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Client Alert

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Vietnam: Draft national infrastructure plan for oil and gas reserves and supply

In brief

On 10 April 2020, the prime minister approved, under Decision No. 503/QD-TTg, a mission to formulate a national infrastructure plan for oil and gas reserves and supply for the 2021-2030 period, with a vision to 2050. In accordance with this decision, on 31 December 2021, the Ministry of Industry and Trade (MOIT) released a draft ("**Draft Plan**") for comments from relevant agencies.

The Draft Plan covers two main areas:

- **Reserves**: The system of crude oil, petrol and gas storage warehouses serving production reserves, commercial reserves and national reserves (excluding (i) raw material and product warehouses of refineries, petrochemical plants and gas treatment plants; (ii) fuel warehouses of power plants; and (iii) internal warehouses of the armed forces)
- **Supply**: The system of oil and gas pipelines in the mid- and downstream sectors from supply points to places of consumption (excluding the upstream sector,[1] i.e., gas pipelines from offshore gas fields to the mainland and pipelines supplying gas to refineries, petrochemical plants, gas treatment plants and power plants)

The MOIT views the Draft Plan as a tool for planning future commercial developments in the sector at the national level. Once approved, the MOIT will use it as a reference to appraise and approve projects of all enterprises producing and trading oil and gas in Vietnam to construct oil and gas warehouses and supply pipelines.

This Draft Plan directly impacts on stand-alone LNG terminal projects as well as unbundled structure of gas-to-power projects whether using a tolling model or a merchant model.

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In depth

The Draft Plan includes an introduction and 11 chapters, and covers the following key items:

- Information on existing infrastructure for storage and supply of oil and gas
- Forecasts of future market demands for oil and gas in Vietnam
- Planned and priority projects in the sector

[1] The upstream sector is discussed in the "National master plan for the development of energy for the period of 2021-2030, with a vision to 2050."

- Estimated total investment capital until 2050

1. Current infrastructure for storage and supply of oil and gas

Reserves

The infrastructure for oil and gas reserves is currently divided into three main parts: (i) production reserves, (ii) commercial reserves and (iii) national reserves. In general, the reserve system in Vietnam does not currently meet the International Energy Agency's standards that require stockpiling a minimum of 90 days' worth of net oil imports.

Current reserve capacity can be broken down into three categories:

- **Production reserves** in the Dung Quat and Nghi Son refineries (Vietnam's two operating oil refineries) can serve up to 15 manufacturing days in terms of crude oil, and from seven to 10 manufacturing days in terms of petroleum products output.
- **Commercial reserves** have reached 36 days of consumption.
- **Domestic reserves** are currently at a level of about 0.4 million tons of products that can serve about 10 days of consumption.

Storage

The current situation of oil and gas storage warehouses in Vietnam is as follows:

- **Oil**: Vietnam currently has 217 oil storage warehouses with a total capacity of about 6.38 million m^3.
- **Gas**: There are 57 liquefied petroleum gas (LPG) storage warehouses in Vietnam with a total capacity of 519,341 m^3. Vietnam, however, currently does not have any compressed natural gas (CNG) or liquefied natural gas (LNG) terminals in operation. For LNG specifically, Vietnam has three LNG terminals under construction, which are expected to come into operation in the coming months:

Terminal	Location	Developer	Expected capacity (m^3)	Scale capacity (tons/year)	Planned commencement of operation
Cai Mep	Ba Ria-Vung Tau	Hai Linh Co., Ltd.	220,000	3,400,000	2022
Thi Vai MMTPA LNG 1	Ba Ria-Vung Tau	PV Gas	180,000	1,000,000	2022
Northern Vietnam	Hai Phong	ITECO[2]	80,000	700,000	2024[3]

Source: Chapter II of the Draft Plan

Mid- and downstream supply network

The supply network is split into the following:

- **Oil**: Petrolimex is the only enterprise currently operating the oil pipeline network, with its biggest infrastructure being the B12 petroleum pipeline running from Quang Ninh province to Ha Nam province. This pipeline has strategic importance as it supplies over 50% of petroleum products consumed in Northern Vietnam.

