



# Vietnam Renewables: Investment Priorities

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# Executive Summary

Vietnam leads the ASEAN region's forecast GDP growth, and its primary energy demand is expected to increase substantially. It is a coal-dependent country but has strong wind and solar potential and has adopted supportive policies to boost clean energy investments. Vietnam's goal of achieving net-zero emissions by 2050 and reducing emissions by 15.8% (unconditionally) and 43.5% (conditionally) by 2030 calls for large-scale renewable investment. The government aims to increase renewable energy's share to 39.2% by 2030 and up to 71.5% by 2050, yet several challenges hinder the outlook for wind and solar deployment.

This report follows the [ASEAN Renewables: Opportunities and Challenges](#). It summarises Vietnam's power market structure and outlines the main opportunities and challenges for renewable power deployment in Vietnam in the context of its economic growth potential. It also introduces priorities and potential solutions for local and foreign players to accelerate renewables deployment.

<b>Opportunities</b>	<ul style="list-style-type: none"><li>• Offshore wind potential</li><li>• Solar potential</li><li>• Supportive policies and regulatory frameworks</li></ul>
<b>Challenges</b>	<ul style="list-style-type: none"><li>• Coal dependency</li><li>• Uncertainty over current policy and investment frameworks</li><li>• Lack of transparent legal and financial frameworks</li><li>• Renewables Power Purchase Agreement (PPA) risks</li><li>• Restrictive monetary controls and investment conditions</li><li>• Higher cost of capital in Vietnam</li><li>• Lack of hard currency support</li><li>• Lack of investment in the northern region</li><li>• Constraints for offshore wind</li><li>• Grid integration issues</li></ul>
<b>Solutions</b>	<ul style="list-style-type: none"><li>• Bolster additional investment in transmission capacity</li><li>• Address stranded renewables assets</li><li>• Provide incentives to invest in large-scale renewables in North Vietnam</li><li>• Introduce regular competitive tenders and encourage bankability</li><li>• Introduce risk hedging facilities to tackle foreign currency exchange risk</li></ul>

# Introduction

The GDP of ASEAN member states<sup>1</sup> is projected to outpace the growth rates of many developing and advanced economies, with a regional average compounded annual growth rate (CAGR) of 6.7 per cent until 2027<sup>2</sup>. Gas and oil import costs could exceed 5 per cent of gross domestic product (GDP) by 2030<sup>3</sup>. The region's reliance on imported energy makes the swift adoption of renewable energy critical.

That urgency is even more acute for Vietnam. The country leads the ASEAN region's forecast GDP growth with an impressive CAGR of 10.9 per cent to 2027 (see Figure 1). Its primary energy demand is expected to increase from 67.7 Mt in 2010 to 186.0 Mt in 2035, an annual growth rate of 4.1 per cent, while its final energy demand has an expected CAGR of 3.3 per cent over the same period<sup>4</sup>.

Figure 1. Gross Domestic Product of Vietnam from 2017-2027\* (figures after 2021 are estimates)<sup>5</sup>



Notes: \* = forecast

Source: IMF, October 2022

This warrants a question – how can such demand be met whilst not relying on imports nor carbon generation? With a natural potential for wind capacity from its long shoreline and solar prospects, renewable sources offer low-cost solutions. Yet the outlook for wind and solar deployment is hindered by several challenges, including the current power market structure in the country, insufficient contracting certainty with the primary off-taker, and lack of restrictive monetary controls for foreign investors.

## Power Market Structure

Like most ASEAN power markets, Vietnam is structured around a single buyer system with long-term, legacy Power Purchase Agreements (PPAs)<sup>6</sup> tied to fossil-based generation. EVN<sup>7</sup>, the country's incumbent state-owned utility, controlling a significant proportion of the generation capacity, the transmission and distribution (T&D) grid, and the de facto electricity retailers.

Vietnam's payment for power consumption is tied to regulated tariffs, primarily determined by a government-linked agency, instead of open market mechanisms. This adds a political dimension and limits a "willing-buyer/willing-seller" construct, where buyers and sellers have the flexibility to set prices and take on risks depending on their capacity.

1 ASEAN member states include Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam

2 IMF (2022)

3 IEA (2022a), Southeast Asia Energy Outlook 2022

4 Journal of World Energy Law & Business (2023), Vietnam's energy transition to 2050: is importing liquefied natural gas a good solution

5 IMF (2022), World Economic Outlook

6 PPAs are contracts between energy buyers and sellers to buy and sell energy generated by renewable assets. If they incentivise continuous energy output by coal plants, then the PPAs may not provide the right signals for plants to provide capacity or flexibility in a way that would better support the integration of variable renewables into the system

7 Vietnam Electricity (EVN) is the largest power company in Vietnam

There is some level of competitive dispatch in the generation sector. However, a notable proportion of the generation capacity remains through long-term PPAs with EVN's single-buyer unit, the Electricity Power Trading Corporation (EPTC).

Thus far, Vietnam has supported the entry of renewables, particularly utility-scale solar and onshore wind, with relatively attractive feed-in tariff (FiT) schemes. This has, however, placed a heavy financial burden on EVN, given that tariffs are set at below FiT rates<sup>8</sup>. Regarding its current financial position, EVN's credit rating is BB<sup>9</sup>.

