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Stranded assets risk derails Vietnam's plan for new coal power plants

Minh Ha-Duong¹

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Abstract: In 2016, Vietnam planned to build a fleet of new coal-fired power plants, expanding capacity to 54.5 GW in 2030, from 13.1 GW in 2015. Three years later, the risk of stranded assets not only made this plan sub-optimal, it also made it infeasible because investors are looking elsewhere.

Introduction: Vietnam's plan for a fleet of coal power plants

Vietnam has a socialist-oriented market economy, where the state sector plays the decisive role in directing economic development. State owned enterprises form the backbone of the energy sector. Development of the electricity sector is guided by ten-years Power Development Master Plans, usually adjusted with a mid-term revision. The plans determine power sources development, power grids development, connectivity with neighboring countries and electrification of remote areas. In addition to ensuring the engineering coherence of sources and grid developments, plans have administrative power: projects need to be included in the plan to be authorized.

The current Power Development Plan is *PDP7 revised*, the mid-term revision of the seventh plan, for 2011-2020 with a vision to 2030 (Nguyễn Tấn Dũng 2016). The core electricity supply strategy of PDP7 was to build a fleet of coal power plants. Vietnam achieved 13.1 GW of coal-based generation capacity in 2015. In January 2016, Vietnam's former Prime Minister, Nguyen Tan Dung, announced he would "review development plans of all new coal plants and halt any new coal power development". That was only partially realized in the 2016 PDP7 revision. The strategy was reduced by 23 GW, targeting 'only'

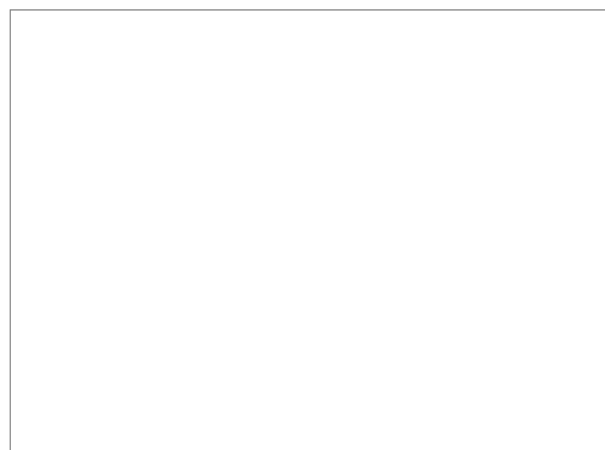


Figure 1: New coal power capacity in Vietnam since 2016.

54.5 GW of coal in 2030 – out of 72 GW total additions. As Figure 1 shows, that meant building 33.7 GW of new coal power generation between 2016 and 2024.

How it is not happening

Three years later, reality has diverged from the plan to a point where Vietnam is facing the prospect of power shortages from 2019 onward. The causes are discussed in (Hoàng Quốc Vương 2019) evaluation report. This is not because the nuclear power plans have been scrapped by the National Assembly in late 2016: those capacities were not scheduled to come online before 2028. This is not because renewable energy development has been slow: Vietnam's solar PV feed in tariff has been a spectacular success, in April 2019 the connected PV capacity was 150 MW, by the end of June deadline, over 4 460 MW was

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connected in 82 plants. According to (REN21 2019 table R17), only China, India, the US and Japan installed more PV capacity in 2018.

The return to a supply-constrained situation is attributable to delays in the installation of large thermal power generation facilities. Natural gas power plants have been mostly constrained by fuel supply infrastructure delays, and will impact the security of supply mostly in the Southern part of Vietnam. And as Figure 1 shows, the delays in building new coal power plants means that coal capacity development fleet is behind schedule for 4.3 GW in 2019, up to around 14 GW in 2022. Beyond these years, the situation is more uncertain. If one expects, as in the evaluation report, that coal power plants today at the “permitted” or “pre-permit” stage will be constructed, the 2024 gap could be 9.4 GW. But if one assumes that no new coal power plant will start construction, that figure increases to 19.8 GW.

Who is responsible for these delays? The plan relied on three categories of actors to build the fleet of coal power plant: a/ Vietnam Electricity; b/ The other two state owned enterprises in the energy sector; and c/ Foreign investors.

i) Vietnam Electricity performed as planned or better. They commissioned 3 044 MW on or ahead of schedule in 2016-2018, with an additional 1 260 MW on track for 2019.

ii) The Vietnam Oil and Gas Group (PVN) owned four power supply projects with a total capacity of 5 400 MW in the Plan. All three projects under construction are delayed by 2-3 years or more, and PVN proposed to transfer the fourth to another project owner. The Vietnam National Coal - Mineral Industries Holding Corporation Limited (TKV) was planned to undertake 4 projects with a total capacity of 2 950 MW, including 2 in the period of 2016-2020 and 2 in the period of 2021-2030. All 4 projects are now delayed by at least 2 years. Of the three projects undertaking investment preparation procedures, one has not found a project location and one is in the middle of changing its project owner. The fourth project is not yet undertaking investment preparation procedures.

iii) Given the finite capital capacities of the public sector, the plan also relied on a program of 13 Built-Operate-Transfer projects with foreign investors. Most projects (eleven) were supposed to come online before 2024. One project is operating: the Vinh Tan I power station, jointly owned by China Southern Power Grid and Vinacomin (TKV), was built successfully seven months ahead of schedule in 2018-2019. But others are delayed due to ‘certain obstacles in negotiation’ according to the evaluation report. Three are under construction, expected to open in 2021-2022 with one year delay (Duyen Hai II with Janakuasa and Hai Duong with JAKS, both from Malaysia, and Nghi Son II with Korean Electric Power Corp.) Four projects at the “Permitted” stage are expected to open in 2023-2025 behind the plan (Van Phong I one year, Vung Anh II two years, Nam Dinh I three years, Song Hau three years). Two at the “Pre-permit” stage are delayed by 2-3 years to after 2024, and the last three are unidentified and not expected before 2025.