[2] After the issuance of the Draft Plan at the end of December 2021, JAPEX (a Japanese investor) announced on its website that it signed a share purchase agreement with ITECO to participate in the Northern Vietnam LNG terminal project.

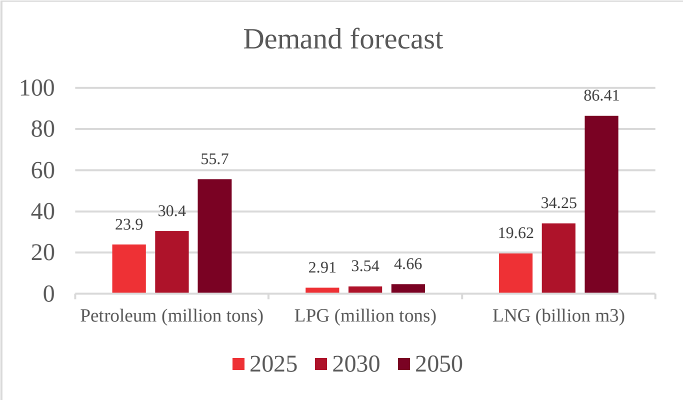
[3] Although the Draft Plan indicates that the planned Commercial Operation Date (COD) of Northern Vietnam LNG terminal is Quarter III of 2024, this project is stated to be put into operation in 2025 according to the Nam Dinh Vu industrial park website.

- **Gas**: All of the eight main gas pipelines in Vietnam are currently managed by government-owned Vietnam Oil and Gas Group (as specified in Schedule 1
Existing natural gas pipelines below).

On top of that, there are around 17,000 petrol stations and over 250 LPG filling stations in Vietnam serving the downstream sector.

2. Market demand for oil and gas for the period of 2025-2050

The Draft Plan includes periodic forecasts of oil and gas market demand until 2050. The demand for petroleum is expected to more than double while the demand for LNG should skyrocket with demand levels nearly 4.5 times higher in 2050 than in 2025. This increase aligns with Vietnam's expected electricity generation mix, with gas-fired power representing approximately 27.4% of power generation in 2045,[4] most of which will be fired using regasified LNG.



Source: Chapter XI of the Draft Plan[5]

3. Planned and priority infrastructure projects

To meet this increased market demand, Vietnam will need to revamp existing facilities and develop a number of greenfield midstream infrastructure, which are listed in the Draft Plan.

Petroleum: The government expects to relocate or clear out six operating warehouses with a total capacity of 55,291 m^3, and increase the capacity of 41 other warehouses, as well as renovate, upgrade and expand the existing petroleum pipeline network.

Gas:

- **Terminals**: A total of eight LNG import terminals should either be expanded or constructed by 2050, in addition to the LNG terminals of integrated LNG-to-power projects listed in the National Power Development Plan VIII (PDP VIII) (see Schedule 2 Planned LNG terminal projects under the Draft Plan and planned LNG-to-power projects in the PDP VIII below).

- **Pipelines**: A total of 22 new gas supply pipelines should be constructed, thereby expanding the length of the network by an additional 750 kilometers and its capacity by an extra 20 billion m^3 per year (see Schedule 3
Planned greenfield natural gas supply pipelines below).

All LNG terminals as well as seven of the pipeline projects have been listed as government priority. The current Draft Plan does not clarify any specific additional incentives for priority projects. However, it seems that these projects shall be facilitated to have early deployment and speed up their progress. The incentives will be decided on a case-by-case basis in accordance with the current laws.