Figure 2: Overview of Key Players in the Vietnam Energy Market

Overview of Key Players				
Regulation	Ministry of Industry and Trade (MOIT)			
	ERAV	EREA	MPI	
Generation	EVN-owned generation companies	Equitized generation companies (GENCOs)	Build-operate-transfer (BOT) projects	IPPs
Single Buyer	Electricity Power Trading Company (EPTC)			
Transmission and Distribution	Power System and Market Operator: National Load Dispatch Center (NLDC) Transmission Grid: National Power Transmission Corporation (NPTC) Power Corporations: NPC, CPC, SPC, HPC AND HCMPC			
Customer	Domestic Clients		Industrial Clients	

Source: Baringa (2023)

While Vietnam has more than 50% of its installed capacity in renewable technology (and approximately 30% of solar and wind), the rest of the generation stack is dominated by carbon-intensive coal generation units.

Figure 3 shows a mild solar and onshore wind growth, displacing 12% of coal generation. As these are not equivalent in load factor, the more robust growth is with natural gas, reaching 28% of the capacity mix in 2035, strategically switching from baseload coal to baseload gas at 50% less carbon emissions.

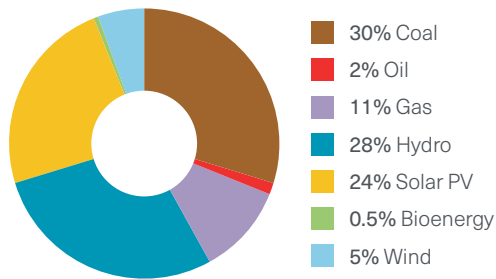
Notably, solar PV and wind do not contribute to greater capacity additions. Offshore wind is, therefore, a growth pillar that needs to be spurred for emissions reduction and reliance on outside energy imports.

8 Baringa insights (2023)

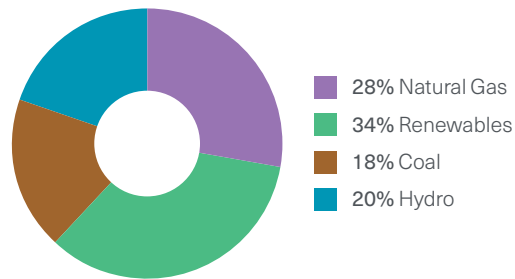
9 Fitch (2022)

Figure 3: Vietnam's Electricity Capacity, by Technology

2021 Capacity by Technology (75.5 GW)



2035 Capacity by Technology (158 GW)  
Based on Vietnam PDP8



Coal Fleet Age Avg.: 8

Peak Demand GW: 42.5

Reserve Margin: 34%

Annual T&D Loss: 6.53%

Source: CCFI/IEA (2023)

## Opportunities in Vietnam

### Offshore wind potential

In recent years, Vietnam has set ambitious targets to increase its non-hydro-renewable capacity in its Power Development Plans. Vietnam aims to increase its renewable energy capacity to 34% of total installed capacity by 2035 while reducing coal capacity.<sup>10</sup> Vietnam is well positioned for renewable energy investments, a function of strong winds along its long coastline, favourable wind patterns and suitable locations for wind farms. According to the World Bank, Vietnam's offshore wind potential exceeds 500GW<sup>11</sup>, which could replace coal as a base load source.

Vietnam's current wind power capacity is only 4GW, behind the pace needed to meet targets outlined in the country's Eighth National Power Development Plan (PDP8), which aims for 6GW of offshore and 21.88GW of onshore wind power by 2030. The PDP8 further targets 70GW to 91.6GW of offshore wind power by 2050, provided the necessary technology and investment are available.<sup>12</sup> Currently, all wind projects are onshore or nearshore.<sup>13</sup>

#### i) Economic opportunities

Based on the World Bank estimates, a standard 3GW offshore wind power project in Vietnam could contribute over USD 2.1 billion to the country's economy<sup>14</sup> and create more than 27,000 jobs in project development, manufacturing, construction, and operations. According to the World Bank, innovative technology and component scaling are set to drive further investments in Vietnam's supply chains, aiming for 60% local content by 2035.

A 3GW offshore wind plant can supply clean energy to more than 3 million households and further expedite the phase-out of coal-fired plants. This could enhance energy security by decreasing reliance on energy imports and countering fossil fuel price fluctuations while anticipating reduced offshore wind costs over the asset's lifetime.<sup>15</sup>

### Solar potential

Vietnam has high solar potential, especially in the central and southern areas of the country, where solar energy intensity averages 5 kWh/m<sup>2</sup> per day. Vietnam's total technical solar potential is 963 GW (837 GW on land, 77 GW floating, and 48 GW rooftop). However, considering economic potential and construction conditions, the total solar potential in Vietnam is estimated to be around 386 GW.

