Capital demand in Vietnam energy industry

THEMATIC REPORT

Trung Hoang
☎ (84) 989.573.673
✉ trunght@shinhan.com







- The Vietnam electricity industry overview
- Capital demand in Vietnam energy industry
- Capital demand for Power Generation Joint Stock Corporation 3

The Vietnam electricity industry overview

The Vietnam government plans to expand Vietnam's power capacity to triple over the next 15 years. Total power capacity is forecasted to increase to 129.5 GW in 2030 from 42.1GW in 2016. In which, coal thermal is projected to be the main source for electricity production while renewable energy is showing an upward trend.

Currently, the construction progress of many power projects is very slow. We estimate that additional capacity in the next 2 years accounts for only 40- 50% of demand increase. Vietnam average reserve margin is reporting a low level. we assess all power plants will run full their capacity in next coming year to adap the increase of power demand

Capital demand in Vietnam energy industry

We estimate that Vietnam need around ~USD5-6 billion capital / year until 2030 to invest in energy industry. However, electricity developers face more challenge to meet CAPEX capital demand, due to two caustions: 1) less guarantee support and more strictly regulation from Vietnam government; and 2) Vietnam domestic commercial banks' lending limit for electricity projects is 15% of the bank's charter capital.

Therefore, we assess that EVN and other developers could not finance their next mega electricity projects from Vietnam bank's loans. The electricity developers are seeking a huge investment capital demand from foreign financial institutions.

Capital demand for Power Generation Joint Stock Corporation 3

Power Generation Corporation No 3. (GENCO 3), the No.2 biggest electricity producer in Vietnam, possesses a 6.3 GW power portfolio (accouting ~13% of national capacity). Currently, Genco 3 is seeking foreign capital for its mega project "Long Son Gas Power Center" with total CAPEX phase 1 around VND24,292 bn (~USD1,1 bn). The groundbreaking is expected from 2021-2025. The investment capital will be contributed 70% by debt. The management expect the tenor of debt is expected at least 10 years.

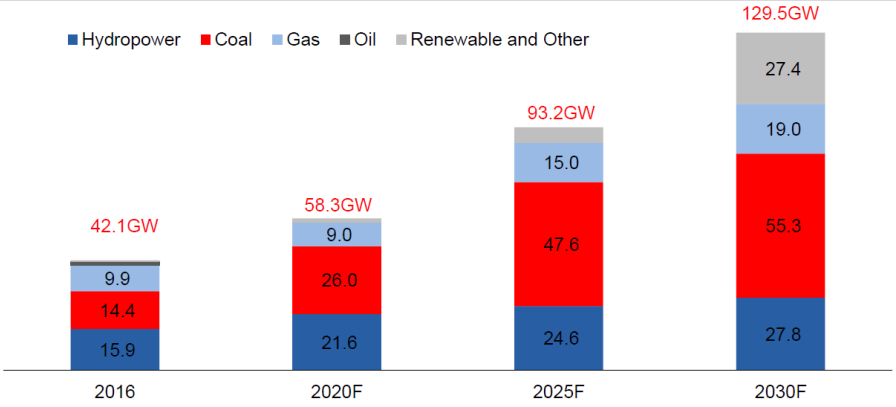
1. The Vietnam electricity industry overview

a) Overview

According to Vietnam Power Development Plan VII for the period of 2016 – 2030 (hereinafter refferred to as PDP 7) in March 18th 2016, the government plans to expand Vietnam's power capacity to triple over the next 15 years. Total power capacity is forecasted to increase to 129.5 GW in 2030 from 42.1GW in 2016.

Following government's plan, coal thermal is projected to be the main source for electricity production while renewable energy is showing an upward trend. The proportion of coal only changes slightly between 2020 and 2030, and is projected to provide a half of total electricity production. Besides, the projections for the share of electricity produced from gas have undergone a significant change for 2020. Similarly, and somewhat surprisingly, the proportion of hydro power have seen a significant decrease of its contribution in power capacity, due to the full using hydro resources.

