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Southeast Asia's Renewable Energy Ambition: The Case of Vietnam

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Introduction

Southeast Asia has made remarkable progress in expanding renewable energy sources. Facilitated by the various national policies that are in place to encourage their development, the share of renewable energy sources in the region's installed capacity has increased significantly, rising from around 20 percent to 33 percent in the last twenty years, and is expected to surpass the regional 35 percent target by 2025.¹

While the regional figures look promising, individual countries differ in terms of speed, scale, and the choice of renewable energy technologies developed. Vietnam is a forerunner of renewable energy expansion in Southeast Asia. Significant investments have been made in utility-scale solar and wind power projects since mid-2010s, particularly in provinces with high renewable energy potential such as Ninh Thuan, Binh Thuan, Bac Lieu and Quang Tri.² The country added 1,718 Megawatt (MW) of hydropower and 3,405MW of wind power between 2020 and 2022, which accounted for

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¹ ASEAN Centre for Energy (ACE), "ASEAN Power Updates 2023" (Jakarta: ACE, 2023), <https://aseanenergy.org/publications/asean-power-updates-2023/>.

² Xuan Phuong Nguyen et al., "Mission, Challenges, and Prospects of Renewable Energy Development in Vietnam," *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* 0, no. 0 (2021): 1–13, <https://doi.org/10.1080/15567036.2021.1965264>.

around half of additional hydropower capacity and all of additional wind power capacity in Southeast Asia during that period.³ Similarly, the country's solar power development made up approximately 70 percent of additional solar power capacity in Southeast Asia between 2013 and 2022.⁴

Vietnam's impressive strides in renewable energy development was made possible by its geographical location that endows it with abundant sunlight, long coastlines, favourable wind conditions, and abundant rivers. Yet, beyond nature, Vietnam's remarkable renewable energy development was made possible by factors such as alignment with the global climate agenda, formulation of enabling policies, and effective implementation strategies.

Sound policies play a pivotal role in facilitating low-carbon energy transition. Market incentives, financial support, and regulatory certainty stimulate demand for renewable energy technologies and encourage their deployment at scale. Equally critical is their effective implementations. These are manifested in, among others, clarity and ease in obtaining permits, licenses, and approvals, and adherence to environmental and safety requirements.

Like in many other countries, the push for low-carbon energy transition in Vietnam is rooted in the global climate processes. Countries' responses vary according to their unique circumstances, but developing countries often heavily rely on fossil fuels and do not immediately appraise renewable energy sources as a viable alternatives, especially in view of their energy security and economic development goals. Vietnam is likewise heavily dependent on coal for its power generation. Against such backdrop, the country's massive expansion of renewable energy sources, despite its continued reliance on coal, thus presents a compelling case for analysis. This NTS Insight examines this phenomenon by tracing the evolution of Vietnam's energy-related policies vis-a-vis global climate processes and the changing roles of the different energy sources for the country's energy security.

From Self-Sufficiency to Increased Reliance on Energy Source Imports

Vietnam's alignment with the international climate agenda is catalysed by its energy security interests. Vietnamese policymakers and planners widely agreed that domestic energy resources would not be able to meet the country's growing energy needs.⁵ Its fast-growing economy and population, projected increase in energy demands, and depleting domestic sources, were set to turn Vietnam into an energy importer. The potential loss of self-sufficiency posed significant concerns from energy security perspective.

The prospect of an increased reliance on import plays a key role in motivating Vietnam to develop renewable energy sources more aggressively, especially given the ruling Communist Party of Vietnam (CPV)'s priority in ensuring sufficient energy supply to maintain its power and legitimacy.⁶ Additionally, renewable energy costs are declining, and international financing support for coal projects is drying up, thus making renewable energy expansion increasingly more attractive.⁷

Vietnam did not traditionally rely on fossil fuels for electricity generation. Instead, the country had a long history of utilising renewable energy sources, most notably hydropower, for at least four decades. Hydropower was an important energy source as evident in hydropower supplying electricity for industries in the 1980s.⁸ Together with traditional

³ ACE, "ASEAN Power Updates 2023."

⁴ International Renewable Energy Agency (IRENA), "Renewable Energy Statistics 2023" (Abu Dhabi: IRENA, 2023).

⁵ Tien Minh Do and Deepak Sharma, "Vietnam's Energy Sector: A Review of Current Energy Policies and Strategies," *Energy Policy*, Sustainability of biofuels, 39, no. 10 (2011): 5770–77, <https://doi.org/10.1016/j.enpol.2011.08.010>.

