnam

According to the EV/EBITDA valuation method, the average EV / EBITDA of some Vietnamese power plants is 5.87 times, slightly lower than that of regional peers of 6.13 times.

Fig 13. Vietnam – EV/EBITDA of listed power companies



Source: FiinPro, KB Securities Vietnam

III. Risks

The domestic supply of input materials – coal and gas has declined due to the increasing demand of power plants and more difficult conditions for exploitation

1. Risk of supply of raw materials for thermal power plants

For thermal power plants, the supply of input materials such as coal and gas is very important as this will strongly affect the safe operation and generation plan of both power plants and the National Load Dispatch Center (A0).

Gas supplies of gas power plants in Vietnam are taken from offshore gas fields in Cuu Long, Nam Con Son and Malay – Tho Chu basins. After many years of exploitation, the reserves of near-shore gas fields have been falling, especially in the Cuu Long and Nam Con Son basins. Although there are many new gas fields such as the Sao Vang – Dai Nguyet about to be acquired to ensure sufficient gas output, these newly-acquired fields are farther from shore, and difficult to exploit, leading to more expensive transportation costs and more frequent incidents during gas transportation. On March 27, 2018, a gas compressor of Block 06.1 had a serious technical problem, so the total gas supply for all Southeastern gas power plants decreased from 21 million Sm³ per day to 18.5 million Sm³ per day. The problem was solved later on June 5, 2018, but the supply of gas could not fully recover and was only about 19.5 Sm³ per day.

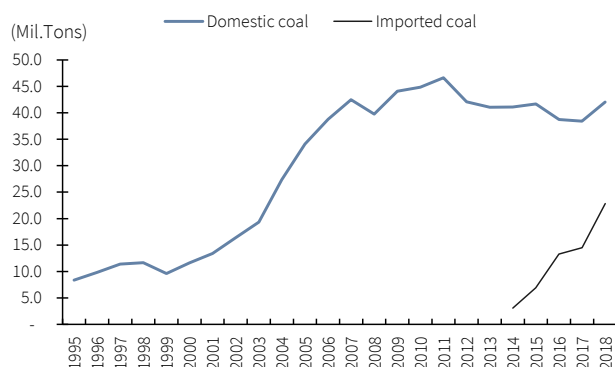
The PDP 7 proposed a plant to import liquefied natural gas (LNG) to offset the current gas shortage and to serve the development of gas power in the future. On June 24, 2019, PV Gas signed an Engineering, procurement and construction contract (EPC) for LNG Thi Vai storage project with a joint venture of Samsung C&T –PTSC contractor. The project is expected to complete phase 1 with a capacity of 1 million tons of LNG per year by 2022 and 3 million tons of LNG per year by 2023.

Coal supplies of coal-fired power plants in Vietnam are provided by the Vietnam National Coal and Mineral Industries Group (Vinacomin) and Dong Bac Corporation. However, Vietnam's coal reserves are declining, making it difficult to exploit due to deeper exploitation into the ground. Mining coal output decreased from 46.6 million tons in 2011 to 38.4 million tons in 2017 and increased again to 42 million tons in 2018. By the end of 2018 – early 2019, strong effects from *El Nino* and surging number of coal-fired power plants led to a sharp increase in coal demand, while domestic coal does not meet the demand. This heavily affected the operation of thermal power plants, some of which even had to close temporarily. Currently, coal shortages are still existing, but not as serious as in the period of late-2018 – early 2019.

The PDP 7 emphasized the importance of coal power in raising the whole system capacity in 2020–2030, so domestic demand for coal is still growing rapidly. The Ministry of Industry and Trade assigned Vinacomin to import and distribute coal to thermal power plants. Many plants asked to proactively

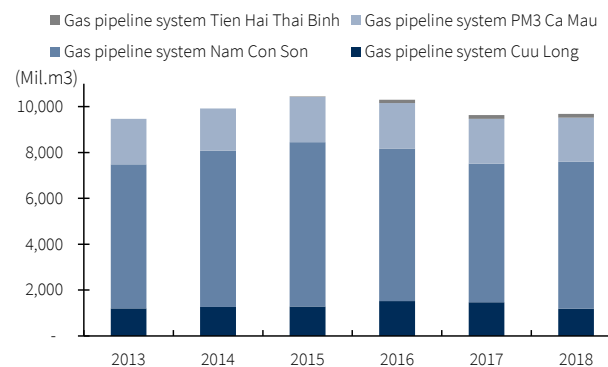
import coal, but have not been approved as the Ministry is concerned that high import coal prices may result in higher power production costs.

Fig 14. Vietnam – domestic consumption and imported coal



Source: Vietnam General Statistic Office, KB Securities Vietnam

Fig 8. Vietnam – Annual gas output



Source: PV Gas, KB Securities Vietnam

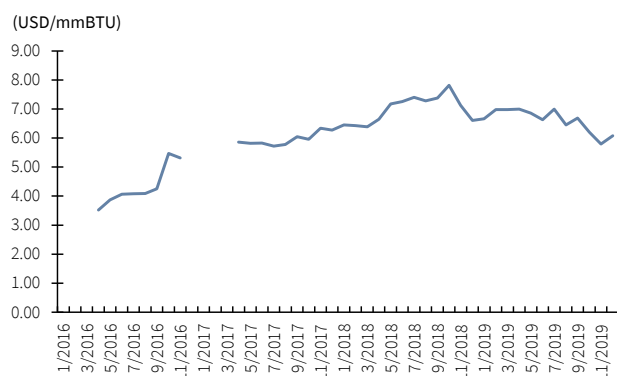
2. Risk of input material prices to thermal power plants

In addition to the risks of raw material shortage, the prices of input materials are also a big risk, affecting the competitiveness of power plants. In the case of higher coal or gas prices, the costs of generation in coal or gas power plants will also increase, which will directly reduce the competitiveness of power plants on the competitive power generation market, and indirectly affect power purchase agreement.

Currently, the prices of gas sold to power plants are partly based on the MFO price (the average monthly fuel oil price in Singapore market according to the Platt's magazine), so the gas prices will be correlated with the oil prices. For coal fuels, due to the shortage of domestic coal, Vinacomin and Dong Bac Corporation have to import coal from other countries. Therefore, the movement of coal prices on the international market will also have an impact on the input coal prices of power plants.

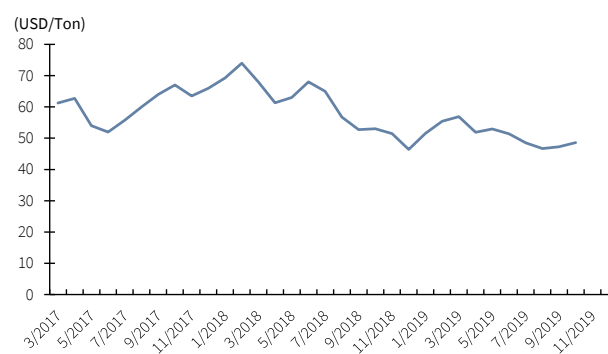
Currently, due to the provisions of the International Maritime Association (IMO) that all ships must use maritime fuel with a maximum sulfur content of 0.5% from January 1, 2020, vs the current limit of 3.5%. With consumption of 80% – 90% of fuel oils for shipping, the prices of high sulfur fuel oils (3.5%) was forecast to drop sharply, which will benefit gas thermal power plants.

Fig 16. Vietnam Southeastern – gas prices



Source: Nhon Trach 2, KB Securities Vietnam

Fig 17. Vietnam – FOB Kalimantan 5,000 GAR coal prices



Source: PV Power, KB Securities Vietnam

3. Risk of input material prices to thermal power plants

Currently in Vietnam, EVN is the monopoly to buy electricity from all generators and then distributes it to customers. Therefore, in the power trading relationship between EVN and power plants, EVN always has stronger negotiation power. It is possible for EVN and power plants to agree on a contractual electricity price in a PPA signed earlier. The incident happened to the Pha Lai, Ca Mau 1 & 2, and Nhon Trach 2 thermal power plants, which has greatly affected the business results of these plants.

