

# **Challenges and opportunities facing Vietnam in the implementation of Power Development Plan VIII**

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On Monday, April 21<sup>st</sup> the kingdom of Denmark launched a tender to establish 6 GW of offshore wind power by 2030. Meanwhile Vietnam, which has the exact same goal, is still only at the planning a pilot stage. Asking why would be a rhetorical question, but why should Vietnam accept lagging behind developed countries in the transition to cleaner energy sources?

This situation underscores the broader challenges faced by Vietnam, including limited technological infrastructure and regulatory hurdles, which need to be addressed to empower the next generation. By

overcoming these obstacles and leveraging its opportunities, Vietnam can not only catch up but potentially become a model of sustainable development, replicating its success from economic reforms seen in the last generation.

*There is a shared sense of urgency.*

Every year before the summer, electricians in Vietnam get to work double-shifts to keep the economy running during the dry seasons. Last year, they did not completely succeed and rolling blackouts occurred, particularly in the North. Entering the summer of 2024,

the question merits serious attention again: power demand has grown 13% since the last year, more than expected, and since rainfall has not been particularly generous the hydroelectricity will not be abundant.

There is a shared sense of urgency to avoid last year's blackouts. In the last months EVN conserved water by using other sources of electricity when possible. The coal inventories are less tight than last year – the 2022 energy crisis and its crazy high prices is over, and demand reduction agreements have been signed, to kick off in time of short supply. Exports from the Lao Republic and China have increased, and there is a heroic push to complete the 500 kV circuit 3 line from Quang Trach (Quang Binh) to Pho Noi (Hung Yen), which would provide electricity to the North. Other preparation efforts included signing demand reduction agreement with many electricity customers, and a greater transparency on the situation, e.g. EVN publishes daily breakdown of electricity production by sources and the dam water levels. Overall, the summer has been anticipated, and with a little luck last year's situations will not repeat.

*PDP8 is one year old.*

But preparing for the summer is more than an electricity system management problem. This is also a moment to accelerate and orient investment in power production capacities. The national power development strategy is not only to provide enough electricity for the next summer, but to move forward into a competitive, sustainable, net-zero future. The one year old Power Development Plan VIII envisions doubling the country's power generation capacity from 2020 to 2030, with a significant shift towards cleaner energy sources like liquefied natural gas (LNG), wind, and solar.

Vietnam power development strategy aims to attract investment in fossil-based as well as clean investment. But both ways are not equally difficult. Markets are already preferring the green options. The pivot to

renewable energy is happening not only to attract foreign investment from RE100 companies like Lego, Apple and Samsung, who are committed to use only green electricity, but because technological shifts have already made solar and wind power easier to invest in than coal and natural gas.

The PDP VIII implementation plan recently published (Decision 262/QĐ-TTĐ dated 2024-04-01) provides detailed lists of onshore wind power plants, small hydro power plants, and biomass/waste power plants. Nothing is changed for the 27 solar PV projects: they still require a customer to be allowed to build, EVN is not going to buy their production. For offshore wind, the 6 GW by 2030 target is quite ambitious compared to where Denmark is. Still, the implementation plan clarify the aims: to build 2,500 MW in the North, 500 MW in Central, and 3,000 MW in the South by 2030. As an offshore wind project phase is typically 500 MW, about 42 x 12 GW turbines. If a pilot scheme that assigns EVN and PVN to take lead in collaboration with international partners is setup this year, a quick outcome would be a final investment decision by 2025 for the few projects which have already been surveying and measuring wind for years.

The PDP8 implementation plan is only one step in a long journey. That decision is not enough to allow all these projects to go forward, but it raises an important administrative barrier for them. Looking ahead, we see that a policy package will soon be passed along with a revision of the Electricity Law. The Ministry of Industry and Trade is currently seeking opinions on various draft decrees on (i) direct electricity trading between electricity generators and customers goods that use large amounts of electricity, known as the DPPA; (ii) to encourage the development of rooftop solar power installed in people's homes, offices, self-produced and self-consumed industrial parks; (iii) developing gas power and offshore and onshore wind power.