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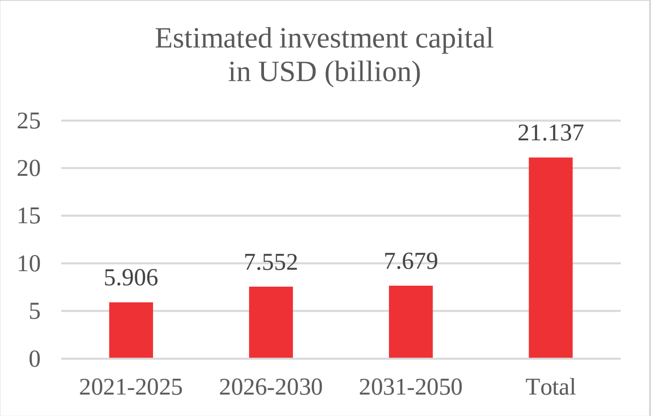
[4] PDP VIII (November 2021 version).

[5] In terms of petroleum, the chart does not cover the amount of petroleum exported to other countries and sold to foreign ships and aircraft.

4. Estimated investment capital

Vietnam's ambitions in the development of oil and gas infrastructure will require a dramatic increase in investment needs, which are estimated at over USD 21 billion over the next 30 years.



Source: Chapter VII of the Draft Plan

To mobilize investment, the government plans to use various sources of financing, including (i) foreign direct investments (FDI), (ii) commercial and concessional loans, (iii) enhanced cooperation with banks in the region and the world, and (iv) further disinvestment of the state in the sector's state-owned enterprises (SOEs).

A number of SOEs in the oil and gas sector have started a corporatization process in recent years, notably PVOIL, PV GAS and other subsidiaries of Petrovietnam. The Draft Plan, however, does not detail which companies are included in the future disinvestment plan.

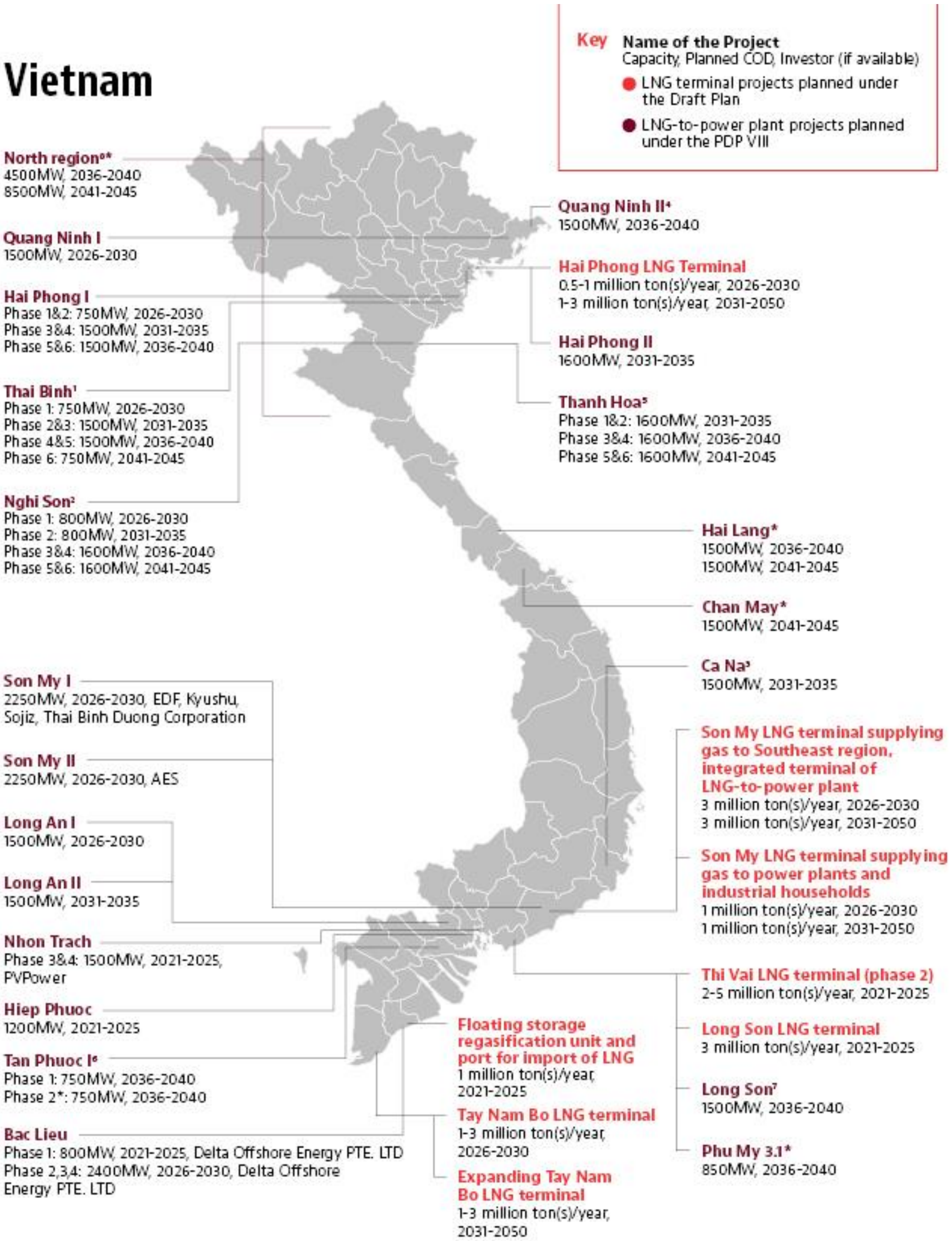
The government is also considering a number of fiscal tools in order to increase FDIs in the sector, such as tax holidays or the discounted income tax rate at 10% instead of the usual rate set at 22%.

