August 2019

Vietnam Electricity

A primer look

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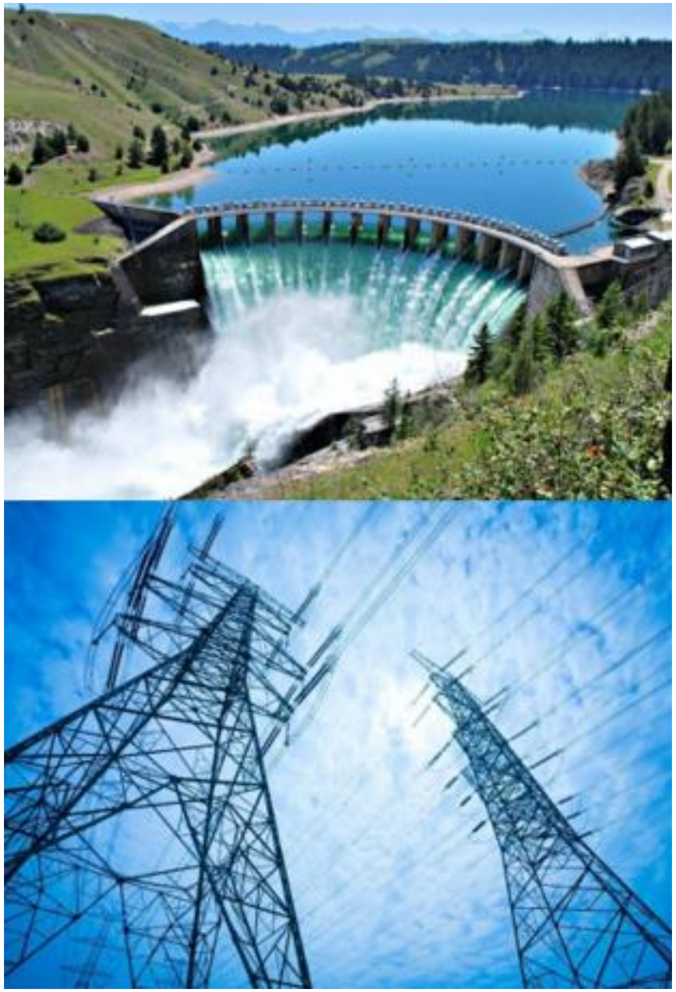
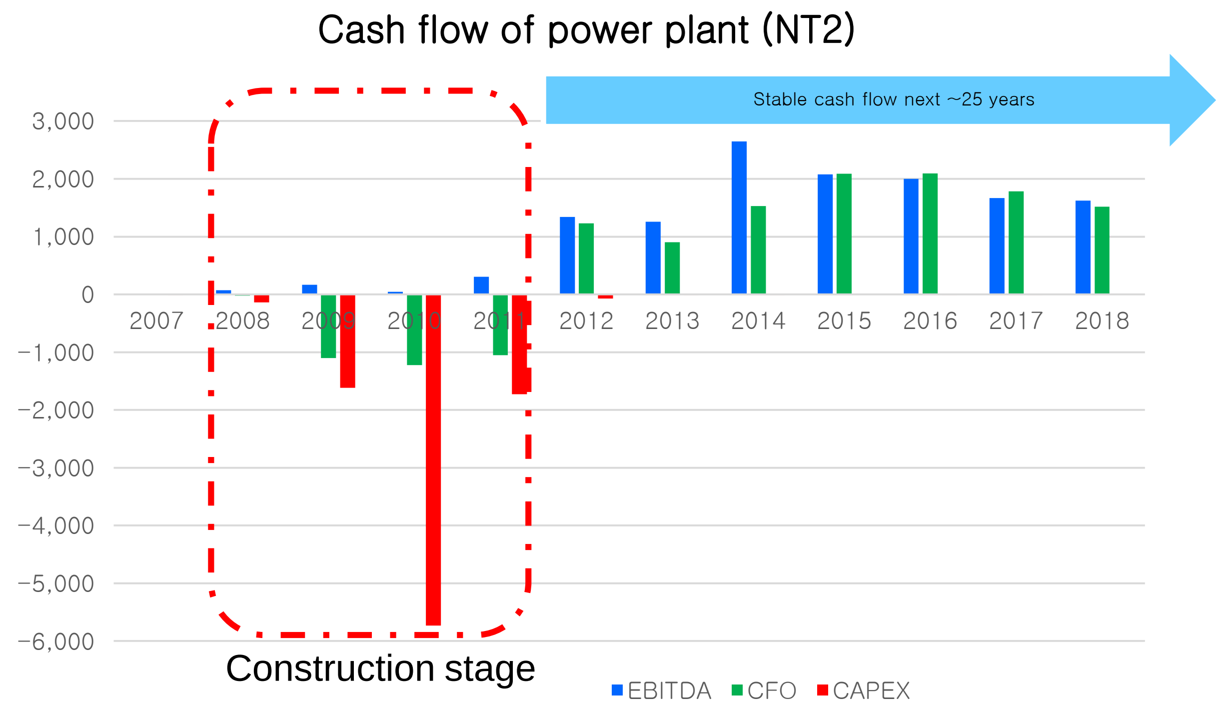


I. Electricity Industry Overview

Video

Why Electricity industry now?

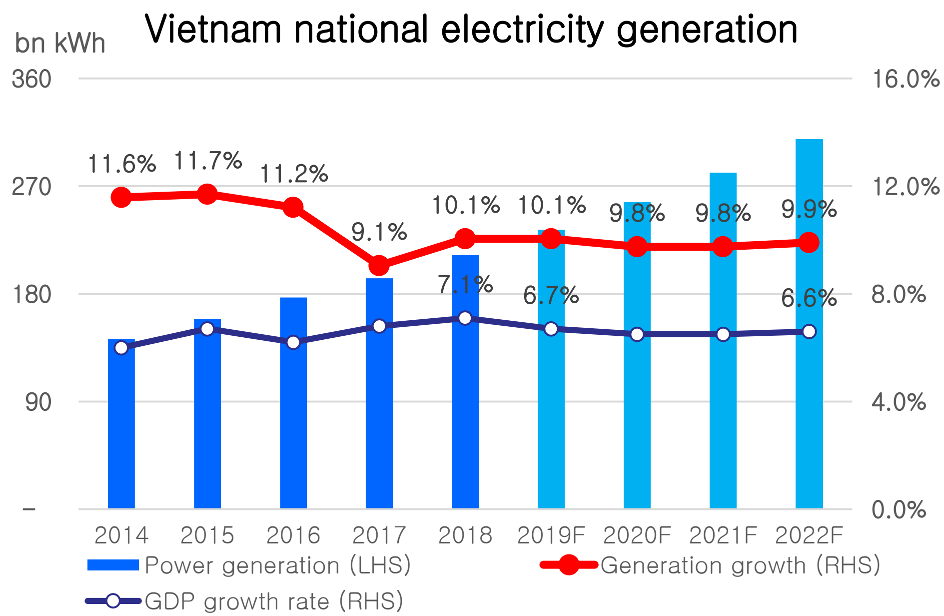
Cash-cow business model

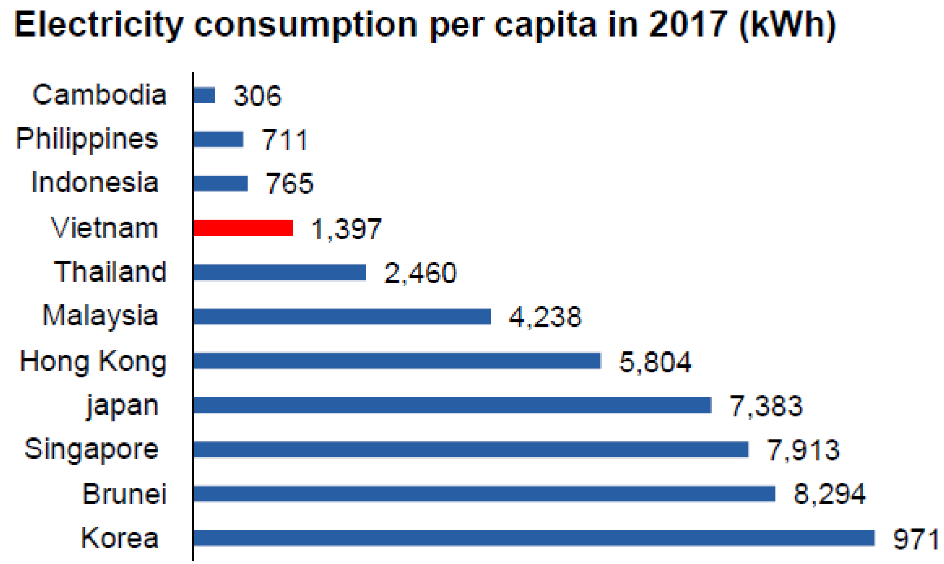


Minimized risk

- Vietnam Government ensure project performance with **IRR ~12%** via ensuring output and sale price
- Up to now, not recognize any default event relative power company

I.1 Vietnam electricity industry





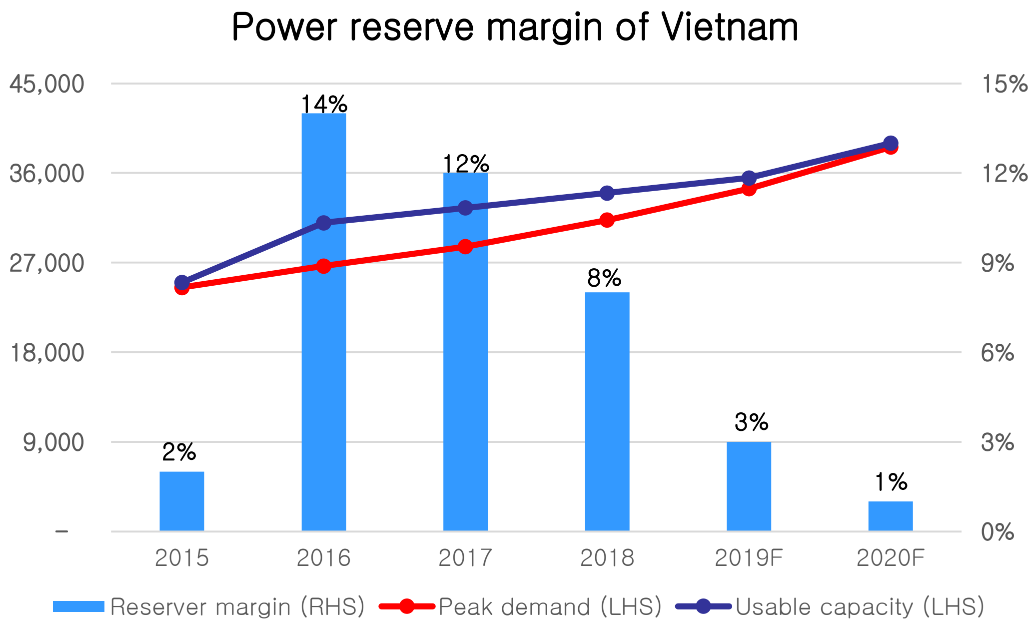
Source: CIA World Factbook

Electricity growth ~1.5x GDP growth: Every 1% GDP growth requires 1.5% electricity generation

=> Vietnam is expected GDP growth ~6.5% in next 5 years

Vietnam electricity consumption / capita is expected to increase significantly when economy develop

