

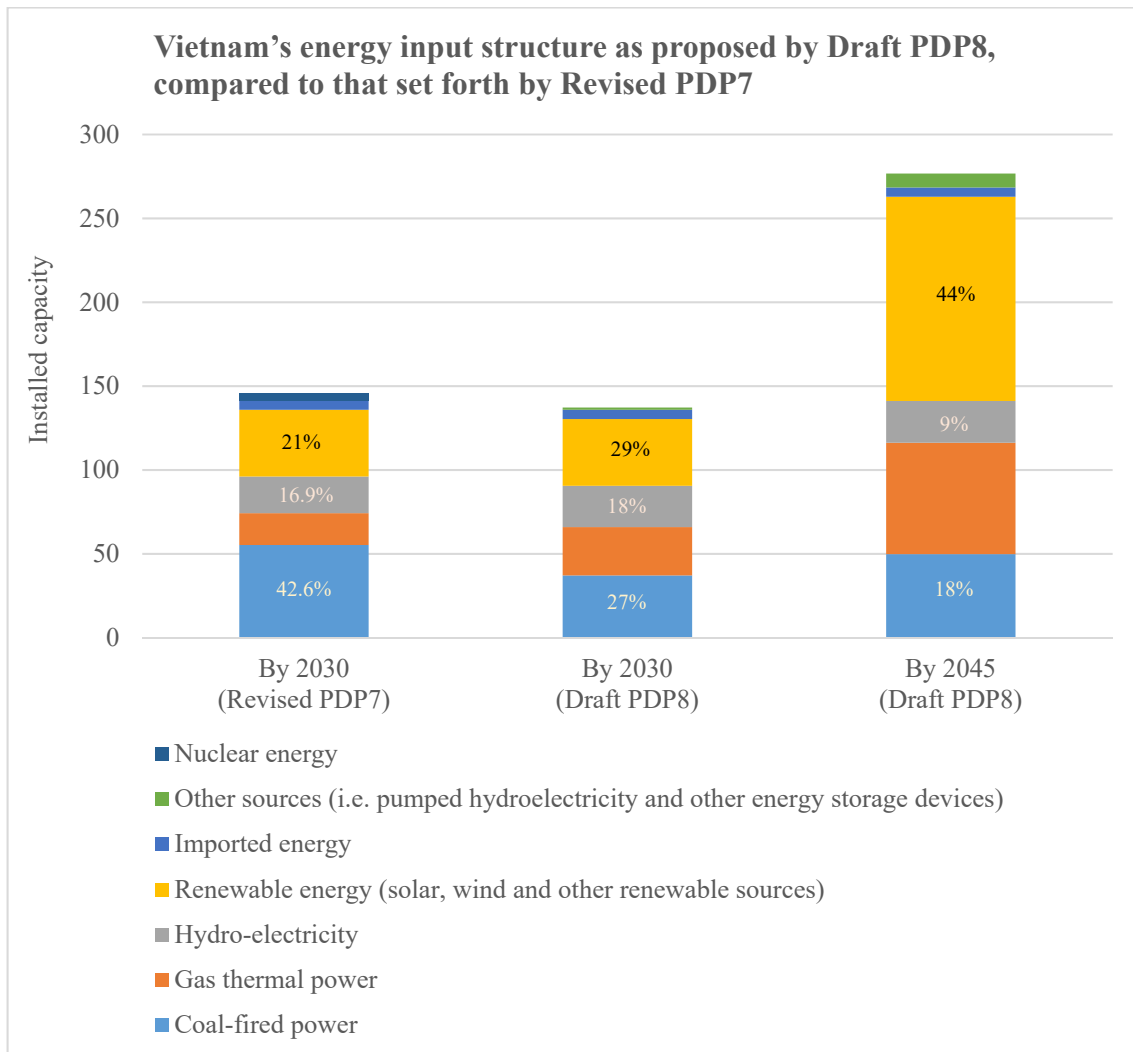
SOME NOTABLE POINTS WITH RESPECT TO THE LATEST DRAFT OF NATIONAL POWER DEVELOPMENT MASTER PLAN (DRAFT PDP8)

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The third version of Draft PDP8 was published by the Ministry of Industry and Trade (MOIT) for public opinion, in February 2021. Draft PDP8 lays out Vietnam’s master plan for energy and power development for the period of 2021-2030, with a vision to 2045. We have set out in this article some of the noteworthy points of Draft PDP8.

1. Changing the energy input structure towards renewable energy sources

The chart below illustrates Vietnam’s energy input structure as proposed by Draft PDP8¹, compared to the same set forth by Revised PDP7². There is a clear shift from traditional power sources, such as hydropower and coal-fired power, into renewable energy. Nuclear power has not been included for final estimation of energy input under Draft PDP8, though Draft PDP8 does discuss certain scenarios involving input from nuclear power.



1 Explanation report of Draft PDP8, page 13.

2 The revised national power development master plan for the period of 2011-2020, with a vision to 2030, as approved by the Prime Minister on 18 March 2016.

