CHỨNG KHOÁN GUOTAI JUNAN (VIỆT NAM)
GUOTAI JUNAN SECURITIES (VIETNAM)

INDUSTRY OUTLOOK

ELECTRIC POWER 2025

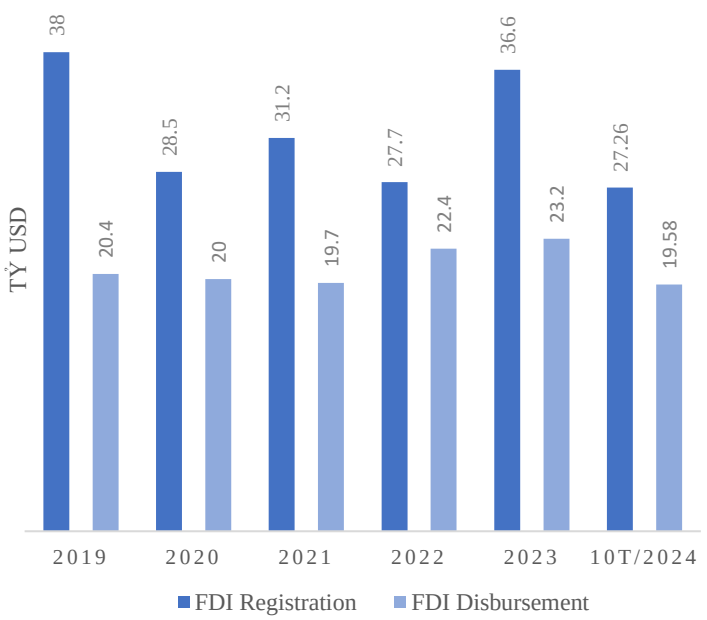
POSITIVE

Guotai Junan (VN) Research
Jan 09, 2024

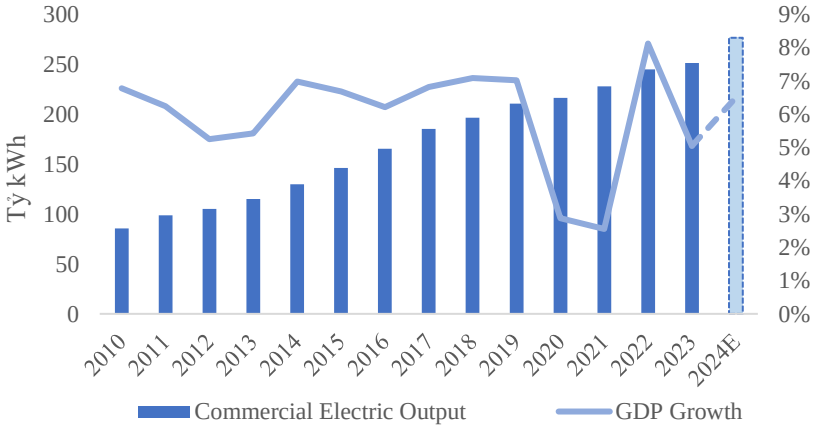
ELECTRICITY CONSUMPTION IS PREDICTED TO INCREASE GIVEN GROWING FDI INTO THE INDUSTRIAL PRODUCTION

- **We forecast the growth rate of electricity consumption in Vietnam to reach 12% based on the forecast of GDP growth rate at 6.5-7% in 2025**. Electricity consumption demand in Vietnam has grown rapidly for more than 30 years and has played an important role in the industrialization process. In particular, the two main groups of electricity consumers in Vietnam are the industrial production - construction group, accounting for 54% of consumption output and the household and civil group, accounting for 34% of consumption output. The compound growth rate (CAGR) of the industry in the period 2010 - 2023 is reaching a high figure of 9%, significantly higher than the average growth rate of 2.6% of the world in the same period and is also among the countries with the highest growth rate in the world. Currently, Vietnam has risen to become the country with the second largest electricity output in Southeast Asia and the 20th largest in the world.
- During the period 2020-2023, due to Covid-19 and economic recession, industrial electricity consumption growth has decreased significantly. However, after 10M2024, this index has clearly recovered due to the low base level and demonstrated the large demand for electricity consumption from the continuous opening and construction of industrial parks with the IIP index growing at an average of 8.7%/year.
- **On October 11, 2024, EVN decided to adjust the average retail electricity price to VND 2,103,116/kWh, an increase of 4.8% compared to the current level.** This comes from (1) the proportion of electricity use shifting in an unfavorable direction when thermal power (including coal-fired and oil-fired thermal power) is having input material costs, the proportion of electricity sources is increasing from 35.5% to 43.8%, (2) hydropower output at reservoirs has decreased sharply in 2023 due to El Nino weather and (3) high load demand forces EVN to buy input electricity at significantly higher production costs. We believe that increasing electricity prices can have a more positive impact on EVN's financial situation, ensuring cash flow to pay power plants as well as having room to mobilize from higher-priced electricity sources.

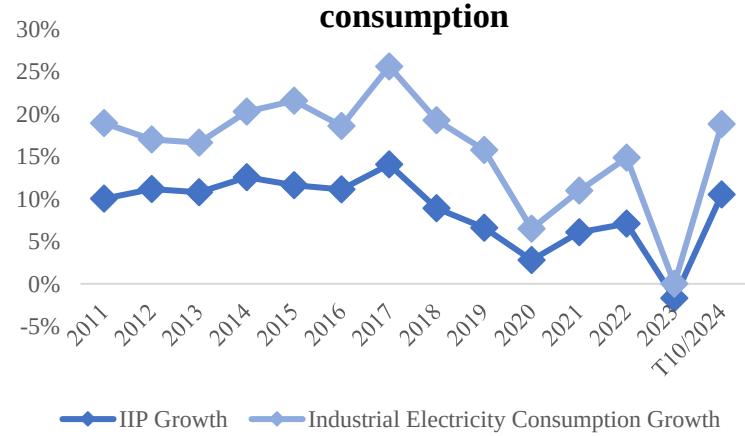
FDI capital flow developments



Commercial electricity output



IIP growth and industrial electricity consumption



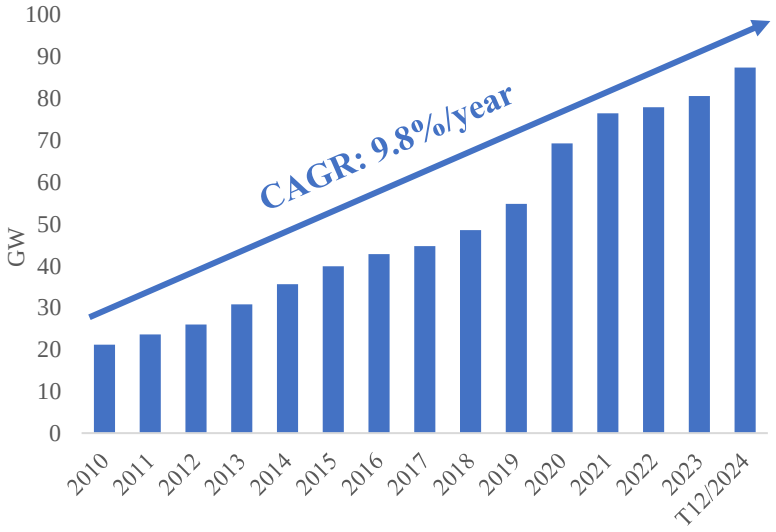
Average retail electricity price

Source: EVN, GSO, MOIT, GTJASVN Research

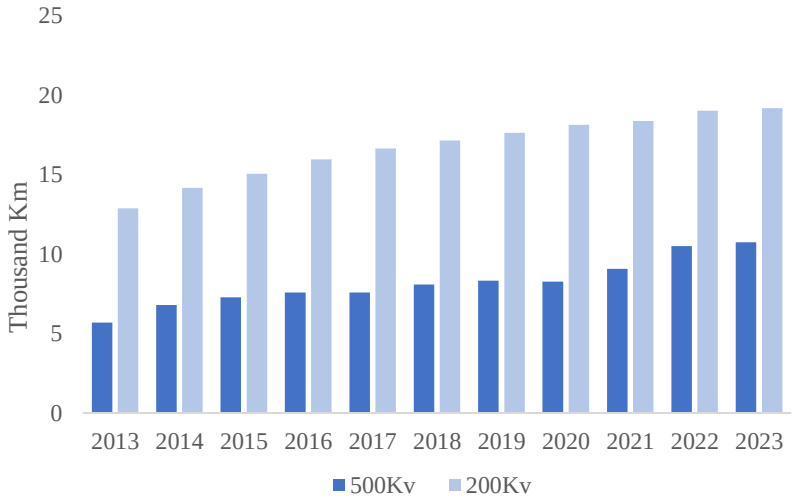
STATUS OF POWER PRODUCTION SCALE IN VIETNAM

- **The scale of electricity capacity development far exceeds the maximum load capacity of the entire system.** As of December 2024, the total capacity of Vietnam's power source scale reached 87,391 MW (+8% YoY) with a CAGR growth rate in the period 2010-2024 reaching about 9.8%/year, ranking first in Southeast Asia and 25th in the world. Although the total installed capacity of the power source system is quite high compared to the maximum load capacity demand (45,531 MW), the distribution of power sources and power reserves between regions is uneven, so there are still power outages, especially in the North.
- **Investing in expanding the large transmission grid ensures the development of renewable energy power supply.** Because renewable power centers are built in concentrated locations far from load centers (along sea routes and offshore) and the installation time of stations is faster than that of traditional power sources, new transmission lines need to be built in a short time to keep up with the progress, so these renewable power farms will need longer transmission lines. In August 2024, the National Power Transmission Corporation (EVNPT) accelerated the completion of the national key project of the 500kV Circuit 3 Quang Trach - Pho Noi line in less than 1 year (3-4 times faster than similar 500kV line projects), which partly demonstrates the Government's determination to ensure electricity supply and national energy security.
- **The Qc output ratio of traditional power plants still ensures large electricity exploitation output**. According to Circular 24/20219 of the Ministry of Industry and Trade, the ratio of electricity through the Contract (Qc) compared to the planned output ratio of NLDC announced is at 60-100%. Power plants need to negotiate with A0 annually on the α ratio applied to the annual exploited output. This ratio has been high in recent years at 70%-90%, and is especially important for thermal power plants when electricity prices increase, they can still maintain the output level sold according to the committed Qc contract.