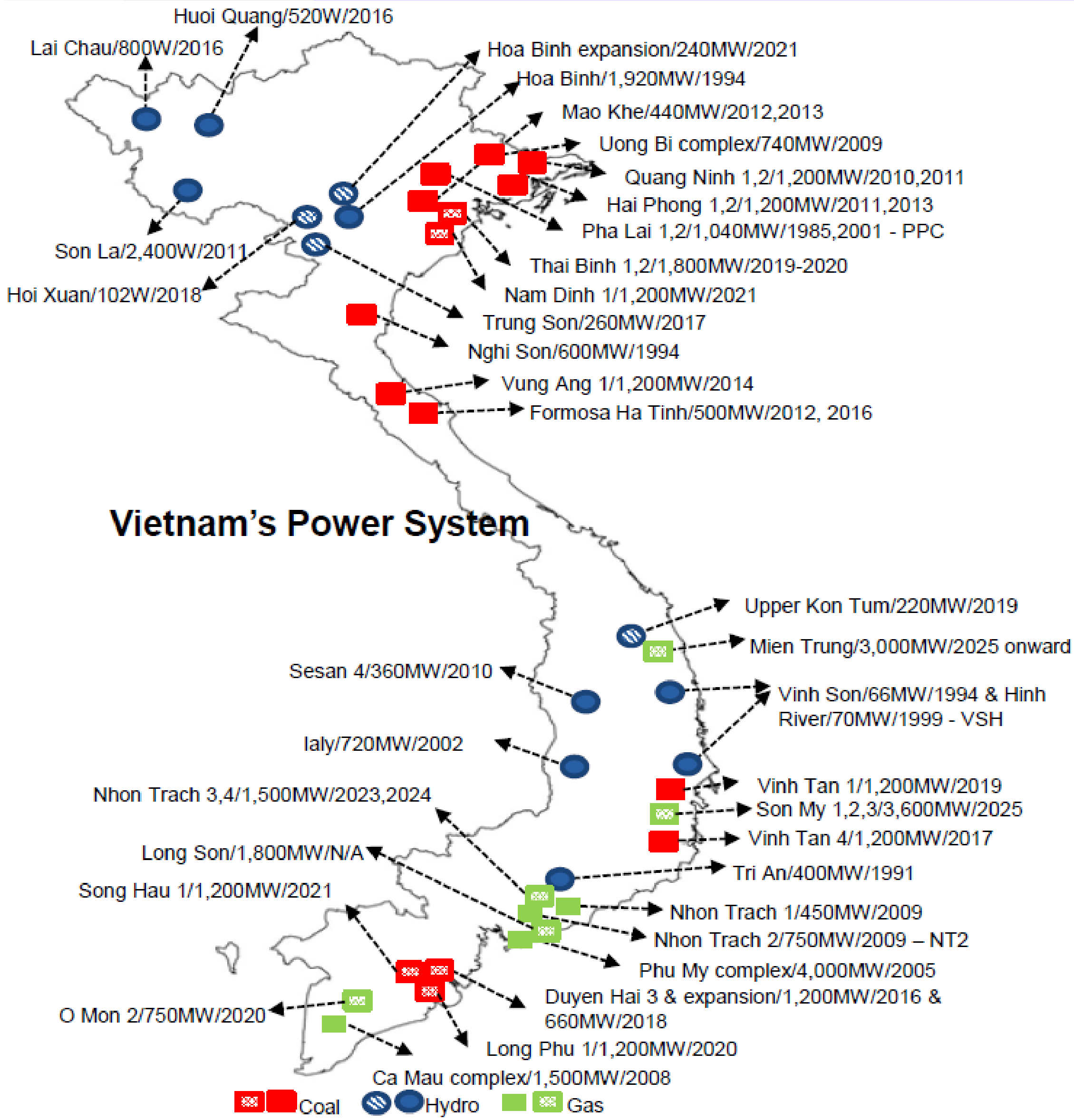
I.2 Electricity reserve



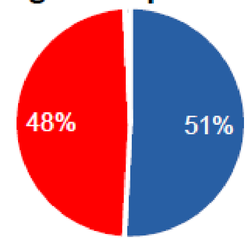
Source: MOIT & SHIC

- (*) 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

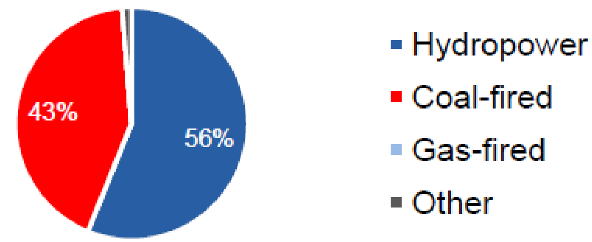
I.3 Major power plants and distribution



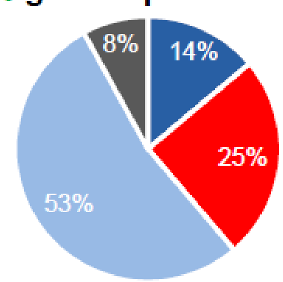
The North's (20GW, 44% of national capacity) consumption accounts for **43% of national demand**, **+12.2%** growth p.a. in 2010-2018.



Central (12GW, 25% of national capacity) consumption accounts for **9% of national demand**, **+9.8%** growth p.a. in 2010-2018.



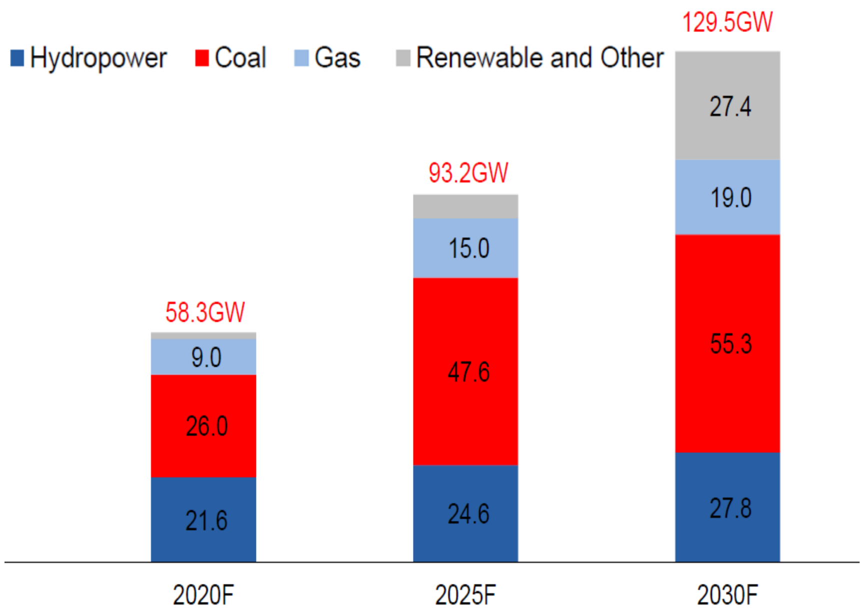
The South's (15GW, 31% of national capacity) consumption **accounts for 50% of national demand**, **+9.7%** growth p.a. in 2010-2018.



II. Electricity expansion plan and capital demand.

II.1 The Government electricity expansion plan

Breakdown VN power capacity and expansion plan



Source: EVN, MOIT & SHIC

Transmission system expansion plan annual

Item	Unit	2016~2020	2021~2025	2026~2030
500 KV Substation	MVA	26,700	26,400	23,550
220 KV Substation	MVA	34,966	33,888	32,750
500 KV Lines	km	2,746	3,592	3,714
220 KV Lines	km	7,488	4,076	3,435

Source: World Bank & MOIT

- The power generation capacity to **double over to 2030:**

  129.6GW in 2030 from 58.3GW in 2020

- Coal thermal power will contribute more proportion in national capacity.

- The transmission system need to **expand aggressively** in coming years

II.2 Vietnam Capital demand for electricity USD8–12 bn per year

Unit: USD billion	Average Annual Investment				Total Investment Financing needed 2016–30
	Historic Period 2011–2015	Forecast Period			
		2016–20	2020–25	2025–30	
Generation	**6.6**	**9.8 - 12**	**7.8 - 9.5**	**6.0 - 7.3**	**118 - 144**
• Coal	3.6	7.2 - 8.8	3.9 - 4.7	3.9 - 4.7	75 - 92
• Gas	0.4	1.2 - 1.4	0.8 - 1.0	0.0 - 0.1	10 - 12
• Hydro	2.5	0.3 - 0.4	0.8 - 0.9	-	5 - 7
• Renewables	0.1	1.1 - 1.3	2.3 - 2.9	2.0 - 2.5	27 - 33
Network	**1.2**	**1.7 - 2.1**	**2.4 - 2.9**	**2.6 - 3.2**	**34 - 41**
• Transmission	0.5	0.8 - 1.0	1.3 - 1.5	1.3 - 1.6	17 - 21
• Distribution	0.7	0.9 - 1.1	1.1 - 1.4	1.3 - 1.6	17 - 21
Grand total	**7.8**	**11.6 - 14.1**	**10.1 - 12.4**	**8.6 - 10.5**	**152 - 185**

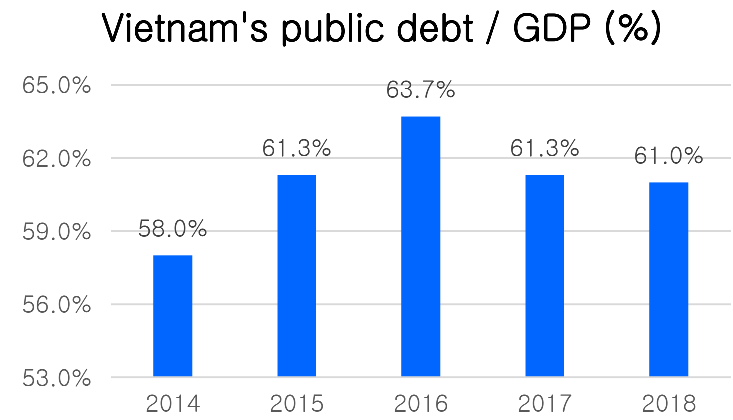
Source: World Bank & MOIT

Over the period 2011–15, the Vietnamese electricity sector has achieved investments of **US$7.8 billion per year** on average

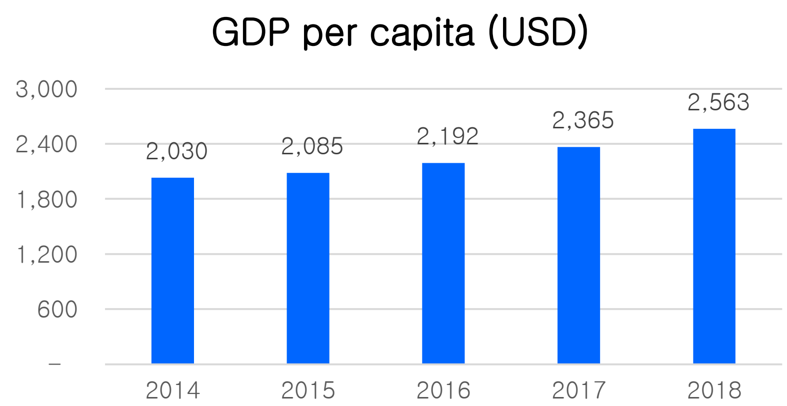
To keep pace with demand, electricity sector investments will need to accelerate substantially, to around **US$8–12 billion annually for the period 2016–30**. According to the government's PDP7, the total investment needed in the power sector for the forecasted period of 2016–30 are estimated at **US$152–185 billion**.