⁶ Ira Irina Dorband, Michael Jakob, and Jan Christoph Steckel, "Unraveling the Political Economy of Coal: Insights from Vietnam," *Energy Policy* 147 (December 1, 2020): 111860, <https://doi.org/10.1016/j.enpol.2020.111860>.

⁷ Dorband, Jakob, and Steckel.

⁸ Alan David Lee and Franz Gerner, "Learning from Power Sector Reform Experiences: The Case of Vietnam," Policy Research Working Paper 9169 (World Bank Group, March 2020).

biomass, hydropower met energy demands until 1990,⁹ and remained the primary source of power generation in the early 2000s.¹⁰

Although Vietnam started off with renewable energy sources, fossil fuels eventually became an important source of energy in the country.¹¹ This was following the 1986 Đổi Mới reforms, which transformed Vietnam's economy from a centrally planned economy to a socialist-oriented market economy, and encouraged the exploration and production activities in the fossil fuel sector.

Vietnam is home to approximately 3.39 billion tonnes of proven recoverable reserves of coal, 460 million cubic meters (m³) of crude oil reserves, and 610 billion m³ of gas reserves, with 2019 production figures reaching 47.16 million tonnes of coal, 13.09 million tonnes of crude oil, and 10.2 billion m³ of natural gas.¹²

Vietnam's domestic fossil fuel reserves were initially able to meet demands, but they became depleted over the years.¹³ Around year 2007-2008, studies conducted by Institute of Energy Vietnam, International Energy Agency, and the Institute of Energy Economics showed that Vietnam would eventually have to rely on imports of coal, oil, gas, and even hydropower, to meet its growing domestic demands by 2025.¹⁴ A 2009 study suggested that the country would begin importing electricity from 2014 onwards.¹⁵ In a 2011 study, it was projected that Vietnam would become a net energy importer around 2015 or even earlier.¹⁶

Participation in Global Climate Processes and the Evolution of National Energy Policies

Energy security, fossil fuel dependence, and import reliance were not yet a major concern for Vietnam during the time of its involvement in the 1992 United Nations Framework Convention on Climate Change (UNFCCC).¹⁷ Nonetheless, Vietnam demonstrated its commitment to participate in the global fight against climate change by ratifying the 1992 UNFCCC on 16 November 1994¹⁸ and the 1997 Kyoto Protocol on 25 September 2002.¹⁹ To operationalise the 1992 UNFCCC and the 1997 Kyoto Protocol, Vietnam established a National Steering Committee and submitted its Initial National Communication to the UNFCCC Secretariat in 2003.²⁰

The Initial National Communication offered an understanding of Vietnam's approach to balance climate mitigation imperative and the country's economic growth and energy security objectives. The document showed that Vietnam's national development plan in the early 2000s was guided by the directives of the 9th National Congress of the CVP, which prioritised industrialisation and modernisation efforts. To support such goals, the accompanying energy development strategy covering the period of 1996 to 2020 envisioned the expansion of hydropower and fossil fuels (mainly oil and gas) as the backbones of its energy sector,²¹ which, by 2000, made up of 55 percent hydropower, 17 percent oil, 16 percent natural gas, and 12 percent coal for electricity generation.²²

⁹ Anne Zimmer, Michael Jakob, and Jan Christoph Steckel, "What Motivates Vietnam to Strive for a Low-Carbon Economy? — On the Drivers of Climate Policy in a Developing Country," *Energy for Sustainable Development* 24 (2015): 19–32, <https://doi.org/10.1016/j.esd.2014.10.003>.

¹⁰ International Energy Agency (IEA), "Viet Nam - Countries & Regions," accessed April 29, 2024, <https://www.iea.org/countries/viet-nam>.

¹¹ Zimmer, Jakob, and Steckel, "What Motivates Vietnam to Strive for a Low-Carbon Economy?"

¹² N. M. Bao, "Viet Nam Country Report," in *Energy Outlook and Energy-Saving Potential in East Asia 2023*, ed. S. Kimura, H. Phoumin, and A. J. Purwanto (Jakarta: ERIA, 2023), 357–81.

¹³ Zimmer, Jakob, and Steckel, "What Motivates Vietnam to Strive for a Low-Carbon Economy?"

¹⁴ Minh Do and Sharma, "Vietnam's Energy Sector."