2. Major modifications made to the power source development program³

In comparison with Revised PDP7, until 2030, the power source development program, as proposed by Draft PDP8, will include the following major modifications:

- Focus will be put on large-scale solar and wind power sources (with the capacity of wind power sources being tripled and the capacity of solar power being doubled compared to those contemplated under Revised PDP7);
- Only ongoing coal-fired thermal projects currently under construction, and in accordance with the investment promotion program for operation during the 2021-2025 period, should continue to be developed;
- Gas-to-power sources utilizing LNG (combined cycle gas turbines) in the north of Vietnam, and flexible sources (ICE) in both the north and south, should be further constructed.
- Regarding renewable energy: The percentage of renewable energy input (excluding hydropower) in Draft PDP8 will increase to almost 30% in 2030, whereas such percentage in Revised PDP7 is 16.3%. To be more specific, until 2030, onshore and near-shore wind power is expected to develop an additional capacity of 9 GW, offshore wind power 2-3 GW, and solar power 7 GW, whereas biomass power is expected to reduce by 0.5 GW, and small-scale hydropower to reduce by 1.8 GW.
- Coal-fired power: Draft PDP8 decreases the percentage of coal-fired thermal power input by 16%, to 27%, compared to Revised PDP7. Approximately 18 GW of imported coal-fired thermal power projects approved under Revised PDP7 may be delayed after 2030, or not even included for consideration. Some inauspicious coal-fired power projects are named in Draft PDP8.
- Gas-to-power: Draft PDP8 increases the ratio of gas-to-power source by 6%, to 21%. PDP8 recommends a plan to construct an additional 5 GW combined cycle gas turbine source utilizing LNG in the north, 500-700 MW flexible source (ICE) in the north, and 900 MW of ICE in the south. The implementation of about 6.5-2.5 GW of combined cycle gas turbines sources utilizing LNG among the total capacity of 14.5 GW already approved for the south may be delayed after 2030, due to the lower growth of power loads in the south, compared to Revised PDP7, despite the substantial development of solar and wind power sources in the south; and
- Draft PDP8 gives priority to the development of power project plants for the north, especially renewable energy, in general, and solar power, in particular.

3. Grid development program focusing on 200kV and 500kV transmission grid⁴

For the periods of 2021 – 2030 and 2031 - 2045, Draft PDP8 estimates the requirement to build 500kV power grids and 220kV power grids as below. Such grid development program is expected to help cure the recent over-capacity concerns among power plant developers, and support the import of electricity from neighboring countries such as China and Laos.

		2021 – 2030	2031 - 2045
500kV	No. of stations	86	103
	Transmission lines	13,000km	6,000km
220kV	No. of stations	95	108
	Transmission lines	21,000km	4000km

4. Breakdown of capital and land use demand for electricity development⁵

Draft PDP8 foresees the capital and land use demand for the nation’s electricity development as follows:

	2021 – 2030 period	2031 – 2045 period
Total investment capital and breakdown	USD 128.3 billion (USD 95.4 billion for power sources, USD 32.9 billion for grids)	USD 192.3 billion (USD 140.2 billion for power sources, USD 52.1 billion for grids)
Average investment allocation to power sources and grids	74%/26%	73%/27%
Average annual investment capital and breakdown	USD 12.8 billion (USD 9.5 billion for power sources, USD 3.3 billion for grids)	USD 12.8 billion (USD 9.3 billion for power sources, USD 3.4 billion for grids)
Average marginal cost for power sources	UScent 8.8/kWh	UScent 9.6/kWh
Average marginal cost until transmission lines	UScent 11.4/kWh	UScent 12.3/kWh

³ Explanation report of Draft PDP8, page 354.

⁴ Explanation report of Draft PDP8, pages 14.