III. Recommended tickers

We recommend to buy PV Power Nhon Trach 2 (NT2: HOSE) and Hai Phong Thermal Power (HND: UPCOM) shares with the potential of 33.4% and 15.3%, respectively. These are two power plants with high operation efficiency, large capitalization and good liquidity, which are suitable for both individual and institutional investors.



Hai Phong Thermal (HND)

Healthy financial status, effective operations

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February 10, 2020

HND is one of the largest coal power plants in Vietnam

Hai Phong Thermal Power (HND: Upcom) is one of the largest coal-fired power plants in Vietnam with a capacity of 1,200 MW and a commercial electricity output of 6.3 billion kWh per year.

2020 highly mobilized power output amid nationwide power shortage

Some large coal power plants were behind schedule amid surging demand for electricity led to the local shortage of electricity. Accordingly, HND was acquired to produce a high power output of 7.8 billion kWh in 2020 to solve the shortage.

Annual FCFE should reach VND1000 billion in the next three years, and rise to VND3000 billion after all debts are paid off

HND pays VND1,800 billion loan principal each year, which reduces VND100 billion financial expenses for the next years, and improves overall performance. Our calculations show HND's annual cash from operations from 2019 is about VND2800 billion, VND1800 billion of which is to pay loans, and VND1,000 billion left is free cash flow of equity. So HND should pay off all debts in the next three years, and its free cash flow should increase VND3000 billion annually.

Risks

1) Bearish results vs 2019 as no earnings surprise will be recorded from exchange difference, which may affect short-term stock prices; 2) Rainy weather; and 3) Risk of disruption of raw material supply.

Buy

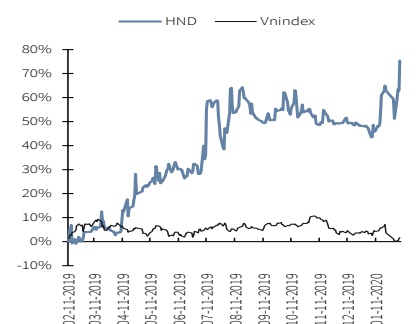
Target price	VND22,010
Upside/Downside (%)	33.4%
Current price (VND)	16,500
Market cap (VNDbn)	7,450

Trading data	
Number of outstanding shares	500,000,000
10-day avg trading volume	154,121
% foreign ownership	0%

Share price performance				
(%)	1M	3M	6M	12M
HND	17.4%	15.0%	7.2%	75.4%
VNindex	-2.4%	-8.1%	-2.6%	1.6%

Forecast earnings & valuation

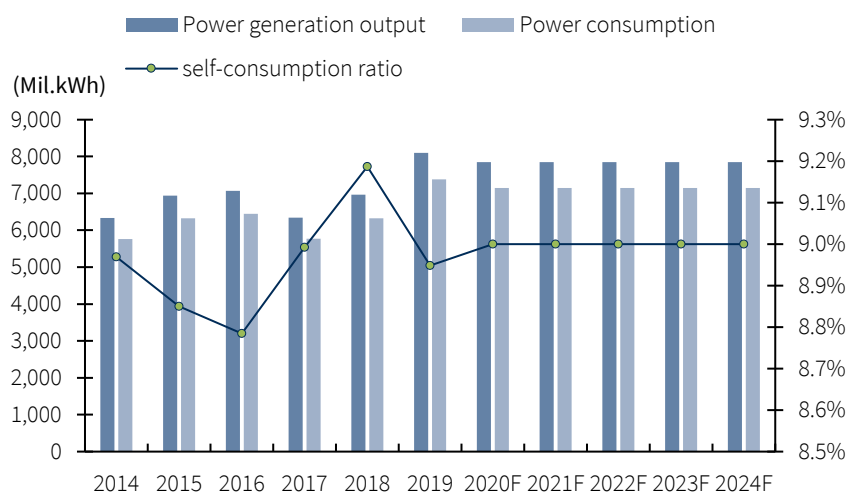
	2018A	2019A	2020F	2021F
Net sales (VNDbn)	9,527	11,301	10,781	10,781
Revenue growth (%)	4.7%	18.6%	-4.6%	0.0%
Gross profit (VNDbn)	1,592	1,777	1,467	1,457
Gross profit margin	16.7%	15.7%	13.6%	13.5%
Net profit (VNDbn)	425	1,203	966	1,077
Net profit margin (%)	4.5%	10.6%	9.0%	10.0%
EPS (VND)	850	2,406	1,932	2,155
P/E (x)	17.5	6.2	7.7	6.9
P.B (x)	1.3	1.2	1.2	1.2
Dividend yield (%)	2%	7%	13%	15%



Source: FiinPro, KB Securities Vietnam

Fig 18. HND - Power output

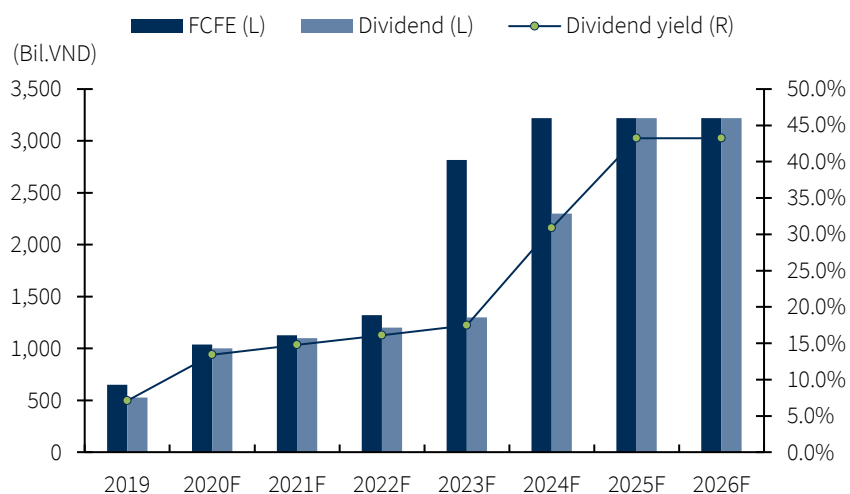
We forecast HND’s production output should continue to remain high over the next five years based on power shortage and basically solved raw material shortage issues



Source: HND, KB Securities Vietnam

Fig 19. HND - FCFE & dividend yield

We forecast the annual free cash flow from 2020 to 2022 will be stable at around VND1,100 billion, then increase to VND3,000 billion from 2023. However, in 2023 and 2024, the company can only pay dividends of VND1,300 and VND2,300 billion respectively, because the retained earnings to pay dividends has run out. By 2025, after the company has fully depreciated its machine and equipment, its performance would be strongly improved and equal to the free cash flow, the dividend cash flow may reach more than VND3,000 billion per year