¹⁵ Nhan T. Nguyen and Minh Ha-Duong, "Economic Potential of Renewable Energy in Vietnam's Power Sector," *Energy Policy* 37, no. 5 (2009): 1601–13, <https://doi.org/10.1016/j.enpol.2008.12.026>.

¹⁶ Minh Do and Sharma, "Vietnam's Energy Sector."

¹⁷ "The Politics and Economics of Transition to an Open Market Economy in Viet Nam," OECD Development Centre Working Papers, vol. 152, OECD Development Centre Working Papers, September 1, 1999, <https://doi.org/10.1787/634117557525>.

¹⁸ United Nations Climate Change, "Viet Nam," United Nations Climate Change, accessed April 17, 2024, https://unfccc.int/tools_xml/country_VN.html.

¹⁹ United Nations Climate Change.

²⁰ "VIETNAM'S INDC.Pdf," accessed April 17, 2024, <https://unfccc.int/sites/default/files/NDC/2022-06/VIETNAM%27S%20INDC.pdf>.

²¹ "Viet Nam - Initial National Communication," n.d.

²² "Viet Nam - Countries & Regions."

Although the intention to expand both hydropower and fossil fuels suggested an emphasis on ensuring energy supply, Vietnam's Initial National Communication already outlined a two-staged climate mitigation strategy in the subsequent two decades. It envisioned energy savings and improving efficiency in the first decade between 2000 and 2010, followed by developing newer types of renewable energy such as geothermal and utility-scale wind power in the second decade between 2010 and 2020. This plan thus confirmed the government's alignment with the global climate agenda.

Energy Security Concerns and Stronger Resolve to Develop Renewable Energy Sources

Such alignment was further demonstrated in the 'National Energy Development Strategy by 2020, Vision towards 2050' issued in 2007, around which time a number of studies showed that Vietnam would eventually become an energy source importer. Energy security considerations had thus begun to influence the drafting of relevant policy documents as evident in the 2007 National Energy Development Strategy that outlined a plan to increase renewable energy share to about 3 percent of the total amount of commercial primary energy by 2010; with further increase to about 5 percent by 2020 and 11 percent by 2050.²³ The following year, climate change was mainstreamed into national policies through the formulation of the National Target Programme to Respond to Climate Change (NTP-RCC).²⁴ Subsequently, the National Climate Change Strategy was formulated in 2011, and in 2012, the inter-ministerial National Committee for Climate Change (NCCC) was established directly under the Prime Minister's office.²⁵

In view of renewable energy expansion plans, Vietnam's Ministry of Natural Resources and Environment collaborated with various international agencies such as the UN Environment Programme (UNEP), the Global Environment Facility (GEF), the UNEP RISØ Centre, and the Asian Institute of Technology, to assess the country's technology needs. In their 2012 document, they identified wind power development as a priority.²⁶ The commissioning of this study further demonstrated the country's commitment to the global climate agenda.

In 2015, the Vietnamese government launched 'Renewable Energy Development Strategy up to 2030 with an Outlook to 2050' where it envisioned gradual progress in greenhouse gas emission reduction in the energy sector by approximately 5 percent by 2020, 25 percent by 2030, and 45 percent by 2050. This would be achieved through a phased reduction of coal consumption and oil imports, alongside an increase in renewable energy production and utilisation. The transition to low-carbon energy sources would increase the share of renewable energy sources from approximately 31 percent by 2020, to 32 percent by 2030, and to 44 percent by 2050 of the total primary energy consumption.²⁷

The document likewise envisioned the electricity produced from renewable energy sources to increase from 32 percent in 2030 to 43 percent in 2050, with wind power being prioritised up to 2030.²⁸ The share of wind power was to be increased from none in 2015 to about 1 percent in 2020, to 2.7 percent in 2030, and to around 5 percent in 2050; whereas solar power was to be increased to approximately 0.5 percent in 2020, to 6 percent in 2030 and 20 percent in 2050.²⁹

²³ The Government of Socialist Republic of Viet Nam, "Approving Vietnam's National Energy Development Strategy up to 2020, with 2050 Vision," Pub. L. No. Decision 1855/QDTTg (2007).

²⁴ The Government of Socialist Republic of Viet Nam, "Decision on Approval of the National Target Program to Respond to Climate Change," Pub. L. No. 158/2008/QĐ-TTg, 158/2008/QĐ-TTg (2008), <https://lawnet.vn/en/vb/Resolution-55-NQ-TW-2020-orientations-of-strategy-for-national-energy-development-7EB92.html>.