II.2 The constraints impede the raising capital demand

(1) By law, Vietnam's public debt **cannot exceed 65 percent of GDP**. Due to sizable fiscal deficits in recent years, public debt has risen steeply from 51.7 percent of GDP in 2010 to an estimated 61.4 percent of GDP in 2017. Therefore, it will be difficult for EVN to rely on the government for extra capital or to borrow directly from commercial banks, DPs and IFIs supported by a MOF guarantee.



(2) Due to its recent middle-income status, Vietnam has reduced access to highly concessional **funds from IFIs and DPs**

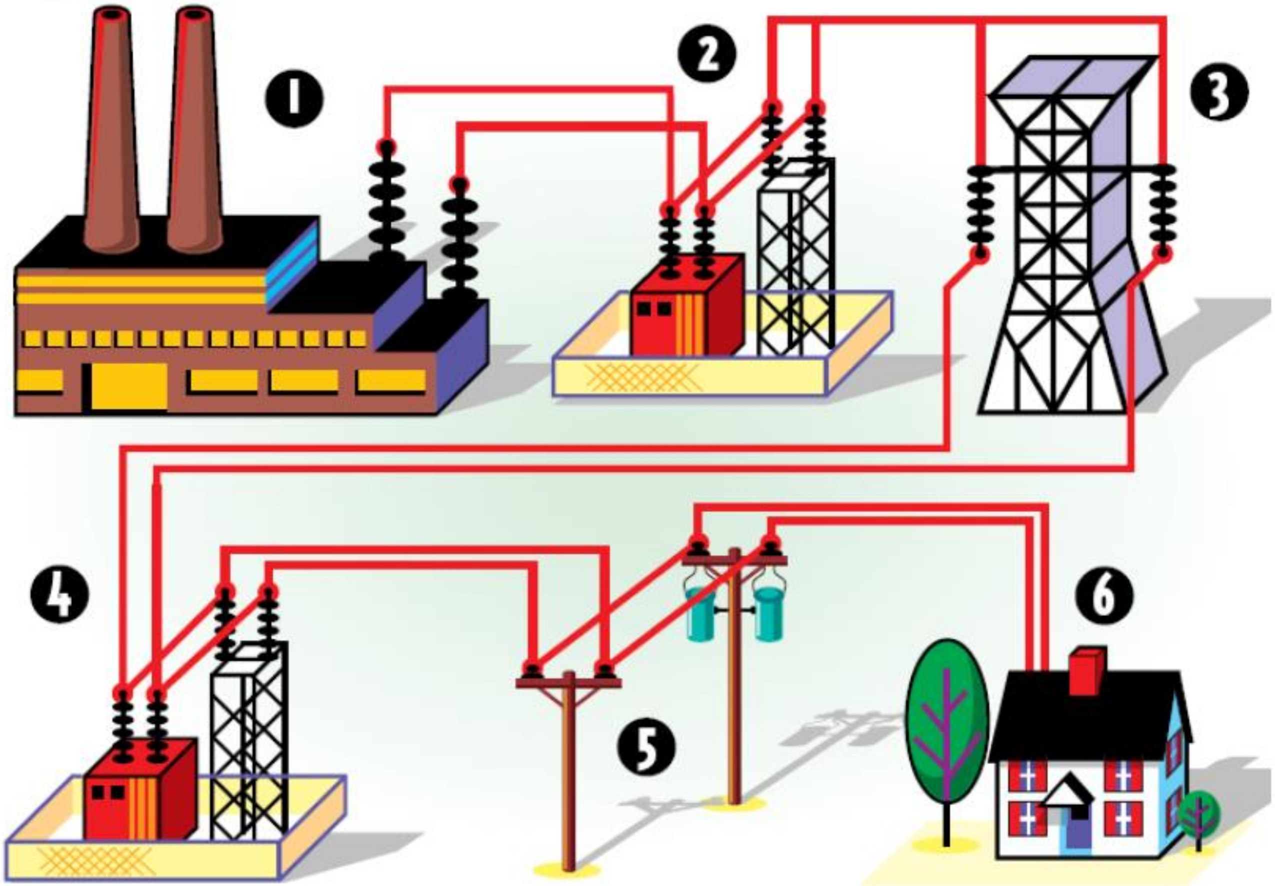


(3) Vietnam domestic commercial banks' lending limit for electricity projects is **15% of the bank's charter capital**. Meanwhile, the charter capital of the largest banks in Vietnam is currently only around VND30,000-40,000 billion

III. Vietnam Electricity Value Chain.

III.1 Electricity industry overview

The Electricity System



Source: Edison Electric Institute.

The path of electricity from the power plant to an end-user customer:

(1) electricity is generated at the power plant;

(2) voltage is raised at the substation;

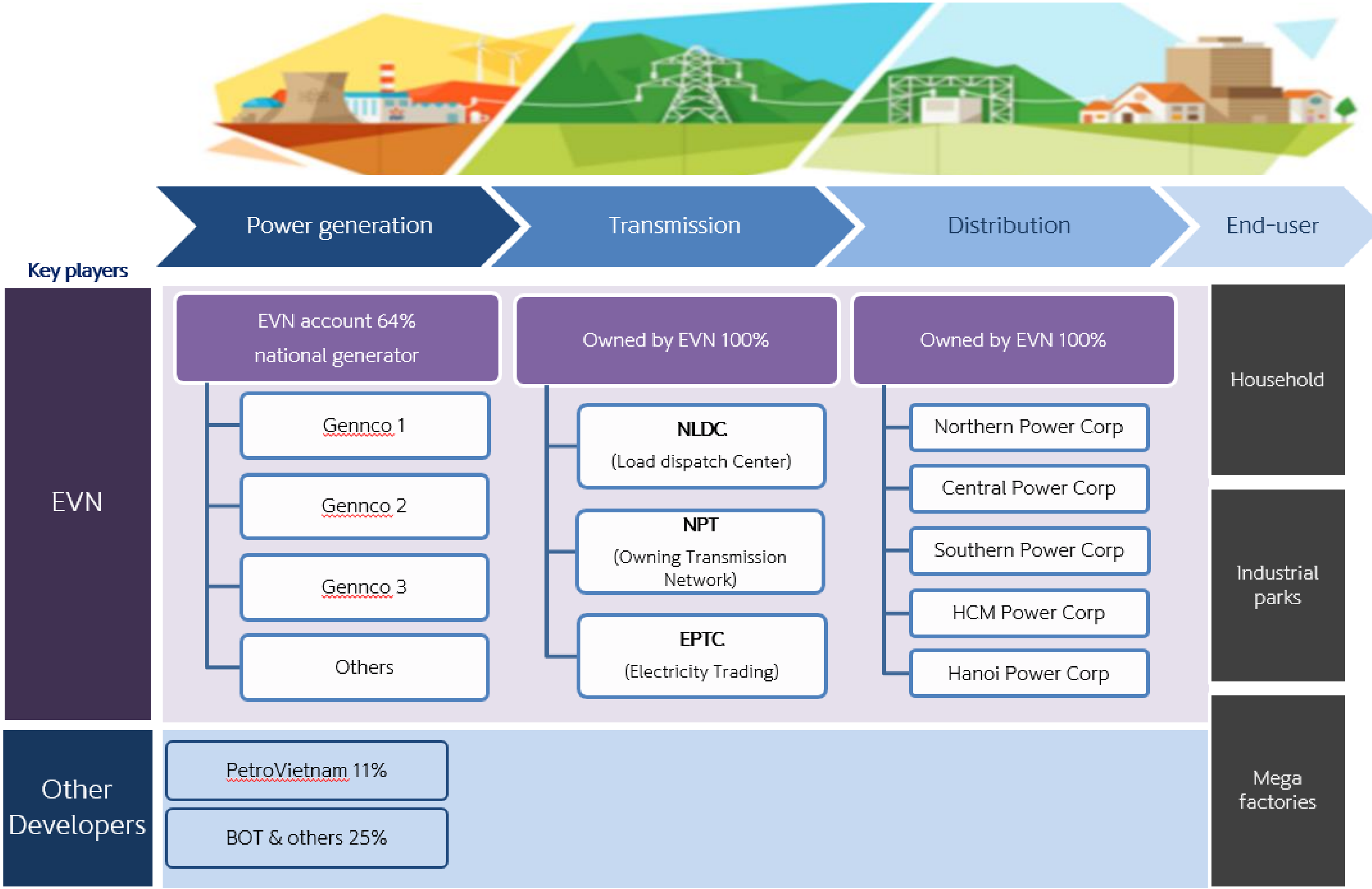
(3) transmission process begins

(4) transmission lines deliver electrical currents to a second power substation;

(5) voltage is lowered and the distribution process commences; and

(6) lower voltage electricity is distributed to residential, commercial, and industrial customers

III.3 Value chain of Vietnam electricity industry



Electricity Viet Nam Corp (EVN) play **monopoly position in mid-stream**

EVN is sole buyer electric from power plants and sole seller to end-users

III.3 Key player in Electricity Value Chain

		Key players
UPSTREAM	Power Plant Owners	EVN 22%; Genco 1 14%, Genco 2 9%, Genco 3 (PGV) 13%; PV Power (POW) 11%; Vinacomin 5%; REE 1%
UPSTREAM	Constructors	**Plant construction: Most be SOEs** SongDa Group (SJG), Lilama, Vinaconex, PVS…; **Equipment suppliers: imported equipment** Simen (Germany), General Electric (US)…; **Transmission construction: Domestic players** Power Construction No.1 (PC1), Vietnam Electricity Construction (VNE)…
UPSTREAM	Finance services	**International Finance Institutional** World Bank, Asian Development Bank, French Development Agency, KFW & JICA; **International Investment Banking** Citibank, Credit Agricole CIB, Gen X Energy, Sumitomo Mitsui Banking, Société Générale, HSBC; **Domestic Bank** Vietcombank, MBBank, Vietinbank, BIDV, ACB..
MIDSTREAM	Transmission network owner	EVN 100%; **NLDC** Load Dispatch Center; **NPT** Owning Transmission Network; **EPTC** Operating Electric Trading market
MIDSTREAM	Constructors	**Transmission network construction:** Power Construction No.1 (PC1) 50%, Vietnam Electricity Construction (VNE) 10%…; **Equipment suppliers:** Gelex transformer, Dong Anh Electrical Equipment…
MIDSTREAM	Finance services	**International Finance Institutional** World Bank, Asian Development Bank, French Development Agency, KFW & JICA; **Domestic Bank** Vietcombank, MBBank, Vietinbank, BIDV, ACB, STB, VIB, SHB, VPB..
DOWNSTREAM	Distribution network owner	EVN 100%; Northern Power Corp; Central Power Corp; Southern Power Corp; HCM Power Corp; Hanoi Power Corp
DOWNSTREAM	Constructors	**Transmission network & transformer station construction:** Power Construction No.1 (PC1), Vietnam Electricity Construction (VNE) …; **Equipment suppliers:** Gelex Equipment Corp, Dong Anh Electrical Equipment…
DOWNSTREAM	Finance services	**Domestic Bank** Vietcombank, MBBank, Vietinbank, BIDV, ACB, STB, VIB, SHB, VPB..