While the projects unlocked by these draft decrees may not provide electricity this summer, they are essential to progress towards a sufficient and sustainable power system. Let us examine a few critical problems to understand how much the texts on the table are going to solve them.

**1. Financing Challenges:** The PDP8 estimates a total investment requirement of \$134.7 billion for electricity sources and transmission infrastructure development between 2021 and 2030. Mobilizing such substantial capital will necessitate innovative financing mechanisms and the active participation of both domestic and international investors. The success of initiatives like the Just Energy Transition Partnership will be pivotal in unlocking the necessary green finance.

The draft decree on incentive mechanisms and policies for rooftop solar development is a step forward to restart investment in the rooftop solar sector, which stalled after the 2021 boom. The key positive aspect of the draft is its focus on promoting self-production and self-consumption rooftop solar systems. By allowing unlimited capacity development for systems not connected to the national grid and prioritizing administrative procedures for these installations, the decree could unlock a wave of decentralized solar investment. The proposed incentives, such as exemptions from operating licenses and land use restrictions, further reduce barriers to adoption.

However, the draft's treatment of grid-connected rooftop solar systems raises some concerns. The proposed 0 VND purchase price for excess electricity fed into the grid effectively discourages developments that could contribute to national power supply. While grid stability concerns are valid, a fair compensation mechanism that respects EVN's interest with technical norms to minimize grid impact is probably possible. Provincial capacity limits for grid-connected systems, tied to provincial power development plans, may also

constrain the growth of the rooftop solar sector, but those can be revised.

**2. LNG Investment and Gas Supply Risks:** LNG-fired power generation is expected to play a key role in the country's energy transition, with the PDP8 envisioning LNG accounting for 14.9% of total installed capacity by 2030. This reliance on imported LNG would expose Vietnam to the volatility of international markets and potential supply disruptions. Securing reliable, long-term LNG contracts and developing the requisite import infrastructure will be critical to mitigate these risks.

However, the first step is to actually build these power plants. Even if the cost per-kW of capacity of gas-to-power is lower than the cost of offshore wind capacity, these remains billion-dollars projects. To convince private companies, the reward/risk ratio must be attractive. On the other hand, it is not reasonable to pass all the risk to EVN and leave all the benefit to the investors. The draft decree on the mechanism for developing power projects using domestic natural gas and imported LNG tries to find a suitable compromise.

The draft decree outlines the government's in-principle agreement to a mechanism for transferring gas prices to electricity prices, which is crucial for the financial viability of these projects. The decree says that EVN could guarantee to the power plants a 70% capacity factor during the first 7 years. Economically, it is only interesting to burn gas when the renewable energy sources are not producing electricity. So the assumption there is that during the next seven years the solar and wind farms will not crowd out the LNG power plants, because the demand is growing so fast.

However, the broader LNG strategy face several challenges. EVN estimated the cost of LNG-fired power generation at 2,400-2,800 VND/kWh at current LNG prices of \$12-14/MMBtu. This is more than the price at which EVN sells electricity. On their side, investors

would prefer the use of foreign laws and arbitration for dispute resolution, government guarantees for foreign currency conversion, and compensation mechanisms for legal changes.

Looking at regional benchmarks, experts have pointed to the experience of countries like China and Thailand, where LNG power plants have shifted from baseload to peaking roles due to lower-than-expected demand growth. To mitigate similar risks, Vietnam may need to consider adopting two-part tariffs that provide separate payments for capacity and energy, ensuring cost recovery for investors while preserving flexibility in plant dispatch.

Overall, the draft decree on LNG-to-power projects is a necessary step to provide greater clarity and predictability for investors. However, fully implementing Vietnam's LNG ambitions will require a delicate balancing act between ensuring project bankability, managing affordability impacts, and aligning infrastructure development timelines.

**3. Regulatory Reforms:** The rapid pace of the energy transition will require Vietnam to streamline its regulatory frameworks and approval processes. Delays in permitting and licensing can significantly hinder the timely implementation of clean energy projects. Establishing clear, transparent, and efficient regulatory mechanisms will be essential to attract private sector investment and facilitate the smooth execution of the PDP8.