²⁵ Lisa Strauch, Yann Robiou du Pont, and Julia Balanowski, "Multi-Level Climate Governance in Vietnam. Bridging National Planning and Local Climate Action." (Berlin: Adelphi, 2018), <https://adelphi.de/en/system/files/mediathek/bilder/Multi-level%20climate%20governance%20in%20Vietnam%20-%20adelphi.pdf>.

²⁶ Quach Tat Quang, Nguyen Van Anh, and Nguyen Thanh Hai, "Viet Nam Technology Needs Assessment for Climate Change Mitigation and Adaptation" (Ha Noi: UNEP, GEF, UNEP RISØ CENTRE, AND AIT, June 2012).

²⁷ The Government of Socialist Republic of Viet Nam, "Decision Approving the Viet Nam's Renewable Energy Development Strategy up to 2030 with an Outlook to 2050," Pub. L. No. 2068/QĐ-TTg, 2068/QĐ-TTg (2015), <https://lawnet.vn/en/vb/Resolution-55-NQ-TW-2020-orientations-of-strategy-for-national-energy-development-7EB92.html>.

²⁸ The Government of Socialist Republic of Viet Nam.

²⁹ Ibid.

In addition to setting targets, the 2015 Renewable Energy Development Strategy outlined a vision to capitalise on the potential economic benefits of the low-carbon energy transition agenda by cultivating domestic capacity for renewable energy technologies and industries, with the goal of achieving self-sufficiency and subsequently exporting Vietnam-manufactured products to the global market.

The evolution of policy documents since the ratification of the 1992 UNFCCC evidently demonstrated the country's increasingly robust intention to develop renewable energy sources. The first concrete measure aimed at incentivising renewable energy development was the feed-in-tariff (FIT) that the government introduced exclusively for wind power in 2011.³⁰ By ensuring that developers receive specific tariffs for a set duration, FIT has been recognised as the most effective incentive to boost renewable energy development worldwide³¹ by providing assurance regarding return on investments.

Managing Energy Security and Climate Mitigation Imperatives

Despite its commitment to expanding renewable energy, Vietnam has taken a calibrated approach to addressing climate change. This was observed in the 2 percent budget allocation for climate mitigation in the NTP-RCC in the early 2000s,³² which suggested that, during this period, the focus was not in reducing greenhouse gas emissions despite the NTP-RCC's vision to transition to low-energy sources.³³ A lack of emphasis on emission reduction was observed most notably in the sharp increase of coal share from 15 percent in 2000 to 39 percent in 2015 in Vietnam's energy mix.³⁴ This jump in share suggested that Vietnam's alignment with the global climate agenda and its commitment to develop renewable energy sources were primarily driven by energy security considerations and the potential economic benefits of renewable energy expansion.

Such was the prevailing outlook in Vietnam when it participated in the 21st UN Climate Change Conference (COP21) in Paris in 2015. The country subsequently ratified the Paris Agreement on 3 November 2016.³⁵ Following the ratification, the CPV issued the 'Strategy for National Energy Development by 2030 with a Vision towards 2045' in 2020.³⁶ The approach in the document further underscored an emphasis on energy security, as evidenced by its strategy to extend the exploration and exploitation of oil, gas, and coal, while simultaneously expanding renewable energy sources. Similarly for electricity generation, it envisioned increased use of gas to replace coal, and the deployment of advanced modern technologies such as ultra-supercritical in coal-fired power plants, along with wind and solar power development.

Although the 2020 National Energy Development still envisioned fossil fuel use, the government's overall direction was to reduce their use over the years. Such intention became clearer in the 'National Strategy for Climate Change Until 2050' approved in 2022.³⁷ Similar to the trends adopted by many countries in the early post-Covid-19 pandemic period, the document also iterated the country's ambition to achieve net zero emission by 2050, of which the energy sector was to contribute 32.6 percent emission reduction by 2030. The expansion of hydropower, solar, and wind would serve as the main strategy to gradually transition away from coal, with no more new coal power plant being built after 2030.

The plan to curb coal use became more apparent in the latest 'National Power Development Plan Covering the Period from 2021 to 2030, with a Vision to 2050,' or more known as the Power Development Plan VIII (PDP8), approved

³⁰ The Government of Socialist Republic of Viet Nam, "Decision on the Mechanism Supporting the Development of Wind Power Project in Vietnam," Pub. L. No. 37/2011/QĐ-TTg, 37/2011/QĐ-TTg (2011).