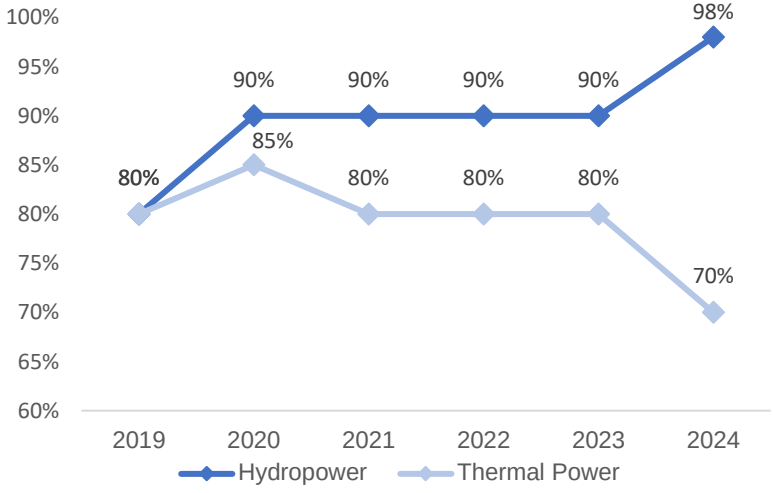
Power capacity in Vietnam



Transmission line length over the years



Annual Alpha Ratio



Source: EVN, EVNPT, ERAV

VALUE CHAIN OF VIETNAM ELECTRIC POWER INDUSTRY 2024

INPUT MATERIALS → **ELECTRICITY PRODUCTION** → **ELECTRICITY TRANSMISSION** → **DISTRIBUTION & RETAIL** → **CONSUMPTION STRUCTURE**

Coal

- TKV, TCT Đông Bắc
- Import Indonesia, Australia

Hydropower

Renewable Energy

Gas

- PV GAS
- Import Indonesia

Coal-fired thermal power (37.5%)

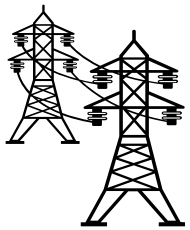
Hydropower (30.5%)

Renewable Energy (19.1%)

Gas-fired power (12.1%)

Transmission grid

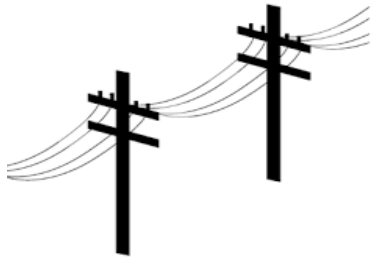
EVNNPT



Electric Market

- EVNNLDC
- EVNEPTC

Distribution network



5 Electricity Corporation

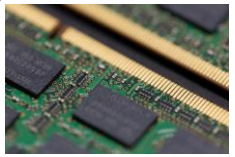
- EVNNPC
- EVNCPC
- EVNSPC
- EVNHANOI
- EVNHCMC

Industry, Construction (55%)

Household (34%)

Agriculture (4%)

Trade and services (4%)

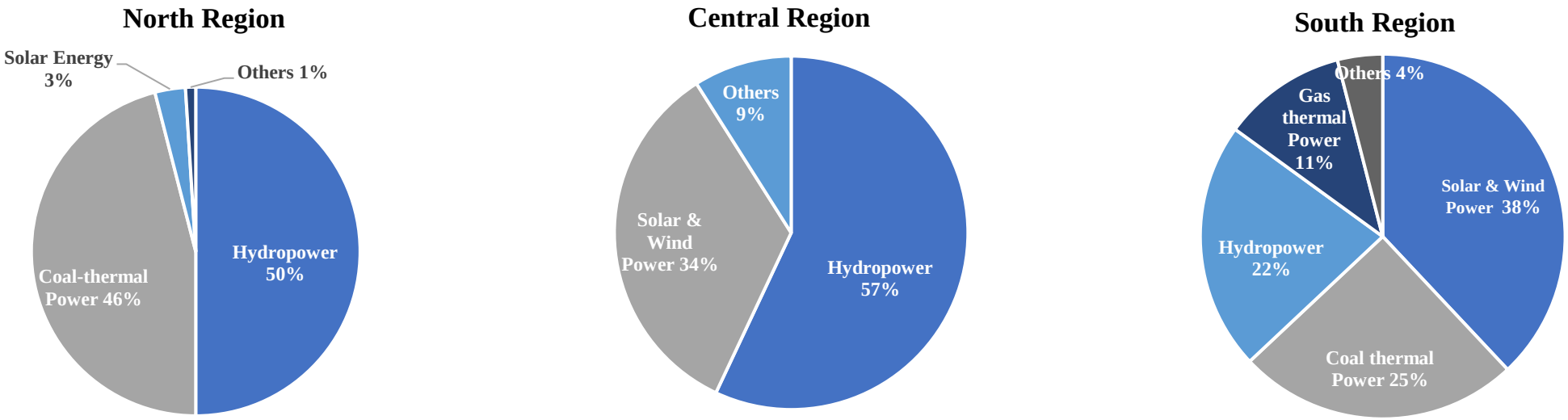


Other consumption (4%)

DIVERSE INPUT MATERIAL SOURCES BUT FRAGMENTED AND REGIONALLY CONCENTRATED

Uneven distribution of input resources leads to an imbalance in the distribution of electricity in the three regions of the country. Accordingly, Coal-fired Thermal Power - the power source with the largest proportion of output capacity is concentrated mainly in the northern provinces (Hai Phong, Hai Duong, Quang Ninh, etc.). Hydropower is concentrated in the provinces adjacent to the three main river systems: Da River, Se San River and Dong Nai River. Gas-fired Thermal Power and renewable energy sources (Solar Power & Wind Power) are concentrated in the central and southern regions. Plants producing these power sources are built in a concentrated area based on favorable geographical locations for input energy sources as well as technical production requirements to reduce input costs.

Power capacity structure by region in 2020



Source: Power Plan VIII

1. THERMAL POWER

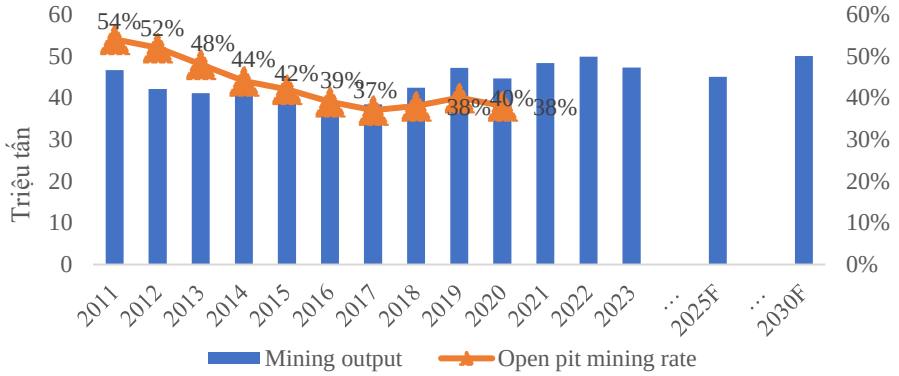
1.1 Coal-fired thermal power

Vietnam mainly exploits the Northeast Coal Basin - Quang Ninh with reserves of about 3.6 billion tons (in 2023), accounting for about 90% of the country's coal reserves. With the remaining coal mining capacity, this coal reserve is enough to exploit for the next 40 years. In addition, Vietnam still has great potential for coal exploitation from the Red River coal basin (distributed length from Hung Yen to Nam Dinh) with an estimated resource of nearly 42 billion tons, about 12 times that of the Northeast Coal Basin. However, due to complex geological conditions and technological limitations, it is currently not possible to exploit more from this coal mine until 2040 when there is a plan for experimental exploitation. Therefore, in the context of increasingly low output from open-pit mines and the need for underground mines to be exploited deeper at higher costs, the capacity output has nearly reached its limit at around 40-50 million tons/year in recent years. Accordingly, coal output is forecast to remain at 45-50 million tons until 2030, then gradually decrease to 38-40 million tons in 2040.

For the same reason, the electricity industry will import more coal in the context of coal demand exceeding exploitation capacity. The electricity industry is the industry that consumes the most coal, accounting for 70-75% of output, and due to the growth of the coal-fired thermal power industry, since 2018, the coal consumption demand of the electricity industry alone has exceeded domestic production capacity and must be imported from countries such as Indonesia, Australia, etc. According to forecasts, coal demand will continue to increase until 2030 from 95-127 million tons/year and with domestic output maintained at only 45 million tons/year, coal import output is expected to increase to about 50-85 million tons/year and gradually become the main input source for the coal-fired thermal power industry. However, after a sharp increase in 2021-2022, world coal prices have returned to stability since 2023 and are showing a downward trend due to (1) the shift to renewable energy in Europe and (2) high coal inventories amid low demand. With imported coal prices trending downward, the use of imported coal will benefit coal-fired power plants.

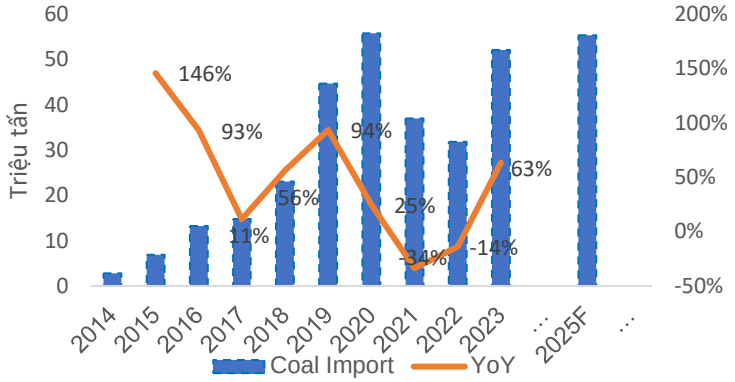
Regarding the outlook for the first half of 2025, we believe that coal-fired power plants will continue to play the role of the most mobilized power source to meet the growing electricity demand in Vietnam as hydropower will be prioritized for water storage in the drier seasons, especially in the Northern region where many coal-fired and hydropower plants are concentrated.

Coal mining output in Vietnam



Source: GSO, Draft coal industry strategy development

Coal import output



Source: General Department of Customs

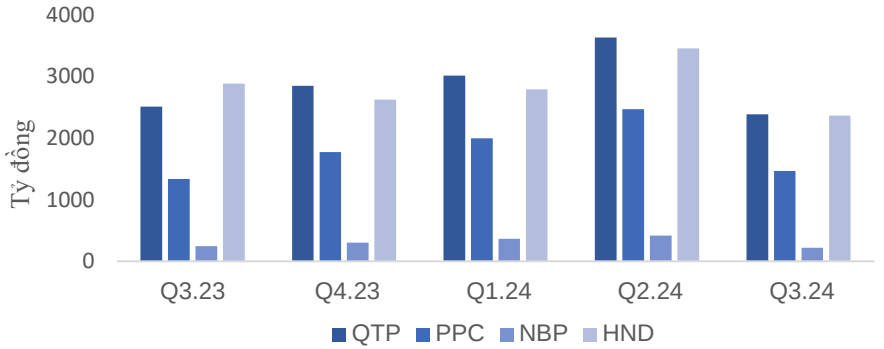
Newcastle Coal Index 6000 kcal

Source: Bloomberg

Thermal power enterprises - Revenue is not optimistic but profits are clearly differentiated

In Q3/2024, coal-fired thermal power enterprises recorded negative business results when recording a decrease in revenue and many enterprises reported losses, especially the Northern coal-fired thermal power group, in which the electricity production in Q3 of HND and QTP decreased sharply to 1.2 billion kWh (-26.7% YoY) and 1.3 billion kWh (-16% YoY) respectively due to more rain, causing the output mobilized from thermal power to decrease. Accordingly, revenue in Q3 of HND and QTP decreased slightly to VND 2,365 billion (-16% YoY) and VND 2,400 billion (-5% YoY), however, QTP was the only enterprise showing positive business performance with after-tax profit reaching VND 76 billion, 6.5 times higher than the previous year due to improved generator efficiency, leading to a decrease in heat loss. HND, QTP and NBP all recorded negative profit after tax in the context of increasing input material prices and decreasing mobilized output.

Thermal power companies' revenue



Source: FiinproX, GTJASVN Research

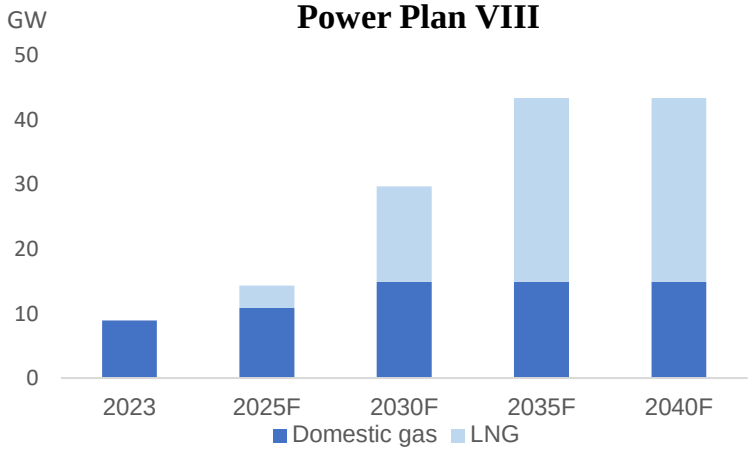
1.2 Gas-fired thermal power

Vietnam mainly exploits concentrated in the Southern region (Vung Tau, Dong Nai, Ca Mau). Input, buy natural gas directly from PV GAS mines, in the future switch to importing LNG gas to produce electricity.