Breakdown of Vietnam's power capacity

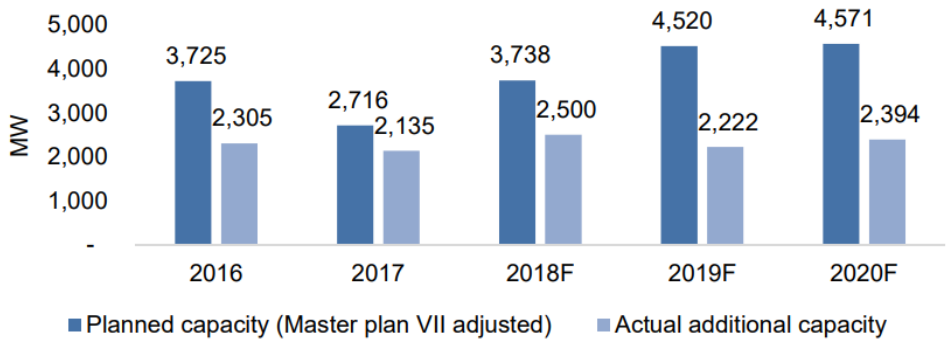


Source: EVN, Shinhan Investment Corp.

b) Shortage of electricity supply makes price peak in 2019

According to the Decision No 219/QD-TTg approving business plan of the period 2016 - 2020 of EVN, electricity consumption is expected to increase at 10%/year from 2018 to 2020. To meet demand, electricity generation capacity must increase by 4,000- 5,000 MW/year. However, the construction progress of many power projects is very slow. We estimate that additional capacity in the next 2 years accounts for only 40- 50% of demand increase.

Vietnam power generation capacity in period 2016-2020



Source: EVN & Shinhan Investment Corp.

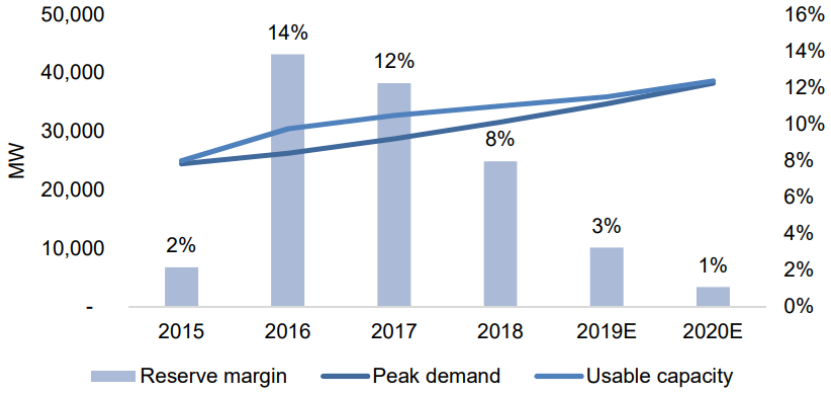
Vietnam average reserve margin (*) in the past 3 years was only 10%, lower than 25- 40% of the region

and recommendation level 25%-30% of International Energy Agency (IEA). Demand has been growing quickly while electricity capacity has slightly increased only 5%/year, making reserve margin decrease to a very thin level.

(*) Reserve margin = (Usable capacity – peak demand) /Usable Capacity: Reverse margin represents the redundancy between the power plant capacity and power demand in the system. The lower reserve margin as the lower shortage of electricity supply

Therefore, we assess all power plants will run full their capacity in next coming year to adap the increase of power demand.

Power reserve margin of Vietnam for the period of 2015 - 2020E



Source: MOIT & Shinhan Investment Corp.

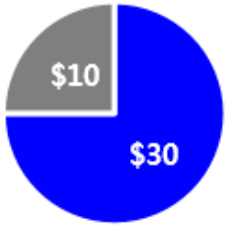
2. Capital demand in Vietnam energy industry

To implement the PDP 7, the government estimates that total investment capital (without BOT projects) will be approximately VND3,207 trillion (equivalent to ~USD148 billion). For the period 2016-2020, around USD40 billion are required, of which 75% will be used for power generation development and 25% for power network development. The amount of USD108 billion is required for period 2021-2030 with a similar distribution for power generation and network development respectively. We estimate that Vietnam need around ~USD5-6 billion capital / year until 2030 to invest in energy industry.