³¹ Hang Thi-Thuy Le et al., "Critical Assessment of Feed-In Tariffs and Solar Photovoltaic Development in Vietnam," *Energies* 15, no. 2 (January 2022): 556, <https://doi.org/10.3390/en15020556>.

³² François Fortier, "Taking a Climate Chance: A Procedural Critique of Vietnam's Climate Change Strategy," *Asia Pacific Viewpoint* 51, no. 3 (December 2010): 229–47, <https://doi.org/10.1111/j.1467-8373.2010.01428.x>.

³³ Zimmer, Jakob, and Steckel, "What Motivates Vietnam to Strive for a Low-Carbon Economy?"

³⁴ "Viet Nam - Countries & Regions."

³⁵ United Nations Climate Change, "Viet Nam," United Nations Climate Change, accessed April 19, 2024, <https://unfccc.int/node/61236>.

³⁶ Communist Party of Vietnam, "Orientations of Strategy for National Energy Development by 2030 with a Vision towards 2045," Pub. L. No. Resolution No. 55-NQ/TW, Resolution No. 55-NQ/TW (2020), <https://lawnet.vn/en/vb/Resolution-55-NQ-TW-2020-orientations-of-strategy-for-national-energy-development-7EB92.html>.

³⁷ The Government of Socialist Republic of Viet Nam, "Decision Approving the National Strategy for Climate Change until 2050," Pub. L. No. No. 896/QĐ-TTg, No. 896/QĐ-TTg (2022), <https://lawnet.vn/en/vb/Resolution-55-NQ-TW-2020-orientations-of-strategy-for-national-energy-development-7EB92.html>.

in mid-2023.³⁸ It stated that the country would only push ahead with the construction of six coal-fired power plants, namely Na Duong II, An Khanh - Bac Giang, Vung Ang II, Quang Trach I, Van Phong I, and Long Phu I, with combined capacity of 6,125 MW. The other coal-fired projects, such as Quang Ninh III, Cam Pha III, Hai Phong III, Quynh Lap I, II, Vung Ang III, Quang Trach II, Long Phu II, III, Tan Phuoc I, II with combined capacity of 13,220 MW, would be shelved.

Additionally, PDP8 envisioned that coal-fired power plants that had been operational for 20 years would either undergo conversion to biomass and ammonia if deemed financially feasible, or be shut down. Similarly, plants with more than 40 years of operation would be closed if fuel conversion was not viable. Table 1 provides a summary of the projected changes in Vietnam’s electricity sources between 2030 and 2050, highlighting a sharp decrease in coal usage and a rise in solar and offshore wind power.

Table 1. Vietnam’s Envisioned Power Sources in 2030 and 2050

	2030	2050
Coal	20%	0%
Solar	8.5%	33-34.4%
Onshore wind power	14.5%	12.2-13.4%
Offshore wind power	4%	14.3-16%
Hydropower	19.5%	6.3-7.3%

Source: PDP8³⁹

Energy Security and Weaning Off Coal Dependence

In the interim, while fossil fuels were still being used during the transition period, Vietnam envisioned further exploration of domestic coal and oil to increase their reserves and output and reduce dependence on imported fuels. For example, the Strategy for Development of Vietnam Coal Industry to 2030, with a vision to 2045, that was approved in January 2024 provided guidelines and targets for Vietnam’s coal production, investment, technology, and market expansion. The annual growth rate of Vietnam’s domestic coal production between 2012 and 2022 stood at 1.7 percent⁴⁰ with most production happening at Quảng Ninh province and the Red River Delta basin.⁴¹ The Strategy for Development of Vietnam Coal Industry targeted annual coal production of approximately 40-50 million tons by 2030, including expanding the coal mining site in the Red River Coal Basin to an industrial scale the by 2050. The document also envisioned the use of clean coal technologies to mitigate environmental and social concerns while gradually decreasing coal production to 38-40 million tons per year by 2030-2045.