Gas-fired power plants are more flexible and cleaner than coal-fired power plants, but they are more expensive: Gas-fired power is gradually playing a more important role in the total national electricity mobilization because: First, gas-fired power is the only stable power source that is not affected by the weather compared to hydropower, wind power, and solar power. Second, gas-fired power has high availability, large capacity, with (1) wide adjustment range, fast response time (5-7%/minute) and (2) lower minimum capacity (40 - 60%), allowing gas-fired power plants to operate at low capacity without having to stop the machine, helping to minimize operating costs. However, in case of machine shutdown, gas-fired power also has a lower start-up time than coal-fired power. The future trend of LNG power generation with the advantage of reducing CO2 greenhouse gas emissions, especially reducing SOx and NOx pollutants compared to coal and oil power plants, by 2030, LNG power capacity is forecast to reach 22,400 MW, accounting for 15% of the total power capacity of the industry. Regarding world gas prices in the period 2019-2024, the European gas price index TTF Dutch has increased sharply in the period 2022 to about 337 USD/MMBtu due to the increase following the trend of world oil prices and has decreased to around 40 USD/MMBtu. However, we believe that with world oil prices trending up and low demand for gas power in the short-term context, gas power has not yet demonstrated its operational efficiency.

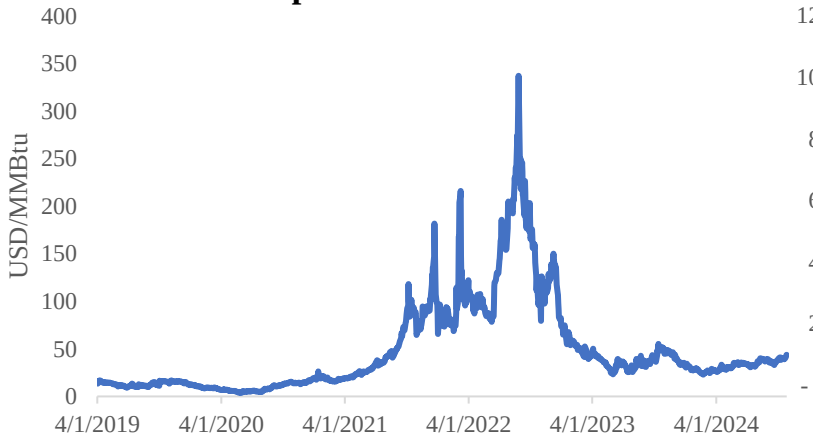
….. leading to a decrease in gas output in existing gas systems, causing difficulties for gas-fired thermal power plants. Gas output in Vietnam is mostly concentrated in gas basins in the South and the Red River basin in Thai Binh with very small output (1-2%) with the country's gas output decreasing from 10.3 billion m3 in 2016 to only 7.3 billion m3 in 2023 because most of the basins have been exploited for a long time, leading to declining reserves and gradual depletion, especially the Nam Con Son mine. In general, the gas power industry is still a new industry, so there is no clear legal framework for implementing new gas power projects. In 2025, we believe that the gas-fired electricity industry will not have many major turning points because the gas price is currently high at around VND 1,900/kWh, so it will be difficult to compete with other types of electricity, especially in the context of declining output from old gas mines, which will lead to increasingly high investment costs for exploiting new mines.

Gas-fired thermal power capacity according to Power Plan VIII



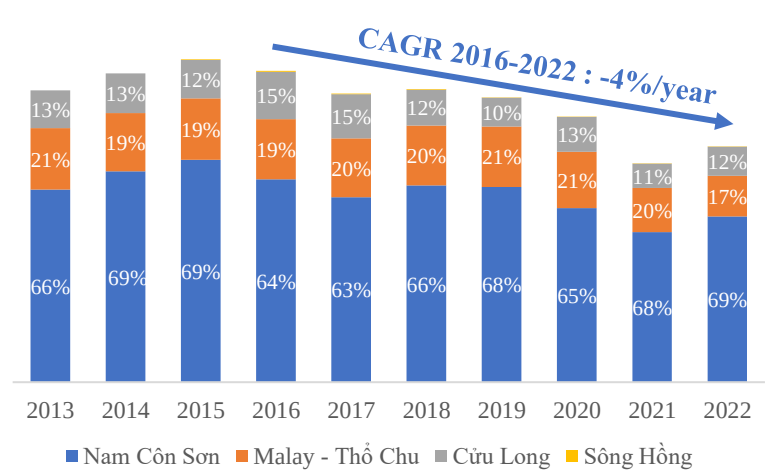
Source: Proposal 4967/TTr-BCT, 8/2022

European LNG Gas Prices



Source: Bloomberg

Dry gas production in Vietnam

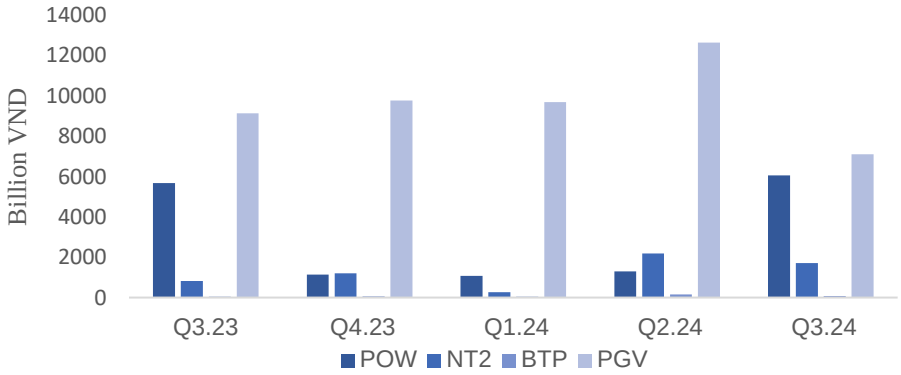


Source: PVGAS, GTJASVN RS

Similar to coal-fired thermal power, the business results of the gas-fired thermal power group still show many difficulties in terms of gas production output but still show clear differentiation. In particular, POW's revenue and net profit reached VND 5,679 billion (-6.0% yoy) and net profit reached VND 52 billion (-74% yoy), on the contrary, NT2 recorded revenue of VND 1,712 billion (+110% YoY) and net profit reached VND 44 billion due to the electricity price of this enterprise increasing by 3% YoY.

Despite facing many disadvantages in terms of high costs in the context of declining output, gas-fired electricity will still be the leading trend in the long term. We believe that LNG gas-fired electricity will be an important base source in the system with a high proportion of renewable energy capacity, especially in the context of domestic gas output being exhausted. According to Power Plan VIII, in the 2025-2035 period, gas-fired thermal power capacity (including LNG) will be strongly developed, expected to increase to 37 GW in 2030 and 40 GW in 2035. In addition, new gas supply infrastructure projects will also be built in parallel with gas-fired thermal power plants, and these projects will play an important role in supplying gas to the electricity industry in the future.

Electricity and Gas business revenue



Nguồn: FiinproX, GTJASVN Research

List of outstanding power projects in the period 2024-35 according to the implementation plan of PDP8

Factory	Capacity (MW)	Corporation	Completion time	Progress
LNG gas Electric				
Nhơn Trạch 3&4	1,600	PVPower	2024	Under construction
LNG Hiệp Phước 1	1,200	Công ty TNHH Hải Linh	2024-2025	Under construction
LNG Bạc Liêu	2,400	Delta Offshore Energy	2027-2029	PPA Negotiation
LNG Sơn Mỹ 1	2,250	Tập đoàn AES	2027-2029	FS Preparation
LNG Sơn Mỹ 2	2,250	EDF – Sojitz – Kyushu – Pacific Group	2027-2029	FS Preparation
LNG Quảng Ninh 1	1,500	PVPOWER – Colavi – Tokyo Gas – Marubeni	2028-2029	
LNG Hải Lăng	1,500	Tập đoàn T&T – Hanwha – Kospo - Kogas	2028-2029	
LNG Nghi Sơn	1,500	Liên danh JERA – Sovico	2029-2030	
LNG Quỳnh Lập	1,500		2029-2030	Choosing Investor
LNG Quảng Trạch	1,500	EVN	2029-2030	FS Preparation
LNG Cà Ná	1,500		2029-2030	Choosing Investor
LNG Long An 1	1,500	VinaCapital - GE	2021-2030	FS Preparation
LNG Long An 2	1,500	VinaCapital - GE	2031-2035	
LNG Long Sơn	1,500	PGV – TTC – TV2 – Mitsubishi – GE – GTPP	2031-2035	
Domestic gas Electric				
Ô Môn II (Lô B)	2,100	PVN	2027	Signing GSA contract
Ô Môn III, IV (Lô B)	1,050	Vietracimex – Marubeni	2028-2030	
Miền Trung 1,2	1,500	PVN	2030	

2. HYDROPOWER

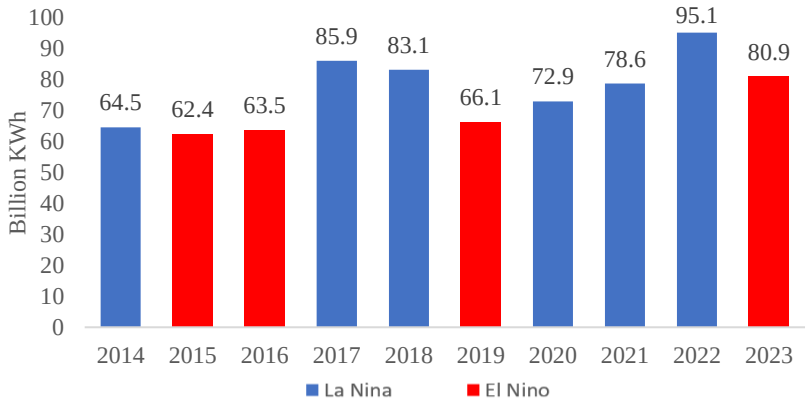
Hydropower reserves in Vietnam are mainly concentrated in two main areas: the Northern mountainous region and the Central Highlands. These two areas are home to many large river systems and have great hydropower potential: the Da River, Lo River, Thao River systems in the Northern mountainous region and the Se San River, Srepok River, Dong Nai River systems in the Central Highlands.

There is not much room left to expand hydropower capacity in Vietnam. According to the Electricity and Renewable Energy Department, the technical potential of hydropower in Vietnam is about 26,000 MW, of which medium and large hydropower is 20,000 MW and small hydropower (capacity under 3,000 MW) is about 6,000 MW, of which in 2023 the output nationwide reached 22,872 MW. Currently, hydropower is difficult to open new ones, due to the dependence on river locations, large-scale hydropower plants >100MW have almost been fully exploited. However, the potential of the remaining medium and large hydropower plants can improve capacity by renovating, upgrading and expanding large hydropower plants such as Hoa Binh, Son La, Lai Chau, Ialy, Tri An, etc. According to Power Plan VIII, hydropower capacity is expected to reach 29,346 MW (accounting for 19.5% of total power capacity) in 2030 and reach more than 36,000 MW (accounting for 6.8% of total power capacity) in 2050.

Input depends on season and hydrology, water volume of rivers/reservoirs, so hydropower output will be unstable and also does not depend on consumption demand. Instead, the advantage of hydropower is that the input cost is very low compared to other sources of electricity, so the more rain, the more output, when in La Nina years, hydropower output is often very high and hydropower output is often low in El Nino years.

