

Vietnam's PDP8 Should Be a Catalyst for Innovation, Not a Barrier to Change

Some Technology Choices Carry Substantially Higher Risks Than Others

Executive Summary

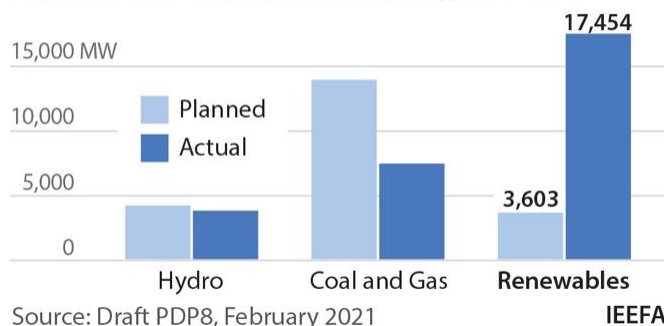
Vietnamese officials were in a fortunate position when they began work on the country's power development plan for 2021-2030 (PDP8). After a decade filled with disappointments from the fossil fuel industry, planners successfully tested the dynamism of renewable energy in Vietnam's fast-growing market. While many conventional coal and gas-power projects failed to progress during the development process, only managing to meet half of the targeted capacity for 2016-2020, solar power developers over-delivered by five times, and they have done so in a fraction of the time. The evidence was clear to inform the next stage of Vietnam's power development.

But beyond timeline considerations, these contrasting realities carry important implications for the power sector planning process. Traditional power sector planning disciplines were developed during a period when technology was relatively static and generation-led planning was the norm. That is not the right approach for an unprecedented period of innovation and cost reduction we are witnessing now. This calls for a fundamental shift away from the traditional planning approach of assessing technology choices on an "as is" basis to a pathway development process that sees each generation technology more holistically. This approach evaluates technology choices in terms of the potential for innovation and factors in risk to long-term performance with the goal of designing the system in a way that can optimize a complementary portfolio of technologies.

Unfortunately, the planners have so far revealed a conventional thought-process, as demonstrated by the generation-centric decisions that have shaped the recently published draft PDP8. Instead of acknowledging the importance of developing a more flexible system, capable of accommodating a changing technology mix, baseload coal and gas-fired power are the focus and continue to dominate 57% of the pipeline to 2030. This strategy conflicts with the most important trends shaping global power markets as well as with the planners' objectives to ensure energy

Vietnam: Coal and Gas Projects Fall Far Behind

Planned versus actual installed capacity, 2016–2020



security and minimize overall system cost including power costs, and health and environmental externalities.

As the government reviews the plans for PDP8, we believe that the following issues deserve attention.

Technology Cost Assumptions Face High Forecasting Risk

PDP8's usefulness as a roadmap will be limited due to the rapid pace of energy transition globally. Coal advocates who dismiss the ability of renewable energy and battery storage as a cost-competitive replacement for baseload coal power pipeline in the future are incorrectly assuming that the technology and how it is deployed will remain static.

To the contrary, there is compelling data which illustrate how the cost curves of key technologies are beginning to diverge sharply. The levelized cost of energy for coal power has remained unchanged between 2009-2020, while that of solar PV has dropped by 90%, and of wind by 70%, according to research firm Lazard.¹ Renewable energy cost deflation as a feature of the technology has consistently defied global analysts and institutions.

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The only certainty now is that the "cost effective" options on the drawing board today will be thoroughly repriced by the market in another two years. As a result, planners need to factor in a much higher degree of power market change than is reflected in the current approach to the PDP8. One needs only to look at rapid market share gains for renewables plus storage over the past two years to appreciate how rapidly cost-competitive innovation can transform markets. Without this insight, there is the risk that there will be a financially destructive system lock-in which will burden the state utility Electricity of Vietnam (EVN) over the coming decades.

In order to manage forecasting errors and maximize the potential of new technologies, Vietnamese planners should opt to focus more on the architecture of the energy system—placing more focus on the strategic importance of both flexibility and grid development—in particular.

Baseload Fossil Fuel Options Come With Risks That Must Be Acknowledged and Mitigated