10 CCFI/IEA (2023), ASEAN Renewables: Opportunities and Challenges

11 World Bank (2021), Offshore Wind Roadmap for Vietnam, World Bank Group

12 Vietnam Briefing (2023), Vietnam Government Approves Power Development Plan 8

13 Surveys with developers (2023)

14 Gross value added to Vietnam's economy (The World Bank, 2023)

15 Surveys with developers (2023)

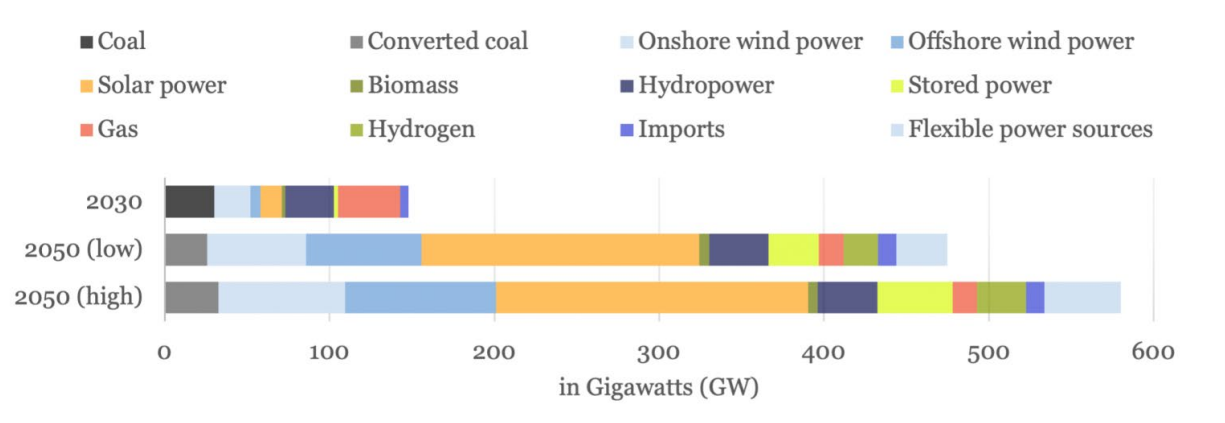
Between the end of 2019 and the end of 2020, about 9 GW of grid-connected solar power sources were serviced. Of the total, 7.8 GW was rooftop PV, of which more than 3.5 GW was in Ninh Thuan and Binh Thuan provinces.<sup>16</sup>

### Supportive policies and regulatory frameworks

#### i) Vietnam's Eighth National Power Development Plan (PDP8)

Vietnam has adopted supportive policies and regulations to boost clean energy investments, including the PDP8, which outlines ambitious goals for renewable energy expansions. The government aims to increase renewable energy's share from 30.9% to 39.2% by 2030 and up to 71.5% by 2050, with solar power becoming the dominant energy source.<sup>17</sup>

Figure 4: Projected installed capacity for electricity generation in Vietnam by source in GW, PDP8



Source: Green Finance & Development Center (Data sourced from PDP8)

The PDP8 has projected that it will cost USD 134.7 billion to reach its 2030 targets set for 2030. Beyond 2030, it is estimated that energy transition investment in Vietnam could require anywhere from USD 399 billion to USD 523 billion.<sup>18</sup> While short-term uncertainties persist, all three scenarios of Vietnam's latest draft PDP8 call for transitioning the country's power mix from one dominated by coal and hydro to one where gas, wind, and solar play more significant roles (note that hydro capacity is believed to have primarily peaked).

It is worth noting that in the latest draft of the PDP8 project, no new coal generation capacity was added after 2030. The plan's base and high scenarios will add 11.7 GW of coal capacity within this decade. However, Vietnam has identified four coal projects already in the pipeline — 1.2GW Nam Dinh I, 1.2GW Quang Tri I, 1.8GW Vinh Tan III and 2GW Song Hau II, totalling 6.2GW in capacity — that are at risk of not obtaining financing. Vietnam's contingency plan envisions an additional 6GW of gas, 7.6GW of onshore and nearshore wind, 3GW of offshore wind and 1GW of biomass capacity to be added.<sup>19</sup>

#### ii) Just Energy Transition Partnership (JETP)

The Just Energy Transition Plan (JETP) for Vietnam, announced in 2020, is expected to lower emissions in the electricity sector, reduce Vietnam's reliance on coal, and bolster renewable energy and energy infrastructure. It also includes provisions to safeguard vulnerable groups, promote carbon capture, utilisation, and storage (CCUS) for climate commitments, and mandate broad stakeholder consultation for consensus.

The JETP includes an international partner group comprising the G7 countries, multilateral banks, and private lenders, pledging USD 15.5 billion over three to five years to support Vietnam's transition to green energy.<sup>20</sup> The public sector financial portion, contributing USD 7.75 billion, is intended to be provided by the countries party to the agreement; the

16 Baringa Insights (2023)

17 "UK-Vietnam International Workshop on the Net Zero Pollution Transition 2023" Hanoi University of Science and Technology and Imperial College London

18 Power Technology (2023), Vietnam approves energy plan for the next decade, promoting renewables

19 BNEF (2023), 1H 2023 Southeast Asia Power Market Outlook

20 GOV.UK (2022), Political declaration on establishing the Just Energy Transition Partnership with Viet Nam

remaining USD 7.75 billion is to come from the private sector (through higher-rate loans, contingent upon regulatory reforms and the viability of individual projects), led by the Glasgow Financial Alliance for Net Zero (GFANZ) institutions.