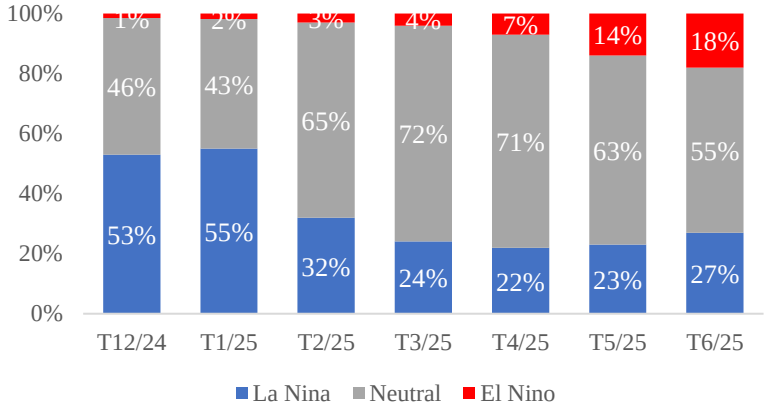
..... Positive business results thanks to favorable hydrological conditions. El Nino has ended and will move to La Nina phase starting from Q3.2024, helping hydropower enterprises recover strongly in output reaching 66.6 billion kWh (+35% YoY) with abundant water output in reservoirs and increased rainfall. According to EVN, direct electricity output (Qc) of hydropower plants will reach 95 - 98% in 2024, higher than the normal level of 85 - 90%. We expect hydropower enterprises to maintain good business results until Q1.2025 in the trend of benefiting from the La Nina phase.

Hydropower production in Vietnam



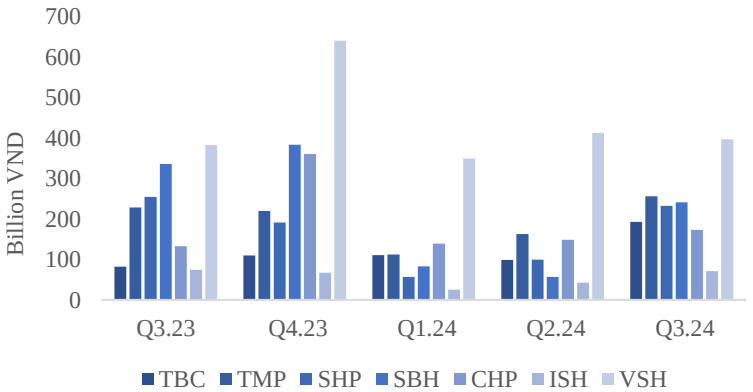
Source: EVN, GTJASVN Research

ENSO Phase Forecast



Source: NOAA, IRI, GTJASVN Research

Revenue of hydropower enterprises



Source: FiinproX, GTJASVN Research

List of hydropower projects planned to implement PQH8

Project	Output (MW)	Corporation	Time Complete	Progress
Nậm Cúm 1,4,5	95.8	CTCP Phát triển Điện Mường Tè	2024-2027	
Nậm Cúm 2,3,6	79.5	CTCP Phát triển Điện Mường Tè	2024-2027	
Sông Hiếu (Bản Mồng)	45	Bộ NN & PTNT	2024	
Yên Sơn	90	Tập đoàn Xây dựng và Du lịch Bình Minh	2024-2025	Under construction
Hồi Xuân	102	VNECO	2024	Under construction
Italy MR	360	EVN	2024-2025	Under construction
Đak Mi 1	84	BB Group	2024-2025	Under construction
Hòa Bình MR	480	EVN	T8/2025	Under construction
Trị An MR	200	EVN	2026	Operation
Thanh Sơn	40	Công ty TNHH Hà Thành	2024	Adjusting planning
Mỹ Lý	120	CTCP Thủy điện Mỹ Lý – Nậm Mô	2028	Adjusting the investment policy
Nâm Mô 1	51	CTCP Thủy điện Mỹ Lý – Nậm Mô	2028	Adjusting the investment policy
Đức Thành	40	Công Ty TNHH New Wide	2026	Under construction
La Ngâu	46	Bộ NN & PTNT	2026	
Cột nước thấp Phú Thọ	105	Tập đoàn Xây dựng và Du lịch Bình Minh	2026	
Cẩm Thủy 2	38	Intracom Group	2030	Overlapping planning of Cam Hoang irrigation lake

Source: GTJASVN Research

3. RENEWABLE ELECTRICITY (INCLUDING SOLAR AND WIND POWER)

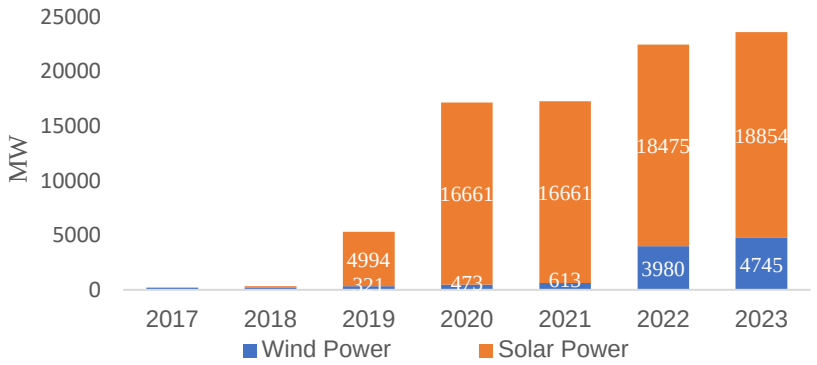
Total renewable energy output in 2023 will reach 37,922 million kWh (+7% YoY) with a capacity of about 23,600 MW (accounting for 27% of the total system capacity), including:

- Solar power: Exploited capacity reaches 18,854 MW and is concentrated in the Central region (Ninh Thuan, Binh Thuan, Binh Dinh, Khanh Hoa, ...). Uneven distribution, concentrated in areas with low electricity demand, often causing overload and congestion of the power system. Solar power capacity is unstable, because it depends on the duration of sunshine, intensity of sunshine and weather.
- Wind power: The exploited capacity reaches 4,475 MW and is concentrated in the coastal areas of the South Central and Southwestern regions (from Ben Tre to Ca Mau), Quang Tri, Gia Lai, etc. Currently, wind power accounts for a small part of the electricity industry structure, the reason also comes from the instability and the electricity purchasing mechanism of EVN with wind power enterprises.

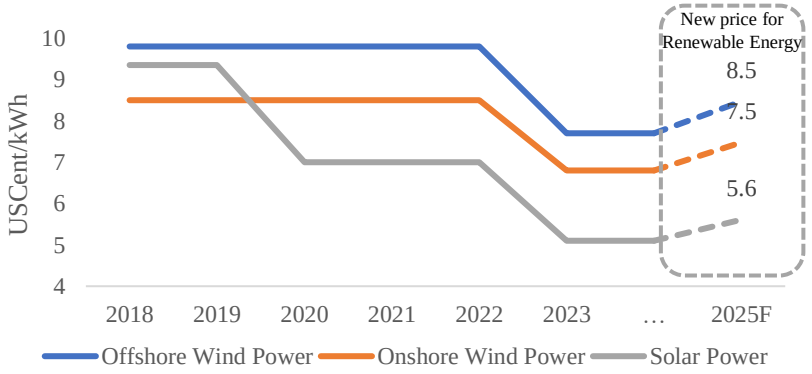
The input wind and solar sources are unstable in terms of output. The output of wind power and solar power depends on the wind direction, wind speed and solar radiation, respectively, so it is difficult to forecast the output of these two energy sources. Wind power is generated without a specific rule but often fluctuates according to the monsoon season, in which wind power is divided into (1) onshore wind power (Onshore) and (2) offshore wind power (Offshore) and the installation location for each type is also an important factor to achieve the best wind output. For solar power, output is mainly concentrated during the day, especially at noon, and reaches large output during hot seasons and months during the El Nino phase.

Prospects for renewable energy projects are difficult in the short term. When the fixed electricity purchase price mechanism (FIT price) expires, especially after Circular 19/BCT - Regulations on the development of renewable energy generation price framework was issued, it has not yet provided an official price for wind power and solar power sources, making it difficult for renewable energy projects to mobilize capital, ensure profits for investors, and hinder the progress of renewable energy projects. However, we believe that the new price framework will remain the same or increase slightly due to (1) power shortages in many areas causing high demand for electricity and (2) the exploitation potential of hydropower and thermal power is gradually depleted in the context of the turning point of shifting from traditional power sources to renewable energy according to the goals set out in the Power Plan VIII.

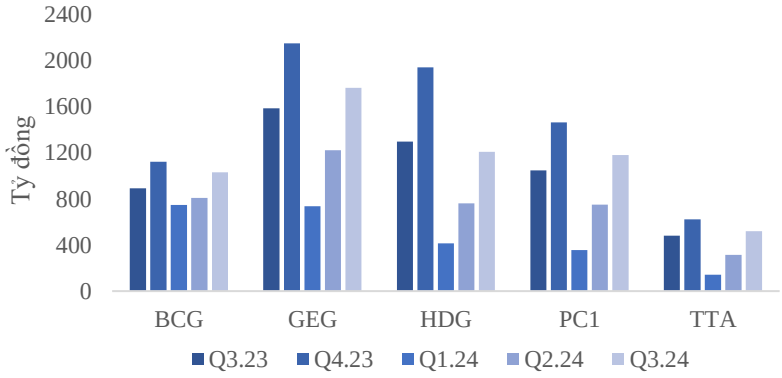
Renewable energy capacity 2017-2023



Forecast of selling price of renewable energy



Renewable Energy Business Revenue



Source: MOIT, EVN, VEA GTJASVN Research

During the period 2010-2015, renewable energy enterprises always maintained a relatively high level of BLNG at 50% due to the Government's preferential price mechanism, leading to strong growth since 2019. Although the growth momentum has now slowed down due to the absence of the FIT price mechanism, especially for transitional projects, renewable energy enterprises still show a positive business performance picture due to a sharp increase in exploitation output with impressive revenue growth of BCG, GEG and PC1 at 11-15% over the same period.

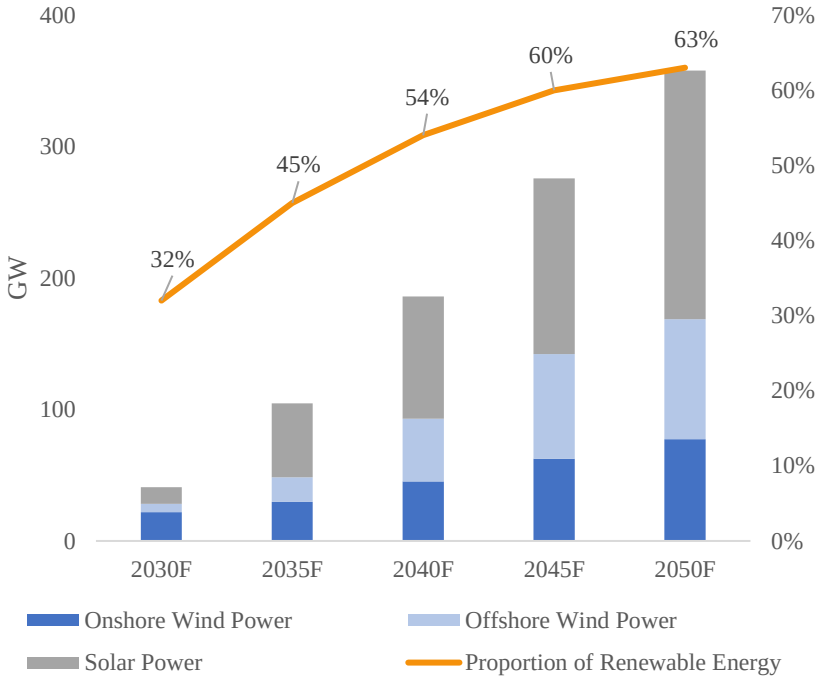
Long-term prospects come from playing a pivotal role from shifting to renewable energy sources and direct electricity sale mechanism (DPPA)

With the government's approval of the National Power Plan VIII for the period 2021-2030, with a vision to 2050, the target of renewable energy by 2050 will account for a large proportion of 63%, including:

- Onshore wind power: Total capacity reaches 12.9 GW by 2030 (growth of 55%/year). In the period 2030-2035, onshore wind power continues to grow at 7%/year.
- Offshore wind power: Total capacity reaches 6 GW by 2030 and 18 GW by 2035.
- Solar power: Total capacity reaches 20.6 GW by 2030. In the period of 2030-2035, Solar power will be promoted with a CAGR of about 23%/year. Accordingly, Solar power is still an energy source expected to account for a large proportion of electricity exploitation capacity according to the Government's policy.