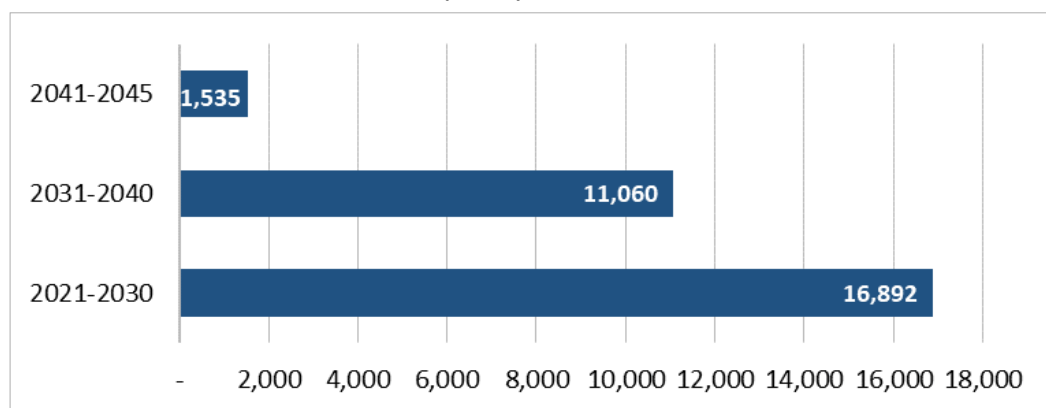
Vietnam's high reliance on coal power projects, that are subject to frequent delays, has put Vietnam on the brink of serious power shortages on more than one occasion. Nevertheless, observers will be surprised by the high level of reliance on

¹ Lazard. *Lazard's Levelized Cost of Energy Analysis – Version 14.0*. October 2020

coal-fired projects that have been retained in PDP8, despite the challenges acknowledged by the planners in the draft. Coal-fired power has been the biggest loser in energy transition to date. These projects, although optically “cheap”, have failed to deliver in the way that planners in many energy growth markets had expected.

Figure 1: Vietnam Maintains a Significant Coal Power Pipeline, Despite Mounting Risks

Additional Coal-Fired Power Capacity Planned for 2021-2045 (MW)



Source: Ministry of Industry and Trade (Draft PDP8, February 2021).

In Vietnam, and elsewhere, coal-fired projects increasingly suffer from development delays, cost over-runs, local community opposition, and structural funding challenges.

Vung Ang 2, one of the latest coal power projects to have concluded the pre-investment phase, required a total of 12 years for the sponsors and Vietnamese state agencies to reach an agreement on the contract terms alone. A further five years is expected for the plant's construction, without accounting for new construction risks.

Vietnam's coal-fired projects suffer from development delays and cost over-runs.

Planners must think carefully about making meaningful new commitments to coal-fired power capacity at a time when there is no prospect of technology or cost improvements. As recent experience has shown, choosing to pursue a coal power station now means preparing for at least a decade-long development cycle, followed by a minimum 20-year lock-in to high-emissions electricity. Moreover, the guaranteed power purchase agreements (PPA) and funding structures used by coal power project sponsors are in direct conflict with the need for more flexible power options that will give system operators more ability to adapt to new technology and market incentives.

In the meantime, funding risks for new coal projects continue to rise. IEEFA has tracked up to 135 financial institutions globally which have announced concrete divestment plans from coal-fired power assets. Vietnam has been and must expect to be impacted directly by this global trend. One of the longstanding investors in Vietnam's power sector, Mitsubishi, announced in February that it would pull out of the 2GW Vinh Tan 3 coal power project that has been on the drawing board since 2009. The Japanese trading house together with other partners have been facing mounting criticism from international investors and civil organizations for their involvement in Vung Ang 2. In response to rising opposition to Japan's poor climate track record, the Governor of state-owned Japan Bank for International Cooperation also said last week that Vung Ang 2 will be its last coal financing.

With the withdrawal of the major banks and the Japanese and South Korean export credit agencies, Vietnam will struggle to find quality counterparties for these deals. There is a risk that the ones that emerge will be hard pressed to assemble the project financing without a significant quid pro quo.

Failure To Account for Real Costs of Fossil Fuel Power Will Hurt Rate-Payers in the Long-Run

One of the most important take-aways from the rapid shift in global power markets is that power sector planners are increasingly vulnerable to fatal design errors if they fail to account for the real costs associated with different technology and fuel choices. As noted above, coal-fired power is a mature technology and there is little prospect of meaningful cost improvements. At the same time, carbon emissions and other environmental costs should be addressed at the outset.

**Coal-fired power is
a mature technology.**

For gas-fired power, assumptions about capacity factors, fuel cost volatility, and carbon emissions all suffer from upside forecasting bias. At the same time, much of the discussion about LNG for power has also tended to underestimate the cost of the associated infrastructure—regasification, storage, pipelines, and market development— and to gloss over the risk of new geo-political risks due to vulnerable supply chains. For Vietnam as a potential gas importer, the risks are particularly high.

Both of these fossil fuel technologies suffer from limited potential for cost reductions and are exposed to fuel price volatility—costs which cannot be easily edged by cost-sensitive ratepayers. The hefty utility bills facing Texas residents in the aftermath of the energy crisis last month is something Vietnam must avoid.²

² IEEFA. [Lessons from the Texas Energy Crisis for Emerging LNG Importers in Asia](#). March 2021.

Meanwhile, renewable energy continues to benefit from dramatic technology-driven cost improvements that Vietnam is well positioned to exploit. With modernized grid infrastructure and tailored incentives for storage, planners can reliably drive new renewable energy procurement costs down sharply and meet baseload-like supply goals.

