

The New National Power Development Plan of Vietnam

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The Prime Minister has recently issued the long-awaited Decision 500, approving the national power development plan (“**PDP8**”). Decision 500 took effect on May 15, 2023. It covers a term of 27 years (2023 to 2050). It provides general policies, objectives, plans for development of power generation and transmission lines, land use, list of important projects, and a general road map to implement PDP8. This Article is a highlight and analysis of general policies set out in PDP8.

Background and general observations. In 2021, the Ministry of Industry and Trade (“**MOIT**”) submitted its proposal¹ and a draft of the national power development plan (“**2021 Version**”) for the period from 2020 to 2030 (with a vision up to 2050) to the Prime Minister for his approval. The 2021 Version contained 1,000 pages and 19 Chapters that provided assessments, plans for several important industry matters (eg, performance review, forecast, power generation, development and diversion of various power sources, renewable energy, LNG, transmission lines, requirements on investment capital, etc.). The 2021 Version was not approved during the then Prime Minister’s term. The new Prime Minister continued to consider new drafts of PDP8. The final draft was dated May 14, 2023 (“**2023 Version**”)². The 2023 Version and the 2021 Version are vastly different. For example, several energy projects listed in the 2021 Version were removed from the 2023 Version.

Double capacity of power generation (up to 2030). It has been reported that up to 2020, the total installed capacity of the power generation industry had reached 69,340 MW³. It is estimated that during the 2023-2050 period, Vietnam’s average GDP will be 6.5%-7.5%. To meet the country’s GDP growth as contemplated in PDP8, Vietnam plans to double the current capacity of the power industry, reaching 150,500 MW⁴ in 2030. The total capacity will be increased after 2031, and it may reach 490,530MW - 573,000 MW⁵ by 2050. This creates great opportunities for energy developers. Below is a table that describes the total capacity of the power industry by phases and

¹ MOIT’s letter no 1682/TTr-BCT dated March 26, 2021.

² The 2023 Version is prepared and based on Explanatory Statements (“**ES**”) performed by the Energy Institute.

³ MOIT’s letter no. 2842/TTr-BCT dated May 14, 2023 (“**MOIT Letter 2842**”).

⁴ Rounded figure.

⁵ Rounded figure.

by sources of energy:

No.	Source of energy	2020	2030	2050
		Capacity (MW)	Capacity (MW)	Capacity (MW)
1	Hydropower plants	20,993	29,346	36,016
2	Coal-fired power plants	21,383	30,127 ⁶	0
3	Domestic gas-fired power plants	9,025	14,930	-
	<i>Ammonia-fired power plants</i>	-	-	25,632
	<i>Converted power plants by using only hydrogen</i>	-	-	7,030
	<i>Converted power plants by using hydrogen and LNG</i>	-	-	4,500
	<i>Converted power plants by using LNG</i>	-	-	7,900
4	LNG power plants ⁷	-	22,400	-
5	Onshore wind power projects	538	21,880	60,050
6	Offshore wind power projects	-	6,000	70,000
7	Solar power projects	16,506	12,836 ⁸	168,594
8	Biomass and waste-to-energy projects	-	2,270	6,015
9	Heat and power co-generation	-	2,700	4,500
10	Flexible source	-	300	30,900
11	Pumped-storage hydroelectricity	-	2,400	-
12	Battery storage	-	300	-
13	Power storage	-	-	30,650
14	Imported electricity	572	5,000 ⁹	11,042
15	Others	325	-	-
		69,342¹⁰	150,489¹¹	490,529¹²

Vietnam has seven (7) years from now to 2030 to double the current capacity. Time is of the essence to achieve this target. The task requires efforts from all stakeholders (eg, developers, regulatory bodies, EVN, PVN, Vinacomin¹³, local authorities, etc.).

Development of Renewable Energy (“RE”). Vietnam plans to develop various sources of energy, but will focus on RE and clean energy. Renewable energy (solar, wind, biomass, waste-to-energy) is now commercially viable. This explains why both domestic and foreign investors

⁶ Coal fired power plants which are unable to be developed will be replaced by LNG or RE projects. This total capacity does not include the capacity of delayed/abandoned projects (Cong Thanh, Nam Dinh I, Quang Tri, Vinh Tan III, Song Hau II).

⁷ After 2035, no new LNG power plants will be developed.

⁸ The capacity does not include the capacity of existing rooftop solar projects.

⁹ Imported volume may reach 8,000MW.

¹⁰ This statistic is stated in MOIT Letter 2842.

¹¹ This total capacity does not include the capacity of existing rooftop solar projects, RE for new energy production, and exported electricity).

¹² Maximum capacity may reach 573,000MW.

¹³ EVN, PVN and Vinacomin are large state-owned corporations which are assigned to develop large coal-fired power plants and gas-turbine power plants in the first phase (up to 2030) (eg, O On II, O Mon IV, Dung Quat I, Dung Quat III, Minh Trung I, Mien Trung II, etc.).

now have a larger interest in development of renewable energy projects. There is a clear opportunity for investors to explore new “blue ocean” areas. A combination of (i) production of hydrogen and blue ammonia and (ii) development of renewable energy projects (hybrid projects) is an option for RE projects (solar and wind) to generate new and clean energy (hydrogen and blue ammonia). These new markets will likely first be pursued by foreign investors that have advanced technologies, experience and large financial capabilities. There appears to be room for both pioneers and experienced players.