However, out of the available public funding, a mere 2%, amounting to USD 321.5 million, is provided in grants, predominantly from the European Union and EU member states. Concessional loans at low interest make up USD 2.7 billion, with most funds being market-priced loans, a prospect Vietnam has hesitated to embrace.<sup>21</sup>

Vietnam is expected to launch the Resource Mobilisation Plan at the end of this year. This includes categories such as renewable energy industry development, power transmission and energy storage and transition of coal power generation, and energy efficiency.<sup>22</sup>

### iii) Direct Power Purchase Agreement (DPPA)

The recent amendments in the Law on Electricity permit foreign investors to invest in grid development and operation. The Ministry of Investment and Trade (MOIT) is testing a direct power purchase agreement (DPPA) scheme, enabling industrial consumers to engage electricity producers directly. If this leads to Vietnam's electricity market progress toward market liberalisation, numerous opportunities, particularly in renewables, could emerge.<sup>23</sup>

## Challenges in Vietnam

### Coal dependency

Vietnam heavily relies on coal for its electricity, with plans to expand coal power capacity until 2030. According to the government's latest baseline scenario, coal will remain Vietnam's most crucial energy source until 2030, surpassing 36 gigawatts (GW) of installed capacity. Up to 11 new coal-fired power plants will be built in the upcoming years, amounting to approximately 30GW in 2025<sup>24</sup>. To date, Vietnam is one of the world's top 20 coal users<sup>25</sup> and has the largest coal power capacity in the Greater Mekong<sup>26</sup>. Due to the strong existing interest in coal and renewables variability concerns, it is a challenge for the nation to design and implement coal-fired power phase-out transactions in the near term.<sup>27</sup>

### Uncertainty over current policy and investment frameworks

Vietnam's renewable energy development needs more certainty surrounding its policy and investment frameworks. While reporting indicates that Vietnam is likely to increase the role of renewables in the PDP8, the release of this plan has been delayed due to divergences regarding the country's future power mix, especially in coal-fired power generation phasing down along with the growth of renewable energy.<sup>28</sup> This indicates that fossil fuels remain the backbone of its economic development in the medium term.

### Lack of transparent legal and financial frameworks

Following the expiration of feed-in-tariffs (FiTs) for solar and wind-generated electricity in 2021, the government has yet to release new guidelines for purchases and sale agreements related to renewable energy sources in an amended version of the Electricity Law. The government has proposed extending the FiT deadlines from 2021 to the end of 2023. After the FiT expired, the Ministry of Industry and Trade (MOIT) introduced an auction system with two possibilities – one involves developers to auction electricity sales to local distributors, while the other allows investors to bid on land for their projects. However, in the absence of an official government decision regarding the post-2023 approach, the future remains uncertain.<sup>29</sup> The lack of transparent legal and financial frameworks dissuades private investors from investing in renewable energy in Vietnam. Consequently, this puts the nation's future targets for higher integration of renewable energy at risk.<sup>30</sup>

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21 Reuters (2023), Indonesia, Vietnam energy transition financing under G7-funded plans

22 Energy Transition Partnership (2023)

23 Vietnam Briefing (2022), Unpacked: Vietnam's US\$15.5 Billion JETP Agreement

24 Reuters (2022), Vietnam boosts coal use plan for 2030 as G7 climate offer stalls

25 Reuters (2022), Vietnam boosts coal use plan for 2030 as G7 climate offer stalls

26 Global Coal Plant Tracker (2022)

27 Surveys with developers (2023)

28 Green Finance & Development Center (2023), Vietnam's Eight National Power Development Plan (PDP8)

29 Vietnam Briefing (2022), How Can Investors Seize Vietnam's Wind Power Potential

30 Green Finance & Development Center (2023), Vietnam's Eight National Power Development Plan (PDP8)



## Renewables Power Purchase Agreement (PPA) risks

Other factors that shape the landscape of wind energy agreements in Vietnam include the consideration of Vietnam's wind PPAs, which is, via the auction system, a form of security package from the government. The PPA also differs from international lenders' expectations related to the regulatory framework. The governance of the wind PPA falls under Vietnamese law, and any dispute resolution is channelled through the Vietnamese courts or arbitration. However, the existing PPA also needs provisions for protection against changes in law and taxation adjustments, thus relying on safeguards provided by the Investment Law.<sup>31</sup>

PPA risks, such as termination payment, are caused by the absence of a predefined compensation formula for non-performance and irregularities by state entities. Additionally, curtailment risks arise because of insufficient compensation mechanisms and specific provisions for deemed capacity. EVN retains the authority to curtail projects without transparent compensation rules. In other words, if the facility can produce electricity but EVN cannot accept it, the PPA model must address payment or compensation for this unutilised potential energy.<sup>32</sup> Here, it is worth noting that EVN is accountable for purchasing all power output from grid-connected projects at the delivery point in Vietnam. The Danish government has also raised the issue of curtailment risks, indicating that curtailment can reach up to 15% in South Vietnam if no additional investment is made.<sup>33</sup>

## Restrictive monetary controls and investment conditions

Vietnam has strict capital controls, limiting financing options for foreign investors. Regulatory oversight and less-developed local capital markets further complicate investment conditions, reducing investor opportunities. The Vietnamese Dong (VND) is not a freely convertible currency, with mid-to long-term offshore VND loans requiring registration from the State Bank of Vietnam. The ability to undertake refinancing and more complex financial structures also requires approval and review from government authorities. This means that the number of levers available to investors is significantly reduced relative to a market with a well-developed financial system.<sup>34</sup>

## Higher cost of capital in Vietnam

The weighted average cost of capital (WACC) in local currency (LCY) for renewable power generation in Vietnam is estimated to range from approximately 10% to 15%, depending on the technology (solar, onshore wind and offshore wind) and case-specific conditions. This estimate is derived mainly from interviews conducted with practitioners in the country. Those interviewees provided broad (as much as 350 basis points) ranges in their responses by technology, which, again, reflects that case specifics can have a significant bearing on both the cost of borrowing and required equity returns. The ranges (by technology) fit, at least directionally, with other available cost of capital inputs and what is known about deploying these renewable technologies in Vietnam today.