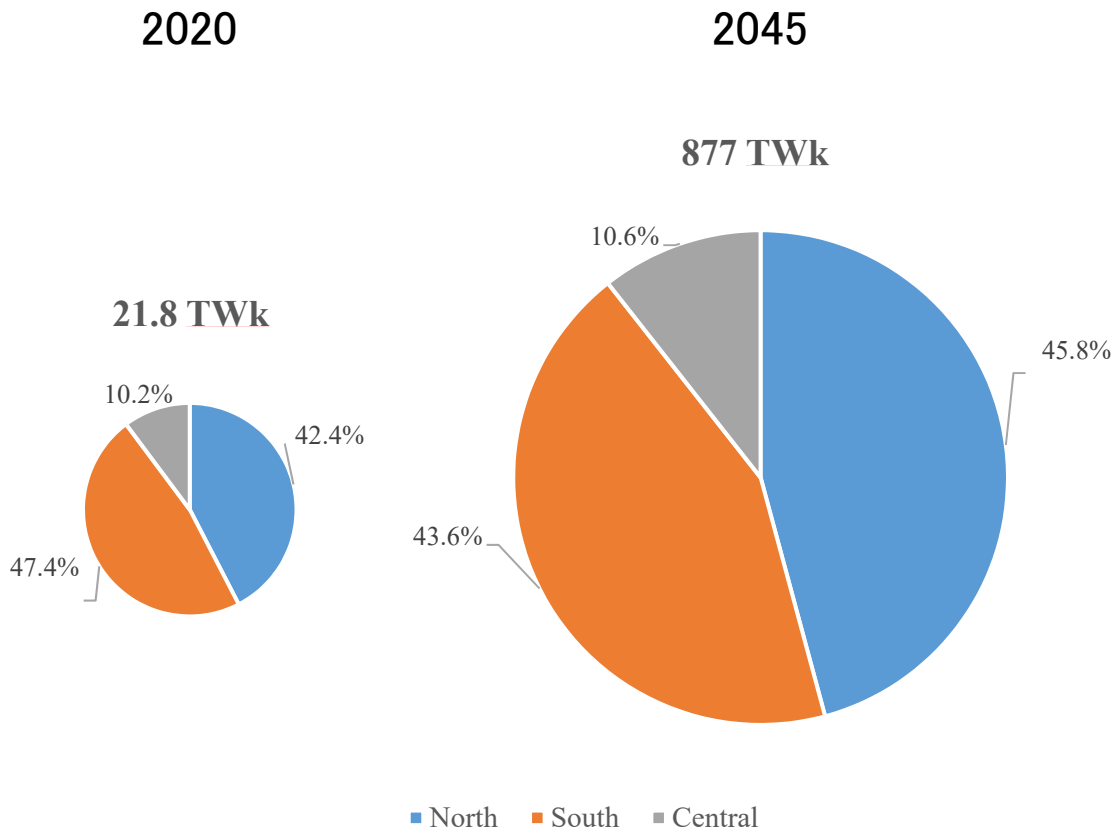
⁵ Explanation report of Draft PDP8, page 14, 701, and 795.

Total land use and breakdown	<ul style="list-style-type: none"> - 80,000 ha of land (45,000 ha for 220-500kV national grids, 30,000 ha for solar power, 6,000 ha for onshore wind power) - 37,000 ha of sea surface for offshore wind power 	<ul style="list-style-type: none"> - 102,000 ha of land (28,000 ha for 220-500kV national grids, 62,000 ha for solar power, 8,000 ha for onshore wind power) - 260,000 ha of sea surface for offshore wind power
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5. Gradual change in power consumption needs in the north and south⁶

Draft PDP8 anticipates a general decrease in the entire nation’s demand for commercial electricity, compared to Revised PDP7, due to a lower forecast for economic growth. According to the Draft PDP8’s forecast, the proportion of commercial electricity in the north will gradually increase from 42.4% in 2020 to 45.8% in 2045, whereas the south will lower its percentage from 47.4% in 2020 to 43.6% in 2045. Such forecast also envisages the north’s commercial electricity demand will start to exceed that of the south from 2040.

Gradual change in demand for commercial electricity in Vietnam



6. Proposed mechanisms and measures for the implementation of Draft PDP8⁷

Draft PDP8 proposes among other things the following key mechanisms and measures to implement Draft PDP8:

- Mechanisms for power investment and development: e.g., implementing bidding to select investors for power projects; encouraging BOT projects to join the electricity market; providing Feed-in-Tariff to inspire investment in renewable energy;
- Mechanisms to attract investment and mobilize capital: e.g., developing the model of direct power purchase agreement (DPPA) between renewable energy developers/power generation companies and private power buyers/consumers; formulating renewable portfolio standards and sale/purchase renewable energy certificates;
- Mechanisms to secure a stable electricity production system and market operation in light of a highly integrated system of variable renewable energy sources;

⁶ Explanation report of Draft PDP8, page 240.
⁷ Explanation report of Draft PDP8, chapter 18.

- Measures regarding laws and policies: e.g., amending the Electricity Law to meet the requirements of power development in the new period; studying and promulgating laws on renewable energy and on selection of developers for independent power projects;
- Measures regarding localization of electrical devices and development of electrical mechanics;
- Measures regarding supply of materials: e.g., diversifying the import sources of coal and LNG; actively implementing the master plan on the construction of ports and warehouses for importation of LNG and coal;
- Measures regarding capital mobilization: e.g., issuing bonds (both locally and in foreign countries) to provide funding for power generation projects (with state guarantees for bond issuance with respect to urgent and important power projects); giving priority to foreign direct investment projects through domestic payment or making in-kind contribution without requiring a government guarantee;
- Measures regarding pricing of electric utilities: adjusting the cost of electricity in accordance with market price; building a competitive electricity market;
- Measures regarding protection of the environment: strictly following the laws and regulations with respect to the environmental impact assessment report; building a system to deal with the impact of unpredictable weather;
- Measures regarding technology: e.g., applying “smart” electrical grids; improving the technology of those industries with high electricity consumption (steel, cement, chemical, etc.); prohibiting the import of old and/or low-tech equipment in the production and use of electricity; controlling the levels of SO_x, NO_x, and dust emitted by newly-build thermal plants; and
- Measures regarding energy saving: e.g., actively stimulating the implementation of the Law on Energy Savings; conducting the Demand-side Management program (DSM) to reduce the need for energy consumption.

End

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