In addition to focusing on promoting renewable electricity output, in October 2024, the Ministry of Industry and Trade approved Laos' preferential import electricity price framework for 5 years from December 31, 2025 with a maximum ceiling price of 6.4 US cents/kWh, significantly lower than the FIT 2 price mechanism in Vietnam at an average of 7.25 US cents/kWh.

Renewable power capacity according to PQH8



Source: Power Plan VIII

According to Decree 80/2024/ND-CP, in addition to being a pivotal step for the development of the Wholesale Electricity Market (VWEM) and later moving towards the Competitive Retail Electricity Market (VREM), the direct electricity sale mechanism (DPPA) also encourages investment in renewable energy projects. In addition, DPPA helps ensure output commitments, as well as minimize price fluctuation risks in the market due to the nature of CfD contracts. The domestic DPPA mechanism is demonstrated with the following 2 models:

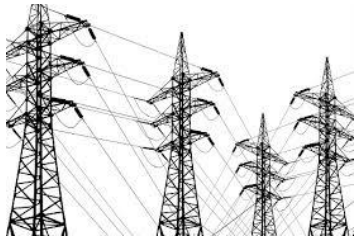
Model 1: Electricity trading via private connection lines

Renewable energy generators can sign direct contracts with large electricity users (average consumption of 200,000 kWh/month or more in the last 12 months). Customers and generators will negotiate on output and selling price, usually based on the retail electricity price regulated by the State.

Power transmission diagram by direct electrical connection method

Power Facilities

DPPA has direct power connection line



Consumption clients

Source: VEA, GTJASVN Research

Model 2: Electricity trading via the national grid

This model allows large customers or authorized electricity retailers (with electricity purchase output of 200,000 kWh/month or more and connected to the national grid at voltage level of 22 kV or higher) to purchase electricity from renewable energy generators via the national grid on the condition that they participate in the model of renewable energy generators with a capacity of 10 MW or more. For the adjusted electricity consumption output equal to the smallest value between the electricity consumption of the buyer and the actual output of the renewable energy generator, the buyer must pay EVN additional electricity costs according to the electricity market price, the cost of using the power system service and the cost of clearing the difference. Accordingly, we expect that renewable energy enterprises, especially those with experience in implementing wind power and solar power projects and low LCOE costs, will benefit from electricity price mechanisms that help improve exploited electricity output and gradually affirm the important role of this source of electricity in the future.

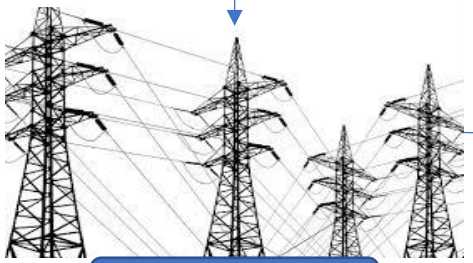
Electricity consumers

Futures contracts for difference to negotiate prices, electricity output and renewable energy certificates

Renewable energy generation units

Retail Electricity Sale Agreement (for DPPA scheme)

Electricity purchase and sale contract on the spot electricity market



Power Corporations

EVN

Electric Spot Market

Source: VEA, GTJASVN Research

ELECTRICITY STOCKS AND INVESTMENT VIEWPOINT

We divide the investment prospects of electricity stocks into 2 groups:

- Enterprises owning many hydropower plants in the energy sector will benefit from the La Nina weather phase (heavy rain), especially enterprises owning plants in the Central region where the rainy season is concentrated and enterprises with the advantage of water reservoirs with deep water levels.

- Enterprises with a portfolio of solar and wind power plants will benefit from the shift in energy structure towards renewable energy under Power Plan 8, and have good geographical locations to mobilize high electricity output. In addition, we will prioritize enterprises with strengths in multi-industry fields and many development projects outside the portfolio of power plants.

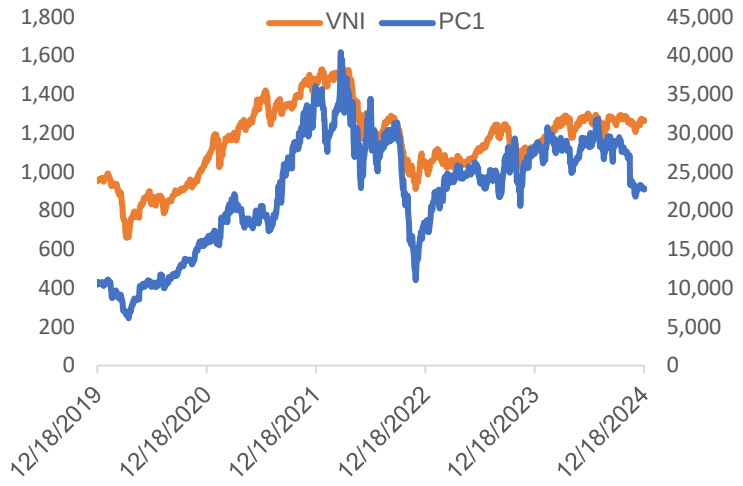
INVESTMENT RECOMMENDATIONS

PC1 – BUY – 30,130 VND (+31.86%)
VSH – HOLD – 52,300 VND (+6.52%)
HDG – BUY – 34,300 VND (+20.4%)

Source: GTJASVN Research

PC1 GROUP CORPORATION (HOSE: PC1)

Stock price performance



Stock information (12/18/2024)

Market Price (VND)	22,850
Price Volatility 52W	21,630 – 27,680
Average trading Vol 52W	3,855,616
Market Cap (Bil VND)	8,172.12
P/E	18.61
P/B	0.93

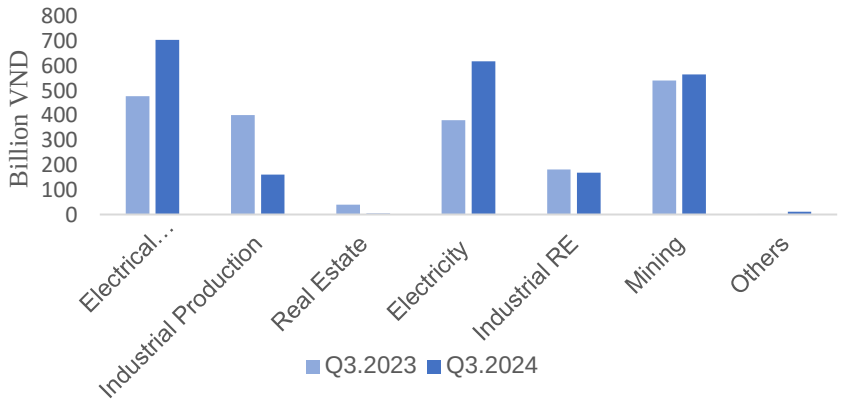
PC1 Group Joint Stock Company is a leading enterprise in the country in the field of electrical construction with experience in implementing many national power transmission projects, especially EPC and PC general contractor projects up to 500 KV voltage level. After demonstrating its position in the electrical construction consulting industry, PC1 has expanded into the fields of Industry, Energy & RE investment.

Update on Q3/2024 business results: The main growth driver comes from the electrical construction segment, helping to report profits early for the whole year. In the first 9 months of the year, PC1 Group recorded VND 7,538 billion in revenue (+47% YoY), and after-tax profit increased more than 6 times, reaching VND 578 billion (110% of the plan), exceeding the profit target for the whole year, including:

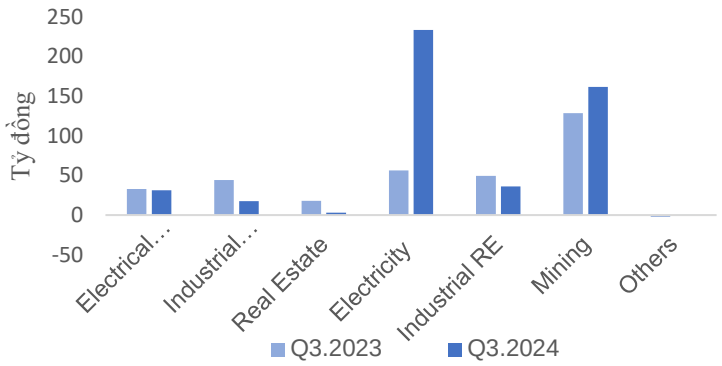
- The electrical construction segment brought in the main source of revenue for PC1 when in Q3 it reached VND 705 billion (+48% YoY) with the contribution of the 500kV Line 3 project, bringing the total accumulated revenue of the electrical construction segment in the first 9 months to VND 2,457 billion (+66% YoY)
- Revenue from the mining segment with the main activity of selling nickel concentrate recorded a sudden growth in the first 9 months of VND 1,431 billion, 2.6 times higher than the same period.
- Although industrial production activities decreased sharply by 60% to VND 161 billion in Q3/2024, the cumulative 9 months of this segment still recorded positive results of nearly VND 1,230 billion (+65% YoY)

Costs were significantly reduced, of which sales expenses decreased by VND 16.4 billion (-26% YoY), financial expenses reached VND 98.2 billion (-70% YoY) due to the sharp decrease in exchange rates from the end of Q3/2024, helping to significantly reduce exchange rate differences in USD loans at 3 wind power plants of PC1. Accordingly, PC1 recorded a profit after tax in Q3 of VND 259 billion, 2.6 times higher than the same period.

Revenue structure Q3/2024



Gross Profit Structure Q3/2024



Sources: BCTC PC1, GTJASVN Research

BUSINESS PROSPECTS

1. The power construction segment will recover from a low base in 2023 and a positive backlog.

The construction segment will continue to be a pillar contributing to the company's stable revenue and the foundation for the development of other business segments. In October 2024, PC1 signed an EPC contract for the Camarines Sur Wind Power Plant with a capacity of 58.5 MW in the Philippines. PC1's recorded workload will reach VND 1,200 billion, expected to be recorded in the 2025-2026 period, accordingly, we expect PC1's backlog volume in 2025 to reach about VND 4,950 billion from the expectation of signing many new stable contracts according to Power Plan 8 on power development construction from 2025-2030 as well as expanding to the international construction market in the Philippines, Laos, and Australia. Accordingly, we forecast revenue in 2024F/2025F for PC1's power construction segment to reach VND3,844/4,279 billion (+47.4%/11.4% YoY), respectively.

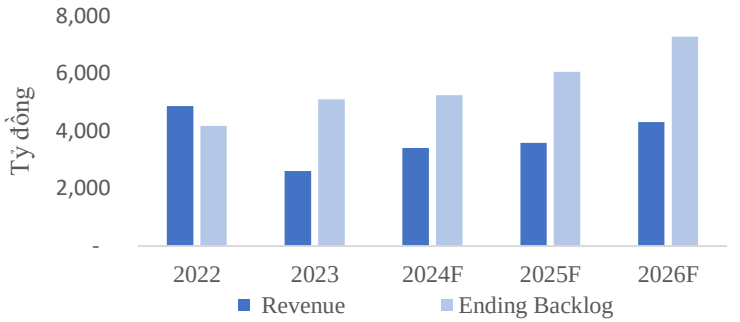
2. The energy segment benefits in the short term thanks to the La Nina weather phase.

In 9M/2024, the hydropower segment recorded an output of 509 million kWh (97% of the plan) due to favorable weather in Q3. We believe that the probability of La Nina will continue until the end of Q3/2025, accordingly, we expect PC1's hydropower output in 2024 to reach 638.3 million kWh (+59% YoY). In addition, PC1 completed legal procedures to implement the construction of hydropower projects in the 2024-2025 period with 2 hydropower plants, Bao Lac A (30 MW) and Thuong Ha (13 MW). It is expected that in 2026, the hydropower capacity of PC1's plants will reach 212 MW (+25% YoY). For the wind power segment, we forecast it to remain stable in 2024 and increase slightly in 2025 thanks to the increase in electricity prices in the context of the USD/VND exchange rate trending up. We expect PC1's energy revenue in 2024F/2025F to reach VND1,732/1,823 billion (+18.6%/5.3% YoY).