According to degree 04/2017/ND-CP about Vietnam's government guarantee, the government has just provided maximum 70% total investment capital for energy projects (from previously 80% CAPEX). The conditions for government guarantee or loans are more and more strict, and longer approval process. Especially these projects, with CAPEX orver VND10 trillion (~USD500 mn), must be submitted to the National Assemble for approval.

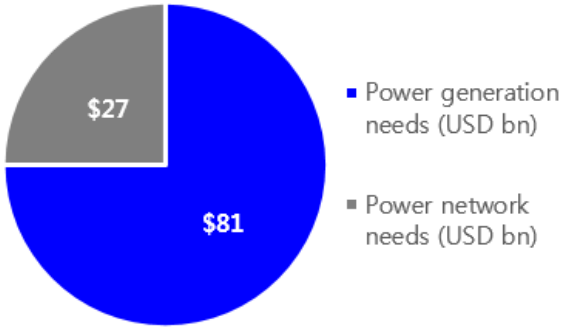
In addition, Vietnam domestic commercial banks' lending limit for electricity projects is 15% of the bank's charter capital. Meanwhile, the charter capital of the largest banks in Vietnam is currently only around VND30,000-40,000 billion. Therefore, we assess that EVN and other developers could not finance their next mega electricity projects from Vietnam bank's loans. The electricity developers are seeking a huge investment capital demand from foreign financial institutions.

Investment capital required in 2016-2020 (USD bn)



Source: EVN & Shinhan Investment Corp.

Investment capital required in 2020-2030 (USD bn)



Source: EVN & Shinhan Investment Corp.

3. Capital demand for Power Generation Joint Stock Corporation 3 (UPCoM: PGV)

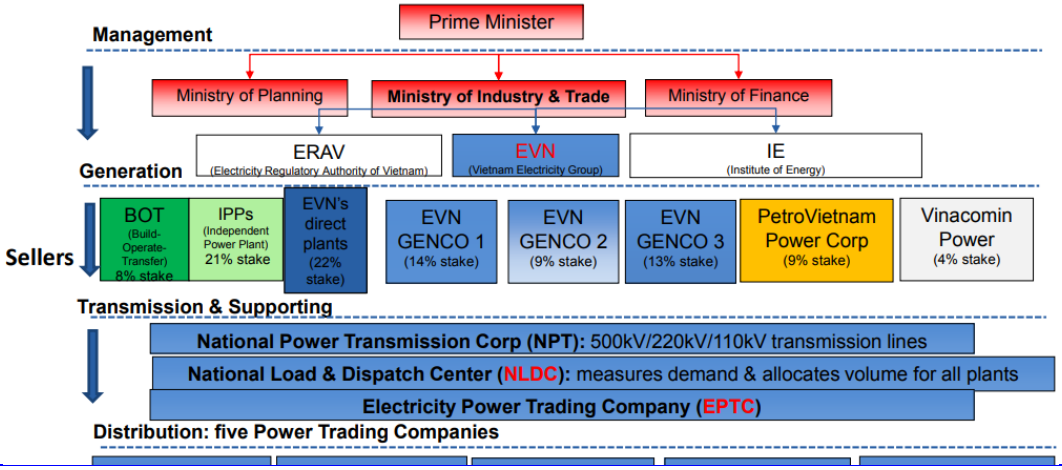
Power Generation Corporation No 3. (GENCO 3) is the No.2 biggest electricity producer in Vietnam. It possesses a 6.3 GW power portfolio, 13% of national capacity. Gas-fired plants contribute 45% of capacity, followed by coal-fired plants at 37% of capacity with the remainder from hydropower plants and other.

Currently, Genco 3 is seeking foreign capital for its mega project "Long Son Gas Power Center" with total CAPEX phase 1 around VND24,292 bn (~USD1,1 bn). The groundbreaking is expected from 2021-2025. The investment capital will be contributed 70% by debt. The management expect the tenor of debt is expected at least 10 years.

Regarding to electricity output, Ba Ria – Vung Tau was attracted some mega FDI and domestic projects, which raise huge energy demand in internal province in coming years. Some typical projects are Southern Petrochemical Complex by SCG Thailand (~ USD5.4 bn), Polypropylene and LPG Complex by Hyosung (~1.2 bn), Paper Merubeni factory (~USD211 mn), LPG warehouse Hai Linh (~USD218 mn) and My Xuan Granite Bricks factory (~ USD50 mn). We assess Genco 3's project will achieve high efficiency after operation thank to its prime location in big industrial zone.