IV. Potential target companies.

IV. Upstream: Electricity Viet Nam Corp (EVN)

BOARD OF DIRECTORS

PRESIDENT AND CEO

- Vice President Technical and Power System Operation
- Vice President Power Business
- Vice President Investment & Construction
- Vice President Economics & Finance

- Strategy Dept.
- Internal Audit and Financial Supervision Dept.
- Office of Board of Directors
- Technical & Operational Dept.
- Safety Management Dept.
- Science - Technology & Environment Dept.
- Business Dept.
- Power Market Dept.
- Information and Communication Technology Dept.
- Organization & Human Resource Dept.
- Corporate Planning Dept.
- Communications Dept.
- Investment Management Dept.
- Procurement Management Dept.
- Construction Management Dept.
- International Relation Dept.
- Inspection Dept.
- Legal Dept.
- Financial & Accounting Dept.
- Capital Management Dept.
- General Affairs Dept.

GENERATION

Dependent Accounting Units:

1. Hoa Binh Hydropower Company
2. Ialy Hydropower Company
3. Tri An Hydropower Company
4. Tuyen Quang Hydropower Company
5. Se San Hydropower Development Company
6. Son La Hydropower Company
7. Huoi Quang – Ban Chat Hydropower Company
8. Thai Binh Thermal Power Company
9. Vinh Tan 4 Thermal Power Plant

Independent Accounting Units:

10. Power Generation Corporation 1
11. Power Generation Corporation 2
12. Power Generation Corporation 3 - JSC
13. Thu Duc Thermal Power Company

TRANSMISSION

Independent Accounting Unit:

1. National Power Transmission Corporation

Dependent Accounting Unit:

2. National Load Dispatch Center

DISTRIBUTION

Independent Accounting Units:

1. Northern Power Corporation
2. Central Power Corporation
3. Southern Power Corporation
4. Hanoi Power Corporation
5. Hochiminh City Power Corporation

OTHERS

Dependent Accounting Units:

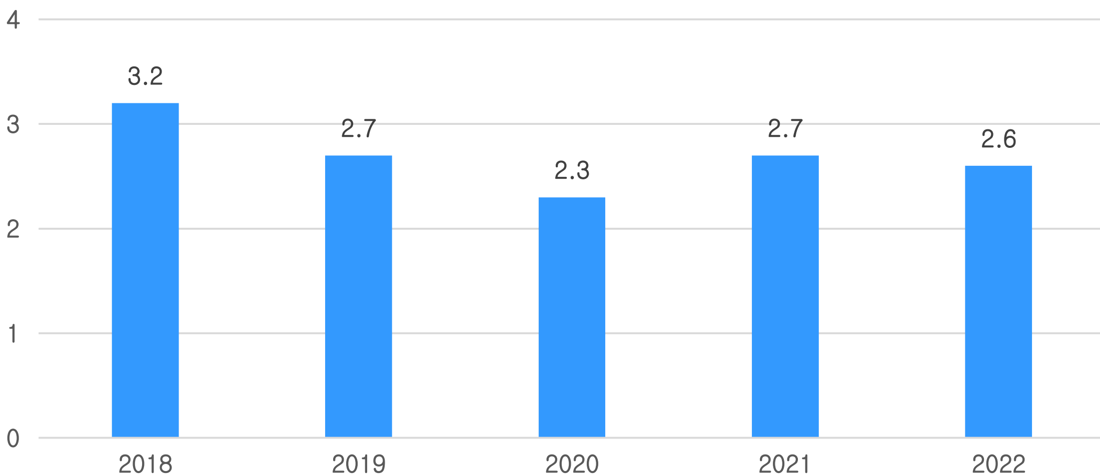
1. Vietnam Electricity Power Projects Management Board No.1
2. Vietnam Electricity Power Projects Management Board No.2
3. Vietnam Electricity Power Projects Management Board No.3
4. EVN Construction and Technology Investment Management Board
5. Electric Power Trading Company
6. Electric Information Center
7. Information & Communication Technology Company of Vietnam Electricity
8. EVN Power Service Center

Independent Accounting Units:

9. Dong Anh Electrical Equipment Corporation JSC
10. Power Engineering Consulting No. 1 JSC
11. Power Engineering Consulting No. 2 JSC
12. Power Engineering Consulting No. 3 JSC
13. Power Engineering Consulting No. 4 JSC
14. Vinh Tan 3 Energy JSC
15. Thuan Binh Wind Power JSC
16. EVN Finance JSC

IV. Upstream: Electricity Viet Nam Corp (EVN)

EVN's Debt Financing Requirements (USD bn)



Source: World Bank & EVN

EVN will continue to play an important role and will be responsible for about **30 percent** of total investment requirements until 2030. During the period 2018–22, EVN debt financing requirements, which include new debt-to-finance capex as well as maturing debt-to-refinance existing debt, are **US$2.3–3.2 billion annually**

FitchRatings

BB EVN

2018 EVN was the first state-owned enterprise of Vietnam to be assigned by Fitch Ratings an Issuer Default Rating of 'BB', with a 'Stable Outlook' for long-term foreign currency.

EVN is seeking debt financing from potential domestic and international investors

IV. Upstream: Electricity Viet Nam Corp (EVN)

Dec 31 (VNDbn)	2014	2015	2016	2017
Current assets	**99,174**	**105,608**	**99,943**	**105,285**
Cash & equivalents	44,325	41,969	41,513	45,704
Short-term financial asset	9,980	17,361	18,616	17,916
Accounts receivable	24,139	24,289	19,166	17,214
Inventory	15,999	17,063	15,799	17,772
Other current assets	4,731	4,926	4,849	6,679
Non-current assets	**476,913**	**535,432**	**592,274**	**596,295**
Net fixed assets	321,773	425,426	473,737	493,943
Investments	6,143	5,032	5,151	5,508
Other long-term assets	148,997	104,974	113,386	96,844
Total assets	**576,087**	**641,040**	**692,217**	**701,580**
Current liabilities	**103,443**	**120,237**	**121,193**	**115,557**
Accounts payable	41,433	53,364	57,732	50,269
Short-term debt	37,668	42,638	35,663	38,027
Other current liabilities	24,342	24,235	27,798	27,261
Non-current liabilities	**303,676**	**334,523**	**365,788**	**373,574**
Long-term debt	300,713	327,515	360,929	366,418
Other long-term liabilities	2,963	7,008	4,859	7,156
Total liabilities	**407,119**	**454,760**	**486,981**	**489,131**
Controlling Interests	161,129	178,746	198,245	204,464
Minority & other funds (*)	7,839	7,534	6,991	7,985
Shareholder's equity	**168,968**	**186,280**	**205,236**	**212,449**

- **Weak earning margin but strong cash flow and EBITDA**
- **High leverage level**

Dec 31 (VND bn)	2014	2015	2016	2017
Revenue	**202,645**	**240,734**	**272,703**	**294,847**
Cost of goods sold	(173,283)	(204,486)	(233,671)	(250,742)
Gross profit	**29,362**	**36,248**	**39,031**	**44,105**
Gross margin	*14.5%*	*15.1%*	*14.3%*	*15.0%*
SG&A	(12,562)	(14,678)	(16,525)	(18,594)
SG&A margin	*6.2%*	*6.1%*	*6.1%*	*6.3%*
Operating income	16,800	21,570	22,506	25,511
Operating margin	*8.3%*	*9.0%*	*8.3%*	*8.7%*
Profit before tax	5,351	4,595	5,165	8,145
Profit before tax margin	*3%*	*2%*	*2%*	*3%*
Net interest income (lo ss)	3,333	3,557	3,526	5,109
Net profit margin	*1.6%*	*1.5%*	*1.3%*	*1.7%*

Dec 31 (VNDbn)	2014	2015	2016	2017
Quick Ratio	0.66	0.55	0.50	0.54
Current Ratio	0.96	0.88	0.82	0.91
Total Debt/Equity	2.00	1.99	1.93	1.90
Total Liabilities/Equity	2.41	2.44	2.37	2.30
Cash flow				
Cash flow from operations	43,901	68,310	103,480	70,196
Cash flow from investing	(91,420)	(92,154)	(125,253)	(71,011)
Cash flow from financing	55,065	21,460	21,300	5,004
EBIT	16,800	21,569	22,506	25,511
EBIT margin	8.3%	9.0%	8.3%	8.7%
EBITDA	62,937	76,429	88,195	98,170
EBITDA margin	31.1%	31.8%	32.3%	33.3%