3. Potential growth of the mineral sector in the medium term from the exploitation of the Nickel "treasure"

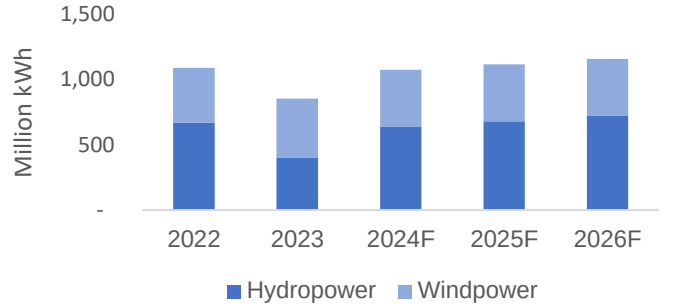
As of December 24, Nickel prices remained low (-4.7% YTD) and are forecast to continue to move sideways in 2025 due to increasing supply in Indonesia (the country with the largest Nickel mining capacity in the world) and the Philippines amid weakening Nickel consumption demand in China. We believe that the large supply is a factor that is holding back the increase in Nickel prices in the short term, however, in the medium term, we expect Nickel prices to improve strongly thanks to the strong shift to electric vehicles in many countries, especially in Vietnam. With PC1 being the only listed company capable of producing and exploiting Nickel through its subsidiary, Tan Phat Minerals JSC (PC1 owns 57.27%). Signing a cooperation agreement with Trafigura - the second largest non-ferrous metal trading enterprise in the mineral sector, will help PC1 secure output orders in the following years. We believe that mineral exploitation will open a new business area for PC1 with a gross profit margin of 30%, in which we forecast that with the price of Nickel will decrease slightly compared to 2023, revenue in 2024 will reach VND 2,057 billion (+191.7% YoY) due to the low base in 2023 due to operating only in the last 6 months of the year while revenue in 2025 will remain the same (+0% YoY).

Estimated revenue and backlog 2024F-2026F



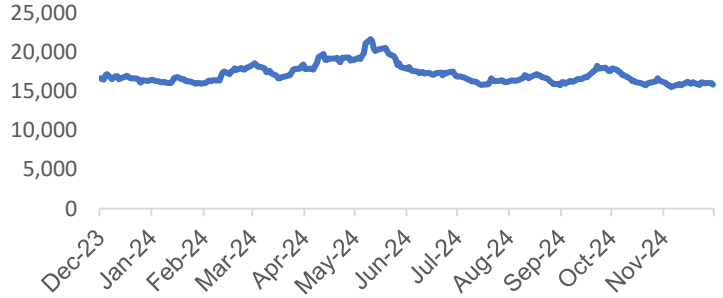
Source: PC1, GTJASVN Research

Electricity output forecast 2024F-2026F



Source: PC1, GTJASVN Research

Nikken Price



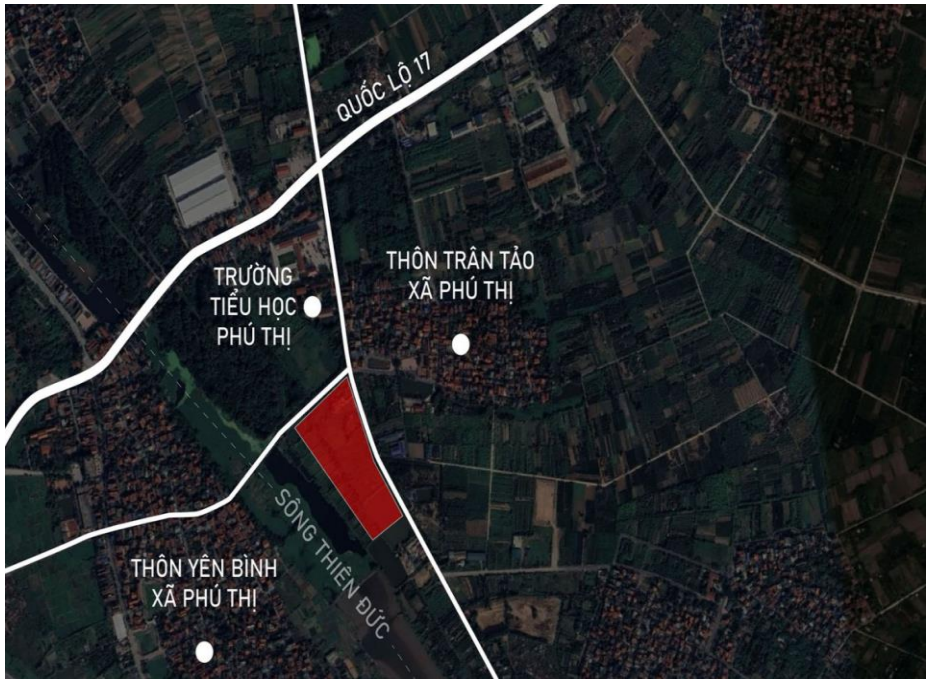
Source: Bloomberg

BUSINESS PROSPECTS

4. Long-term prospects from expanding the residential and industrial real estate market.

- **Residential real estate**: PC1 plans to start a 1.5-hectare project in the Thap Vang residential area, Gia Lam district with a total investment of about VND 1,536 billion in Q4/2024 and is expected to record all revenue in 2025.
- **Industrial real estate**: PC1 said that in addition to Nomura Industrial Park 1 which has been 100% leased, the Nomura Industrial Park Phase 2 project has completed the design and has been approved for the 1/2,000 planning and is also in the process of proposing investment in Phu My Industrial Park in Vung Tau. Regarding the industrial park projects of the Western Pacific affiliated company (PC1 owns 30% of the company), Yen Phong 2A Industrial Park has handed over 14% of the commercial area and will accelerate implementation in 2025, including Yen Lenh Industrial Park. We expect Yen Phong and Yen Lenh 2A IPs to achieve occupancy rates of 30% with rental prices of USD 165 and USD 85/m2, respectively. WPG is expected to record net profit of VND 300 billion, while PC1 will record profits from joint ventures and associates at VND 90 billion (+4% YoY). In the long term, Western Pacific aims to expand its total industrial land fund to 1,000 ha by 2025 and 2,000-3,000 ha by 2030, expected to contribute a large amount of profit to PC1 from 2026.

Location of Golden Tower residential project



PC1 Industrial Park real estate projects are being implemented

Project	Ownership	Land Area	Renting Price (USD/m2)	Update Progress
Nomura GĐ1	70%	123	120	Renting with 100% occupancy rate
Nomura GĐ2	100%	123	120	Waiting for investment policy
Yên Phong IIA	18.6%	151	165	Renting with 100% occupancy rate
Yên Lệnh	30%	49	83	Under construction
Yên Lư	30%	66	115	Investment policy granted in Q3/24
Đồng Văn 5	30%	166	90	Investment policy granted in Q3/24

Source: PC1, GTJASVN Research

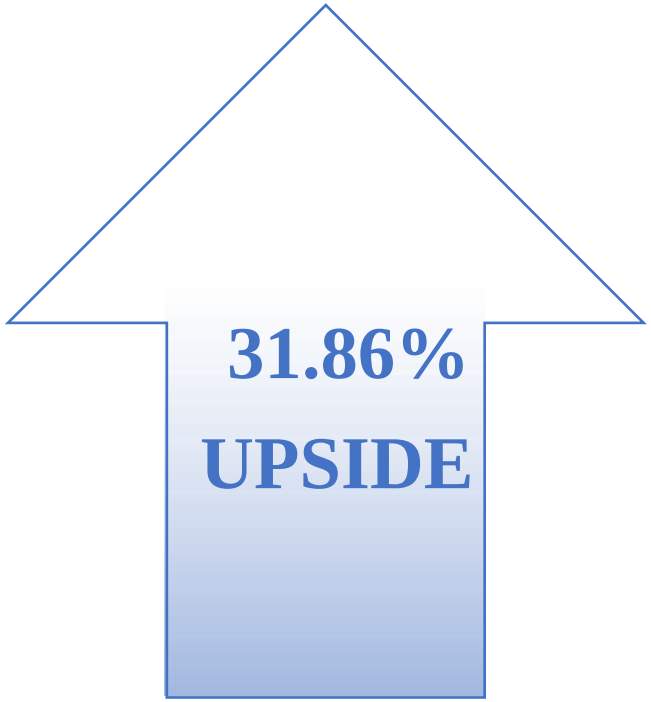
FORECAST AND VALUATION

We recommend **BUY** PC1 shares with a target price of **VND30,130/share**, equivalent to an upside of **31.86%** compared to the closing price on December 18, 2024, based on two main valuation methods: P/E and FCFF with a weight of 50%/50% for each method. For the FCFF discounted cash flow valuation model, the projected revenue in 2024-2025 is expected to grow by VND10,251 billion (+31.8% YoY) and VND10,932 billion (+6.6% YoY) respectively thanks to (1) a large power construction backlog in 2025, (2) improved hydropower output thanks to favorable weather and (3) breakthrough prospects from the mineral exploitation segment. Gross profit margin is estimated at nearly 20% and 21%. Accordingly, we estimate that the parent company's consolidated net profit will reach about VND575 billion (+311% YoY) and VND848 billion (+47% YoY) in 2024F and 2025F, respectively.

In Terms of investment risks, we are concerned about risks related to:

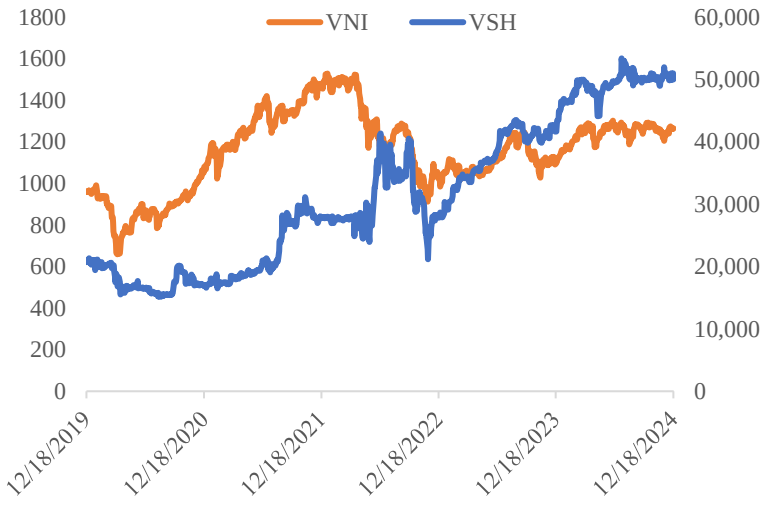
- Exchange rate fluctuations when the enterprise has many loans in foreign currencies
- The ability to implement the power construction backlog is not as expected in the past.