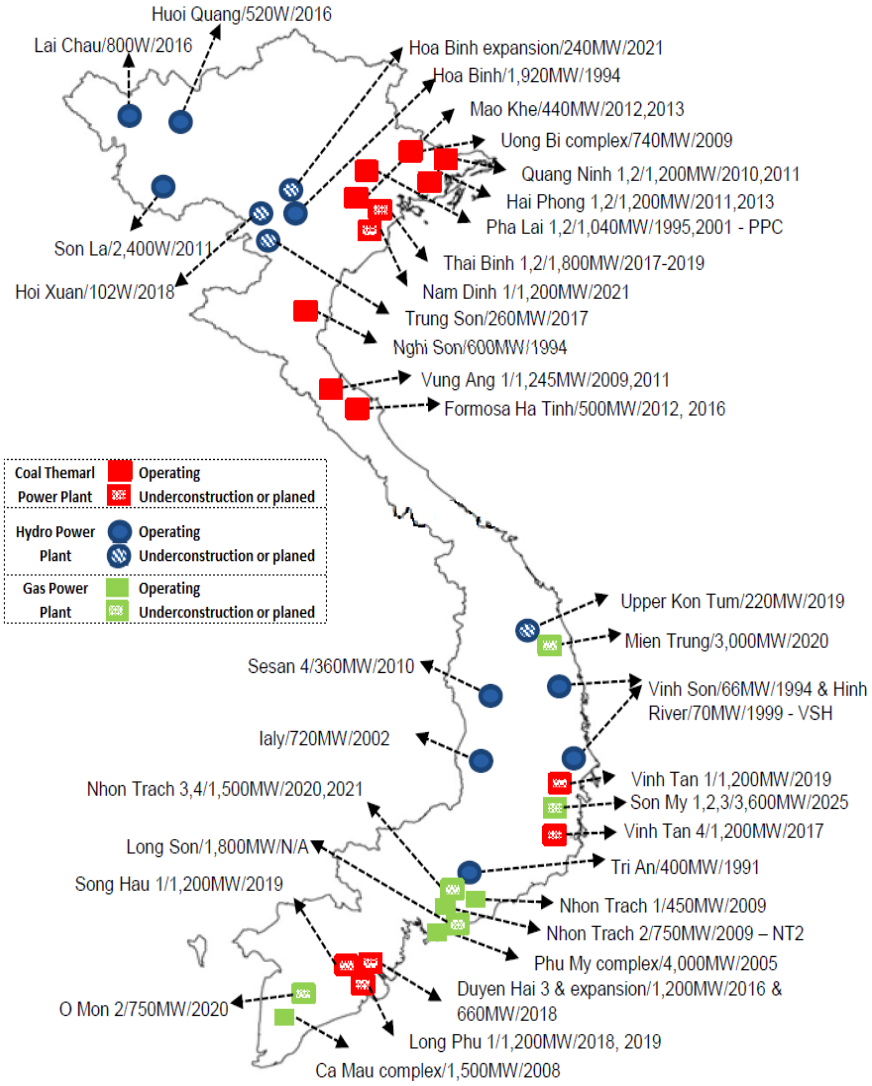
Current status: Ba Ria – Vung Tau's standing committee approved the guideline on location selection, determined the project border and studied the location of the prospective project and is currently completing the procedures for addition of the project to the national electricity development planning.

Vietnam's power industry structure



Source: EVN, Shinhan Investment Corp.