In summary, all players but the national electricity company are lagging behind schedule. This situation is not unique to Vietnam. (IEA 2019) noted that “In 2018, coal-fired power Final Investment Decisions declined by 30% to 22 GW, their lowest level this century [...] The largest fall in FIDs was in China, but levels in Southeast Asia were their lowest level in 14 years.”

Why: stranded assets risk demotivated investors

Investors’ decisions are influenced by multiple causes. But profit being the main driver of companies, we may argue that the problem delaying investment in coal power generation is an excessive risk/rewards ratio. In which the risk of severe and fast depreciation – stranded assets – is a major component. There are three main reasons why an investor would be cautious about owning a coal power plant.

i) While up to 2015, Vietnam was producing more coal than it used, the mining industry has not met the growth in

demand. New coal plants run on imported fuel. The price of coal on the international market, while less volatile than oil or gas prices, is still very uncertain: since 2010 it varied from a 50 lowest to 130 USD/Mt highest.

ii) The natural conditions for renewable energy sources are favorable in Vietnam, there is lots of solar irradiation and lots of wind offshore. Their cost is declining with innovation and economies of scale. After kickstarting the utility solar industry with a feed in tariff of 9.35 cents per kWh, the government is moving towards auctions to reduce the costs. According to (Jakob Lundsager, Nguyen Ngoc Hung, and Mikael Togeby 2019), by 2030 the levelized costs of electricity generation from wind and solar energy will be significantly lower than those from coal and gas in Vietnam.

iii) The environmental standards can only get stricter. The capital Hanoi is into the top three most polluted cities in Southeast Asia (Phan 2019). In 2015, coal power plants caused less PM2.5 air pollution in Hanoi than agriculture, transport or industry, but by 2030 the power sector would easily become the leading source of PM2.5 pollution in Hanoi (Amann et al. 2019), if the planned coal plants were opened. The energy sector is responsible for most of Vietnam's GHG emissions increase by 320% between 2010 and 2030 in its INDC's business as usual scenario. While Vietnam's climate change policy has been slow to touch the energy sector, cautious investors would assume that something such as an increasing Renewable Portfolio Standards may only happen within the next few years.

A global analysis of 6 685 coal plants (Gray et al. 2018) finds that it is now cheaper to build new renewable generation than to run 35 percent of coal plants worldwide. For those companies, holding on to coal power plants assets is not economically interesting, even if they are fully amortized. The same report concludes that by 2030, renewables beat out most of today's existing and planned coal-fired generation in Vietnam, the average plant age at retirement will be 13 years, and this creates a 11.7 billion stranded assets risk.

In a more focused and updated analysis, (Gray et al. 2019) estimated that the long run marginal cost of electricity from Vietnam's coal power plants was 47 USD/MWh in 2019, due to reliance on seaborne coal market. They expect new solar PV to be cheaper than new coal by 2020 and new onshore wind by 2021. The year when new renewables will be cheaper than operating existing coal depends on assumptions about fuel prices and technical progress, but is between 2028 and 2033 in the central cases.

Vietnam Electricity, as the State owned company with the mission to provide electricity to the Nation, is perhaps less affected by this business logic than other actors. But they cannot escape the economic constraints. Because of liquidity constraints, it is necessary to borrow or to equitize to finance the development of the power generation system. Borrowing is limited by the national debt / GDP ceiling, and most large financial institutions are restraining loans for fossil fuel plants anyway. Equitizing means convincing investors to buy shares in the electricity generation companies, those assets contain lots of aging hydro and thermal power plants. In February 2018, the initial public offering of EVN's subsidiary Power Generation Company 3 was a big failure, selling 7.45 million shares out of 267 millions offered. This demonstrates that investors had very low appetite for these traditional assets.

Conclusions and recommendations

What are the implications for the Power Development Plan 8, for 2020-2030, currently under preparation to be published next year?

Vietnam's Prime Minister Nguyen Xuan Phuc recognized the need for "minimizing coal-fired thermal power, especially old-fashioned technology", and particularly in the Mekong Delta, as it would "affect the long-term benefits of the locality" (Hau Giang, September 28th, 2017). We advocate for a clearer and harder "No new coal power plants" line. The old strategy has failed to provide energy supply security and has to be replaced. Trying harder the

same thing is not likely to work better. Because of the stranded assets problem, private and public investors have less and less interest in building coal power plants in Vietnam.

Since investors recognize that the economic window to build new coal generation projects in Vietnam is closed, only already permitted, only four-tenths of coal power generation units with a scheduled completion in or before 2025 should be kept in the next plan. The government can terminate all other projects on the basis of Circular 43 (Trần Tuấn Anh 2016), since they are late, and relieve investors who are struggling to obtain financing and the administrative and the social licenses to operate.

We hope that the 13th National Congress in January 2021 will adapt the Asian concept of ecological civilization as a

key goal for Vietnamese society; leading to stricter pollution control norms; higher fossil fuel taxes and import duties; and leading the National Assembly to vote a 2021 Renewable Energy Law enacting a Renewable Portfolio Standards for all. But even without political leadership into the energy transition, many coal power plants are already losing money, and that will be generalized after 2030. The coal plants built under BOT contract will have no residual value. Vietnam Electricity should already be ready to decommission them after 20-25 years. We believe that market forces are driving towards an exit from coal before 2050.

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