It is projected that (i) the RE portion will contribute 47% of the generated energy in 2030, and 67%-71% in 2050; (ii) up to 2030, 50% of office buildings and residential houses in Vietnam will be equipped with rooftop solar systems for their own consumption; (iii) the total capacity of onshore wind projects will be 21,880MW and 60,000 MW in 2030 and 2050, respectively; (iii) the total capacity of offshore wind projects may reach 70,000 MW in 2050. In computing the capacity of offshore wind projects, PDP8 does not include the capacity of offshore wind projects for new energy production. The total capacity of offshore wind projects (including the capacity for new energy production) may reach 240,000 MW in 2050. This target seems to be ambitious but may be achievable in consideration of Vietnam’s favorable location and the rapid development of technology.

Looking at the above table, coal fired plants, LNG power plants and hydropower plants will continue to be a significant portion of Vietnam’s energy mix during the first phase (up to 2030). The situation will change in the second phase (2031-2050). RE projects will be prominent in the second phase; meanwhile coal-fired plants, gas-turbine and LNG power plants will be converted or will gradually be reduced in the second phase. The energy transition, via development of RE and new energy, is aimed to meet Vietnam’s commitments to achieve net zero emissions by 2050 and to mitigate reliance on LNG importation and fossil energy.

While RE has many benefits, there are also some potential issues: (i) RE is intermittent (stability and 24/7 availability are not confirmed); (ii) need for large land areas; and (iii) the national security defense. PDP8 promotes the development of flexible sources that can be quickly started to supplement power shortages. It is planned that the flexible sources may contribute 30,900 MW in 2050. The development of power storage systems and the combination of RE and nuclear power plants (with safer and smaller reactors) could be alternatives.

Diversification of capital mobilization. According to the approved PDP8, the total investment capital during the 2021–2030 period will be US\$135 billion. Investment capital will be increased from 2031 to 2050. It may reach US\$523 billion in 2050. The financial package of US\$ 15 billion from developed countries, under the non-binding JETP¹⁴ arrangement, can provide initial support, but Vietnam needs more. Vietnam will still need to mobilize capital from other sources. The participation of the private sector is crucial for the success of PDP8. There are a number of notable policies in PDP8: (i) the Government encourages residents and enterprises to install rooftop solar systems for their own consumption; (ii) the Government creates a favorable and transparent investment environment for the private sector to participate in the development of the power industry on the basis of fair competition, a competitive market for electricity pricing, balance of interest and risk allocation among stakeholders, investors and end-users; (iii) the Government implements flexible financing programs, creates favorable conditions for enterprises to access

¹⁴ JETP is an abbreviation of “Just Energy Transition Partnership”.

capital in order to develop power projects; and (iv) [the Government creates conditions] for power plants to increase their capacity to mobilize capital and to accommodate the requirement of domestic and international financial institutions. Such policies are welcomed by the private sector. Regulatory bodies need to convert these general policies into implementing regulations to make PDP8 realistic. The MOIT is assigned to prepare a detailed plan to implement PDP8 and to submit it to the Prime Minister before the end of June 2023.

Development of Power Transmission Lines. The Government has no plan to develop 500 kV trans-regional transmission lines (ie limiting long-distance power transmission stations/substations) between now and 2030. It is planned that US\$15 billion will be used to develop the transmission lines in the first phase (up to 2030). The investment amount for power transmission lines will be increased to US\$34.8-38.6 billion in the second phase (2031-2050). Particular transmission line projects/work to be constructed in the first phase (up to 2030) can be found in Schedule 8 to Schedule 19 of PDP 8.

The development of power transmission lines and the distribution system, under PDP7, has not matched the rapid development of the power generation system. This has caused serious overload to the national transmission line. PDP8 provides a general policy to develop power transmission lines and distribution lines: (i) the development of transmission lines and the distribution system must meet N-1 criteria; (ii) the development of transmission lines in big cities or special areas must meet N-2 criteria; and (iii) the development of transmission lines for solar and wind power plants must meet N-0 and N-1 criteria.

Vietnam's environmental commitments and PDP8. Vietnam has committed to reduce its carbon emissions to 0% by 2050. Vietnam's environmental commitment has been incorporated and is reflected in PDP8. For instance, PDP8 sets a target for the power industry to reduce the volume of carbon emissions to 170 million tons and to 31 million tons in 2030 and 2050, respectively. Under PDP8, no new coal-fired plants will be developed after 2030. PDP8 also imposes a deadline (June 2024) for other coal-fired power plants (Cong Thanh, Nam Dinh I, Quang Tri, Vinh Tan III, Song Hau II) to proceed with their projects; otherwise, these delayed/abandon coal-fired plants will be terminated and replaced by RE or LNG power plants. Due to shortage of finance, it is unlikely that these coal-fired plants will be able to meet PDP8's deadline. This opens opportunities for low-carbon (LNG projects) and zero-carbon energy developers to be the alternative for coal-fired plants.

PDP8 is an important legal document for the power industry during the coming decade and afterward. There are several hurdles and challenges to overcome before PDP8's policies and objectives can be realized. The Government plays a central role to bring the intended results. The private sector and business communities expect that the Government will enact sensible regulations to promote the development of the industry: (i) a fair FiT mechanism for transitional projects (wind and solar power projects) must be put in place; (ii) favorable FiT mechanism should apply to the young industry (offshore wind power projects and hybrid projects); (iii) tax incentives and/or refundable tax credits should be granted for residents and owners of buildings who install rooftop solar systems for their own consumption; (iv) a Direct Power Purchase Agreement mechanism should be put into place as soon as possible; (v) a sensible law on RE should be enacted; (vi) sufficient land areas (including water surface) for the development of RE (including

spaces for EV¹⁵ charging stations) should be reserved. Of course, Government's guarantees and subsidies are welcome by the private sector. In return, Vietnam will have a source of sustainable, clean and green power, and a low-carbon and circular economy.

¹⁵ EV is an abbreviation of "electrical vehicles"