Schedule 1
Existing natural gas pipelines

No.	Name	Owner	Operation year	Capacity (million sm3/year)		Pipeline level
				Design capacity	Operation capacity	
1	Bach Ho - Dinh Co pipeline	PV Gas	1995	2,160	2,160	Level 3
1A	Dinh Co - Ba Ria - Phu My - Hiep Phuoc gas pipeline	PV Gas	1995	3,540	3,011	Level 3
2	Nam Con Son 1 gas pipeline	Joint venture of PV Gas, Rosneft and Perenco	2002	-	6,974	Level 3
3	Nam Con Son 2 gas pipeline	PV Gas	2020	7,000	-	Level 3
4	Pipeline supplying gas from gas supply center to customers	CNG Vietnam JSC	-	146	30	Level 1
4A	Pipeline system for gas collection and distribution from Ham Rong and Thai Binh field	PV Gas	2016	520	520	Level 1
5	Pipeline system distributing low-pressure gas to Tien Hai -Thai Binh industrial zone	Petrovietnam Low Pressure Gas Distribution JSC	2015	401	63	Level 1
6	Nhon Trach - Hiep Phuoc low-pressure gas distribution pipeline system	Petrovietnam Low Pressure Gas Distribution JSC	2012	-	-	Level 2
6A	Nhon Trach low-pressure gas distribution pipeline system	-	-	2,137	544	Level 1
6B	Hiep Phuoc low-pressure gas distribution pipeline system	-	-	240	85	Level 2
7	Phu My - My Xuan - Go Dau gas distribution pipeline system	Petrovietnam Low Pressure Gas Distribution JSC	2003	-	-	Level 1
7A	Phu My industrial zone gas pipeline	-	-	4,491	1,019	Level 2
7B	My Xuan industrial zone gas pipeline	-	-	3,078	297	Level 1
7C	Go Dau industrial zone gas pipeline	-	-	843	80	Level 1
8	PM3 - Ca May gas pipeline	PV Gas	2007	2,000	2,000	Level 3

Source: Chapter II of the Draft Plan

Schedule 2
Planned LNG terminal projects under the Draft Plan and planned LNG-to-power projects in the PDP VIII (draft subject to change)



1 In the high senario, planned COD of phase 2&3&4 (Thai Binh project) with the total capacity of 2250MW is 2031-2035 and phase 5&6 with the total capacity of 1500MW is 2036-2040.
2 In the high senario, planned COD of both phase 1&2 of Nghi Son is 2026-2030 and planned COD of phase 3&4 is 2031-2035
3 In the high senario, planned COD of Ca Na is 2026-2030
4 In the high senario, planned COD of Quang Ninh II is 2031-2035
5 In the high senario, planned COD of phase 3&4&5&6 of Thanh Hoa project is 2036-2040.
6 In the high senario, Tan Phuoc I has the capacity of 800 MW and planned COD is 2031-2035.
7 In the high senario, planned COD of Long Son is 2031-2035
8 The specific address for this project have not yet been clarified under the PDP8
* Additional projects in case of high scenario