Source: HND, KB Securities Vietnam

Table 20. HND – Business performance & financial indexes

Income statement					Balance sheet				
(VNDbn)	2017A	2018A	2019A	2020F	(VNDbn)	2017A	2018A	2019A	2020F
(Reporting standard)	VN GAAP	VN GAAP	VN GAAP	VN GAAP	(Reporting standard)	VN GAAP	VN GAAP	VN GAAP	VN GAAP
Net sales	9,095	9,527	11,301	11,349	Total assets	15,155	13,769	12,664	11,329
Cost of sales	7,389	7,935	9,545	9,571	Current assets	2,557	3,021	3,655	4,106
Gross profit	1,706	1,592	1,756	1,778	Cash & equivalents	23	692	779	1,229
Financial income	24	24	34	44	ST investments	0	0	0	0
Financial expenses	1,158	997	397	310	Receivables & others	1,818	1,972	2,279	2,279
of which: interest expenses	611	504	383	272	Inventories	716	356	598	598
Gain/(loss) from joint ventures	-	-	-	-	Long-term assets	12,597	10,748	9,008	7,223
Selling expenses	-	-	-	-	LT trade receivables & others	268	252	217	217
General & admin expenses	158	169	153	157	Fixed assets & inv properties	12,186	10,328	8,560	6,774
Operating profit/(loss)	414	450	1,240	1,354	LT incomplete assets	143	168	231	231
Other incomes	10	3	7	7	LT investments	1	1	1	1
Other expenses	3	4	5	5	Goodwill	0	0	0	0
Net other income/(expenses)	6	(1)	2	2	Total liabilities	9,969	8,077	6,464	4,619
Pretax profit/(loss)	420	449	1,242	1,357	Current liabilities	2,769	2,687	2,937	2,852
Income tax	24	24	70	76	Trade payables & others	819	777	1,039	1,036
Net profit/(loss)	396	425	1,173	1,281	Advances & unrealized sales	0	0	0	0
Minority interest	-	-	-	-	Short-term borrowings	1,903	1,861	1,870	1,815
Net profit attributable to shrdrs	396	425	1,173	1,281	Long-term liabilities	7,200	5,391	3,527	1,767
					LT trade payables	0	0	0	0
					LT customer advances	0	0	0	0
					Unrealized revenue	0	0	0	0
					Long-term borrowings	7,200	5,391	3,527	1,767
					Owners' equity	5,186	5,692	6,199	6,710
					Paid-in capital	5,000	5,000	5,000	5,000
					Share premium	197	197	197	197
					Undistributed earnings	246	432	939	1,450
					Reserves & other adj	(257)	64	63	63
					Minority interests	0	0	0	0
Operating statistics	2017A	2018A	2019A	2020F	Key ratios	2017A	2018A	2019A	2020F
(%)					(x, % VND)				
Gross profit margin	18.8%	16.7%	15.5%	15.7%	Multiples				
EBITDA margin	37.6%	34.4%	30.0%	30.0%	P/E	22.2	20.7	7.5	6.9
EBIT margin	17.0%	14.9%	14.2%	14.3%	P/E diluted	22.2	20.7	7.5	6.9
Pre-tax profit margin	4.6%	4.7%	11.0%	12.0%	P/B	1.7	1.5	1.4	1.3
Operating profit margin	4.5%	4.7%	11.0%	11.9%	P/S	1.0	0.9	0.8	0.8
Net profit margin	4.3%	4.5%	10.4%	11.3%	P/tangible book	1.7	1.5	1.4	1.3
					P/cash flow	49.3	7.6	12.3	2.9
					EV/EBITDA	5.2	4.7	4.0	3.3
					EV/EBIT	11.6	10.8	8.4	6.9
Cash flow statement	2017A	2018A	2019A	2020F	Operating performance				
(VNDbn)					ROE	8.0%	7.8%	19.7%	19.8%
Net profit/(loss) before tax	420	449	1,265	1,357	ROA	2.5%	2.9%	8.9%	10.7%
Depreciation & amortization	1,872	1,856	1,789	1,785	ROIC	9.9%	10.2%	13.1%	14.0%
Profit/(loss) from investing	611	504	383	272	Financial structure				
Interest expense	407	444	(20)	38	Cash ratio	0.8%	25.8%	26.5%	43.1%
Oper profit/(loss) before WC changes	3,309	3,252	3,418	3,452	Quick ratio	64.8%	97.7%	103.2%	144.0%
(Inc)/dec in receivables	(2,901)	(2,331)	(310)	0	Current ratio	92.4%	112.5%	124.4%	144.0%
(Inc)/dec in inventories	(120)	306	(257)	0	LT debt/equity	138.9%	94.7%	56.9%	26.3%
Inc/(dec) in payables	(47)	(14)	156	0	LT debt/total assets	47.5%	39.1%	27.9%	15.6%
(Inc)/dec in prepaid expenses	70	69	50	0	Debt/equity	175.5%	127.4%	87.1%	27.1%
Trading sec, int exp & taxes	(132)	(131)	(544)	(386)	Debt/total assets	60.1%	52.7%	42.6%	16.0%
Net oper cash inflows/(outflows)	179	1,151	2,513	3,066	ST liabilities/equity	53.4%	47.2%	47.4%	42.5%
Fixed & other LT assets	(44)	(11)	(69)	0	ST liabilities/total assets	18.3%	19.5%	23.2%	25.2%
Disposal of fixed assets	0	0	0	0	Total liabilities/equity	192.2%	141.9%	104.3%	68.8%
Loans granted & debt bought	0	0	0	0	Total liabilities/total assets	65.8%	58.7%	51.0%	40.8%
Loan collection & debt sales	0	0	0	0	Activity ratios				
Investments in other entities	0	0	0	0	Asset turnover	0.6	0.7	0.9	0.9
Divestment in other entities	7	0	0	0	Inventory turnover	11.2	14.8	20.0	16.0
Dividends & interest received	21	20	32	0	Account payables turnover	9.0	9.9	10.5	9.2
Net invest cash inflows/(outflows)	(16)	9	(37)	0					
Proceeds from issue of shares	0	0	0	0					
Payments for shrs/repurchases	0	0	0	0					
Proceeds from borrowings	2,047	1,505	1,074	0					
Repayment of borrowings	(2,416)	(1,813)	(2,936)	(1,815)					
Finance lease principal payments	0	0	0	0					
Dividends paid	(394)	(183)	(528)	(800)					
Interest, dividends & profits	0	0	0	0					
Net finance cash inflows/(outflows)	(763)	(491)	(2,390)	(2,615)					
Net inc in cash & equiv	(600)	669	86	451					
Cash & equiv (beginning)	624	23	692	779					
Cash & equiv (ending-net FX)	23	692	779	1,229					

Source: FiiPro, KB Securities Vietnam



PV Nhon Trach 2 (NT2)

A surge in cash flow for owner equity from 2020

February 11, 2020

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NT2 should pay off all debts and increase owner's equity sharply by 2021

PetroVietnam Power Nhon Trach 2 (NT2: HSX) is one of the largest and most modern gas power plants in Vietnam with annual cash flow from operations (CFO) of VND1,500 billion. The company spends VND1,200 billion to pay debts each year, and should own a large and stable cash flow after paying off all debts by 2021.

Newly-acquired Thien Ung & Sao Vang Dai Nguyet basins should cover the gas shortage in the Southeastern region

PVGas will acquire new gas fields such as Thien Ung and Sao Vang Dai Nguyet to offset the shortfall in gas production due to exhausted nearshore fields. By 2021, the Southeastern region's gas output should reach 21 million Sm³ per day vs the current daily output of 18 million Sm³.

Power shortage will help to increase the mobilized output

The national power output reached an annual average growth of 10.8% from 2013 to 2019, hit 209 billion kWh, and should maintain at 10% in the coming years. Currently, many thermal power plants are behind schedule set by the PDP 7, so NT2 would be mobilized with higher output target to offset the power shortage.

Risks

(1) Short-term earnings may decline due to decreasing power prices, and increasing input material prices; and (2) Unstable input gas supplies.

Buy

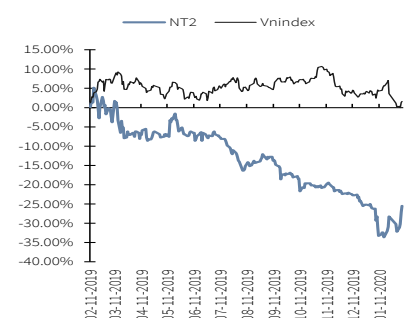
Target price	VND22,010
Upside/Downside (%)	15.3%
Current price (VND)	20,400
Market cap (VNDbn)	5,873

Trading data	
Number of outstanding shares	287,876,029
10-day avg trading volume	347,479
% foreign ownership	18.7%

Share price performance				
(%)	1M	3M	6M	12M
NT2	1.0%	-4.0%	-10.9%	-25.5%
VNindex	-2.4%	-8.1%	-2.6%	1.6%