In addition to climate mitigation imperative, Vietnam’s plan to reduce coal production was also likely to be motivated by the challenges facing its coal sector, as coal reserves became increasingly difficult to exploit. Vietnam’s rapid economic growth and the accompanying increase in energy demands had increased coal use for electricity generation over the past two decades, making it the most dominant energy source surpassing hydropower starting from

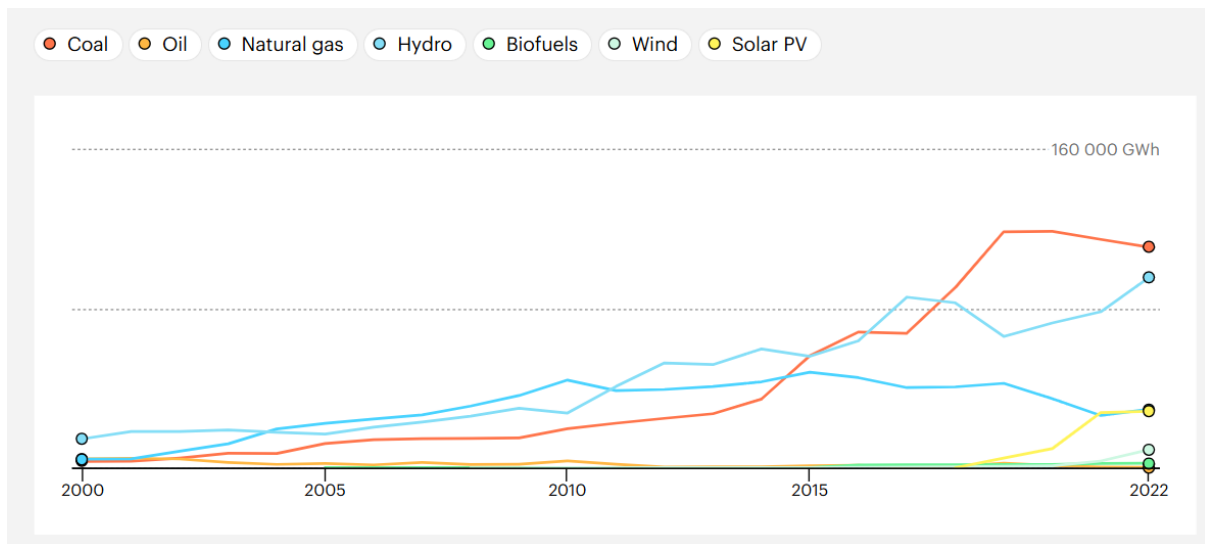
³⁸ The Government of Socialist Republic of Viet Nam, “Decision Approval of National Power Development Plan for 2021-2030 Period, with a Vision to 2050,” Pub. L. No. 500/QĐ-TTg, 500/QĐ-TTg (2023), <https://en.baochinhphu.vn/decision-approving-national-power-development-plan-8-111230614195813455.htm>.

³⁹ The Government of Socialist Republic of Viet Nam.
⁴⁰ Energy Institute, “Statistical Review of World Energy 72nd Edition.”

⁴¹ ILO, “A Just Energy Transition in Southeast Asia: The Impact of Coal Phase-out on Jobs” (Geneva: International Labour Organization (ILO), 2022), <https://www.ilo.org/publications/just-energy-transition-southeast-asia-impact-coal-phase-out-jobs>.

2015.⁴² Since then, Vietnam’s coal consumption had exceeded its domestic production,⁴³ effectively placing Vietnam as a coal importer in the last decade.⁴⁴ While domestic coal production still continued, coal import remained significant in meeting coal demands.⁴⁵ As of 2021, coal and hydropower made up 45 percent and 31 percent of electricity generation respectively.⁴⁶ The increased share of coal in power generation between 2000 and 2022 is illustrated in Figure 1. The increased demand for coal could not be supported by domestic production due to the complex geological characteristics of the country’s coal mines and limited range of coal mining technologies which slowed down production rates.⁴⁷ Growing dependence on coal imports thus posed significant risks to energy security, prompting an accelerated push for renewable energy expansion and a vision to reduce coal use.

Figure 1. Vietnam’s Changing Electricity Sources from 2000 to 2022



Source: IEA⁴⁸

SOEs in Vietnam’s Energy Sector

The State plays a key role in driving low-carbon energy transition in Vietnam. The agenda for renewable energy development and low-carbon energy transition is formulated by the central government, the highest authority that also oversees other ministries and state-owned enterprises (SOEs) involved in the energy sector.⁴⁹ Ministry of Industry and Trade (MOIT) serves as the principal coordinating body, with SOEs such as Viet Nam National Coal and Mineral Industries Group (Vinacomin), Vietnam Oil and Gas Group (PetroVietnam), and Vietnam Electricity (EVN) having substantial authority as monopolies or quasi-monopolies in their respective industry.

The arrangement for electricity provision in the country involves dealings among SOEs, which further entrench the involvement of the State in the sector. For example, Vinacomin, the largest coal producer that contributes to about 90 percent of coal production,⁵⁰ is the main supplier for coal power plants that enter into power purchase agreements (PPAs)

⁴² “Viet Nam - Countries & Regions.”