Interviewees noted a range for onshore wind of approximately 9.5% to 13% (averaging 11.4%), followed by utility-scale solar (responses pointed to an average of 11.9%) and then offshore wind (which averaged 14%) in LCY.

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31 Freshfields Bruckhaus Deringer (2021), Overview of Investment in Renewable Energy in Vietnam

32 Freshfields Bruckhaus Deringer (2021), Overview of Investment in Renewable Energy in Vietnam

33 Danish Energy Agency (2019) Grid Modelling of the Vietnamese Power System

34 Surveys with developers (2023)

Table 1. Onshore wind, Utility-scale solar PV, and C&I solar PV cost of capital metrics for Vietnam

Vietnam									
Technology	Onshore Wind			Utility-scale			Utility-scale solar PV (unweighted mean)		
WACC (LCY)	9.6%	–	13.1%	10.1%	–	13.6%	11.2%	–	14.7%
Expected Return (LCY)	11.0%	–	15.0%	12.5%	–	15.5%	13.5%	–	16.5%
Cost of Debt (LCY)	8.0%	–	12.0%	9.0%	–	12.5%	10.0%	–	13.5%
WACC (USD)	7.0%	–	10.0%	7.5%	–	10.5%	8.8%	–	11.8%
Expected Return (USD)	11.5%	–	14.5%	12.0%	–	15.0%	13.0%	–	16.0%
Cost of Debt (USD)	6.0%	–	8.0%	7.0%	–	8.0%	7.5%	–	9.0%
Tariff currency indexation	USD			USD			USD		
Leverage ratio	65.0%	–	70.0%	65.0%	–	70.0%	65.0%	–	70.0%

Notes: WACC = Weighted Average Cost of Capital

Values represent data across different rate and inflationary regimes. The metrics reflect market participants' expectations for equity returns and debt pricing for investment in new renewable power generation projects over 2022 and 2023.

Debt and equity ranges reflect currency fluctuations versus USD in recent years, pricing variations by investors and include projects under the previous feed-in tariff (FIT) regime and during the post-FIT period.

The lower bounds in the table above reflect a lower interest rate environment and other risk factors.

Source: The authors, based on investor, developer and industry stakeholder discussions.

A few cost-of-capital input sources can be used as references to contextualise these ranges. The most direct comparable is from the International Energy Agency's (IEA) Cost of Capital Observatory. That survey yielded average WACCs in Indonesia of 9.5% and 10.5% for solar PV projects.<sup>35</sup>

The "order-reversal" of the IEA survey relative to the Vietnam results, i.e., the fact that Vietnam has a higher WACC for solar than for onshore wind (and a meaningfully higher WACC than the IEA's estimated solar WACC), is notable. Based on investor and developer surveys, this could be driven by the higher grid and system integration risk in Vietnam for solar PV than wind.

### Lack of hard currency support

Renewable tariffs applied during the implementation of the PDP7 electricity plan were based on a USD-indexed tariff that protected against local currency volatility and increased the attractiveness of renewable investments in Vietnam. Based on the MOIT, the USD indexation for renewable energy tariffs applicable for the upcoming PDP8 electricity plan has been annulled, with tariffs expected to be denominated in VND. The inability to hedge interest rate volatility for VND loans and the lack of a liquid swap market for hard currencies will significantly increase financing costs for renewable investments and narrow the universe of potential investors.<sup>36</sup>

### Lack of investment in the northern region

Hanoi, the capital of Vietnam, continues to be a significant source of energy consumption that has yet to attract substantial renewable capacity. The whole region of northern Vietnam faces energy shortages and primarily relies on thermal investments. Inconsistent energy policies have led to load-shedding and impacted business activities. Combined with recent record-high temperatures in Northern Vietnam that have pushed up energy consumption, this has led to large-scale events of load-shedding and organised blackouts that have severely impacted business activity and sentiment.<sup>37</sup>

<sup>35</sup> IEA, Cost of Capital Observatory

<sup>36</sup> Survey with developers (2023)

<sup>37</sup> Surveys with developers (2023)

## Constraints for offshore wind

Few procurement options and insufficient transmission and port infrastructure are available for offshore wind projects. Despite having established original equipment manufacturer (OEM) presence, such as GE (for turbines), CS Wind (for turbine tower), Helukable (for cable), and ABB (for electrical components), local joint ventures with local staff and imported technologies are facing competition from other Asian countries with competitive advantage, such as Taiwan, South Korea, and Japan.<sup>38</sup>

In addition, another challenge is the need for more clarity around wind regulations. The developer of the first offshore wind project is exposed to regulatory uncertainty. In short, a transparent lease permitting process and compensation from EVN for grid improvement are still absent.<sup>39</sup> 'Renewables major Ørsted has paused offshore wind development activities in Vietnam, citing uncertainty about the country's policy framework and route to market.<sup>40</sup>

## Grid integration issues

Vietnam has successfully installed approximately 76.62GW<sup>41</sup> of renewable capacity over the past five years, with most of the investments made in Vietnam's South and Central regions – given the availability of better renewable resources. Unfortunately, this has also led to significant overbuilding in these areas, which is paired with the lack of grid investment by EVN.<sup>42</sup> which has led to load congestion and the inability to sell energy generation from these assets. EVN's existing balance sheet and funding capacity are also constrained, leading to issues in building new power infrastructure for these regions.<sup>43</sup> Despite the revised Electricity Law, which allows private investment in the grid, there needs to be more clarity on how it could be done, who would operate the grid, and how investors can be compensated for grid construction. Investors who wish to build the grid face legislation issues, such as the need for more clarity on how the grid development can be implemented and how they can be compensated for this.<sup>44</sup>