IV. Upstream: Refrigeration Electrical Engineering (REE)

REE Corporation

General Meeting of Shareholders

Board of Directors

Board of Management

Refrigeration Electrical Engineering

REE M&E

REE Industries

Real Estate

REE Land

REE Property

VIID

Associates

Infrastructure Ultilities

Power sector

EVNNPC THAC BA

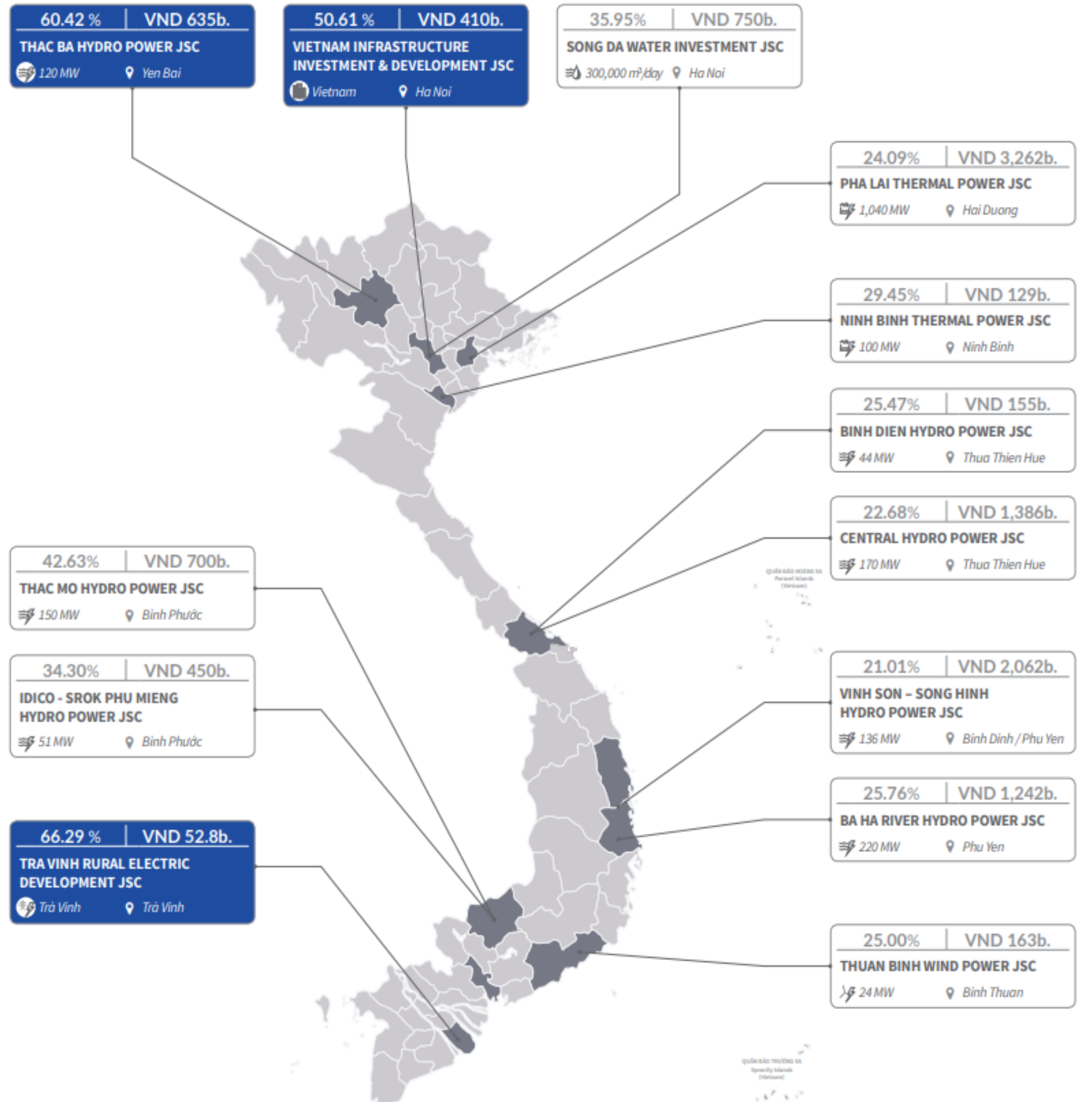
Associates

IDICO SHP

Water sector

Associates

TDW



IV. Upstream: Refrigeration Electrical Engineering (REE)

REE Corporation

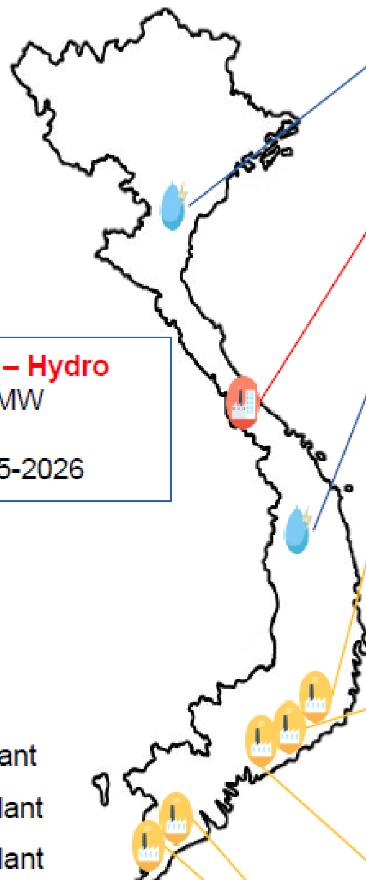
Dec 31 (VNDbn)	2015	2016	2017	2018
Current assets	**3,747**	**4,105**	**5,651**	**5,988**
Cash & equivalents	1,420	960	2,397	1,865
Short-term financial asset	381	749	517	1,139
Accounts receivable	1,369	1,148	1,131	1,966
Inventory	547	1,230	1,556	969
Other current assets	30	18	50	49
Non-current assets	**5,862**	**7,292**	**8,643**	**9,512**
Net fixed assets	1,068	1,202	1,116	2,047
Investments	4,369	5,377	6,274	6,992
Other long-term assets	425	713	1,253	473
Total assets	**9,609**	**11,397**	**14,294**	**15,500**
Current liabilities	**2,226**	**2,618**	**2,927**	**3,057**
Accounts payable	225	406	446	476
Short-term debt	430	594	672	1,111
Other current liabilities	1,571	1,618	1,809	1,470
Non-current liabilities	**700**	**1,058**	**2,674**	**2,515**
Long-term debt	561	899	2,309	2,070
Other long-term liabilities	139	159	365	445
Total liabilities	**2,926**	**3,676**	**5,601**	**5,572**
Controlling Interests	6,334	7,156	8,034	9,318
Minority & other funds (*)	349	565	659	610
Shareholder's equity	**6,683**	**7,721**	**8,693**	**9,928**

- **Strong business performance & cash flow**
- **Low leverage level**
- **CGIF guaranteed straight bond fix rate 7% and 10 years tenor**

Dec 31 (VND bn)	2015	2016	2017	2018
Revenue	**2,643**	**3,659**	**4,995**	**5,101**
Cost of goods sold	(1,752)	(2,478)	(3,566)	(3,873)
Gross profit	**891**	**1,182**	**1,429**	**1,228**
Gross margin	*33.7%*	*32.3%*	*28.6%*	*24.1%*
SG&A	(236)	(309)	(336)	(313)
SG&A margin	*8.9%*	*8.4%*	*6.7%*	*6.1%*
Operating income	655	873	1,093	915
Operating margin	*24.8%*	*23.9%*	*21.9%*	*17.9%*
Profit before tax	1,046	1,376	1,721	2,118
Profit before tax margin	*40%*	*38%*	*34%*	*42%*
Net interest income (loss)	853	1,093	1,377	1,784
Net profit margin	*32.3%*	*29.9%*	*27.6%*	*35.0%*

Dec 31 (VNDbn)	2015	2016	2017	2018
Quick Ratio	1.33	0.87	1.22	1.28
Current Ratio	1.68	1.57	1.93	1.96
Total Debt/Equity	0.15	0.19	0.34	0.32
Total Liabilities/Equity	0.44	0.48	0.64	0.56
Cash flow				
Cash flow from operations	774	681	992	90
Cash flow from investing	(173)	(1,204)	(482)	(220)
Cash flow from financing	(220)	65	926	(403)
EBIT	655	872	1,093	915
EBIT margin	24.8%	23.8%	21.9%	17.9%
EBITDA	788	1,012	1,223	1,076
EBITDA margin	29.8%	27.7%	24.5%	21.1%

IV. Upstream: PV Power (POW)



Luang Prabang – Hydro
Capacity 1,400 MW
Start operating (expected): 2025-2026

Gas thermal plant
Coal thermal plant
Hydro power plant

Source: PV Power

Hua Na – Hydro
Stake: 84.1%
Capacity 180 MW
Start operating: 2013

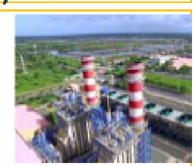
Vung Ang 1 – Coal fired
Stake: 100%
Capacity: 1,200 MW
Start operating: 2014-2015

Dak Drinh – Hydropower
Stake: 94.8%
Capacity: 125 MW
Star operating: 2014

Nhon Trach 1 – Gas fired
Stake: 100%
Capacity: 450 MW
Start operating: 2009

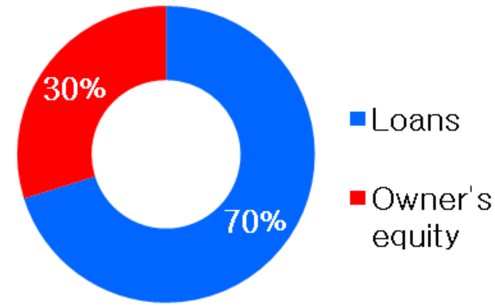
Nhon Trach 2 – Gas fired
Stake: 60%
Capacity: 750 MW
Start operating: 2011

Nhon Trach 3&4 - LNG
Stake: 100%
Capacity: 1,500 MW
Start operating (expected): 2023-2024



Ca Mau 1&2 – Gas fired
Stake: 100%
Capacity: 1,500 MW
Start operating: 2008

Investment capital for Nhon Trach 3 & 4 around USD1.48 billion



- In April 24th 2018, PV Power achieved the Government's approval to develop 2 power plants: Nhon Trach 3 and 4.
- Total estimated investment for 2 gas-fired power plants is **VND33.3 trillion (USD1.48 billion)**
- PV Power chooses to contribute 100 per cent of owner's equity in the two projects. The estimated owner 30% investment capital, at VND9.9 trillion ($440 million), and **take out loans worth about VND23.3 trillion ($1.03 billion)** for the rest ➔ Banking services

IV. Upstream: PV Power (POW)

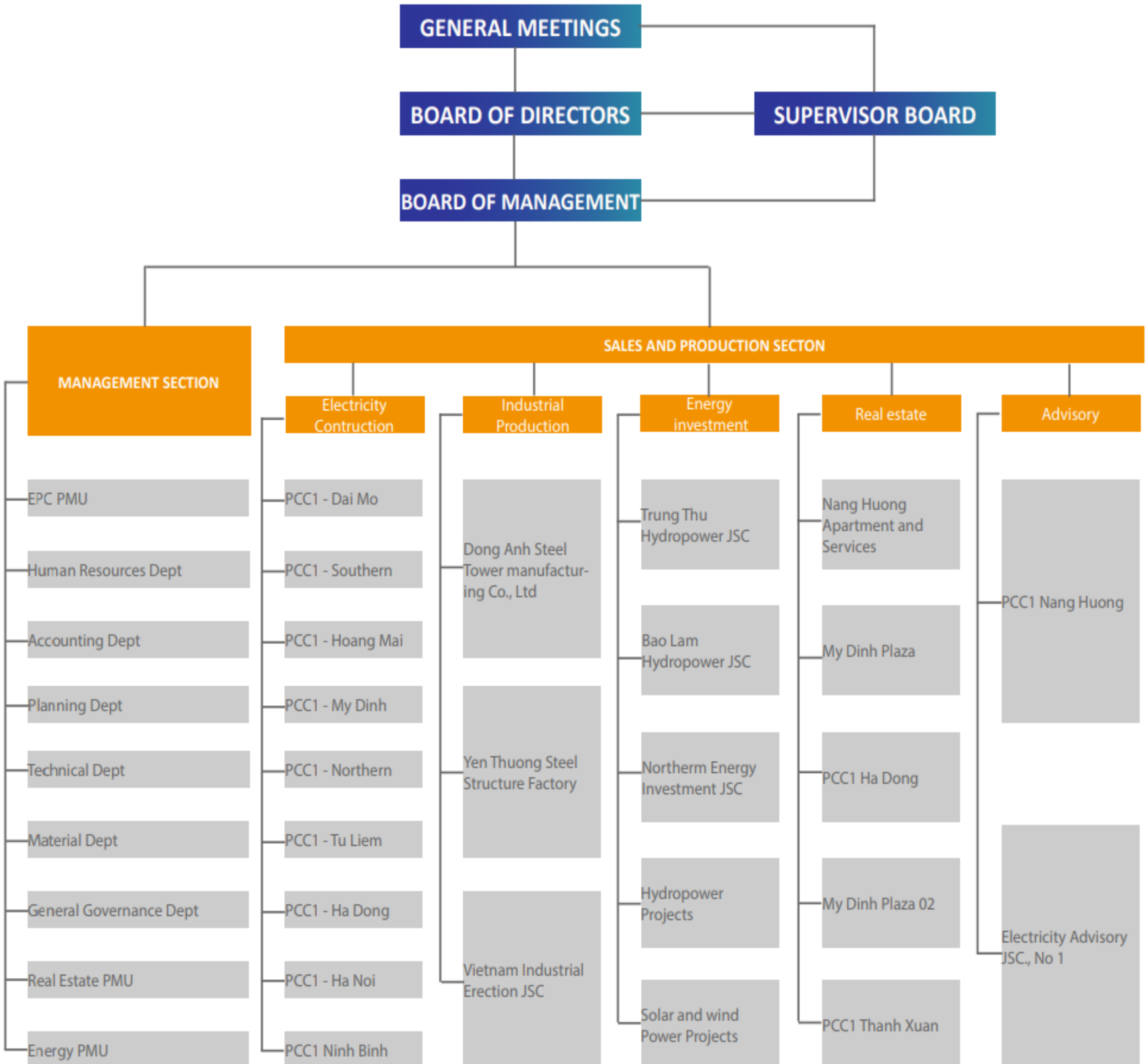
Dec 31 (VNDbn)	2015	2016	2017	2018
Current assets	**16,016**	**18,519**	**13,778**	**15,251**
Cash & equivalents	6,073	4,671	2,266	3,185
Short-term financial asset	150	60	1,039	176
Accounts receivable	5,848	10,230	6,744	7,531
Inventory	3,701	3,347	3,533	4,187
Other current assets	244	211	196	172
Non-current assets	**55,267**	**51,214**	**46,805**	**42,860**
Net fixed assets	51,119	48,068	43,991	40,177
Investments	781	931	957	937
Other long-term assets	3,367	2,215	1,857	1,746
Total assets	**71,283**	**69,733**	**60,583**	**58,111**
Current liabilities	**17,043**	**18,078**	**13,868**	**17,571**
Accounts payable	4,797	6,169	5,041	5,900
Short-term debt	6,651	5,888	6,099	6,554
Other current liabilities	5,595	6,021	2,728	5,117
Non-current liabilities	**27,913**	**24,858**	**18,991**	**13,725**
Long-term debt	27,074	24,669	18,779	13,304
Other long-term liabilities	839	189	212	421
Total liabilities	**44,956**	**42,936**	**32,859**	**31,296**
Controlling Interests	23,630	24,056	24,902	24,506
Minority & other funds (*)	2,697	2,741	2,822	2,309
Shareholder's equity	**26,327**	**26,797**	**27,724**	**26,815**