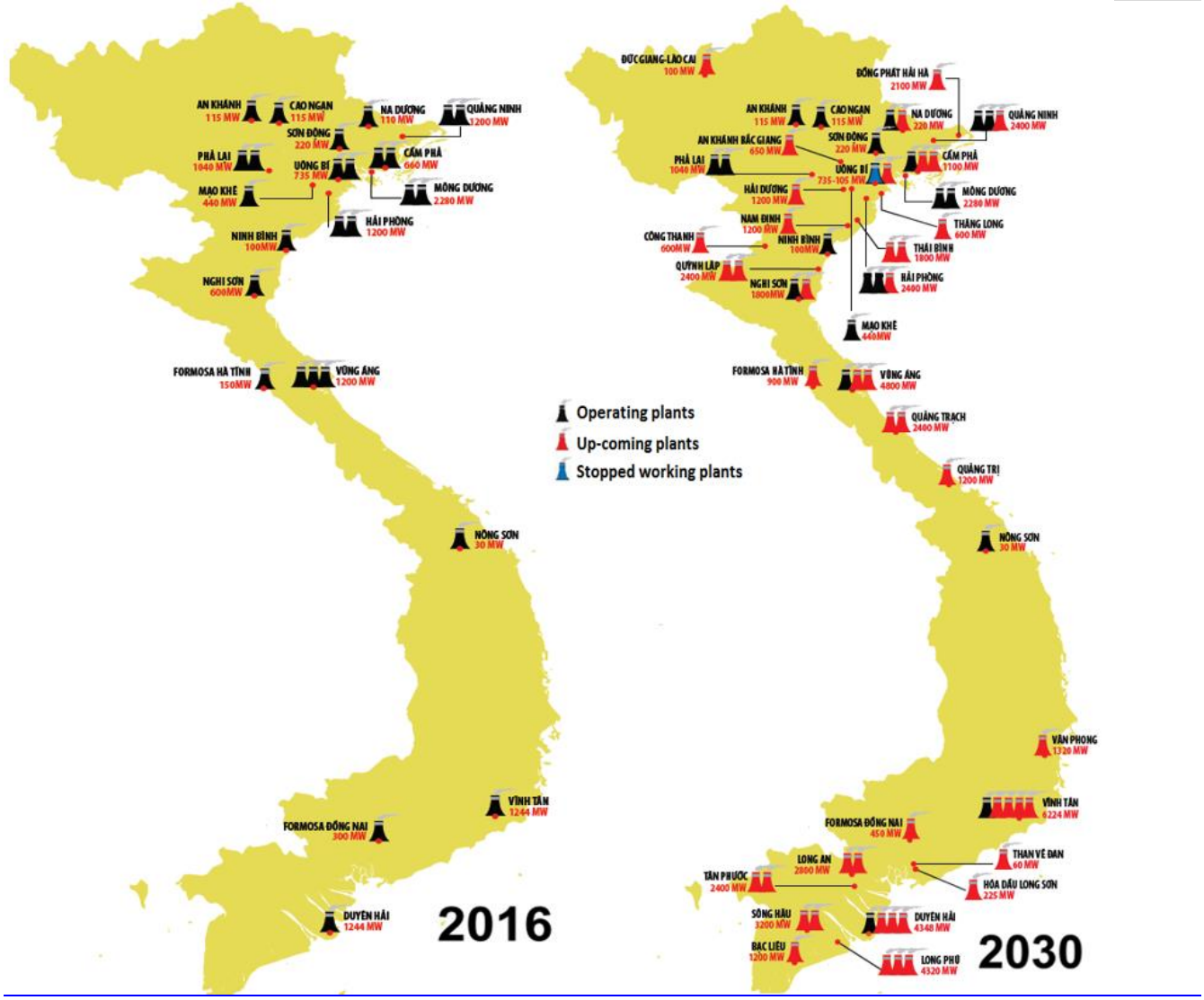
Major Vietnam power plants system map



Source: Shinhan Investment Corp.

Coal thermal power

Coal thermal power plants development map



Source: Shinhan Investment Corp.

According to PDP VII revised, share of coal thermal electricity production in the total power mix will be increased to 49.3% and 53.2% in 2020 and 2030, respectively. Thank to the low cost competitive, the uptrend of coal thermal power development contributes to ensure a rapid increase in electricity demand in line with GDP growth.

However, the increase of coal power may make a potential negative impacts on social welfare and environment. Some coal powers are facing the solid waste solution when operating coal plant. Moreover, coal power put out CO2 smoker to make harmful impact to environment.