# Priorities and Solutions

## Bolster additional investment in transmission capacity

During the implementation of PDP7, substantial grid infrastructure improvements have been necessary to incorporate the buildout of intermittent renewables. Historically, the state utility of Vietnam, EVN, has been the sole owner and operator of mid to large-scale transmission capacity. Given EVN's broad responsibilities and balance sheet constraints, there has been under-investment in transmission, which has led to significant curtailment of newly built renewable energy capacity in Vietnam after the implementation of PDP7.

A single-electricity buyer model could be improved by creating more competition in the renewable power market by introducing FiT and allowing more private players (domestic and foreign) to access the market. The dominant status of EVN in the country can thus be unbundled, creating more explicit responsibilities and free access to Vietnam's energy transition pathway.<sup>45</sup>

Introducing foreign investors in the transmission infrastructure may lessen the investment burden on EVN<sup>46</sup> as they could bring additional capital and technical expertise in delivering large-scale transmission assets.

## Address stranded renewable assets

The MOIT should tackle the existing stranded renewable projects, which missed the recent FiT deadlines of 31 December 2020 for solar projects and 1 November 2021 for wind projects. Current stranded renewable projects should be addressed before attracting more investments in new projects.<sup>47</sup>

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38 Wood Mackenzie and surveys with developers (2023)

39 Surveys with developers (2023)

40 Windpower Monthly (2023), Ørsted pauses offshore wind development in Vietnam

41 Reuters (2022), Vietnam eyes doubling of power generation capacity by 2030

42 Until recently, only EVN (the government-owned state utility) was approved for investing in large-scale grid infrastructure

43 Surveys with developers (2023)

44 Surveys with developers (2023)

45 Survey with developers (2023)

46 Green Finance & Development Center (2023), Vietnam's Eight National Power Development Plan (PDP8)

47 Surveys with developers (2023)

### Provide incentives to invest in large-scale renewables in North Vietnam

Given that existing energy shortages in North Vietnam are prevalent during peak demand periods, the availability of large-scale power generation is essential to provide a predictable power supply for the region. Building large-scale transmission investments to connect existing renewable power generation in the South to the North may not be cost-efficient due to challenging geography and distance. Government support and incentives involved in de-risking renewable investments in the North will be necessary to attract investors, especially regarding facilitating land access and acquisition, providing hard currency support and accelerating permitting and approval activities.<sup>48</sup>

### Introduce regular competitive tenders and encourage bankability

Introducing competitive tariff-based tender processes could bring transparency to new renewables capacity and create opportunities for developers to bring projects to the market with more visibility.

In addition, the contractual structure around renewable projects requires amendments to enable international banks and foreign investors to participate in Vietnam. Hard currency support<sup>49</sup>, which was available in PDP7, will be an important pillar in retaining bankability. Clarity around permitting and approvals is also crucial, considering historical project delays and, in some cases, abandonment.<sup>50</sup> This would increase lending opportunities, scale debt financing and foreign equity participation.

### Introduce risk hedging facilities to tackle foreign currency exchange risk

To address Vietnam's challenges around currency risk, coverage facilities could help with the devaluation of local currencies. Some proposals include concepts like the Exchange Rate Coverage Facility (ERCF), designed to protect foreign currency lenders and domestic stakeholders against the depreciation of local currency payments generated by clean energy projects. This facility proposes a structure to distribute exchange rate risk for clean energy projects by combining domestic and international resources, including carbon credits, development assistance, and global private capital.<sup>51</sup>

## Conclusion

Renewable energy investments are critical in achieving Vietnam's Nationally Determined Contributions (NDCs) of reducing greenhouse gas (GHG) emissions by 15.8% (unconditionally) and 43.5% (conditionally) by 2030.<sup>52</sup> Given Vietnam's strong resource potential, domestic and international investors have shown strong interest in various renewable energy projects, including solar, wind, and hydropower. They have become essential players in shaping Vietnam's low-carbon power sector.

The Vietnamese government has been pivotal in driving renewable energy development through public capital investment. Various mechanisms, such as feed-in tariffs (FiTs) and power purchase agreements (PPAs), have been established to provide financial incentives for renewable energy projects. Publicly owned utilities and state-run enterprises invest in and operate renewable energy projects, particularly utility-scale projects and grid infrastructure.

While several initiatives are underway, challenges remain:

- Coal dependency
- Uncertainty over current policy and investment frameworks
- Lack of transparent legal and financial frameworks
- Renewables Power Purchase Agreement (PPA) risks
- Restrictive monetary controls and investment conditions
- Higher cost of capital in Vietnam
- Lack of hard currency support
- Lack of investment in the northern region
- Constraints for offshore wind
- Grid integration issues

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48 Survey with developers (2023)

49 Surveys with developers (2023)

50 Vietnam Briefing (2023), Renewables in Vietnam: Current Opportunities and Future Outlook

51 Columbia University CGEP (2022), Scaling Clean Energy Through Climate Finance Innovation: Structure of an Exchange Rate Coverage Facility for Developing Countries

52 UNDP (2023)

Additionally, the energy market in Vietnam has operated as a monopoly throughout most of the energy value chain. Liberalising this market and the participation of private operators and investors could increase market transparency and allow the energy market to develop price signals for renewables. A portfolio of mechanisms will be required to build confidence and accelerate the energy transition.