Forecast earnings & valuation

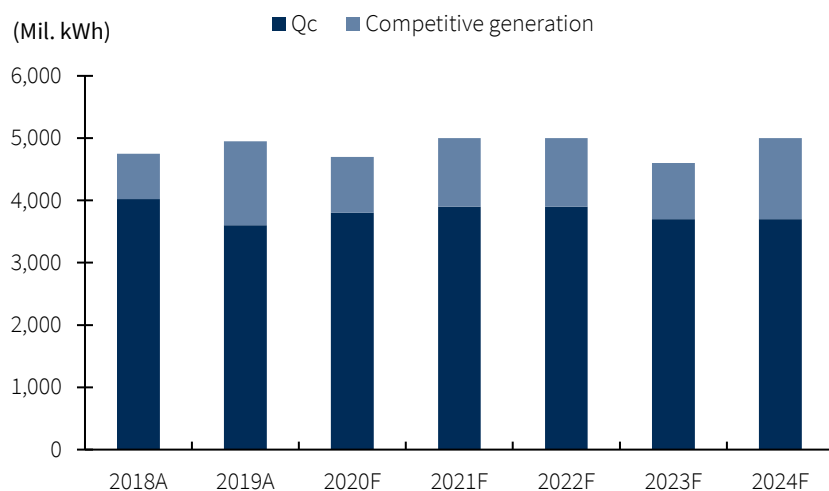
	2018A	2019A	2020F	2021F
Net sales (VNDbn)	7,670	7,654	7,453	8,262
Revenue growth (%)	13.4%	-0.2%	-2.6%	10.9%
Gross profit (VNDbn)	1,015	974	817	855
Gross profit margin	13.2%	12.7%	11.0%	10.3%
Net profit (VNDbn)	782	759	590	689
Net profit margin (%)	9.9%	7.9%	8.3%	8.4%
EPS (VND)	2,638	2,051	2,393	2,465
P/E (x)	7.5	7.7	9.9	8.5
P.B (x)	1.6	1.4	1.4	1.4
Dividend yield (%)	30.8%	4.4%	10.2%	10.2%



Source: FiinPro, KB Securities Vietnam

Fig 21. NT2 – Power output

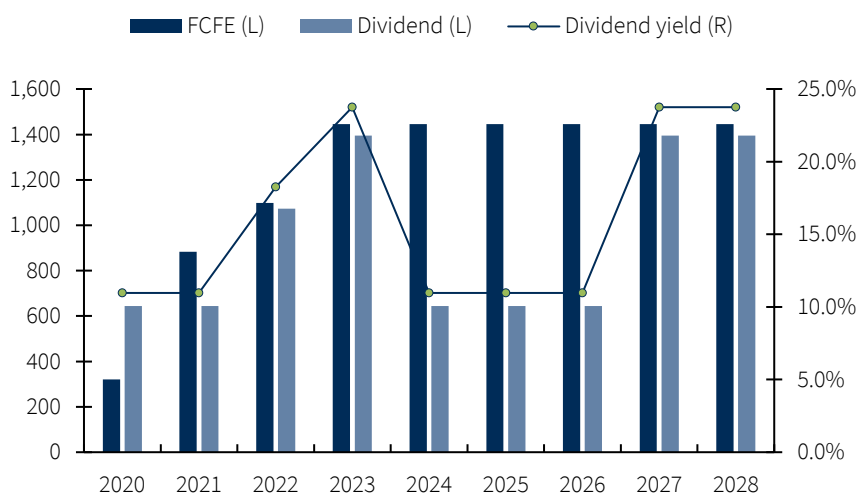
We forecast that the electricity output of NT2 may decrease slightly in 2020, as the company will temporarily stop operations for 20-day maintenance, and the gas output in Cuu Long basin will also decline. Specifically, the power consumption output will lose 250 million kWh vs 4,700 million kWh in 2019.



Source: NT2, KB Securities Vietnam

Fig 22. NT2 – FCFE & dividend yield

We forecast that the free cash flow from 2020 to 2023 will gradually increase from VND400 billion to VND1,400 billion, and maintain at this level from 2023 as the company has gradually paid off its debts. However, from 2024 to 2026, it can only pay about VND600 billion dividends at max as the retained earnings to pay dividends has run out. By 2027, after the company has fully depreciated its machine and equipment, its performance would be strongly improved and equal to the free cash flow, the dividend cash flow may reach up to VND1,400 billion per year



Source: NT2, KB Securities Vietnam

Table 23. NT2 – Business performance & financial indexes

Income statement					Balance sheet				
(VNDbn)	2017A	2018A	2019A	2020F	(VNDbn)	2017A	2018A	2019A	2020F
(Reporting standard)	VN GAAP	VN GAAP	VN GAAP	VN GAAP	(Reporting standard)	VN GAAP	VN GAAP	VN GAAP	VN GAAP
Net sales	6,761	7,670	7,654	7,159	Total assets	9,964	8,852	7,564	6,458
Cost of sales	5,368	6,654	6,679	6,299	Current assets	3,101	2,847	2,416	2,072
Gross profit	1,393	1,015	974	860	Cash & equivalents	146	65	451	219
Financial income	63	73	48	28	ST investments	900	0	200	200
Financial expenses	490	192	168	137	Receivables & others	1,796	2,521	1,463	1,368
of which: interest expenses	120	105	88	56	Inventories	259	261	302	285
Gain/(loss) from joint ventures	-	-	-	-	Long-term assets	6,863	6,005	5,148	4,386
Selling expenses	-	-	-	-	LT trade receivables & others	612	440	270	202
General & admin expenses	114	101	87	89	Fixed assets & inv properties	6,247	5,562	4,876	4,183
Operating profit/(loss)	852	795	767	663	LT incomplete assets	4	3	1	0
Other incomes	1	31	39	-	LT investments	0	0	0	0
Other expenses	0	2	9	-	Goodwill	0	0	0	0
Net other income/(expenses)	1	29	30	-	Total liabilities	4,979	5,169	3,437	2,296
Pretax profit/(loss)	853	824	797	663	Current liabilities	2,284	3,572	2,944	2,296
Income tax	43	42	43	33	Trade payables & others	1,203	2,173	1,585	992
Net profit/(loss)	810	782	754	630	Advances & unrealized sales	0	0	0	0
Minority interest	-	-	-	-	Short-term borrowings	1,066	1,391	1,350	1,304
Net profit attributable to shrhdrs	810	782	754	630	Long-term liabilities	2,695	1,597	493	1
					LT trade payables	0	0	0	1
					LT customer advances	23	0	0	0
					Unrealized revenue	0	0	0	0
					Long-term borrowings	2,632	1,558	492	0
					Owners' equity	4,985	3,683	4,127	4,162
					Paid-in capital	2,879	2,879	2,879	2,879
					Share premium	0	0	0	0
					Undistributed earnings	1,970	668	1,111	1,146
					Reserves & other adj	137	137	137	137
					Minority interests	0	0	0	0
Operating statistics					Key ratios				
(%)	2017A	2018A	2019A	2020F	(x, % VND)	2017A	2018A	2019A	2020F
Gross profit margin	20.6%	13.2%	12.7%	12.0%	Multiples				
EBITDA margin	29.2%	20.7%	20.6%	20.5%	P/E	7.2	7.4	7.7	9.2
EBIT margin	18.9%	11.9%	11.6%	10.8%	P/E diluted	7.2	7.4	7.7	9.2
Pre-tax profit margin	12.6%	10.7%	10.4%	9.3%	P/B	1.2	1.6	1.4	1.4
Operating profit margin	12.6%	10.4%	10.0%	9.3%	P/S	0.9	0.8	0.8	0.8
Net profit margin	12.0%	10.2%	9.9%	8.8%	P/tangible book	1.2	1.6	1.4	1.4
					P/cash flow	3.3	3.8	3.0	4.1
					EV/EBITDA	4.8	5.5	4.6	4.7
					EV/EBIT	7.3	9.5	8.1	8.9
					Operating performance				
					ROE	16.4%	18.0%	19.3%	15.2%
					ROA	7.1%	8.3%	9.2%	9.0%
					ROIC	14.5%	11.5%	13.9%	11.0%
					Financial structure				
					Cash ratio	6.4%	1.8%	15.3%	9.5%
					Quick ratio	45.8%	1.8%	22.1%	18.3%
					Current ratio	135.8%	79.7%	82.1%	90.3%
					LT debt/equity	52.8%	42.3%	11.9%	0.0%
					LT debt/total assets	26.4%	17.6%	6.5%	0.0%
					Debt/equity	74.2%	80.1%	44.6%	31.3%
					Debt/total assets	37.1%	33.3%	24.4%	20.2%
					ST liabilities/equity	45.8%	97.0%	71.3%	55.2%
					ST liabilities/total assets	22.9%	40.4%	38.9%	35.6%
					Total liabilities/equity	99.9%	140.3%	83.3%	55.2%
					Total liabilities/total assets	50.0%	58.4%	45.4%	35.6%
					Activity ratios				
					Asset turnover	3.8	3.0	5.2	5.1
					Inventory turnover	21.5	25.6	23.7	21.5
					Account payables turnover	3.0	5.3	7.6	4.9