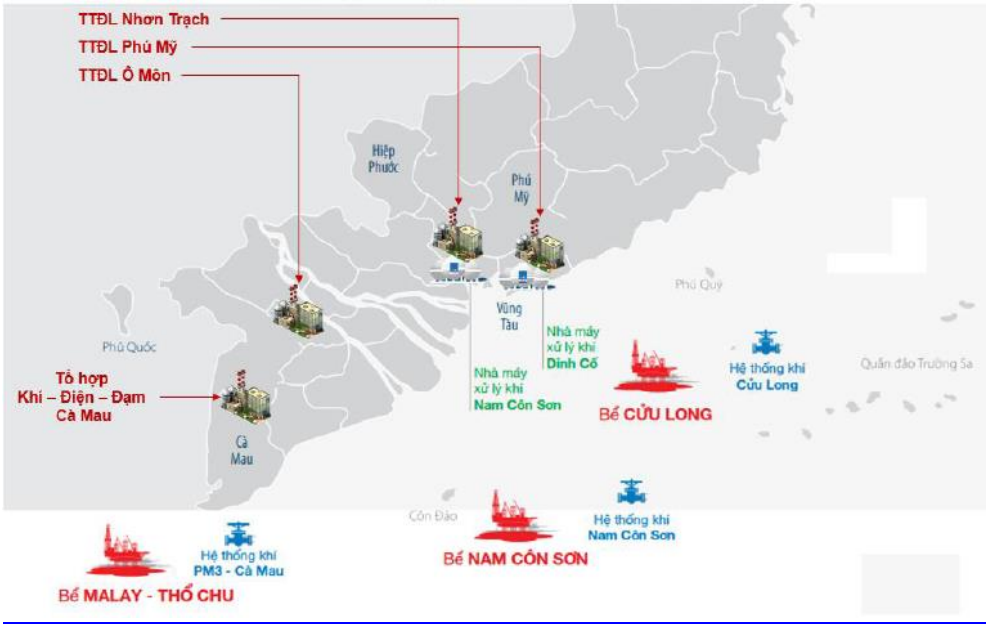
Vietnam will add more than 62 coal power plant in the period 2019-2030. The detail as following table:

No.	Name of power plant	Installed capacity (MW)	Main investor
Projects in operation from 2019			
1	Thang Long thermal power station (2ndphase)	300	Thang Long Thermal Power JSC
2	Na Duong II thermal power station	110	Vinacomin
3	Long Phu I thermal power station (2ndphase)	600	PVN
4	Song Hau I thermal power station (1stand 2nd phases)	2×600	PVN
5	Duyen Hai III thermal power station expanded	660	EVN
6	Vinh Tan I thermal power station (1stand 2nd phases)	2×600	CSG – CPIH – Vinacomin (BOT)
7	Vinh Tan IV thermal power station expanded	600	EVN
Projects in operation from 2020			
8	Formosa Ha Tinh thermal power	300+200+150	Fomosa Group
9	Hai Duong thermal power station (1stphase)	600	Jaks Resources Berhad (BOT)
10	Cam Pha III thermal power station (1stand 2nd phases)	2×220	Vinacomin
11	Cong Thanh thermal power station	600	Cong Thanh Thermal Power JSC
Projects in operation from 2021			
12	Nghi Son II thermal power station (1stphase)	600	Marubeni – Kepco (BOT)
13	Vung Ang II thermal power station (1stphase)	600	VAPCO (BOT)
14	Hai Duong thermal power station (2ndphase)	600	Jaks Resources Berhad (BOT)
15	Nam Dinh I thermal power station (1stphase)	600	Taekwang Power Holdings – ACWA Power (BOT)
16	Quang Trach I thermal power station (1stphase)	600	PVN
17	Duyen Hai II thermal power station (1stand 2nd phases)	2×600	Janakuasa Sdn. Bhd (BOT)
18	Song Hau II thermal power station (1stphase)	1000	Toyo Ink (BOT)
19	Long Phu II thermal power station (1stphase)	660	TATA Power (BOT)
20	Long Phu III thermal power station (1stphase)	600	PVN
21	Uong Bi thermal power station ceasing power generation	105	EVN
Projects in operation from 2022 - 2025			
22	Hai Ha 2 thermal power plant	5×150	Texhong Hai Ha Group (China)
23	Quynh Lap I thermal power station (1stphase)	600	Vinacomin
24	Vung Ang II thermal power station (2ndphase)	600	VAPCO (BOT)
25	Nghi Son II thermal power station (2ndphase)	600	Marubeni – Kepco (BOT)
26	Nam Dinh I thermal power station (2ndphase)	600	Taekwang Power Holdings – ACWA Power (BOT)
27	Quang Trach I thermal power station (2nd phase)	600	PVN
28	Vinh Tan III thermal power station (1stphase)	660	VTEC (BOT)
29	Song Hau II thermal power station (2ndphase)	1000	Toyo Ink (BOT)
30	Long Phu II thermal power station (2ndphase)	660	TATA Power (BOT)
31	Long Phu III thermal power station (2ndand 3rd phases)	2×600	PVN
32	Van Phong I thermal power station (1ststation)	660	Sumitomo (BOT)
33	Quynh Lap I thermal power station (2ndphase)	600	Vinacomin
34	Quang Tri thermal power station (1stphase)	600	EGATi (BOT)
35	Vinh Tan III thermal power station (2ndand 3rd phases)	2×660	VTEC (BOT)
36	Van Phong I thermal power station (2ndphase)	660	Sumitomo (BOT)
37	Vung Ang III thermal power station (1stphase)	600	Samsung C&T (BOT)
38	Quang Tri thermal power station (2ndphase)	600	EGATi (BOT)
39	Long An I thermal power station (1stphase)	600	Not determined
40	Hai Phong III thermal power station (1stphase)	600	Vinacomin
41	Hai Ha 3 thermal power plant	2×300	Texhong Hai Ha Group (China)
42	Rang Dong thermal power plant	100	IPP
43	Vung Ang III thermal power station (2ndphase)	600	Samsung C&T (BOT)
44	Long An I thermal power station (2ndphase)	600	Not determined
Projects in operation from 2026 -2030			