An important one is to enable early coal phase-out, as the country has a relatively young coal fleet. Other areas the government of Vietnam should address to increase confidence and build on the existing clean energy initiatives include:

- Bolster additional investment in transmission capacity
- Address stranded renewable assets
- Provide incentives to invest in large-scale renewables in North Vietnam
- Introduce regular competitive tenders and encourage bankability
- Introduce risk hedging facilities to tackle foreign currency exchange risk

We hope our work will help accelerate progress already underway.

# Country Energy Profile – Vietnam

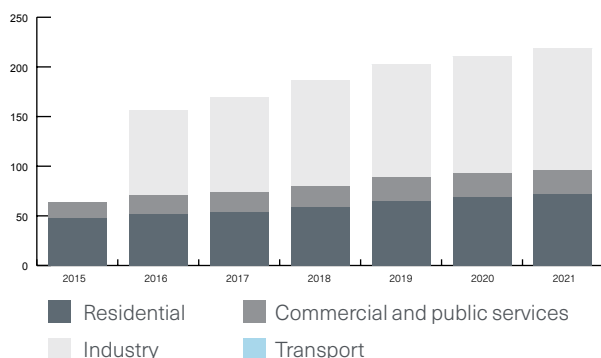


## Cross-Cutting Macro Indicators

Population (mm):	99
GDP Per Capita (USD, 3-yr CAGR):	13284 (7.79%)
Trailing 12M Currency Movement (IDR/USD):	-1.2%
Sovereign Debt Rating (S&P):	BB+
10Y Gov. Bond Yield:	2.59%
Sustainable Debt Issuance (USD, 3-yr CAGR):	0.6bn, (1.15%)
FDI net (USD, 3-yr CAGR):	15.7 bn (0.3%)
FDI % of GFCF:	13.5%
Energy Subsidies (Yes/No, Type, USD):	Yes, Coal (18.1 bn), Oil & Gas (13.4 bn)
Fuel net imports (USD):	13.1 bn
CO2 Emissions (per capita, 3-yr CAGR):	3.59t, (6.88%)
2030 GHG Reduction Target:	15.8% (unconditional), 43.5% (conditional)
Net-Zero Target:	Net-Zero, 2050
Carbon Pricing:	No, environmental tax on gas (0.0428 USD/L) and diesel (0.0214 USD/L)

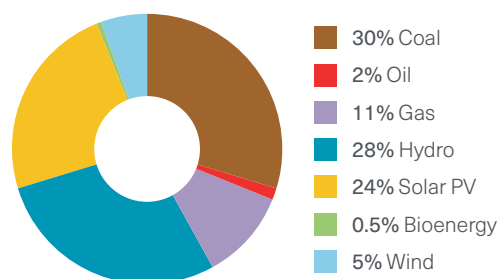
## Power Market Fundamentals

Power Demand By End-Use Sector (TWh)

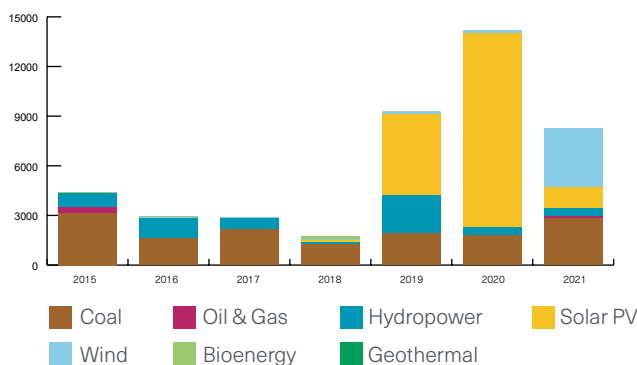


Electricity Capacity

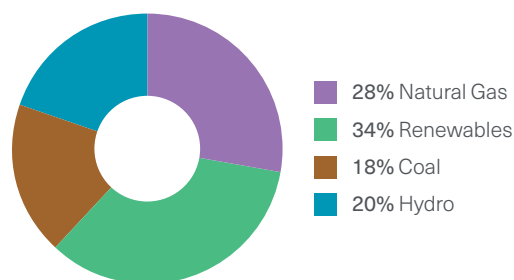
2021 Capacity by Technology (75.5 GW)



Annual Capacity Additions By Technology (MW)



2035 Capacity by Technology (158 GW)  
Based on Vietnam PDP8



Coal Fleet Age Avg.: 8      Peak Demand GW: 42.5  
 Reserve Margin: 34%      Annual T&D Loss: 6.53%

## Power Market Investment Framework

Total Power Capacity GW: 75.5      Renewables Capacity GW and % share: 43.7 / 58%      Renewables Capacity Target: 32% by 2030

## Power Generation Investment Sources of Finance

Rank	Renewable Power	\$ Million	Fossil Fuel Power	\$ Million	Oil & Gas	\$ Million
1	Bamboo Capital Group	1,031	Electricity of Vietnam Group EVN	5,716	PetroVietnam	4,959
2	Xuan Thien Group	867	PetroVietnam	3,491	PetroVietnam	4,445
3	PetroVietnam	740	EVN Group	3,251	Vung Ro Petroleum Company Limited	4,000
4	Electricity of Vietnam Group EVN	734	Teknik Janakuasa	1,760	Idemitsu Kosan	3,159
5	Trungnam Group	673	AES Corporation	994	SCG Chemicals	2,700