Table 1: Renewable Energy Prospects Outshine Fossil Fuel Power

	2020 Baseline Costs	Cost of Associated Infrastructure	Development Timeline	Lock-In/Fixed Capacity Payment Risk	Imported Fuel Price Risk	Potential for Cost Improvement
Coal-fired power	Low	Medium	Long	High	High	Low
LNG-fired power	Medium	High	Long	High	High	Low
Solar	Medium	Medium	Short	Low	None	High
Onshore wind	Medium	Medium	Medium	Low	None	High
Offshore wind	High	Medium	Medium	Low	None	High

Note: Associated infrastructure includes gas import, regasification, storage, and pipeline facilities; or battery solutions (solar, wind power). Source: IEEFA.

Unless these factors are studied carefully and acknowledged in the planning process, policymakers could be lured into making choices that will burden EVN with financial risks that it will struggle to pass on to users. Planners should be cautious about assuming that implied tariff hikes of up to 38% over the medium-term will be easy to deliver. Consumers and large commercial and industrial users will be certain to change their usage patterns in the face of sharp tariff increases on this order. The recent surge in rooftop solar power is only one indication of how consumers might seek to shed unwanted power cost risks.

Underestimating the Need for Green Power Will Threaten GDP Growth

Over the past two years, Vietnam’s economic growth potential has diverged sharply from what we observe elsewhere in Southeast Asia. As Indonesia has struggled to move away from fossil fuels, key supply chain companies have increased their commitments to decarbonize their supply chains. Vietnam is the one country in the region that has worked hard to meet the needs of these key providers of foreign direct investment.

It is important to acknowledge the economic impact of easy access to green power for trade and foreign direct investment (FDI) trends in the coming decade. The European Union is increasingly focused on policies that could lead to carbon border tax adjustments. Investors are already racing against time. In December, a consortium of 29 global fashion brands³ with outsourcing networks in Vietnam urged Prime Minister Nguyen Xuan Phuc to expedite the legal framework to enable direct power purchase agreements between manufacturers and renewable energy plants.

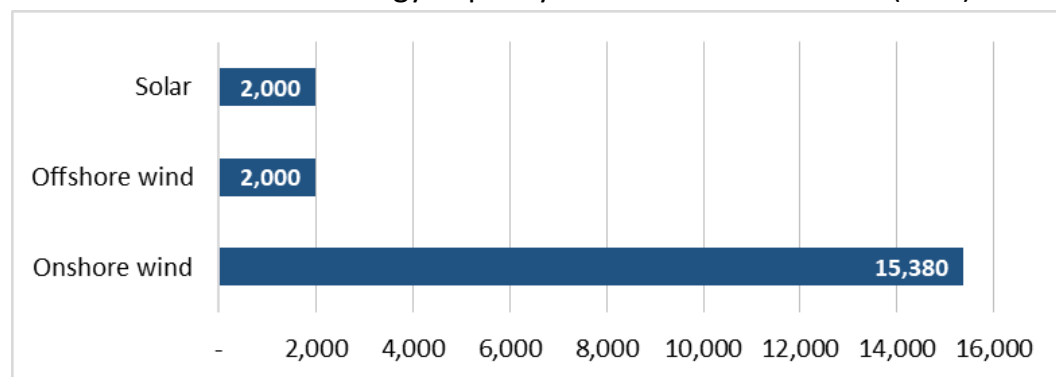
Vietnam must take bolder steps to win the confidence of high value foreign investors that are working hard to meet the needs of their global customers. This is

³ Nikkei Asia. [Nike and H&M to Vietnam: More Renewables, Please](#). December 2020.

a period when Vietnam should want to send a message to global investors that they can meet their green energy needs in Vietnam and that new clean energy options will benefit in a market progressing toward competitive auction structures that can deliver cost competitive outcomes. The market appetite for renewable energy investment is already there. Now it's time to realize steady cost improvements.

Figure 2: Despite Market Appetite, Vietnam Caps New Solar Capacity at Just 2GW

Additional Renewable Energy Capacity Planned for 2021-2030 (MW)



Source: Ministry of Industry and Trade (Draft PDP8, February 2021).

This is why the decision to artificially cap the market penetration of solar and wind power could have severe implications that would reverberate across the wider economy. Renewables have over-delivered in Vietnam over the past two years. This has triggered exaggerated stories about the impact of variability on EVN that ignore global realities. Grid investments and new sources of storage that will resolve these challenges benefit all types of power. What's different about wind and solar is that both technologies are expected to see sharply declining costs over the coming decade.

If Vietnam hopes to diversify its generation mix, meet new demand for clean power, and control power tariffs, renewables should arguably play a bigger role in PDP8, and not less.

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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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Melissa Brown, a former securities analyst at JP Morgan and Citigroup, has played a leading role in various Asian investment organizations focused on mainstream and sustainable investment strategies for public and private equity investors over the past 25 years.

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