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Vietnam Electricity

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Non-Rated

Thematic Report



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Key points for loans contracts

Key characteristic of Vietnam electricity

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 and sell small out put through competitive bidding market.

Electricity sale price for power plants

Vietnam government regulates electricity pricing for EVN's input (revenue output of power plants), which ensure the internal rate of return (IRR) of the power project of 10-12%. EVN and power plants have to negotiate many assumptions: capex, capital structure, interest expense, average utilization rate, etc. for the whole cycle of the power project to calculate IRR 10-12%. Therefore, we assess a loan for power developers in Vietnam having limited default risk. The borrower was ensure the output and sale price.

Key points for power industry

Due to the important position of power industry, Vietnam government regulates many detail conditions for power developers and lenders:

Loan contract: due to interest expense is a component in electricity price, the power plants have to submit loan contracts to EVN before negotiation on electricity selling price.

Interest rate: Vietnam government also sets a maximum interest rate for loans.

- Interests rate in foreign currency are determined maximum 10-yrs Libor + 3%
- Interests rate in domestic currency are determined maximum ADR + 3.5%

EBITDA margin: Thank to IRR 10-12% was guaranteed and cash cow structure after operation, all power plants generate the strong EBITDA cash flow every year. We assess EBITDA margin of thermal power around 20-35% and hydro power around 60-80% annually.

Loan tenor: power plant construction usually takes at least 2-3 years depend on kind of hydropower or thermal plant. Therefore, most of power developers request a long tenor in range 8-15 years for loan.

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Vietnam electricity value chain

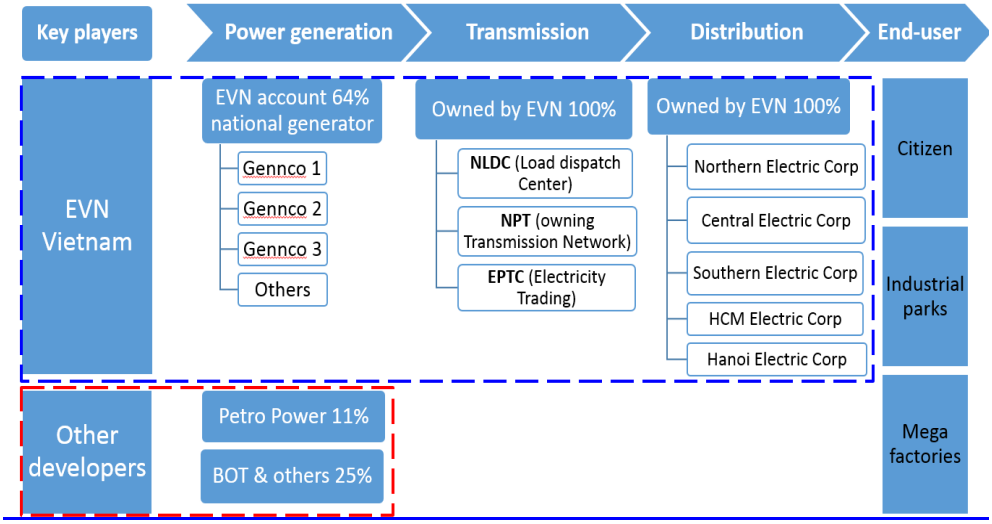
Industry structure

Prior to 2008, Vietnam's electricity market was completely monopoly in 60 years. Vietnam Electricity Group (EVN) was the only entity to purchase electricity from all power plants, transmits and sells electricity to local end-users (households, industrial consumers).

Since 2008, Vietnam government implemented equitization of power generators of EVN. Private developers are only allowed to engage in electricity generation and competitive bidding. Meanwhile, EVN maintains as the sole buyer and plays key participant in electricity industry.

Electricity of Vietnam (EVN), established in 1994 by the Vietnam Prime Minister as a state-owned enterprise, has its core business in developing power generating plants and grid-line networks to supply electricity to households, regulate national grid, import and export power in cooperation with neighboring countries. In addition, EVN owns the entire national power transmission and distribution system and sells electricity to local end-users. Electric power is under the jurisdiction of the Ministry of Industry and Trade (MOIT). The Vietnamese government relies on the national power development plans to advance the sector, which forecast growth in demand and map out the overall development of the power industry to meet demand ten years out.

Value chain of Vietnam electricity industry



Source: Shinhan Investment Corp.

Power Consumption

The country's robust industrialization process has fueled a surging demand for energy in general and electricity. The GVN expects electricity consumption to grow by 10-12% annually through 2020 while the Economic Intelligent Unit estimated that demand for electricity will expand by 4.2% a year between 2018 and 2022, exceeding 191,700GWh. This demand is attributed to increasing industrial and residential use.