Market Structure: Single-buyer utility with IPPs  
 Grid Ownership: State Owned

Pricing: Government Regulated  
 Generation Ownership: Mix of public and private

## Remuneration Mechanisms – Renewable Power and Key Enabling Technologies

Technology	Mechanism	Ceiling Price Level (USD), lifetime avg.	Duration	Currency of Payment	Inflation Adjustment	Grid connection and Land	Other features
Solar PV (Utility Scale)	Feed-in tariff	USD 51/MWh	20 Years	VND	No	Developer responsibility	Ceiling price, renewed FIT scheme replacing expired rates
Floating Solar PV (Utility Scale)	Feed-in tariff	USD 65/MWh	20 Years	VND	No	Developer responsibility	Ceiling price, renewed FIT scheme replacing expired rates
Onshore Wind	Feed-in tariff	USD 68/MWh	20 Years	VND	No	Developer responsibility	Ceiling price, renewed FIT scheme replacing expired rates
Offshore Wind	Feed-in tariff	USD 78/MWh	20 Years	VND	No	Developer responsibility	Ceiling price, renewed FIT scheme replacing expired rates

## Main Drivers, Challenges and Priorities for Investment

### Investment & Return Drivers

- Vietnam has signed the Paris Agreement, which targets net zero by 2050. In planning, it aims to have renewables account for 47% of electricity generation by 2030. To reach these goals, Vietnam estimates USD 11bn+ in annual financing will be necessary
- The country has recently seen a massive spike in electricity demand. It has become a manufacturing hub in recent years, putting significant strain on the grid and making energy security a primary concern. To alleviate this strain, government is now allowing private & foreign investors to build, manage, and operate transmission lines
- Recent buildout in solar (+16GW 2017–2022) has been fuelled by the Solar FiT program, which recently expired and was renewed to include FiTs for wind at the beginning of 2023
- In 2022, the government launched a direct PPA (DPPA) program, allowing projects to sign PPAs directly with corporate off-takers, which will increase the number of bankable projects for investors
- Discussions around the creation of a transparent and competitive wholesale market could make renewable investment in the country much more attractive in the coming years

### Challenges

- Massive buildout of solar has caused the grid to become highly strained due to the increased penetration of intermittent renewables, indicating high levels of curtailment are likely in the short term
- Growth in electricity demand is further putting strain on the grid and is increasing the need for dispatchable generation as intermittent buildout in recent years has been significant
- The lack of a competitive wholesale market makes the country less attractive for renewable investors who tend to benefit from merchant upside in competitive markets
- Following the expiration of FiTs for solar and wind-generated electricity in 2021, the government has yet to release new guidelines for purchases and sale agreements related to electricity generated by renewable energy sources in an amended version of the Electricity Law. It is worth noting that these FiT prices are only relevant to transitional projects which missed the FiT deadline. Hence, the FiTs do not apply to new projects at present.
- Clarity on FiT pricing, timeline, and structure has been poor in the last five years; the new FiT scheme alleviates these concerns for now. However, renewable subsidies are likely to take the form of
  - an auction in the coming years, creating pricing uncertainty outside of the current FiT regime

### Policy and Market Priorities

- Targeted transmission buildout to support increasing intermittent generation and demand; incentives for private investment in transmission lines
- Creation of a robust and transparent wholesale electricity market
- Clarity and standardisation of renewable PPA structure and pricing
- Expansion of the DPPA program beyond the two-year pilot, encouraging direct private investment in the country by increasing the number of bankable projects with high-quality offtake
- There is only the pilot DPPA system. In August 2023, Vietnam's Ministry of Industry and Trade (MOIT) sent a proposal with two forms of DPPA to the Prime Minister with suggestions of how the DPPA would work in Vietnam, suggesting implementing it in two phases up to 2024

## Sources

IEA: Energy Subsidies, CO2 Emissions, Power Demand by end-use sector, Renewable power annual capacity additions by technology, Electricity capacity by technology (2021), Total Installed Capacity (Fossil fuel power based on calculations from S&P Platts), Renewable Power Capacity, Coal Fleet Age (Based on calculations from S&P Platts), Annual T&D Losses

S&P (Platts): Fossil fuel power annual capacity additions by technology

IMF: Population, GDP Per Capita

Bloomberg: Trailing 12M currency movement, 10Y Gov. yield, Sustainable Debt Issuance

IJ Global: Power market sources of finance

World Bank, UN: FDI, GFCF, Fuel net imports

Government of Vietnam: 2030 GHG reduction target, Net-Zero target, Carbon pricing, Planned 2035 generation capacity, Peak demand, Reserve Margin, Remuneration Mechanisms

## Notes

1. FDI, GFCF, Energy Subsidies, Fuel net imports, Total Power Capacity, and Renewables Capacity current as of the 2021 year end, all other values current as of the 2022 year end unless otherwise specified; 2. All \$ values in USD; 3. Bond yields in local currency; 4. CO2 emissions are taken from 2020 real IEA data and extrapolated based on GDP growth rate from IMF data to 2022; 5. Power market sources of finance calculated based on IJ global asset database project capex & ownership. The asset database capex is incomplete for projects in ASEAN; the numbers represented serve as best estimates based on available data.

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