Source: FiiPro, KB Securities Vietnam

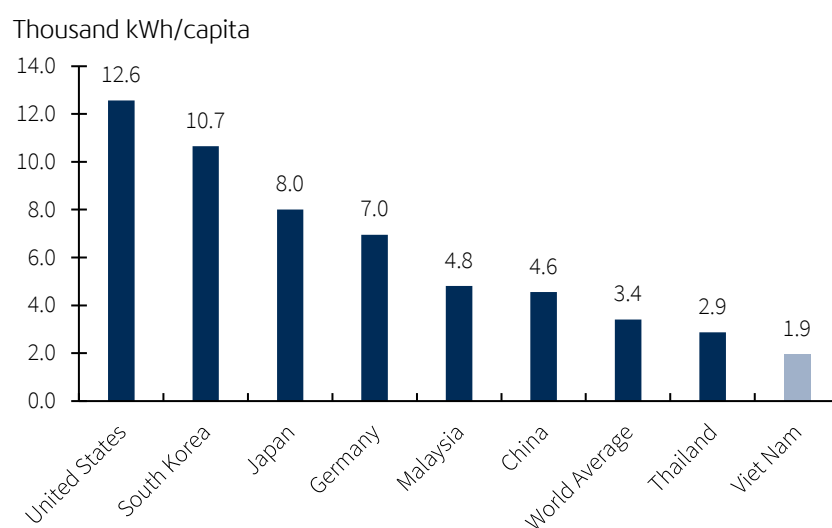
IV. Appendix

Vietnam's average power consumption per capita is still low compared to developed countries in the world

1. Overview of power market supply and demand

Vietnam's average electricity consumption per capita in 2017 reached 1.9 thousand kWh/person, which is still quite low compared to developed countries in the world such as the US with 12.6 thousand kWh/person and South Korea 10.7 thousand kWh/person, or other developing countries in Southeast Asia such as Malaysia 4.8 thousand kWh/person, Thailand 2.9 thousand kWh/person and the world average of 3.4 thousand kWh/person.

Fig 24. Vietnam – Power consumption per capita vs other countries

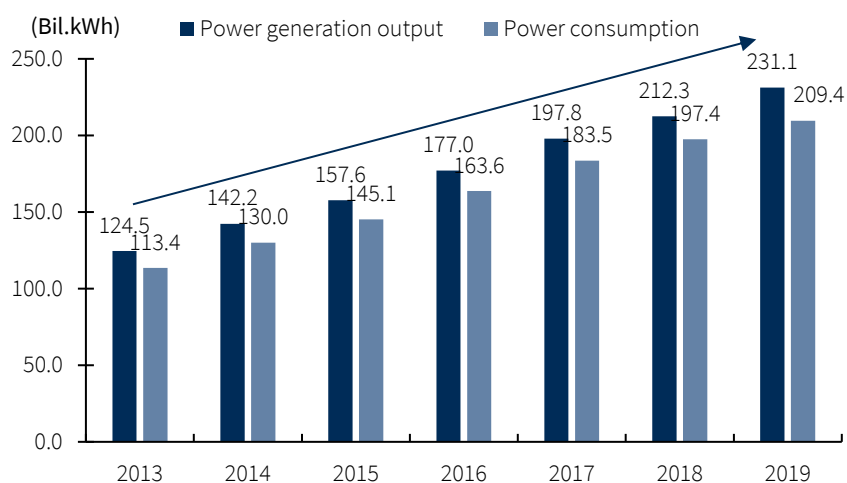


Source: EVN, KB Securities Vietnam

Electricity consumption in Vietnam grew at an average of 10.8% each year from 2013 to 2019

2019 total production was 231.1 billion kWh, up 8.86% YoY, the total consumption output reached 209.4 billion kWh, up 8.85% YoY. The average consumption growth from 2013 to the end of 2019 was 10.8%. The power loss rate on the grid also decreased from 8.87% in 2013 to 6.5% in 2019.

Fig 25. Vietnam – Annual power consumption

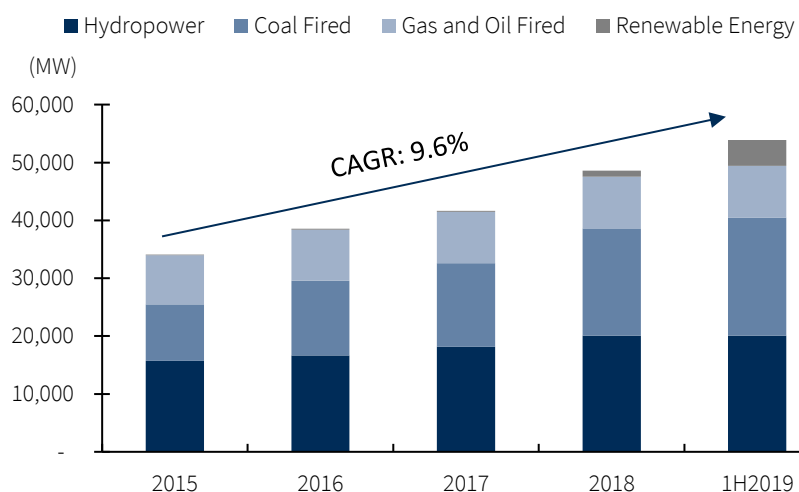


Source: EVN, KB Securities Vietnam

The total installed capacity increased by an average of 9.6% each year in 2015–2018

The addition of new power sources is extremely urgent because of the increasing electricity demand. As of June 30, 2019, the total generation capacity reached 53,913 MWG. Meanwhile, the capacity of hydro power plants accounted for 37%, coal thermal power 38%, gas thermal power accounts for 17%, and renewable power (solar, wind & biomass) 8.3% of the whole system capacity. Annual average capacity growth rate reached 9.6% in the period of 2015 – 2018.

Fig 26. Vietnam – Annual installed capacity

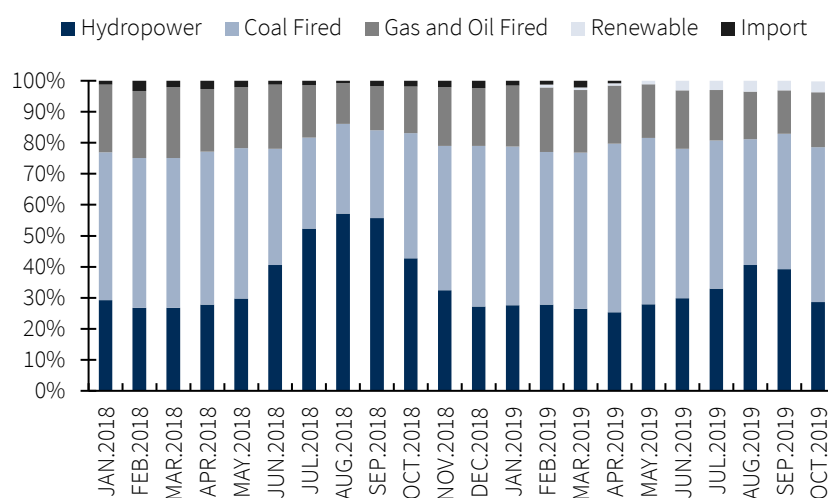


Source: EVN, KB Securities Vietnam

The electricity output generated from all types of power plants depends on the weather. In Vietnam, the rainy season starts from June and ends at the end of October, so hydro power plants work with the highest efficiency in this period. At the peak of the rainy season in August 2018, the electricity output of hydro power plants amounted to more than 50% of the whole system's output, coal

thermal power made up about 30%, electricity and gas and oil accounted for only 15%. In the dry season from December to May, the hydro plants' output only takes about 30% of the system output, while coal thermal power is 50% and gas thermal power is 20%.