45	Hai Phong III thermal power station (2ndphase)	600	Vinacomin
46	Quynh Lap II thermal power station (1stphase)	600	BOT
47	Long An II thermal power station (1stphase)	800	Not determined
48	Quynh Lap II thermal power station (2ndphase)	600	BOT
49	Long An II thermal power station (2ndphase)	800	Not determined
50	Tan Phuoc I thermal power station (1stphase)	600	Not determined
51	Hai Ha 4 thermal power plant	2×300	Texhong Hai Ha Group (China)
52	Quang Trach II thermal power station (1st phase)	600	Not determined
53	Tan Phuoc I thermal power station (2ndphase)	600	Not determined
54	Tan Phuoc II thermal power station, 1stphase (*)	600	Not determined
55	Quang Ninh III thermal power station (1st phase)	600	Not determined
56	Vung Ang III thermal power station, 3rdphase (*)	600	Not determined
57	Quang Trach II thermal power station, 2nd phase	600	Not determined
58	Tan Phuoc II thermal power station, 2ndphase (*)	600	Not determined
59	Bac Lieu I thermal power station, 1stphase (*)	600	Not determined
60	Quang Ninh III thermal power station (2nd phase)	600	Not determined
61	Vung Ang III thermal power station, 4thphase (*)	600	Not determined
62	Bac Lieu I thermal power station, 2ndphase (*)	600	Not determined

Gas thermal power

Major Vietnam power plants system map



Source: Shinhan Investment Corp.

No.	Name of power plant	Capacity (MW)	Main investor
Projects in operation from 2020 – 2025			
1	Nhon Trach III combined cycle power plant	750	PVN
2	O Mon III combined cycle power plant	750	EVN
3	Kien Giang 1 combined cycle power plant	750	PVN
4	Nhon Trach IV combined cycle power plant	750	PVN
5	O Mon IV combined cycle power plant	750	EVN
6	Kien Giang II combined cycle power plant	750	PVN
7	Mien Trung I combined cycle power plant	750	PVN
8	Dung Quat I combined cycle power plant	750	Sembcorp (BOT)
9	Son My II combined cycle power plant (1st phase)	750	PVN
10	Mien Trung II combined cycle power plant	750	PVN
11	Dung Quat II combined cycle power plant	750	Sembcorp (BOT)
12	Son My II combined cycle power plant (2nd phase)	750	PVN
13	Son My II combined cycle power plant (3rd phase)	750	PVN
Projects in operation from 2026 – 2028			
14	Mien Trung III combined cycle power plant	750	PVN
15	O Mon II combined cycle power plant	750	Not determined
16	Son My I combined cycle power plant (1st phase)	750	GDF SUEZ/Sojitz-Pacific (BOT)
17	Son My I combined cycle power plant (2nd phase)	750	GDF SUEZ/Sojitz-Pacific (BOT)
18	Son My I combined cycle power plant (3rd phase)	750	GDF SUEZ/Sojitz-Pacific (BOT)