DCF	P/E
VND 36,570	VND 23,680



Vinh Son - Song Hinh Hydropower JSC (HOSE:VSH)

Stock price performance



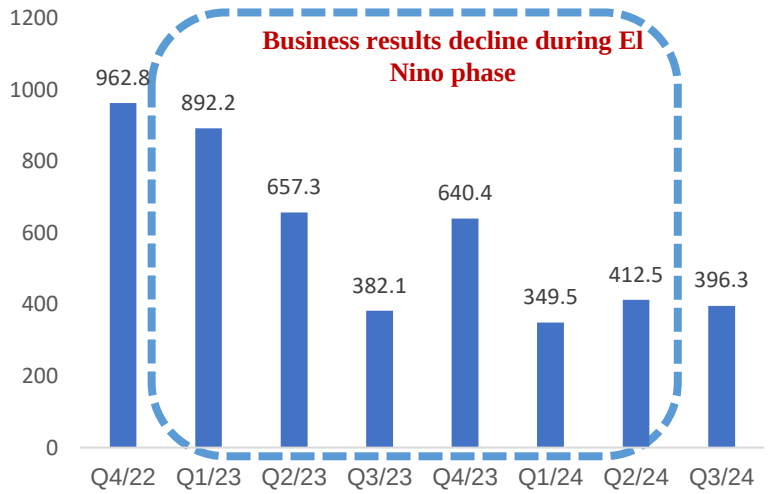
Vinh Son - Song Hinh Hydropower Joint Stock Company, formerly Vinh Son Hydropower Plant, is a subsidiary of Electricity Company III. VSH operates in the fields of trading materials and consulting on the construction of hydropower projects, management services and construction supervision of hydropower plants, most notably the production and trading of electricity, mainly hydropower. Currently, VSH owns 03 hydropower plants operating stably with a total capacity of 356 MW, providing electricity output of about 1.8 billion kWh/year to the national grid. Q3/2024 Business Results Update: Profit triples over the same period thanks to financial activities

- Although 9M2024 revenue reached VND 1,158 billion (-40% YoY), revenue in Q3/2024 alone showed a recovery, reaching VND 396.3 billion (+3.7% YoY) thanks to the recovery of hydropower output of 392.3 million kWh (+5.38% YoY) due to favorable weather conditions when switching to La Nina phase.
- VSH's financial revenue in this period reached more than VND 6 billion, 4.6 times higher than the same period last year thanks to revenue from deposit contracts with higher interest rates. At the same time, financial expenses decreased by 41%, down to VND 65.2 billion, thanks to the company restructuring high-interest bank loans, along with the decrease in market interest rates in the third quarter. Accordingly, the company's after-tax profit reached nearly 78 billion VND, 3 times higher than the same period last year.

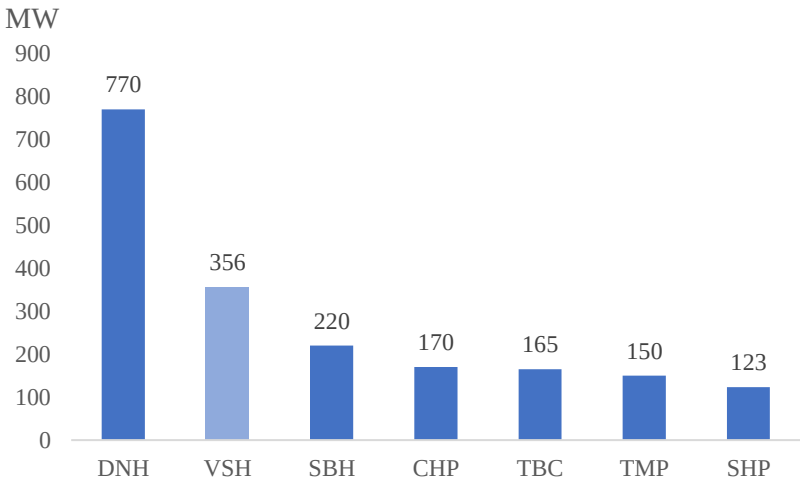
Stock information (12/18/2024)

Market Price (VND)	50,100
Price Volatility 52W	40,530 - 53,400
Average trading Vol 52W	18,377
Market Cap (Bil VND)	11,835.69
P/E	31.41
P/B	2.5

Business Results Q3/2024



Design capacity of Hydropower enterprises



Source: BCTC VSH, GTJASVN Research

BUSINESS PROSPECTS

1. Benefiting from the high demand for industrial electricity

The Southern region, especially Ho Chi Minh City and Dong Nai, is one of the provinces with the highest FDI disbursement in the country. In Q3/24, GDP growth in the South Central region reached 8%, higher than the national average of 5.5%, with the main contributors from tourism and industry, notably the chemical and oil and gas industrial park projects in Nghi Son and the seaport area in Quy Nhon. We forecast that electricity demand in the Southern region in 2025 will grow by 12% over the same period. Accordingly, Vinh Son and Song Hinh hydropower plants, located in Binh Dinh and Phu Yen respectively (in the South Central region), will meet the electricity output for factories and industrial parks in this region, especially in the context of electricity sources from coal-fired thermal power and gas-fired thermal power are gradually being exploited to their full potential.

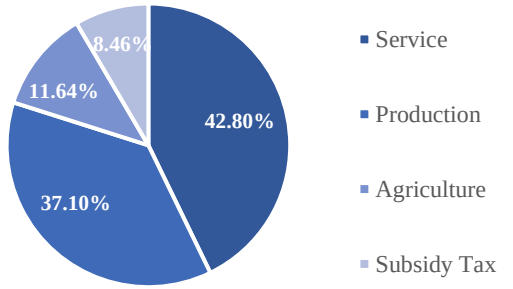
2. Hydropower output recovers thanks to favorable weather conditions

Accumulated in the first 10 months of 2024, commercial electricity output is estimated at 206.86 billion kWh (+11.6% YoY), of which hydropower output reached 76.31 billion kWh (+14.34% YoY), accounting for nearly 30% of the total mobilized output of the electricity industry. In the first half of 2024, hydropower enterprises mobilized low output due to the El Nino weather phase, however, the peak season of hydropower along with the weather clearly shifting to the La Nina phase from Q4/24 will help to make a breakthrough in the mobilized output from hydropower. Being among the enterprises with the largest designed capacity of hydropower plants in the country will help VSH make a significant breakthrough in business results when the cost of mobilizing hydropower is only at 400-600 VND/kWh. In particular, VSH has the advantage of the location of the plants with the water storage level of the power plants being significantly higher than that of the plants in the same region of the South Central Coast and the Central Highlands. We believe that this will be an important condition for VSH to store hydropower in the current favorable conditions for hydropower.

3. Prospects from upgrading and expanding the capacity of hydropower plants in the period of 2024-2025.

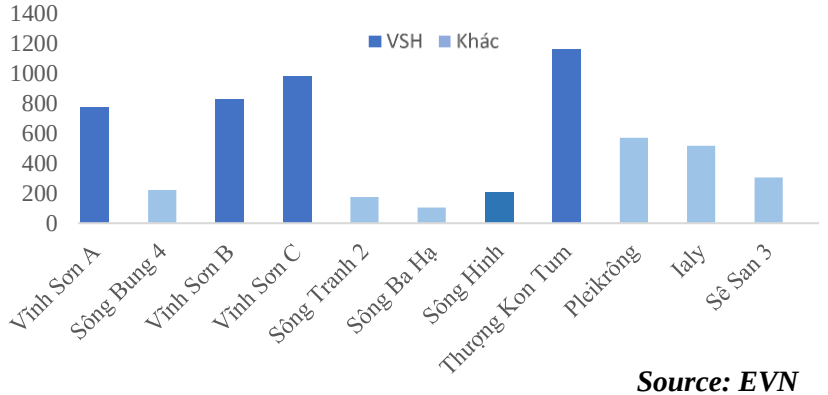
According to the 8th PDP until 2030, hydropower will be an important energy source to solve the problem of surplus and shortage in the load chart of the power system, especially in the context of the exploitation potential cooling down due to the maximum capacity, the expansion of hydropower plants will be the most cost-effective solution while still ensuring the efficiency of mobilized output. In 2024, VSH plans to expand the Vinh Son plant project by 40 MW and the Song Hinh project by 70 MW and is expected to be completed in 2026. In addition, VSH also benefits from the electricity selling price under the PPA contract thanks to the parent company of the enterprise, REE, which has negotiated the electricity selling price for VSH's plant to VND 1,310/kWh (+19.5% compared to the previous contract). Accordingly, we believe that favorable weather conditions as well as the Government's policies to support hydropower development will help VSH make a breakthrough in revenue and hydropower output from expanding the capacity of the plants.

GDP structure by industry in South Central Coast Q3/24



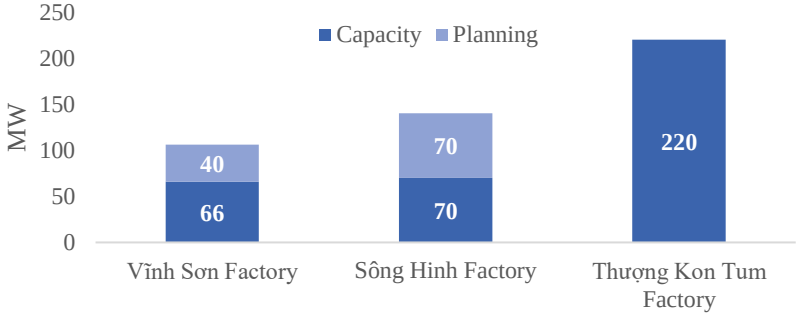
Source: GSO

Water level rise of hydroelectric reservoirs in the area (meters)



Source: EVN

Expanding hydropower plant capacity



Source: VSH, GTJASVN Research

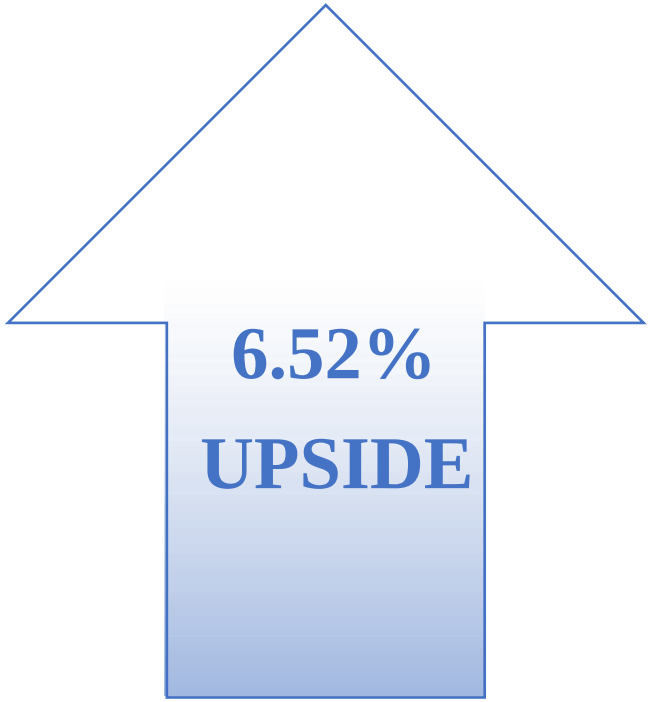
FORECAST AND VALUATION

We recommend **HOLD** for VSH shares with a reasonable stock price in 2025 of VND 52,300, equivalent to an Upside of 6.52%. Regarding valuation methods, we use 2 comparative valuation methods, EV/EBITDA and P/E, respectively, with a weight of 50%/50% for each method when compared to hydropower companies with the same scale and revenue in the past year. We forecast VSH's revenue in 2024F/2025F to reach VND2,164 billion (-15.9% YoY) and VND2,470 billion (+14.1% YoY) and VND1,094 billion (+17.4% YoY) respectively thanks to flat output +1% in 2024 and an 11% increase to 2,464 million kWh in 2025. Net profit margin improves from 38.6% to 39.23% thanks to lower interest expenses from the VND350 billion long-term debt repayment loan from parent company REE. Accordingly, the company's projected EPS in 2024F/2025F is VND2,810 and VND3,130.