- **Good business performance & Strong EBITDA**
- **Leverage level decreases significantly**

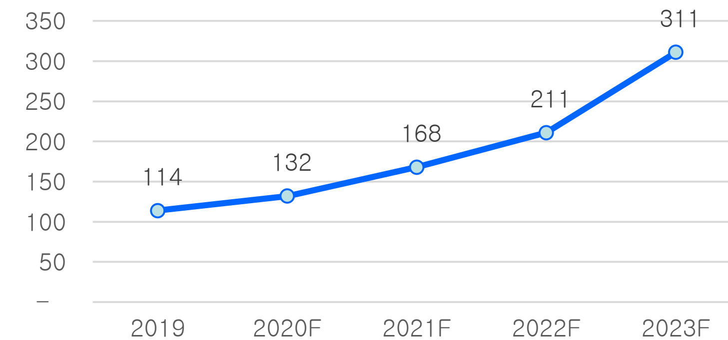
Dec 31 (VND bn)	2015	2016	2017	2018
Revenue	**23,230**	**28,212**	**29,710**	**32,662**
Cost of goods sold	(18,002)	(24,429)	(24,787)	(28,186)
Gross profit	**5,228**	**3,783**	**4,923**	**4,477**
Gross margin	*22.5%*	*13.4%*	*16.6%*	*13.7%*
SG&A	(1,008)	(756)	(815)	(793)
SG&A margin	*4.3%*	*2.7%*	*2.7%*	*2.4%*
Operating income	4,220	3,027	4,108	3,684
Operating margin	*18.2%*	*10.7%*	*13.8%*	*11.3%*
Profit before tax	3,003	1,696	2,733	2,492
Profit before tax margin	*13%*	*6%*	*9%*	*8%*
Net interest income	2,169	1,075	2,233	1,921
Net profit margin	*9.3%*	*3.8%*	*7.5%*	*5.9%*

Dec 31 (VNDbn)	2015	2016	2017	2018
Quick Ratio	0.70	0.82	0.65	0.61
Current Ratio	0.94	1.02	0.99	0.87
Total Debt/Equity	1.28	1.14	0.90	0.74
Total Liabilities/Equity	1.71	1.60	1.19	1.17
Cash flow				
Cash flow from operations	5,042	3,750	6,113	4,996
Cash flow from investing	4,405	(1,376)	(1,059)	1,555
Cash flow from financing	(8,892)	(3,776)	(7,458)	(5,633)
EBIT	4,220	3,027	4,107	3,683
EBIT margin	18.2%	10.7%	13.8%	11.3%
EBITDA	7,045	7,343	8,423	7,604
EBITDA margin	30.3%	26.0%	28.4%	23.3%

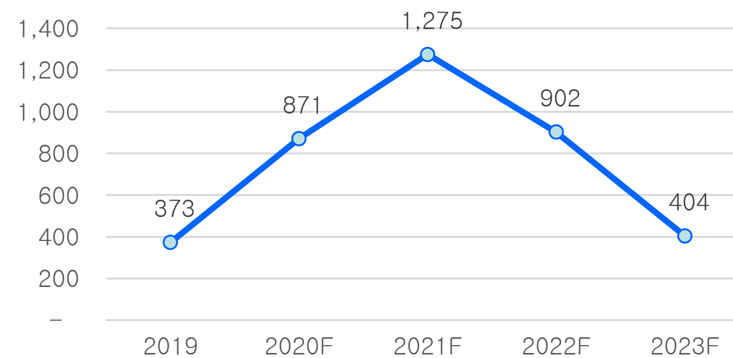
IV. Mid-stream: Power Construction No.1 (PC1)



Hydro power capacity (MW)



Capital demand CAPEX (VND bn)



- PC1 is seeking investors for **straight bond VND1,280 bn** in early 2020.
- The bond tenor is expected 10-years for Solar power project in Dien Bien province.
- Interest rate will be negotiated

IV. Mid-stream: Power Construction No.1 (PC1)

PCC1

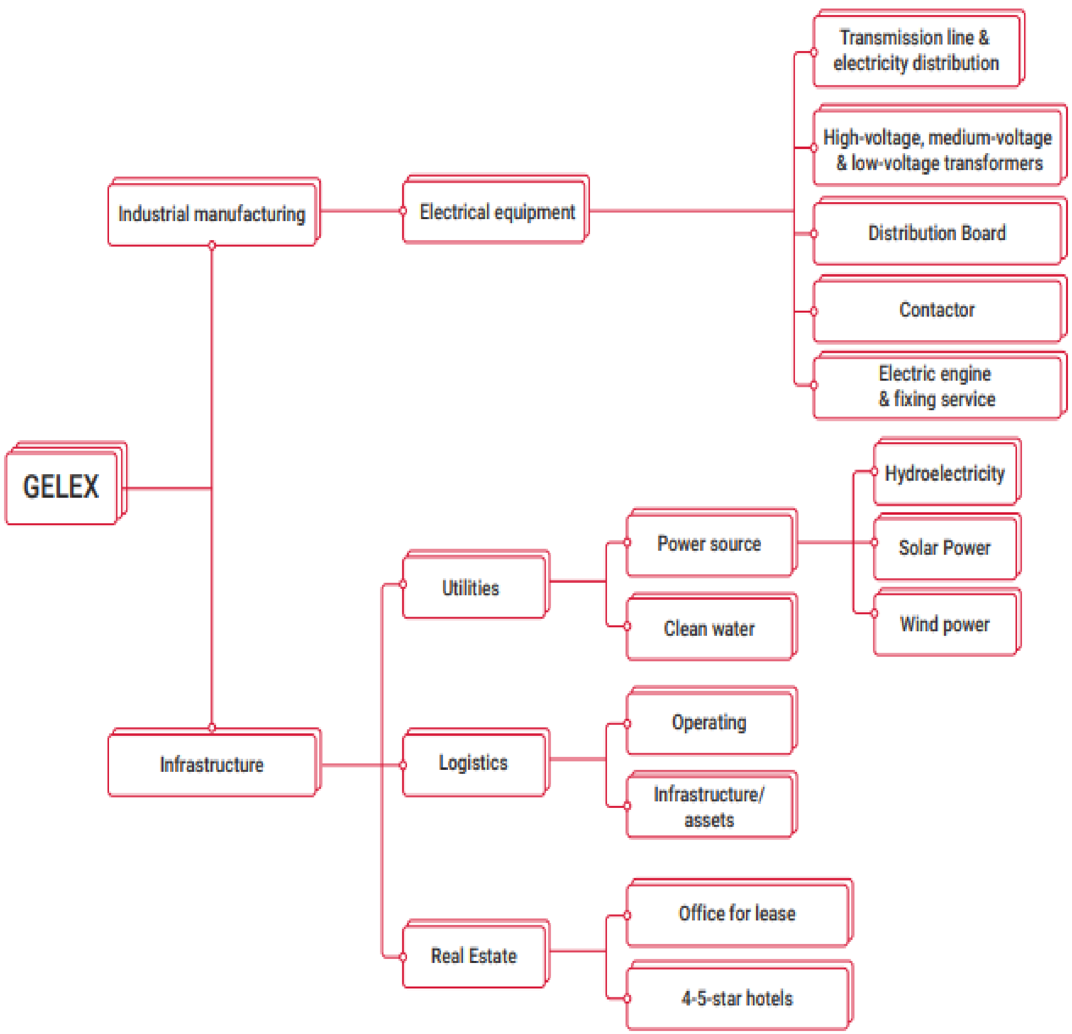
Dec 31 (VNDbn)	2015	2016	2017	2018
Current assets	**2,121**	**2,046**	**3,093**	**3,150**
Cash & equivalents	571	419	567	701
Short-term financial asset	0	20	100	90
Accounts receivable	961	1,046	1,302	1,552
Inventory	568	532	1,085	759
Other current assets	21	29	39	48
Non-current assets	**1,142**	**2,484**	**3,121**	**3,447**
Net fixed assets	183	1,027	2,858	2,701
Investments	155	85	91	97
Other long-term assets	804	1,372	172	649
Total assets	**3,263**	**4,530**	**6,214**	**6,597**
Current liabilities	**1,287**	**1,377**	**1,833**	**1,741**
Accounts payable	441	815	794	758
Short-term debt	63	135	294	416
Other current liabilities	783	427	745	567
Non-current liabilities	**606**	**1,090**	**1,567**	**1,577**
Long-term debt	461	981	1,527	1,554
Other long-term liabilities	145	109	40	23
Total liabilities	**1,893**	**2,467**	**3,400**	**3,318**
Controlling Interests	1,300	1,958	2,684	3,119
Minority & other funds (*)	70	105	130	160
Shareholder's equity	**1,370**	**2,063**	**2,814**	**3,279**