The Electricity Law revision will lay the ground for MOIT to launch auctions for new power generation and transmission projects. Further legislative and administrative work remains to be done before Vietnam can call for bids for new capacity like many countries do. As pilot projects are small by nature, one would expect the first rounds of auctions to be for projects at the 50MW scale. We are still a few years away from seeing

offshore wind tenders like the ones in Denmark or Taiwan.

**4. Infrastructure Constraints:** Vietnam's existing power grid infrastructure needs significant upgrades to accommodate the planned increase in renewable energy capacity. Transmission bottlenecks have already led to curtailment issues for solar and wind projects. Synchronizing grid enhancements with the construction of new power plants is crucial to ensure the smooth integration of clean energy into the system.

The draft decree on direct power purchase agreements (DPPA) introduces a new way to manage the electricity grid, not as an integrated part of the EVN infrastructure, but as an independent power transportation service. More precisely, the DPPA introduces two models for direct electricity trading between renewable energy generators and large consumers: off-the-grid (utilizing private transmission lines) and on-grid (utilizing the national grid).

Under the off-grid DPPA model, a large energy user can secure a stable, clean power supply while avoiding grid congestion issues by building a privately-owned power line. For example, an data center can contract directly with one or several nearby wind or solar farms.

The on-grid DPPA model, on the other hand, allows renewable energy generators with a capacity of at least 10 MW to sell electricity to large consumers (defined as those consuming a minimum of 500,000 kWh per month with a 22 kV connection) through the national grid. This model setups the transaction as a virtual arrangement with EVN in the middle, with the renewable generator receiving the spot market price for its output, the consumer paying the spot price plus transmission and distribution charges, and the two parties entering into a contract for differences to manage price risks.

The DPPA decree will allow distressed power generation projects, that missed the FIT window, to finally reach a market. This is an important piece to maintain Vietnam's favorable investment climate, since many international companies are now requiring renewable energy.

**5. Human Capital Development:** As Vietnam shifts towards a cleaner energy mix, there will be a growing demand for skilled professionals in the renewable energy sector. Developing the necessary human capital through targeted education and training programs will be vital to support the transition. Collaborations between industry, academia, and government can help bridge the skills gap and foster innovation in the clean energy space.

The PDP8 implementation plan proposes to establish two new inter-regional offshore wind industry clusters, to include manufacturing facilities, ports and supporting industries for renewable energy, as well as 'green' and low carbon industrial zones, and research and development facilities. The Northern center would span Hai Phong, Quang Ninh and Thai Binh provinces, earmarking a capacity of 2,000MW for offshore wind, along with an additional 500MW for onshore and nearshore power generation. The Southern center: Located within Ninh Thuan, Binh Thuan, Ba Ria - Vung Tau and Ho Chi Minh City territories, this centre anticipates between 2,000-2,500MW of offshore wind power and another 1,500-2000MW from onshore and nearshore sources.

### *Towards a carbon tax and an ASEAN supergrid?*

Further changes are coming to the energy sector in Vietnam. Capacity payments, where power generation projects are paid to be available when needed, regardless of the amount of electricity they produce, have proved to be effective to attract investment in flexible power generation sources like LNG or energy storage projects. The Environment law kickstarted the creation of a carbon market for large CO<sub>2</sub> emitters. And cross-border trade in electricity is increasing. While the creation of a synchronized ASEAN supergrid is still on the horizon, submarine high voltage direct current interconnectors have expanded the technological frontier by allowing bilateral electricity trade, for example, between Singapore and an offshore wind field in Vietnam.

To sum up, the painful memory of last year's blackouts reminds the need for action. But this month, Vietnam is not only addressing its electricity needs for the summer but also paving the way for a sustainable energy future. The forthcoming policy package in Vietnam holds promise for the renewable sector, to unlock investment decisions for rooftop solar and onshore wind projects, facilitated by the DPPA and rooftop solar decrees. However, to implement the LNG-to-power plans, long negotiations can be expected. The potential benefits of these transformations extend beyond environmental impact—they promise enhanced economic stability and job creation, contributing to broader societal well-being.



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