⁴³ Energy Institute, “Statistical Review of World Energy 72nd Edition” (Energy Institute, 2023), <https://www.energyinst.org/statistical-review/home>.

⁴⁴ “Vietnam’s Energy Crunch,” ASEAN Business News, October 27, 2022, <https://www.aseanbriefing.com/news/vietnams-energy-crunch/>.

⁴⁵ “Việt Nam to Increase Coal Imports in 2025-35: Industry Ministry,” *Viet Nam News*, August 15, 2022, <https://vietnamnews.vn/economy/1297943/viet-nam-to-increase-coal-imports-in-2025-35-industry-ministry.html>.

⁴⁶ “Viet Nam - Countries & Regions.”

⁴⁷ Quynh Nga Nguyen et al., “Current Status of Coal Mining and Some Highlights in the 2030 Development Plan of Coal Industry in Vietnam,” *Journal of the Polish Mineral Engineering Society* 1, no. 2 (2021): 373–80, <https://doi.org/10.29227/IM-2021-02-34>.

⁴⁸ IEA, 2024, “Evolution of electricity generation sources in Viet Nam since 2000,” accessed December 7, 2024, <https://www.iea.org/countries/vietnam/electricity>, License: CC BY 4.0

⁴⁹ Maryna Henrysson and Cary Yungmee Hendrickson, “Transforming the Governance of Energy Systems: The Politics of Ideas in Low-Carbon Infrastructure Development in Mexico and Vietnam,” *Climate and Development*, Vol. 13, No.1 (2021): 49-60.

⁵⁰ “Vietnam’s Energy Crunch.”

with EVN.⁵¹ In addition to PPAs with coal power plants, EVN also enters into agreements with private sector developers, known as independent power producers (IPPs), for the purchase of renewable energy-generated electricity from solar, wind, and biomass power plants. EVN is the primary actor in the electricity industry through its monopoly of electricity transmission and distribution⁵² and its role as the single largest buyer in the electricity wholesale market and a single seller in the retail market.⁵³

The country's political system and the roles of the SOEs in the energy sector arguably serve as important factors that facilitate a synergy towards low-carbon energy transition objective despite varying priorities and potential conflicting interests among involved parties. This was evident in the response to EVN's grid capacity constraints following the introduction of the FIT scheme in 2017 to incentivise solar power production. The 9.35 US cents/kWh FIT for solar, 8.5 US cents/kWh for onshore wind, and 9.8 US cents/kWh for offshore wind⁵⁴, received an overwhelming response from the private sector⁵⁵, resulting in a rapid expansion of solar PV capacity between 2019 and 2020, that amounted to approximately 16 GWp.⁵⁶ This was around nineteen times more than the 850MW solar power capacity target outlined in the revised Power Development Plan 7 (PDP7) published in 2016.⁵⁷ Such rapid increase in electricity supply strained EVN's transmission lines' capacity, making it a primary challenge facing renewable energy developers in Vietnam.⁵⁸ The issue of electricity oversupply prompted the government to mandate a scaling back, or curtailment, of electricity production from small-scale solar farms,⁵⁹ and the PDP8 explicitly stated that there will be no additional solar generation until after 2030.⁶⁰

Regardless of such challenge, the country continues to advance its renewable energy ambition as evident in PDP8's vision for renewable energy share to reach up to about 40 percent by 2030 and 70 percent by 2050. This suggests that EVN will have to find a solution to resolve grid capacity problem to remain in line with the central government's directives.

Similarly, the country stays committed to renewable energy development despite incomplete regulations regarding coal phase-out and concerns about potential power shortages and increased electricity prices⁶¹ should coal be removed from electricity generation. The concerns are rooted in the perception of coal as a reliable energy source, given its proven record at providing stable electricity supply in Vietnam.⁶² Switching over to renewable energy sources, which are often intermittent in nature, thus poses risks to electricity provision. Although this problem can be resolved with massive investments in energy storage, this remains a costly option at present.

There are likewise issues with obtaining permits to build new power plants. It is a complex process that is reported to be replete with favouritism and susceptible to corruption, easier for SOEs compared to IPPs, and is harder for renewable energy facilities compared to fossil fuels.⁶³ Such challenges will normally work against the expansion of renewable energy. However, given the political structure in Vietnam, strong commitment from the central government

⁵¹ Thang Nam Do and Paul J. Burke, "Phasing out Coal Power in a Developing Country Context: Insights from Vietnam," *Energy Policy* 176 (May 1, 2023): 113512, <https://doi.org/10.1016/j.enpol.2023.113512>.