Regarding investment risks, we note the management of the following types of risks:

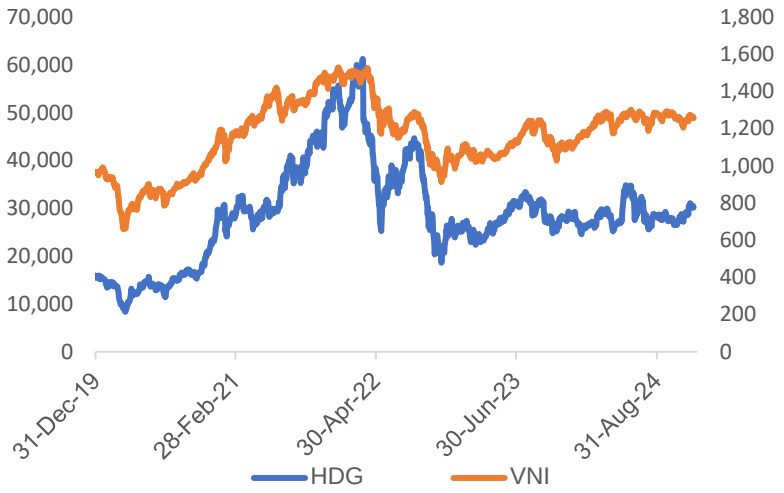
- Risks related to the progress of electricity price negotiations
- Risks of unfavorable weather

EV/EBITDA	P/E
VND 45,100	VND 59,500



HA DO GROUP JSC (HOSE: HDG)

Stock price performance



Stock information (12/18/2024)

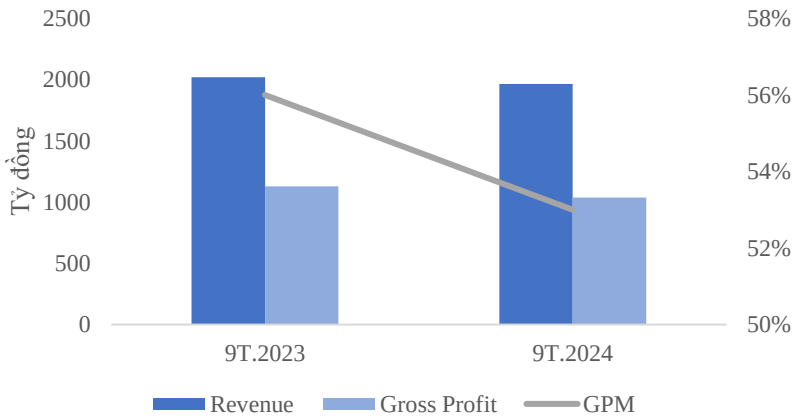
Market Price (VND)	28,500
Price Volatility 52W	21,630 – 27,680
Average trading Vol 52W	3,979,076
Market Cap (Bil VND)	10,157.21
P/E	13.1
P/B	1.28

Ha Do Group Joint Stock Company, formerly a construction company under the Ministry of National Defense, was established in 1990, mainly investing in real estate, producing hydroelectricity and renewable energy such as solar and wind energy. Up to now, the company has owned 15 urban and apartment projects, 8 office and hotel projects, 5 hydroelectric plants and 3 renewable energy plants.

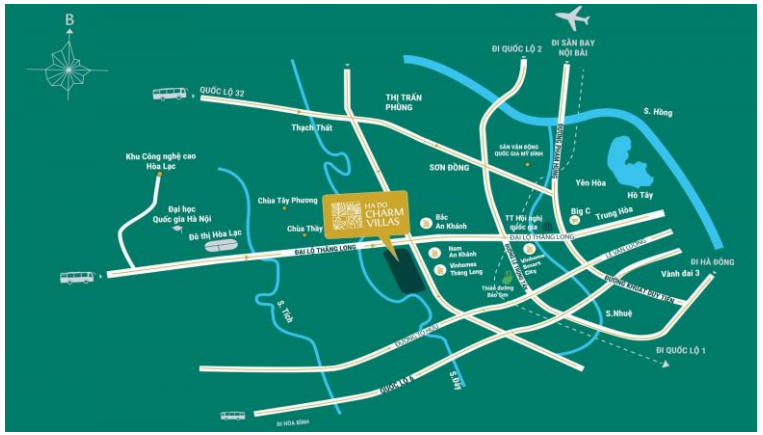
Q3/2024 Business Results Update: Maintaining stable growth. Accumulated in the first 9 months of the year, HDG achieved revenue and profit after tax of VND 1,965 billion (-3% YoY) and VND 545 billion (+2% YoY), respectively, completing only 68% of the revenue target and 56% of the profit target for the whole year. However, in Q3/2024, Ha Do Group recorded VND 567 billion in revenue (+23% YoY), and after-tax profit recorded VND 182 billion (+83% YoY), of which:

- The electricity segment recorded revenue in Q3 of VND 445 billion (+24.1% YoY), due to the weather phase clearly showing a trend of shifting from El Nino to Neutral, helping hydropower output increase sharply by 341 million kWh (+32% YoY)
- Real estate revenue in Q3 did not increase further because during this time HDG did not record additional revenue from project opening, but the cumulative 9M2024 still reached nearly VND 400 billion (+117% YoY).
- Demand for leasing real estate offices and hotels gradually recovered with revenue and gross profit increasing by 15% and 12% YoY, respectively.

Business Results Q3/2024



Perspective of Hado Charm Villas project



Nguồn: HDG

BUSINESS PROSPECTS

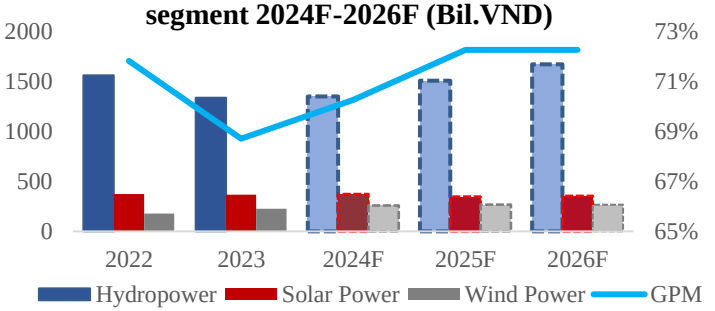
1. Hydropower segment will strongly rebound from Q1.25 thanks to La Nina weather phase

In the forecast of the Hydrometeorological Center, from November 2024 to January 2025, ENSO is likely to shift to La Nina state (characterized by heavy rain), causing hydropower output of the entire system to increase again, especially in the Central region including Nghe An and Quang Nam (location of HDG's hydropower plants). Accordingly, we project that HDG's hydropower output will reach 1,192 million MW (+2% YoY) and grow to 1,316 million MW (+10.4% YoY) in 2024F/2025F respectively. In the long term, after the successful M&A of 2 hydropower plants Son Linh - Son Nham (capacity 24MW) in 2026, the contributed electricity output will increase to 64 million MW, bringing the total capacity to 1,402 million MW (+6.5% YoY).

2. Real estate revenue in 2025 will rebound thanks to the third phase of the Hado Charm Villas project. In 2024, HDG continuously delayed the sale because the company wanted to maximize the benefits of the remaining part of the project (108/528 units) in the context of (1) high demand for housing in the Northern region with the absorption rate of this type of real estate showing positive signs as of 9M24 reaching nearly 65% and (2) the supply of housing is not much left, leading to the selling price of villa/townhouse projects in the Hoai Duc area having a favorable increase at 188.7 million VND/m2 (+58.3% YoY), significantly higher than the selling price of Charm Villas (158 million VND/m2). We estimate the selling price of the project in this third phase at around VND130-140 million/m2 and expect HDG to record revenue from the remaining project of VND2,306 billion in the period of 2025-2026 as the products have been completed and are just waiting for the recovery time. Furthermore, we expect to record cash flow from the two projects Green Lane and Minh Long in the period of 2026-2028. These two projects are built in the form of apartments with a scale of 2.3 - 2.7 ha in Ho Chi Minh City. We forecast revenue for Ha Do's real estate business to reach VND1,222 billion (+144%YoY) and VND1,786 billion (+46%YoY) in the period of 2025F/2026F, respectively.

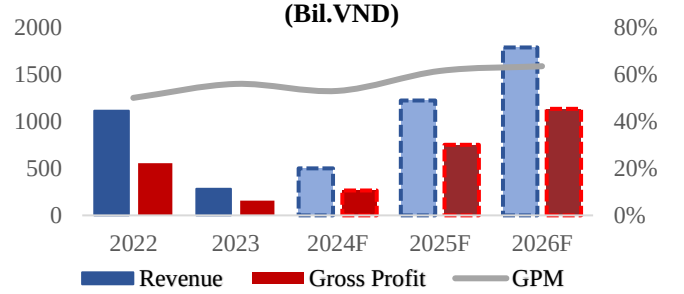
3. Maintaining a healthy financial structure creates a safe foundation for the sustainable development of a multi-industry corporation. After a period of large investments in the power sector, which caused outstanding loans to increase sharply since 2019, the company's outstanding loans have gradually decreased to more than VND 5,400 billion (mostly used to invest in renewable energy projects) and accounted for 37.5% of total capital, helping to maintain a safe financial structure and is forecast to continue to gradually reduce the debt ratio. In addition, the company's interest expense has doubled to VND 486.6 billion in the period 2019-2023. However, the company has a very good ability to repay loans and interest thanks to stable cash flow from the energy sector. We estimate that the annual cash flow from business operations for the power sector will reach about VND 950-1,100 billion, ensuring the company's ability to repay long-term loans. In addition, cash flows from other business activities all bring positive cash flows that will help support HDG's debt repayment.

Forecast revenue and profit margin of electricity segment 2024F-2026F (Bil.VND)



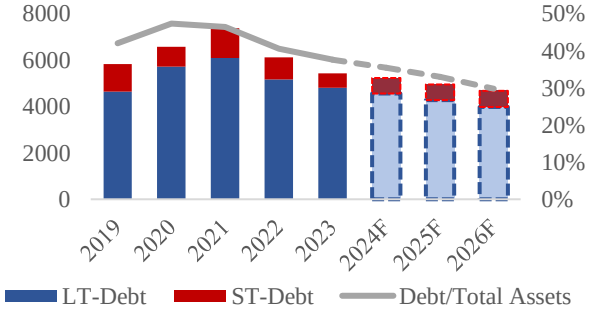
Source: HDG, GTJASVN Research

Real Estate Revenue and Gross Margin Forecast 2024F-2026F (Bil.VND)



Source: HDG, GTJASVN Research

Forecast debt/total assets ratio (Bil.VND)



Source: HDG, GTJASVN Research

FORECAST AND VALUATION

We recommend **BUY** for HDG shares with a fair value for 2025 of VND **34,300/share** (Upside 20.4% compared to the closing price on December 31, 2024) based on the SOTP partial valuation method. In which, the main contribution comes from (1) Energy segment from hydropower, wind power and solar power, (2) Revenue from Hado Charm Villas project phase 3 from 2025-2026 and cash flow from 2 projects Hado Green Lane and Linh Trung in the period 2026-2028 and (3) Office and hotel rental revenue growth in 2024F/2025F is 8% and 15% respectively. We use the following methods: (1) DCF for the power sector with a WACC discount rate of 11.96% and an assumed long-term growth rate of 0.5%/year, (2) RNAV for the residential real estate sector with a discount rate of 13%, (3) office and hotel leasing with a Cap Rate discount rate of 8.5% and (4) valuation by book value at the end of Q3/2024 for the construction and other services sector.

Regarding investment risks, we are concerned about the risks related to:

- Legal risks of the Hado Green Lane and Minh Long projects
- Risk of the FIT price mechanism of the SP InFra 1 power plant being canceled

WACC	
Beta (Adjusted)	1.25
Risk Premium	11%
Risk free rate	3.1%
Ke	**14.4%**
Kd	**8.3%**
E/A	34%
D/A	66%
WACC	**11.96%**

Business Segments	Method	Discount Rate	NPV 2025F
Electric	**DCF**	**11.96%**	**10,243**
Real Estate Investments	RNAV	13%	3,052
Hotel and Office leasing	Capitalization Rate	8.5%	1,370
Other industrial services	Book Value		64
Total Value			**14,729**
(+) Cash and Equivalents			1,993
(-) Net Debt			4,947
(-) Non-controlling Interest			239
Enterprise Value (Bil.VND)			**11,536**
Shares Outstanding			336,331,529
Target Price			**34,301**
Upside			**20.4%**

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