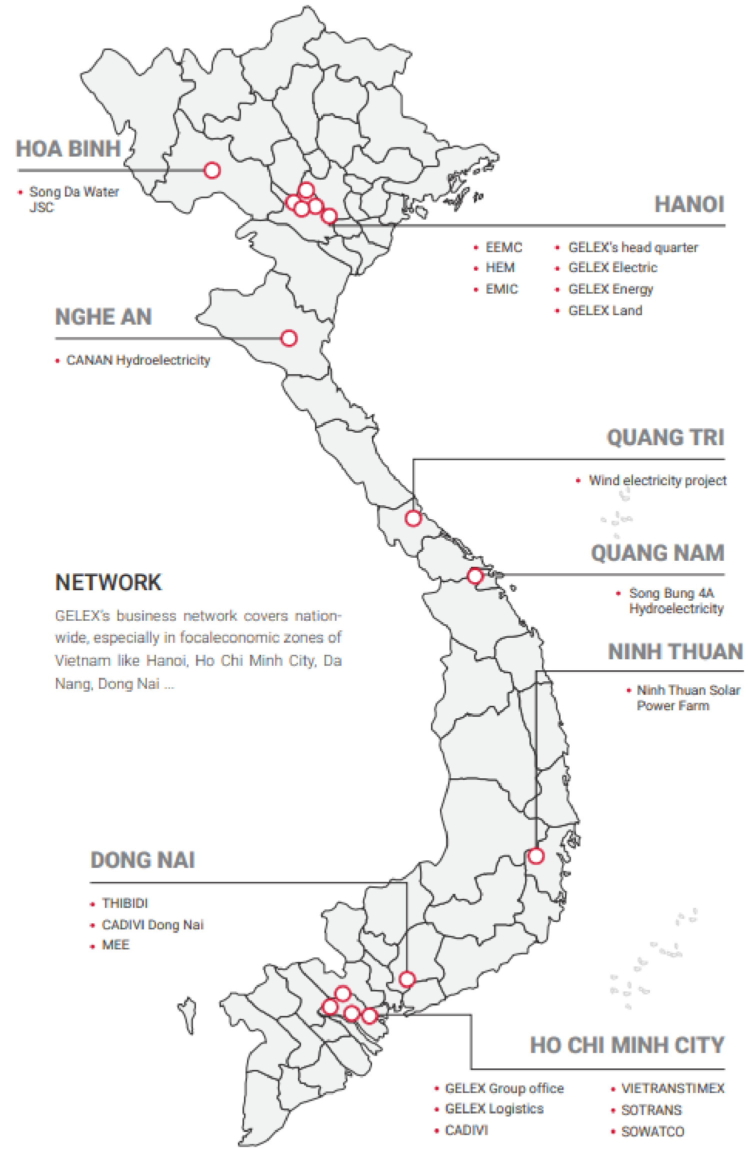
- **Good business performance & Strong EBITDA**
- **Leverage level climb in expanding stage with huge CAPEX. But high liquidity ratio**

Dec 31 (VND bn)	2015	2016	2017	2018
Revenue	**3,101**	**3,008**	**3,161**	**5,084**
Cost of goods sold	(2,672)	(2,482)	(2,679)	(4,219)
Gross profit	**429**	**527**	**481**	**866**
Gross margin	*13.8%*	*17.5%*	*15.2%*	*17.0%*
SG&A	(132)	(129)	(126)	(208)
SG&A margin	*4.3%*	*4.3%*	*4.0%*	*4.1%*
Operating income	297	398	355	658
Operating margin	*9.6%*	*13.2%*	*11.2%*	*12.9%*
Profit before tax	319	401	303	579
Profit before tax margin	*10%*	*13%*	*10%*	*11%*
Net interest income	246	305	256	491
Net profit margin	*7.9%*	*10.1%*	*8.1%*	*9.7%*

Dec 31 (VNDbn)	2015	2016	2017	2018
Quick Ratio	1.19	1.06	1.02	1.29
Current Ratio	1.65	1.49	1.69	1.81
Total Debt/Equity	0.38	0.54	0.65	0.60
Total Liabilities/Equity	1.38	1.20	1.21	1.01
Cash flow				
Cash flow from operations	191	(62)	(180)	513
Cash flow from investing	(613)	(1,089)	(895)	(535)
Cash flow from financing	578	999	1,224	156
EBIT	296	397	355	657
EBIT margin	9.6%	13.2%	11.2%	12.9%
EBITDA	320	433	470	812
EBITDA margin	10.3%	14.4%	14.9%	16.0%

IV. Down-stream: Gelex (GEX)





IV. Down-stream: Gelex (GEX)

GELEX

Dec 31 (VNDbn)	2015	2016	2017	2018
Current assets	**3,097**	**6,328**	**7,448**	**8,104**
Cash & equivalents	518	2,912	1,098	924
Short-term financial asset	448	353	1,546	1,864
Accounts receivable	1,007	1,490	2,907	3,084
Inventory	1,089	1,540	1,855	2,111
Other current assets	35	33	42	121
Non-current assets	**1,821**	**2,458**	**6,313**	**9,143**
Net fixed assets	982	1,023	3,263	4,709
Investments	647	1,004	1,672	1,739
Other long-term assets	192	431	1,378	2,695
Total assets	**4,918**	**8,786**	**13,761**	**17,247**
Current liabilities	**1,801**	**3,387**	**4,764**	**6,827**
Accounts payable	572	559	850	2,047
Short-term debt	504	1,999	2,746	3,742
Other current liabilities	725	829	1,168	1,038
Non-current liabilities	**124**	**2,122**	**2,840**	**2,455**
Long-term debt	17	1,890	2,534	2,132
Other long-term liabilities	107	232	306	323
Total liabilities	**1,925**	**5,509**	**7,604**	**9,282**
Controlling Interests	2,526	2,575	4,231	5,614
Minority & other funds (*)	467	702	1,926	2,351
Shareholder's equity	**2,993**	**3,277**	**6,157**	**7,965**

Dec 31 (VND bn)	2015	2016	2017	2018
Revenue	**8,383**	**7,297**	**11,984**	**13,699**
Cost of goods sold	(7,277)	(6,329)	(9,998)	(11,483)
Gross profit	**1,106**	**968**	**1,986**	**2,216**
Gross margin	*13.2%*	*13.3%*	*16.6%*	*16.2%*
SG&A	(540)	(402)	(790)	(991)
SG&A margin	*6.4%*	*5.5%*	*6.6%*	*7.2%*
Operating income	566	566	1,196	1,225
Operating margin	*6.8%*	*7.8%*	*10.0%*	*8.9%*
Profit before tax	574	700	1,145	1,533
Profit before tax margin	*7%*	*10%*	*10%*	*11%*
Net interest income	321	462	637	942
Net profit margin	*3.8%*	*6.3%*	*5.3%*	*6.9%*

Dec 31 (VNDbn)	2015	2016	2017	2018
Quick Ratio	1.10	1.40	1.03	0.80
Current Ratio	1.72	1.87	1.56	1.19
Total Debt/Equity	0.17	1.19	0.86	0.74
Total Liabilities/Equity	0.64	1.68	1.24	1.17
Cash flow				
Cash flow from operations	6	147	(31)	493
Cash flow from investing	(353)	(697)	(2,460)	(1,369)
Cash flow from financing	95	2,943	676	701
EBIT	566	566	1,196	1,224
EBIT margin	6.8%	7.8%	10.0%	8.9%
EBITDA	664	692	1,514	1,720
EBITDA margin	7.9%	9.5%	12.6%	12.6%

- **Good business performance & Strong EBITDA**
- **Leverage level raises rapidly in expanding stage**

Executive summary

Growing industry

The government plans to expand Vietnam's power capacity to double over the next 10 years.

Huge demand

Capital demand for electricity USD8-12 bn per year

Open to foreign investor

There are three "bottle necks" to raise capital for CAPEX: public debt, higher cost from ODA, limited from domestic bank

Potential target

Key players such as EVN, REE, GEX, PC1 … have a huge capital demand and good business performance


Thank you

Executive summary

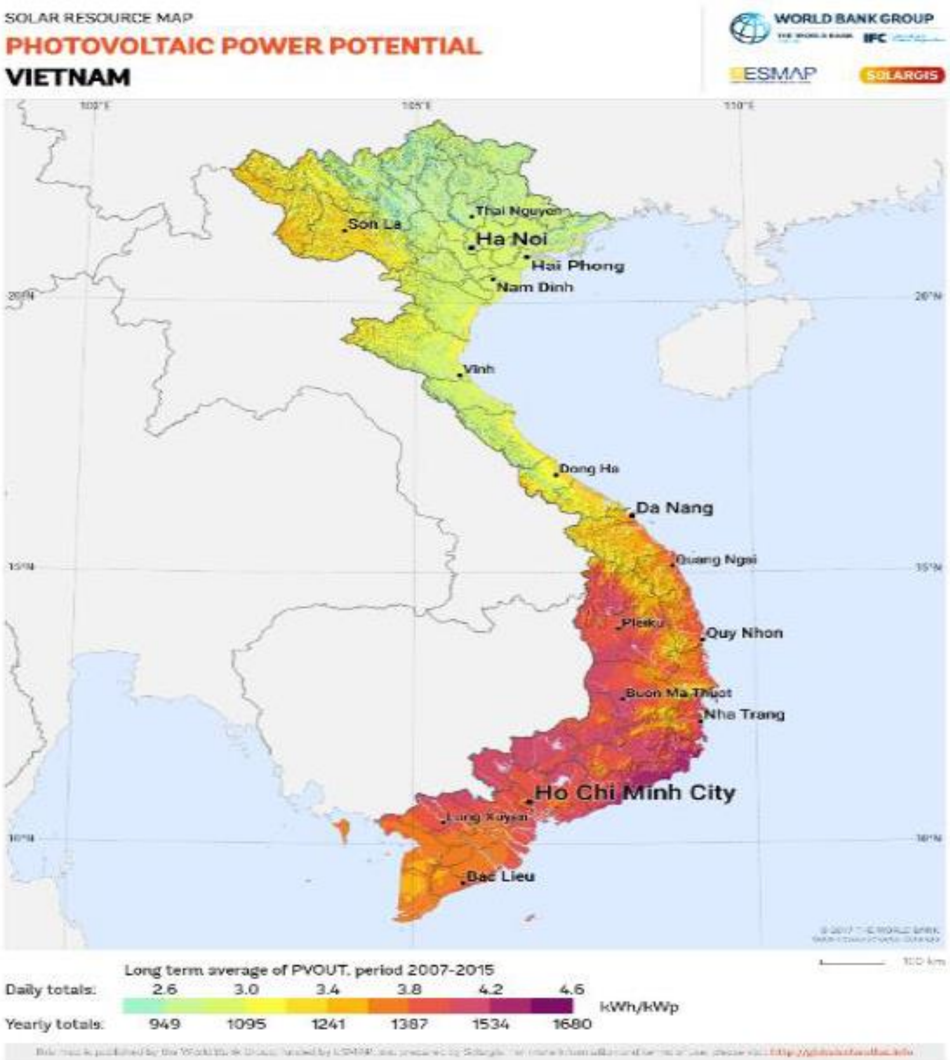
- The Vietnam government plans to expand Vietnam's power capacity to **double over the next 10 years**.
- Total power capacity is forecasted to increase to 129.5 GW in 2030. In which, coal thermal is projected to be the main source for electricity production while renewable energy is showing an upward trend.
- Reserve margin of power capacity decreases to a very thin level 1%-3% raise a shortage of electricity supply, which request an urgent investment for new power plants
- To keep pace with demand, electricity sector investments will need to accelerate substantially, to around **US$8–12 billion annually** for the period 2016–30
- However, there are three "bottle necks" to raise capital for CAPEX:

(1) The conditions for government guarantee or loans are more and more strict, and longer approval process due to Vietnam's public debt approached nearly the ceiling 65% GDP