Fig 27. Vietnam – Monthly power output varied by power plant types



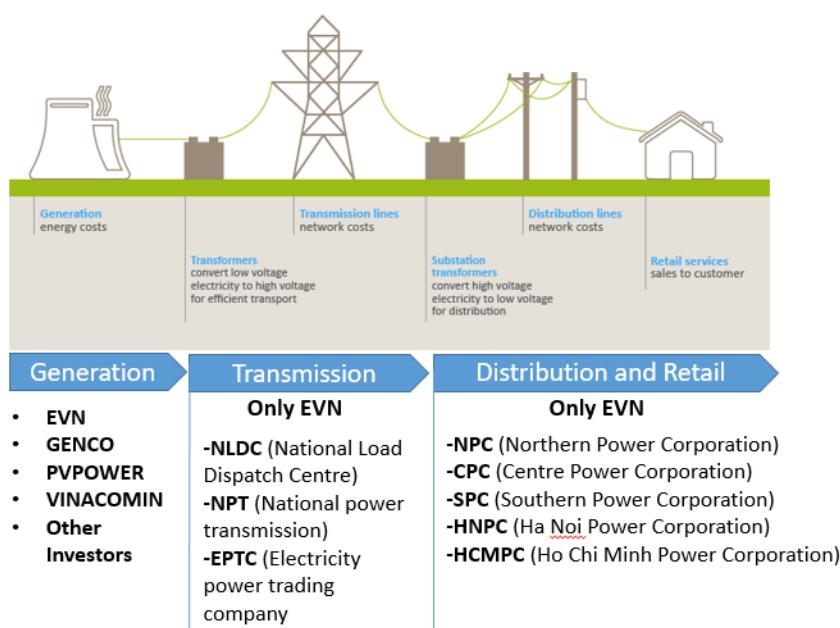
Source: EVN, KB Securities Vietnam

2. The value chain of power industry

The power industry value chain has three stages: Generation, transmission and distribution.

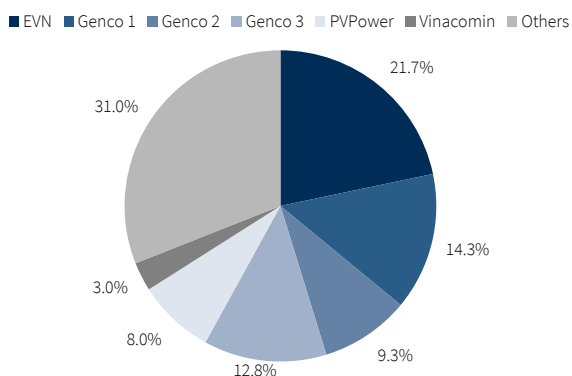
- **Generation:** Power plants generate power and transmit the power to the points connected with the national electricity grid. Power generation is the only stage that the Government allows the participation of other investors outside Vietnam Electricity (EVN). By the end of 2018, the total installed capacity of all EVN plants and member companies accounted for 58% of the total generated capacity of the system, other investors including PVPower (a member of PetroVietnam) with 8%, Vinacomim with 3% and others with 31% total system capacity.
- **Transmission:** EVN has three members directly joint in the operation of electricity transmission: National Power Transmission Corporation (NPT) to invest in transmission lines and ensure the safety of power transmission; National Load Dispatch Centre (NLDC) to operate the power transmission and distribution; and Electricity Power Trading Corporation (EPTC) to conduct wholesale trading and final settlement with power plants and power distributors.
- **Distribution:** EVN has five power distributors and retailers, including Northern Power Corporation, Central Power Corporation, Southern Power Corporation, Hanoi Power Corporation, and Ho Chi Minh City Power Corporation.

Fig 28. Vietnam – Value chain of the power industry



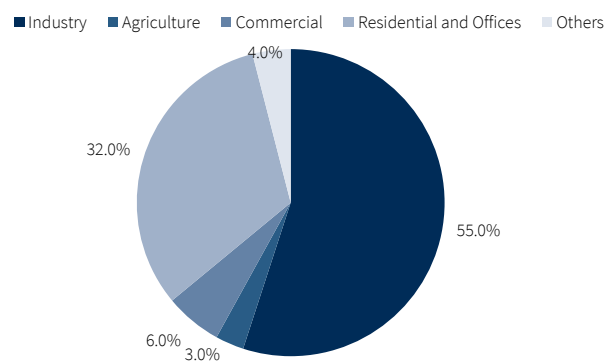
Source: EVN, KB Securities Vietnam

Fig 29. Vietnam – Installed capacity of some investors



Source: EVN, KB Securities Vietnam

Fig 30. Vietnam – Classification of electricity consumers



Source: EVN, KB Securities Vietnam

3. Overview of Vietnam power generation types

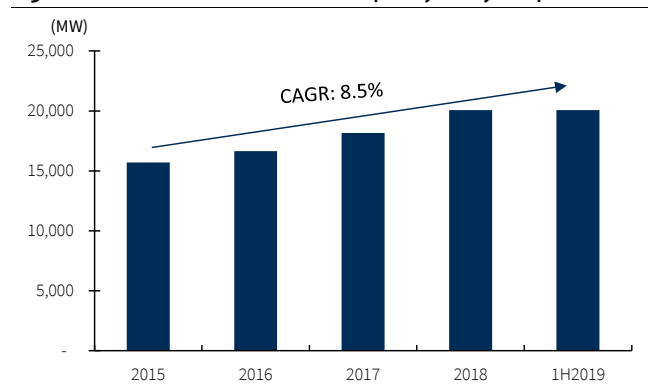
a) Hydroelectricity

Vietnam’s tropical and rainy weather brings huge benefits to hydro power plants. In addition, three-quarters of Vietnam area is mountainous terrain, which creates a 3100-meter height above the sea level and provides a large potential energy. That is also the reason why many Vietnam large hydropower plants are located in the Northwestern region and the Central Highlands, where rugged mountains lie.

According to EVN, the potential of the country's hydro power capacity is about 25,000–26,000 MW, equivalent to about 90–100 billion kWh of electricity per year. As of June 30, 2019, the total capacity of all Vietnam hydroelectric plants reached 20,000 MW (16,000 MW from 80 large and medium-sized plants), or 38% of the system capacity. Up to now, hydroelectric projects with capacity of over 100 MW have been almost fully exploited. Projects located in favorable locations with low IUC have also been implemented.

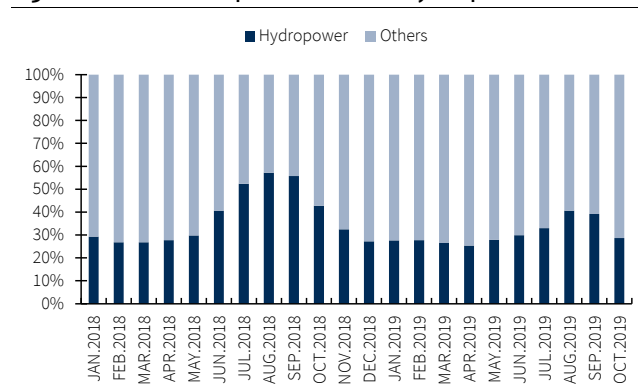
Power generation capacity of hydro power plants heavily depends on the amount of water resources. Therefore, the generation of hydroelectricity changes through seasons (the rainy season usually lasts from June to November) and weather patterns of the year (*El Nino - La Nina*). For example, in the rainy season of 2018, *La Nina* happened, the electricity output of hydro plants was up to more than 50% of the whole system output, but in the rainy season of 2019, the year has *El Nino* happened, the electricity output was down 25% vs 2018 and accounted for 40% of the system output.