Source: Chapter VII of the Draft Plan and Annex 2 of the PDP VIII (September 2021 version)

Schedule 3
Planned greenfield natural gas supply pipelines

No.	Name of the pipeline	Time for starting operation	Design capacity (billion m3/year)	Length (km)	Diameter (inch)	Priority projects
I	**Northern Vietnam region**					
1	CNG supply pipeline system in Tien Hai (phase 2)	2018-2025	0.35			
2	Pipeline system from LNG terminal in Hai Phong to industrial households	2026-2030	0.5-1	15-20	20	
3	Pipeline system distributing low pressure gas to Tien Hai area (phase 3)	2026-2035	0.25	30-50	6-10	Yes
4	Tien Hai - Hai Phong - Hai Duong - Bac Giang - Ha Noi - Vinh Phuc pipeline	2031-2050		150	22	Yes[6]
II	**North Central region**					
1	High pressure pipeline from gas distribution center in Quang Tri to power plants in Quang Tri	2033	1.5	10	16	
III	**South Central region**					
1	High-pressure pipeline from the gas treatment plant in Tam Quang to the power plant in Quang Nam, Quang Ngai and the refinery and petrochemical complex in Dung Quat economic zone	2023-2025	8	25	26	
2	Pipeline system from gas distribution center in Tam Quang to industrial zones in Quang Nam	2023-2025	0.6-0.9	10-15	8-10	
3	Pipeline system from gas distribution station in Dung Quat to Dung Quat industrial zone	2023-2025	0.7	10-15	8-10	
4	Low-pressure gas distribution pipeline system	2023-2025	0.3	50	10	
5	Pipeline from Son My LNG terminal to Phu My gas distribution center to supplement the southeast region	-	-	80	26	Yes

[6] The wording in the list of priority projects is slightly different. However, it seems that they refer to one project since they are both Tien Hai projects with the planned COD in 2026-2030.

No.	Name of the pipeline	Time for starting operation	Design capacity (billion m3/year)	Length (km)	Diameter (inch)	Priority projects
IV	**Southeast region**					
1	System supplying gas to Nhon Duc - Phuoc Kien - Phu My Hung - Thu Thiem urban area (Ho Chi Minh City)	2020	0.3	50	10	
2	System supplying CNG/LNG to Long Thanh Airport	2020-2025	0.2	50	10	
3	Pipeline system supplying gas to Tan Thanh urban area	2020	0.1	26	10	
4	Expanding the pipeline system supplying gas to industrial zones in Dong Nai, Binh Duong, Long An and Long An LNG-to-power plant	2021-2030	-	100	12	Yes
5	Phu My - Hiep Phuoc - Long An pipeline supplying gas to Long An power center	-	-	-	-	
6	Pipeline to connect east and west of the Southern Vietnam area	-	-	-	-	
V	**Southwest region**					
1	Block B - O Mon gas pipeline from Kien Giang to O Mon and Ca Mau	2021	6.4	75	22	
2	Low-pressure gas supply system in Ca Mau	After 2021	0.1-0.2	20	10	
3	Low-pressure gas supply system in Can Tho	After 2025	0.1-0.3	20-30	6-10	
4	Low-pressure gas supply system in Kien Giang	After 2025	0.1-0.3	30-50	8-12	Yes[7]
5	Gas pipeline from LNG floating storage regasification unit to power plants in Ca Mau	2021-2025	-	-	-	Yes
6	Gas pipeline system from Tay Nam Bo LNG terminal to power plants in Ca Mau	2026-2030	-	-	-	Yes

Source: Chapter VII of the Draft Plan

[7] Treatment stations and onshore pipelines in Kien Giang for the period of 2021-2025.

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