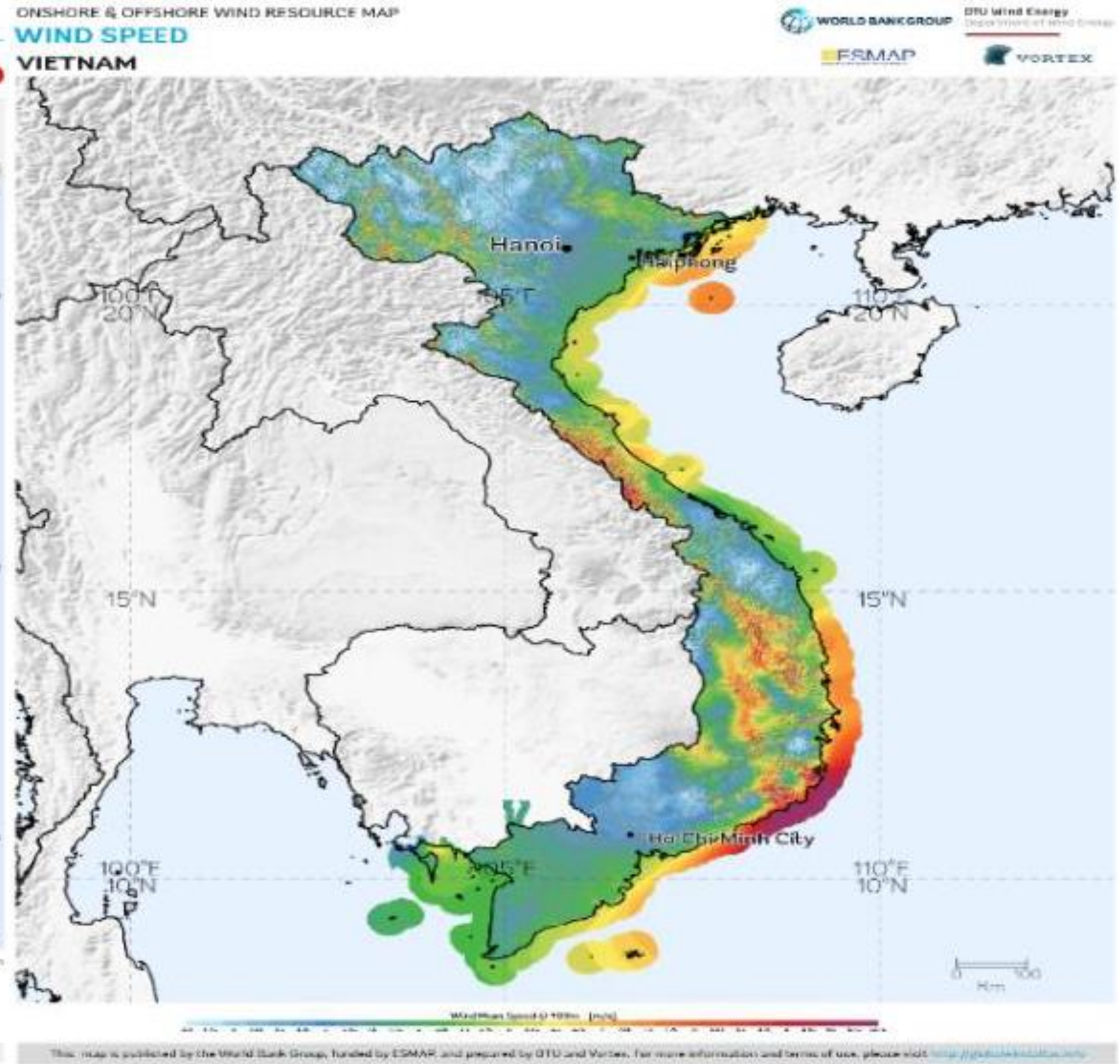
(2) Due to its recent middle-income status, Vietnam has reduced access to highly concessional funds from IFIs and DPs

(3) Vietnam domestic commercial banks' lending limit for electricity projects is 15% of the bank's charter capital

- Vietnam Electricity Group (EVN) plays as **monopoly buyer** for electricity output. EVN owns entire national power transmission and distribution system (grid-line system) and sells electricity to local end-users.
- EVN also contributes **64% national power generation**. Private developers is only allowed to engage in 36% electricity generation
- During the period 2018–22, EVN debt financing requirements, which include new debt-to-finance capex as well as maturing debt-to-refinance existing debt, are **US$2.3–3.2 billion annually**
- All key players in electricity industry (such as REE, GEX, PC1…) have a huge capital demand for their CAPEX in near future

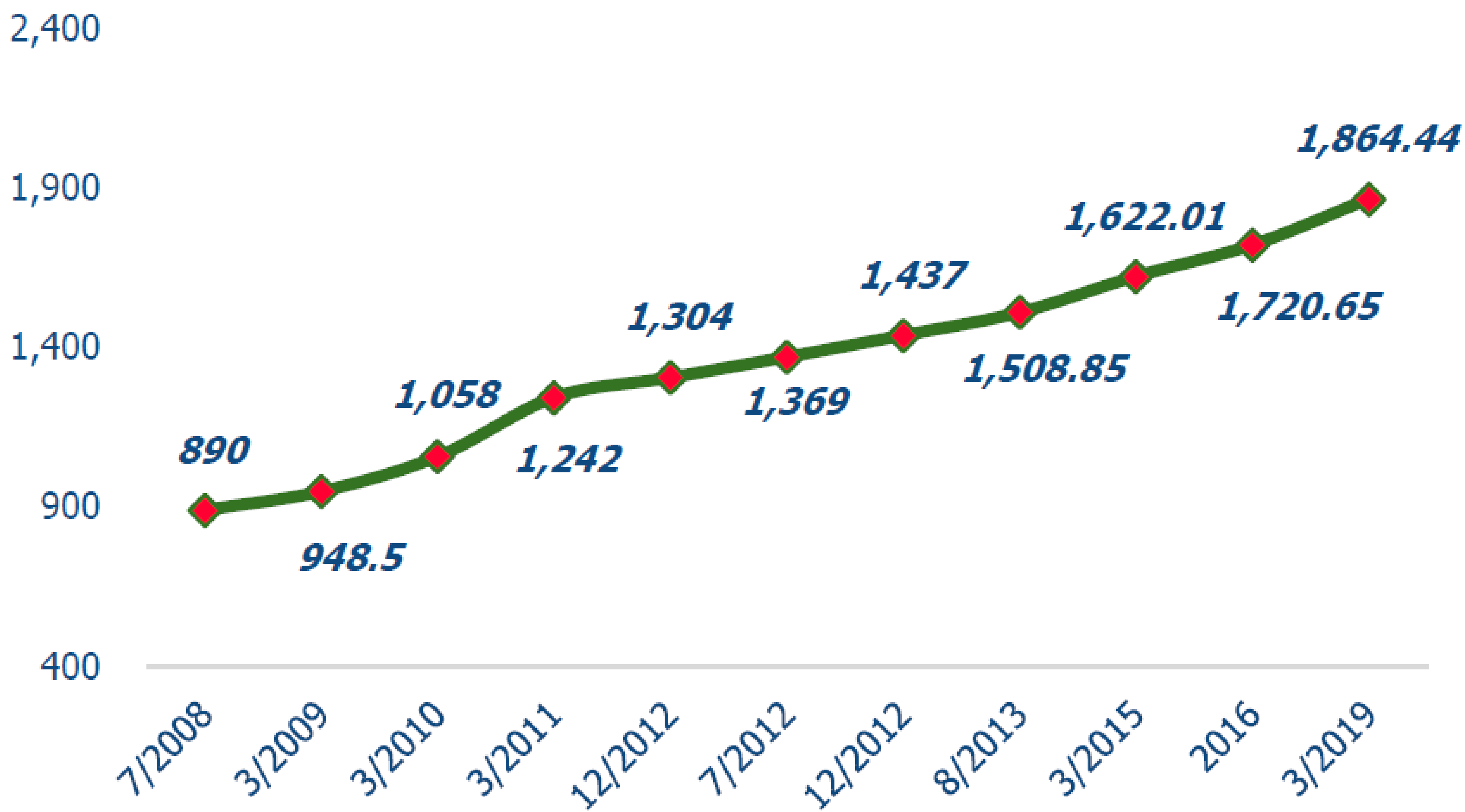


SOLAR RESOURCE MAP
PHOTOVOLTAIC POWER POTENTIAL
VIETNAM
WORLD BANK GROUP
ESMAP
SOLARGIS
Son La
Thai Nguyen
Ha Noi
Hai Phong
Nam Dinh
Vinh
Dong Ha
Da Nang
Quang Ngai
Pleiku
Quy Nhon
Buon Ma Thuot
Nha Trang
Ho Chi Minh City
Long Xuyen
Bac Lieu
Long term average of PVOUT, period 2007-2015
Daily totals: 2.6 3.0 3.4 3.8 4.2 4.6
Yearly totals: 949 1095 1241 1387 1534 1680
kWh/kWp

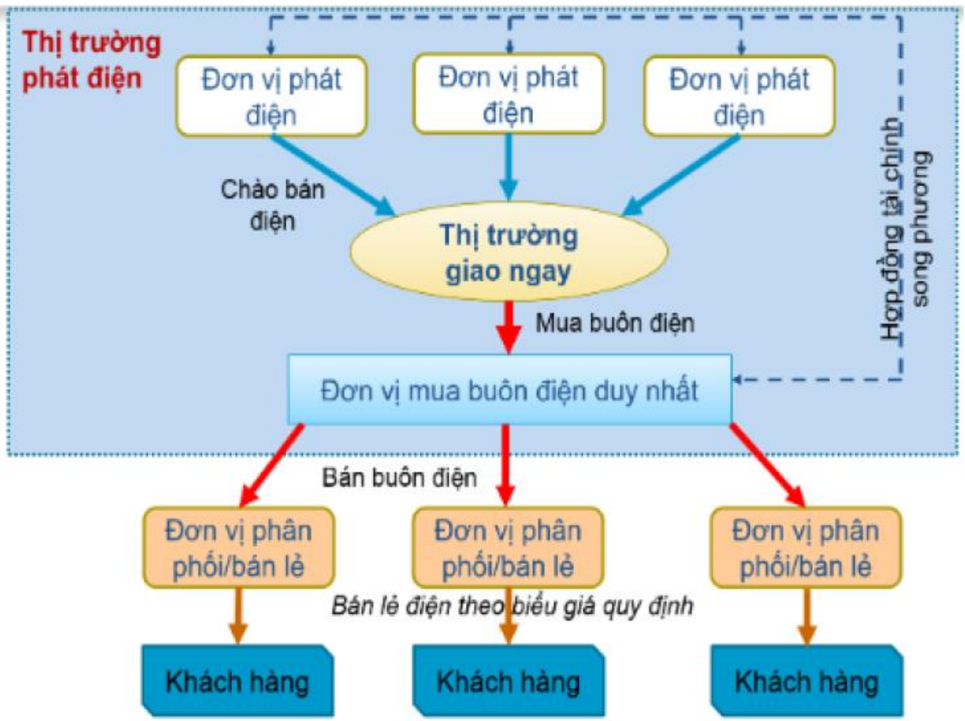


ONSHORE & OFFSHORE WIND RESOURCE MAP
WIND SPEED
VIETNAM
WORLD BANK GROUP
ESMAP
VORTEX
Hanoi
Haiphong
Ho Chi Minh City
15°N
10°N
20°N
100°E
110°E

Retail electricity price change in period 10 year (VND/kWh)



Thị trường phát điện cạnh tranh



Thị trường bán buôn cạnh tranh