Power shortages are expected during this period if adequate measures are not taken to increase the supply accordingly. It is also estimated that an additional capacity of 4,000MW will be required per year on average from now through 2020 to meet demand, requiring an estimated USD19.1 billion of investment for infrastructure by 2035.

Transmission and Distribution

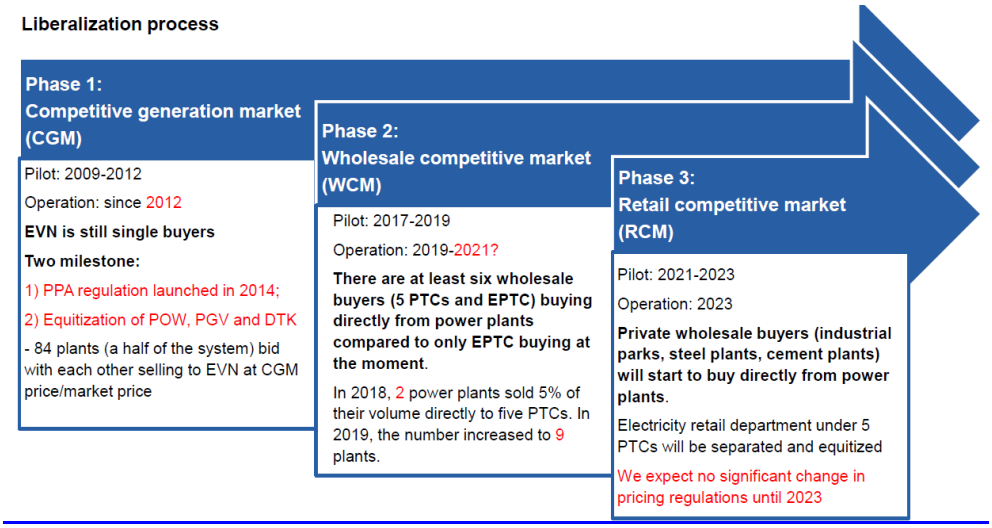
The State shall only maintain its monopoly of electricity transmission grid(s) to ensure the national energy security. EVN operates a power distribution system of about 115,659km of 6kV, 10kV, 15kV, 22kV and 35kV lines, with a total capacity of 3,662 megavolt-amperes (MVA) and 109,199km of 220V lines with a total capacity of 32,061MVA. According to EVN 2017 Annual Report, Vietnam has 7,446km 500 kV lines, 16,071km 220 kV lines, 26,100MVA 500-kV transformers, 41,538MVA 220 kV-transformers.

EVN reports that 100% of the districts were connected to electricity; 99.7% of the communes with 98.69% of rural households have access to the power grid with a target reaching close to 100 percent by 2020. These figures may be exaggerated but were according to the plan.

Development roadmap for local electricity market

According to Decision No. 26/2006 / QDTTg, the government has set a roadmap for the formation and development of competitive electricity market in Vietnam. In which, the government allows private investor participate power generation and end-users are able to purchase directly electricity from power plants. The itinerary of Vietnam liberalizing timeline is as follows:

Vietnam liberalization process



Source: VCSC.

Electricity pricing

The government strictly regulates the retail price, recommended by MOIT and requiring approval by the Prime Minister. A unified tariff is applicable across the country and is low in comparison with other countries in the region. Both urban and rural residential rates are cross subsidized by higher rates for industry, commerce, and foreign consumers. To attract more investment from the private sector in developing IPP projects, MOIT and EVN have been working on a roadmap for price increases and the gradual elimination of government control. By current regulations, EVN may increase or decrease within a margin of up to 5 percent, twice a year without approval from MOIT or the Prime Minister when the input parameters (fuel price, foreign exchange rates, generation mix, competitive power generation market price) change significantly.

Due to EVN is still the sole buyer currently, Vietnam government regulate electricity pricing for EVN's input (revenue of power plants) in Circular No 56/2014/TT-BCT. This pricing formula ensures the internal rate of return (IRR) of the power project of no more than 12%. Changes of raw material price are fully transferred to selling price.

Revenue of a power plant	= **P*Q** = Price (PPA price and CGM price)* Volume (Qc and non-Qc)
	= **PPA** * **Qc** + **CGM price** * **non-Qc**
	= Contracted price/Fixed price *Contracted volume + CGM price/Market price* CGM volume

PPA contract: EVN and power plants negotiate many assumptions: capex, capital structure, interest expense, average utilization rate, etc. for the whole cycle of the power project, of a discounted cash flow model and plug in PPA to derive a project IRR of 10-12%.