Fig 31. Vietnam – Total installed capacity of hydro plants



Source: EVN, KB Securities Vietnam

Fig 32. Vietnam – Output structure of hydro plants



Source: EVN, KB Securities Vietnam

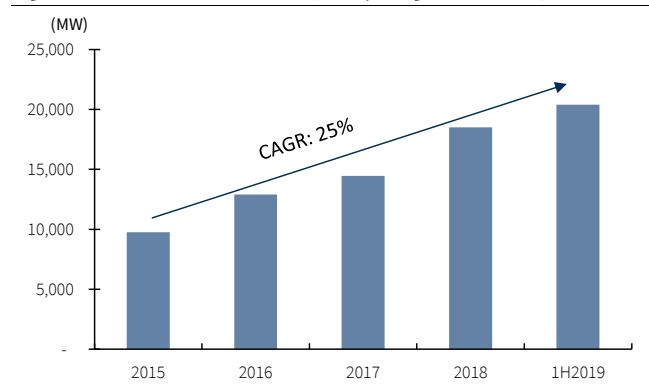
b) Coal-fired thermolectricity

As of June 30, 2019, the total capacity of Vietnam's coal thermal power plants reached about 20,300 MW, equal to 40% of the total capacity of the whole system. Most of Vietnam's coal power plants are located in the Northeast region, near major coal mines, and coastal areas in Central and Southern Vietnam to facilitate coal supply by ships.

The capacity of coal power plants also increased rapidly in the period of 2011 – 2019. In 2011, the total capacity of coal power plants was only 3,371MW but in 2019 it reached 20,300MW, the average rate of increase in capacity was 25% per year in the period of 2011 – 2019. However, the total capacity of coal power plants is still lower about 4,000 MW in 2020 compared to the adjusted PDP 7 due to the delay in some coal thermal power projects in the Southern region. Next time, coal power will still be a key electricity source for Vietnam. According to the adjusted PDP 7, the total installed capacity of coal power plants will reach 45,152 MW in 2025 and 55,252 MW in 2030, accounting for 49.3% and 42.6% of the total installed capacity of the whole system, respectively.

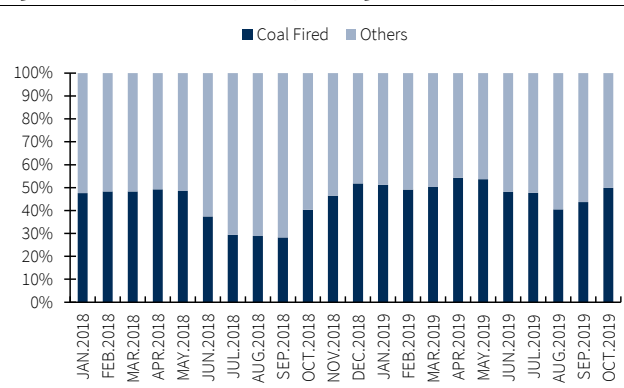
Currently, the domestic coal supply is shortage due to significantly increasing demand and difficult conditions for coal mining when it is required to dig deeper into the ground. The solution proposed by the Ministry of Industry and Trade is to use imported coal to cover the shortage of coal. However, the Ministry of Industry and Trade does not allow plants self-import coal and must import through two distributors – Vinacomin and Dong Bac Corporation.

Fig 33. Vietnam – Installed capacity of gas thermal plants



Source: EVN, KB Securities Vietnam

Fig 34. Vietnam – Power output of gas thermal plants



Source: EVN, KB Securities Vietnam

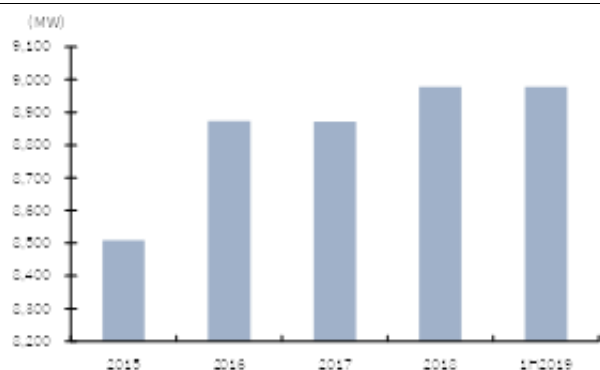
c) Gas-fired thermoelectricity

As of 30/06/2019, the total capacity of Vietnam's gas thermal power plants reached approximately 9,000 MW, equal to 17% of the total system capacity. Gas thermal power plants of Vietnam are located at Nhon Trach electricity center, Phu My electricity center and Ca Mau electricity center in the South. Plants are supplied by PetroVietnam Gas Corporation (PVGas) which transports gas from offshore gas fields in Cuu Long, Nam Con Son and Malay – Tho Chu basins to the mainland.

Currently, over 80% of gas production is supplied to power plants, 10% to fertilizer plants and 5% to serve other industrial customers. According to the adjusted PDP 7, the total installed capacity of gas power plants will reach 18,500 MW in 2025 and 21,700 MW in 2030, accounting for 19.1% and 16.8% of the total installed capacity of the whole system

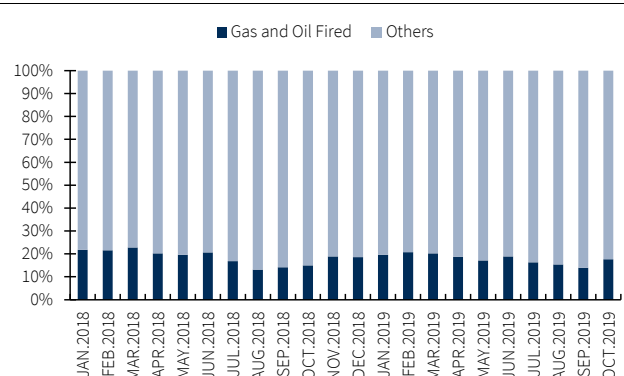
Gas supply for thermal power plants is also shortage due to declining reserves of nearshore gas fields, so PVGas must actively exploit offshore gas fields, which will increase transportation costs. The probability of incidents occurring during gas transportation is also higher, affecting the operation of thermal power plants. Another option being implemented is that the gas power plants will import LNG gas from abroad. The two new gas thermal power plants Nhon Trach 3 and Nhon Trach 4 will be the first gas power plants to use this gas source.

Fig 35. Vietnam – Total installed capacity of gas thermal plants



Source: EVN, KB Securities Vietnam

Fig 36. Vietnam – Output structure of gas thermal plants



Source: EVN, KB Securities Vietnam

d) Solar power

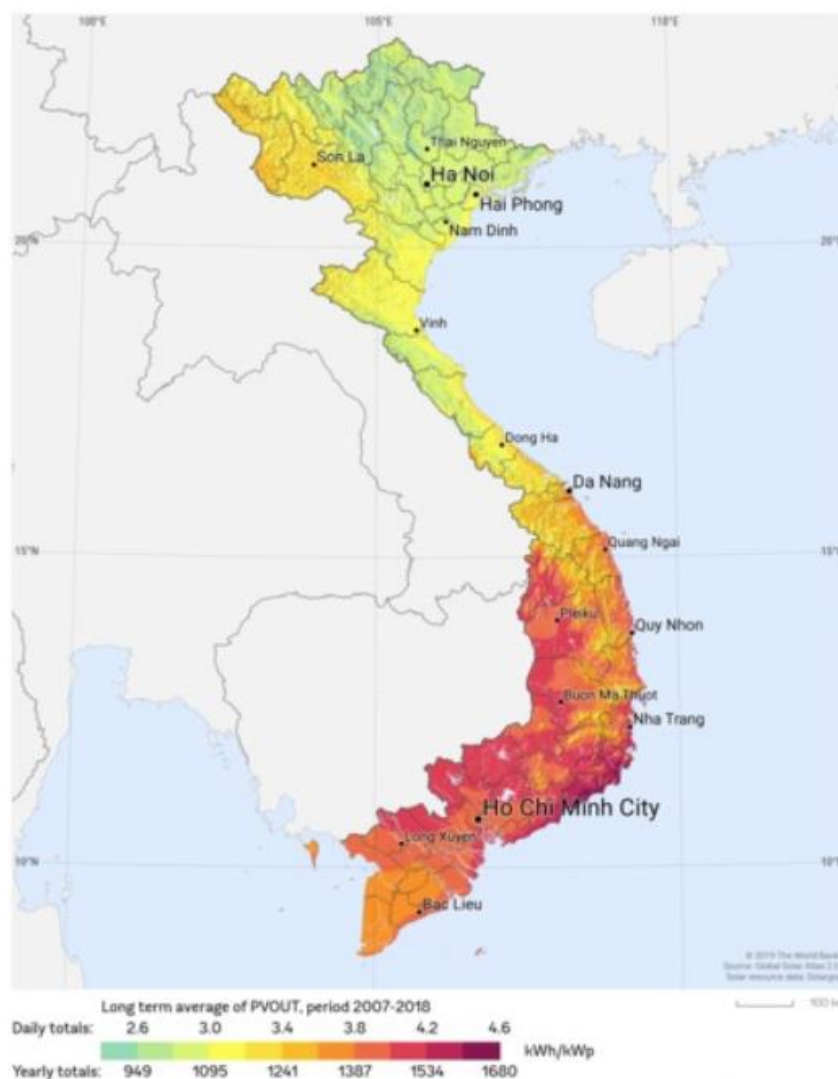
On November 14, 2017, the Prime Minister issued 11/2017/QĐ-TTg for encouraging the development of renewable energy sources such as solar and wind power. According to this decision, EVN buys electricity from solar power plants connected to the grid before June 30 2019 at 9.35 cents per kWh ~ VND 2,169 per kWh within 20 years. This is a favorable price because the prices of hydroelectric plants were only about VND 1,000 per kWh, coal thermal power plants were about VND 1,500 per kWh or gas thermal power plants were VND 1,600 VND per kWh. With the advantage of fast installation, low borrowing interest rate from domestic banks or international credit, the Prime Minister's decision has triggered a race to implement solar power projects before June 30 2019. Accumulated to June 30, 2019, a total of 82 solar power plants came into operation with a total capacity of 4,464 MW, accounting for 8.28% of the total installed capacity of Vietnam's electricity system. According to a recent report by the Ministry of Industry and Trade to the National Assembly, the number of projects waiting to be applied for planning is 260 projects with a total capacity of up to 28,300 MW.