Hydro power plant

No.	Name of power plant	Installed capacity (MW)	Main investor
Projects in operation from 2019 - 2025			
1	Pac Ma hydropower plant	140	Pac Ma Hydropower JSC.
2	Thuong Kon Tum hydropower plant (1stand 2nd phases)	2×110	EVN
3	Ialy hydropower plant expanded	360	EVN
4	My Ly hydropower plant	250	My Ly - Nam Mo JSC.
5	Hoa Binh hydropower plant expanded (1st phase)	240	EVN
6	Hoa Binh hydropower plant expanded (2nd phase)	240	EVN
7	Phu Tho low head hydropower plant	105	Binh Minh Construction & Travel Group Joint-stock Company
8	Bac Ai pumped-storage hydroelectric power station (1st and 2nd phases)	2×300	EVN
9	Tri An hydropower plant expanded	200	EVN
10	Bac Ai pumped-storage hydroelectric power station (3rd and 4th phases)	2×300	EVN
Projects in operation from 2028 - 2030			
11	Dong Phu Yen pumped-storage hydroelectric power plant (1stphase)	300	Xuan Thien Company
12	Dong Phu Yen pumped-storage hydroelectric power plant (2ndphase)	300	Xuan Thien Company
13	Huoi Tao hydropower plant	180	Not determined
14	Dong Phu Yen pumped-storage hydroelectric power plant (3rdphase)	300	Xuan Thien Company
15	Don Duong pumped-storage hydroelectric power plant (1stphase)	300	EVN

Compliance Notice

- Analyst Certification: The following analysts hereby certify the information and material presented in this report are accurate expressions of their views, and that they have not received wrongful pressure to express such views.
- As of the date of this report's publication, Shinhan Investment Corp.'s shareholdings in the company mentioned in this report (Korea Zinc) do not exceed 1% of outstanding shares of the company.
- As of this date, Shinhan Investment Corp. has not participated as the lead underwriter or advisor in issuance of the securities of the company during the past 1 year.
- As of this date, the covering analyst does not possess any financial interest in the securities or debt instruments convertible into such shares of the company, which is required to be disclosed by law, and has not and will not receive any compensation of any kind whatsoever in exchange for expressing specific recommendations.
- All opinions and estimates regarding the company and its securities are accurate representations of the covering analyst's judgments as of this date, and may differ from actual results.
- This report is intended to provide information to assist investment decisions only and should not be used or considered an offer or the solicitation of an offer to sell or to buy any securities. Stock selection and final investment decisions should be made at the client's own discretion.
- This report is distributed to our clients only, and any unauthorized use, duplication, or redistribution of this report is strictly prohibited.

Distribution

- United States: This report is distributed in the U.S. by Shinhan Investment America, Inc., a member of FINRA/SIPC, and is only intended for major U.S. institutional investors as defined in Rule 15a-6(a)(2) under the U.S. Securities Exchange Act of 1934. All U.S. persons that receive this document by their acceptance thereof represent and warrant that they are a major U.S. institutional investor and have not received this report under any express or implied understanding that they will direct commission income to Shinhan Investment Corp. or its affiliates. Pursuant to Rule 15a-6(a)(3), any U.S. recipient of this document wishing to effect a transaction in any securities discussed herein should contact and place orders with Shinhan Investment America, Inc., which accepts responsibility for the contents of this report in the U.S. The securities described in this report may not have been registered under the U.S. Securities Act of 1933, as amended, and, in such case, may not be offered or sold in the U.S. or to U.S. person absent registration or an applicable exemption from the registration requirement.
- All Other Jurisdictions: Customers in all other countries who wish to effect a transaction in any securities referenced in this report should contact Shinhan or its affiliates only if distribution to or use by such customer of this report would not violate applicable laws and regulations and not subject Shinhan and its affiliates to any registration or licensing requirement within such jurisdiction.