Qc is guided to decline gradually to 60% of a power plant's average volume of the project's life cycle (~70% utilization rate for thermal and ~50% utilization rate for hydro).

Due to luring more private power investors, pricing formula regulated by Circular No 56/2014/TT-BCT is a protection for power developers, which ensure the internal rate of return (IRR) of the power project of 10-12%. The borrower was ensure the output and sale price. We think loan for power developers in Vietnam to have limited default risk.

Key points

Loan contract

According to Circular No 56/2014/TT-BCT, the power plants have to submit some documentary to EVN for negotiation on electricity sale price. In which, loan contracts or any document legally binding the investor and lenders, plans or reality of disbursement of loans is required conditions.

However, many foreign banks usually require power developers have to determine output sale price before sign any loan contracts. Until now, loan contract priority or electricity sale price priority is still bottleneck in development power generators.

We believe that foreign lenders have to comply the government's regulation due to interest expense is a component in electricity price. Therefore, the foreign lender should prepare legal documents for this situation.

Maximum interest rate for lender

As mentioned in period report, 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 less guarantee support and more strictly regulation from Vietnam government.

However, interest expense is a component in electricity price, Vietnam government also sets a maximum interest rate for loans. Detail as following:

- Interests of loans in foreign currency are determined by adding mean value of US dollar swap rate for a 10 year term in 36 months close to the time of negotiation on LIBOR swaps plus 3% as annual average rate of bank service fees, guarantee fees and relevant charges (LIBOR 10 years + 3%)
- Interests of domestic currency are determined by adding average interest rate of deposits in Vietnam dong for a 12-month term by four commercial banks (Vietcombank, Vietinbank, BIDV and Agribank) plus 3.5% as annual average rate of bank service fees, guarantee fees and relevant charges (ADR + 3.5%).

EBITDA margin

Power industry required a huge CAPEX in construction period and receive sustainable cash flow in generator period. Thank to IRR 10%-12% was guaranteed and cash cow structure after operation, all power plants generate the strong EBITDA cash flow every year. We think that EBITDA margin of thermal power around 20-35% and hydro power around 60-80% annually.

As mentioned, Vietnam government will calculate cash flow to pay principal debts and interest expenses in electricity sale price. As consequence, we do not recognize any default event for listed power companies in Vietnam.

Debt and EBITDA for listed companies

No	Ticker	Name	Exchange	Debt / Equity (x)	EBITDA (VND bn)	EBITDA margin (%)
1	PGV	Power Generation Corporation 3	UPCOM	6.06	8,959	22.78%
2	POW	PV Power	HOSE	0.74	7,603	23.28%
3	HND	Hai Phong Thermal Power	UPCOM	1.27	3,278	34.42%
4	QTP	Quang Ninh Thermal Power	UPCOM	1.83	3,090	34.27%
5	DNH	Da Nhim - Ham Thuan Hydro Power	UPCOM	0.39	1,791	74.68%
6	NT2	Nhon Trach 2 Power	HOSE	0.80	1,607	20.96%
7	PPC	Pha Lai Thermal Power	HOSE	0.09	1,092	15.35%
8	SBH	Song Ba Ha Hydro Power	UPCOM	0.15	720	80.68%
9	HNA	Hua Na Hydropower	UPCOM	0.84	693	79.24%
10	TMP	Thac Mo Hydropower	HOSE	0.12	634	71.59%

Source: Company data, Shinhan Investment Corp.

Loan tenor

Usually, power plant construction takes at least 2-3 years depend on kind of hydropower or thermal plant. Therefore, most of power developers request a long tenor in range 8-15 years when they sign loan contracts. Most of major loans was guaranteed by the mother companies as EVN or Petro Vietnam (PVN). We believe that both EVN and PVN have to use financial services more and more to fund its power projects in coming years.

Detail of key loan contracts of electricity companies

Borrowers	Projects	Lender	Original debt	Interest rate (% p.a.)	Tenor (years)	Collateral
PV Power	Vung Ang power	• HSBC • Credit Agricole Corporate & Investment • Calyon	USD764 mn	5.9	8- 10 yrs and 2.5 yrs extension	PVN's guarantee
Nhon Trach 2	Nhon Trach 2 power	• Citi Bank • NEXI	USD215 mn and EUR202 mn	Libor + margin	8- 10 yrs and 2.5 yrs extension	EVN's guarantee
Gennco 3	Mong Duong power Vĩnh Tan power	• ADB • Korea Eximbank • China Eximbank	- USD1.3 bn - USD800mn & CNY570mn	2.4- 5.15	8- 15	EVN's guarantee

Source: Company data, Shinhan Investment Corp.

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