⁵² Maryna Henrysson and Cary Yungmee Hendrickson, "Transforming the Governance of Energy Systems: The Politics of Ideas in Low-Carbon Infrastructure Development in Mexico and Vietnam," *Climate and Development*, Vol. 13, No.1 (2021): 49-60.

⁵³ Lee and Gerner, "Learning from Power Sector Reform Experiences: The Case of Vietnam."

⁵⁴ Akiko Urakami, "Are the Barriers to Private Solar/Wind Investment in Vietnam Mainly Those That Limit Network Capacity Expansion?," *Sustainability* 15, no. 13 (2023): 10734, <https://doi.org/10.3390/su151310734>.

⁵⁵ Le et al., "Critical Assessment of Feed-In Tariffs and Solar Photovoltaic Development in Vietnam."

⁵⁶ Ibid.

⁵⁷ The Government of Socialist Republic of Viet Nam, "Decision on the Approval of the Revised National Power Development Master Plan for the 2011-2020 Period with the Vision to 2030," Pub. L. No. 428/QĐ-TTg, 428/QĐ-TTg (2016).

<https://policy.asiapacificenergy.org/sites/default/files/PDP%207%20revised%20Decision%20428-QĐ-TTg%20dated%2018%20March%202016-ENG.pdf>

⁵⁸ Urakami, "Are the Barriers to Private Solar/Wind Investment in Vietnam Mainly Those That Limit Network Capacity Expansion?"

⁵⁹ "Vietnam's Energy Crunch."

⁶⁰ The Government of Socialist Republic of Viet Nam, Decision Approval of National Power Development Plan for 2021-2030 Period, with a Vision to 2050.

⁶¹ Do and Burke, "Phasing out Coal Power in a Developing Country Context."

⁶² Dorband, Jakob, and Steckel, "Unraveling the Political Economy of Coal."

⁶³ Ibid.

serves as a critical enabling factor that creates a momentum for increased utilisation of renewable energy sources despite obstacles.

Lessons Learned

Vietnam's experience has shown that the convergence between the global climate agenda and the country's energy security interests played a key role in catalysing renewable energy development in the country. This is further enabled by Vietnam's favourable geographical conditions, which offer significant renewable energy potential. While coal remains the primary energy source for power generation at the time of writing, diminishing domestic coal production and increasing reliance on coal imports reduces its competitive advantage in view of energy security considerations. Renewable energy sources thus emerged as a viable alternative, as evident in Vietnam outlining ambitious targets to increase their share in its energy mix and committedly implementing supportive policies and incentives to promote renewable energy adoption. As a result, Vietnam has witnessed substantial investments in solar and wind projects and become the forerunner of large-scale renewable energy development in the region in recent years.

Countries vary in their energy security characteristics, but Vietnam's experience suggests that developing countries that view renewable energy expansion as directly serving their energy security interests are more likely to pursue the agenda more aggressively.

Vietnam's experience further shows that the central government's strong commitment for renewable energy expansion is essential to enable a good alignment between top leadership's directives and the operations of relevant ministries and agencies, as evidenced in the continuing development of renewable energy sources despite grid capacity challenges that EVN is facing and the prevailing coal dominance in the country.

Achieving such alignment can be a challenge, and the ability to get different stakeholders onboard of renewable energy expansion agenda despite various interests, priorities, and objectives is critical. The relationship between top leadership and the main actors in the energy sector is especially important. The primary operators in the electricity industry, like EVN, need assurance of governments' commitments to pursue low-carbon transition and of their financial, technical, and political support to overcome current and potential hurdles.

Vietnam's experience further suggests that low-carbon energy transition progress in Southeast Asia will continue to vary across countries, influenced by the role of renewable energy sources for a country's energy security and the alignment of renewable energy expansion objectives across relevant agencies in the country.

Importantly, it is crucial to recognise that having energy security as the main factor driving renewable energy development implies that the interest in renewable energy expansion may not be permanent, but may evolve over time in response to factors such as advancements in fossil fuel technologies and innovations in renewable energy systems. This suggests dynamic trajectories moving forward. Accordingly, anticipating these trends will help in navigating the challenges and opportunities that will emerge along the low-carbon energy transition pathways that Vietnam and other countries the region are pursuing.

About the Author

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