Most of the solar power plants were completed before June 30, 2019 and were located on Ninh Thuan and Binh Thuan provinces, which have the highest amount of solar radiation in Vietnam, leading to the overload of the transmission grid in this area. Many plants are required to reduce their output by National Load Dispatch Centre (NLDC) to avoid causing problems to the transmission system. Some plants having to cut up to 69% of their capacity. Despite of the large capacity, solar power is often unstable and depends on the weather, making it difficult for NLDC to mobilize electricity. In fact, the total capacity of solar power plants accounts for nearly 10% of the total installed capacity of the whole system but the electricity generated by solar power only reaches 3% of the total system output.

According to the adjusted PDP 7, the total capacity of Vietnam's renewable energy sources in 2020 is 850 MW and 2030 is 1200 MW, but by June 30, 2019, the capacity of solar power plants has reached nearly 4,464 MW. Currently, the pricing mechanism for solar power plants completing after June 30, 2019 is still

incomplete and the Government could stop the fixed price for projects that haven't got PPA contracts and could not operation in 2020.

Fig 37. Vietnam – Potential map of solar resource



Source: EVN, KB Securities Vietnam

4. The mechanism of power generation and sale

Currently, power plants generate electricity under the control of National Load Dispatch Centre (EVN NLDC) and make/receive payment with Electricity Power Trading Corporation (EVN EPTC). Power plants trade with EVN through two mechanisms: Power purchase agreement and Cost based pool:

– **Power purchase agreement:** All power plants sign PPAs with EVN. The contract purchase prices are based on the principle that the purchase price will offset almost all expenses such as depreciation, interest, maintenance and raw material costs, and material transport costs to ensure project efficiency reach IRR of 12%. Basing on the forecast of the hydrological situation, the load demand, the price of input materials, and the ability of each plant, EVN NLDC (AO) will assign the monthly production targets for each plant in details.

– **Cost based pool:** After generating electricity as required by A0, power plants can increase electricity generation by buying electricity in the competitive electricity generation market. The payment price in the competitive electricity generation market is determined according to the auction mechanism. Power plants will send daily prices and output quotations to A0. After that, A0 will mobilize electricity from the plants with the prices ranging from low to high each region, until mobilizing enough expected electricity output for the next day. With such a bidding mechanism, plants with low production costs such as hydropower will benefit and the prices in the competitive power generation market will rise in the dry season and decrease in the rainy season. Currently, there are about 93 power plants joint in the competitive power generation market with a total installed capacity of 25,550 MW, accounting for 48% of the total installed capacity of the whole system. Electricity generation in the competitive power market is equal to about 20% of the system output.

5. Stages of electricity market

The Vietnam power market development roadmap will go through three levels:

– **Level 1 – Competitive power generation market:** EVN is the only focal point to buy electricity. The goal is to prioritize mobilizing low-cost power sources to help reduce costs. Power plants will send their offered prices to A0. A0 will announce the mobilized power output for each plant in the next day, based on the plants' offered prices, location and output. This level has been operated for seven years, since the end of 2019.

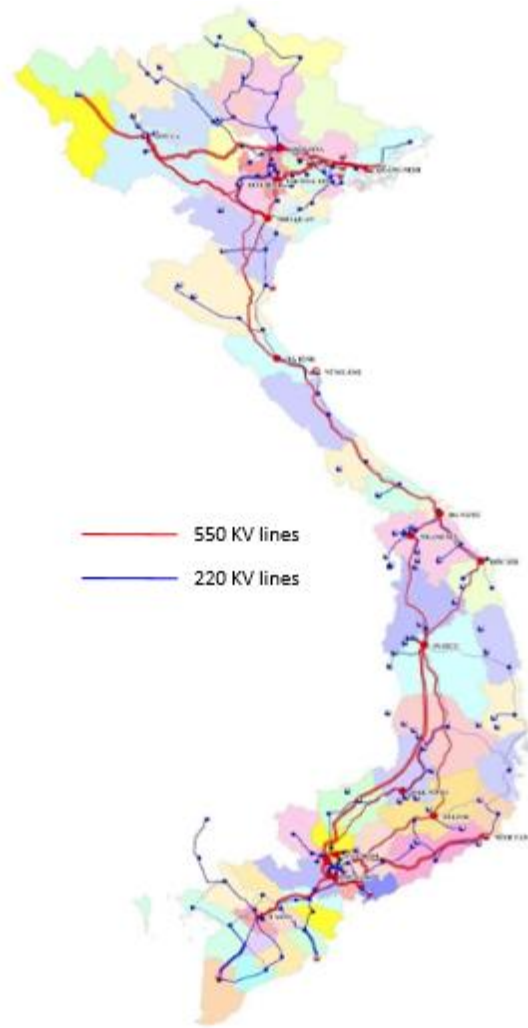
– **Level 2 – Competitive power wholesale market:** Besides EVN, other power corporations, or large electricity consumers can buy electricity directly from generators or in the electricity market. However, only five EVN members are wholesalers in the whole market. The phase of wholesale electricity market was piloted in early 2019 and is expected to be completed by 2023.

– **Level 3 – Competitive power retail market:** At this level, EVN will separate power distribution and retailing. Accordingly, retailers can buy electricity from wholesalers, directly from power plants or from the market. After that, retailers will sell power to consumers. The competitive power retail market is expected to start as soon as the power wholesale market is completed.

6. Developing stages of electricity market

Vietnam's power transmission and distribution system is exclusively managed by EVN NPT. By the end of 2018, Vietnam's power transmission and distribution system had 24,950km of lines (including 7,827 km of 550 kV lines and 17,122km of 220kV lines) and 153 transformer substations (including 30 TBA 500kV and 123 TBA 220kV). The percentage of households using electricity reached 99.05%. Currently, the size of Vietnam's transmission system ranked third among ASEAN countries and eighth among 24 Asian power transmission companies in terms of line length.

Fig 38. Vietnam – National electricity transmission system



Source: EVN, KB Securities Vietnam

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Investment Ratings for Stocks

(based on expectations for absolute price gains over the next 6 months)

Buy:	Hold:	Sell:
+15% or more	+15% to -15%	-15% or more

Investment Ratings for Sectors

(based on expectations for absolute price gains over the next 6 months)

Positive:	Neutral:	Negative:
Outperform the market	Perform in line with the market	Underperform the market

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