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KIS Viet Nam Securities Corporation

Oil & Gas

New normal, new cycle

Hoang Phung I hoang.pm@kisvn.vn

true friend KIS Viet Nam Securities Corporation

OIL & GAS

New normal, new cycle

Oil prices may go sideways in 2023F
Recover Russian oil output and weaker-than-expected demand growth means the oil market is likely to remain in surplus for the remainder of this year and into early next year, which could cool down oil prices. Besides, inventories are at historically low levels, so we believe that oil prices will not drop strongly, whilst limited OPEC spare capacity and uncertainty over how Russian flows will evolve once the EU ban comes into full force.

Natural gas demand is forecasted to soar
Vietnam's Gas Master Plan (GMP) forecasts a doubling of demand for gas between 2020 and 2025, reaching about 20 bcm per year and leveling off afterward. This surge in demand will be driven by power plans to increase gas-fired generation capacity from around 9 GW in 2017 to 38 GW by 2030. Much of this demand will be met by new fields that will be increasingly costly to develop due to deeper water and more complex geology. Therefore, it will also be necessary to import LNG beginning in early 2023 to complement dwindling domestic natural gas production.

The huge potential Block B – O Mon project
Block B–O Mon: The second critical upstream gas development is the PVN-owned Block B–O Mon project. This project is expected to produce 5 bcm/year for consumption at the O Mon power center and the Ca Mau gas-power-fertilizer complex. The gas reserves in Block B are contained in numerous small, compartmentalized reservoirs, making them complicated and expensive to exploit. In July 2017, PVN submitted a gas field development plan to the MOIT calling for up to 1,000 wells and a total investment requirement of up to US$10 billion. The high gas price required to support such high-cost development has been a long-standing roadblock to the commercial development of Block B, and the timeline for future development is still uncertain.

Initiate sector; an Overweight over a 12-month horizon
We initiate an Overweight rating on Oil & Gas industry as we see multiple tailwinds in the middle-term and long-term outlook due to expectations of reactive upstream and midstream projects. We also have BUY ratings on PV Drilling (PVD VN) and PV GAS (GAS VN). PVD is expected to turn around and could enjoy high growth of earnings in the next 3 years due to higher jack-up rates, meanwhile, GAS is the largest listed company in the sector with strong finance ratios and many planning midstream projects to supply natural gas pipelines and import LNG to fill high power demand of Vietnam economy.

Sector
In-depth

Commodities

April 14, 2023

Overweight

Hoang Phung
hoang.pm@kisvn.vn

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- Vietnam O&G industry has a close relationship with global oil prices
- Restarted huge projects will boost upstream and midstream companies' earnings

I. Coverage projection and valuation

Initiate Overweight

Oil & Gas industry stocks have outperformed the market throughout 2022 as oil prices jumped strongly due to supply concerns. Currently, we see that Oil & Gas stock prices are reflected in the oil prices drop in late 2022. We initiate Overweight due to 1) being less affected by the recession than other sectors, 2) the upturn of earnings growth in 2023-25F of upstream companies, and 3) the solid long-term outlook due to project implementation. We pick PVD with a high growth of earnings in the next 3 years and GAS which is number one in the sector with a strong balance sheet & high ROE.

Upstream companies will shine in 2023F-24F

Firstly, we see cooling oil prices in 2023F after a high jump in 2021 and 2022 but we believe that oil prices would stay above USD70/barrel at a level that boosted upstream projects worldwide. Thus, we believe that Vietnamese upstream companies such as PVD will benefit from this trend. Overall, we see Jack-up rates (rig renting prices) have increased sharply in 2022 and could stay strong in 2023F-24F. Besides, changing Oil & Gas Law is a catalyst to support upstream projects in Vietnam in the next years.

Solid long-term outlook due to project implementation

LNG prices cool by above 80% from the peak in 2022, and we expect LNG prices to continue to decrease in the next years which will be competitive with natural gas prices of new basins. We expect GAS to start to import LNG from 2024F with better LNG prices for its Thi Vai LNG terminal — Phase 1. Besides, Block B–O Mon project which is the second critical upstream gas development, is owned by the PVN and GAS has 51% interest in the gas pipeline with CAPEX USD1.1bn and will get the first gas from 2026F after government handles legal problems.

Stock	Recommendation/TP	Investment point	Key valuation assumptions
PVD	BUY, VND28,800	- High jack-up rates in 2023F-24F	Target 40x 2023F PE
GAS	BUY, VND117,700	- Solid Long-term outlook due to project implementation	Target 18x 2023F PE

Table 1. Coverage valuation

Recommendation & TP			Earnings & Valuation											
Company				Sales (VND bn)	OP (VND bn)	NP (VND bn)	EPS (VND)	BPS (VND)	PE (x)	PB (x)	ROE (%)	ROA (%)	DY (%)	EV/EBITDA (x)
Petrovietnam Gas	Recommendation	BUY	2018A	75,612	13,725	11,454	5,877	23,550	12.70	3.17	26.46	18.4	5.36	8.71
(GAS)	TP (VND)	115,200	2019A	75,005	13,649	11,902	6,092	25,344	13.84	3.33	25.44	19.1	5.10	9.42
	Price (14 Apr, VND)	99,300	2020A	64,135	8,694	7,855	4,102	25,307	19.92	3.23	16.21	12.5	4.28	12.71
	Market cap. (VND bn)	190,055	2021A	78,992	10,374	8,673	4,381	26,696	21.38	3.51	17.43	12.2	3.20	12.13
			2022A	100,724	17,799	14,798	7,669	31,274	13.23	3.25	26.68	18.3	2.96	8.04
PV Drillings	Recommendation	BUY	2018A	5,507	100	198	304	24,479	32.82	0.41	1.47	0.9	-	13.49
(PVD)	TP (VND)	27,200	2019A	4,377	37	185	334	24,699	34.24	0.46	1.35	0.9	-	11.86
	Price (14 Apr, VND)	20,750	2020A	5,248	1	187	311	24,842	39.69	0.49	1.35	0.9	-	18.11
	Market cap. (VND bn)	11,535	2021A	4,013	(27)	20	49	24,619	461.28	0.91	0.14	0.1	-	27.69
			2022A	5,467	67	(104)	(197)	25,102	-	0.71	(0.74)	(0.5)	-	13.36
PTSC	Recommendation	Not-rated	2018A	14,638	373	1,047	2,191	24,839	6.77	0.60	8.87	4.4	6.30	2.27
(PVS)	TP (VND)	N/A	2019A	16,941	329	1,011	2,115	25,635	7.23	0.60	8.38	4.1	4.58	0.82
	Price (14 Apr, VND)	26,000	2020A	20,180	(138)	624	1,306	25,411	12.71	0.65	5.12	2.4	6.02	4.88
	Market cap. (VND bn)	12,427	2021A	14,260	66	675	1,411	24,855	18.72	1.06	5.62	2.6	3.79	11.85
			2022A	16,373	7	884	1,849	25,564	11.58	0.84	7.33	3.5	3.74	4.76
Petrolimex	Recommendation	Not-rated	2018A	191,932	4,789	3,748	3,236	17,556	13.78	2.54	18.34	6.3	6.73	9.32
(PLX)	TP (VND)	N/A	2019A	189,604	4,827	4,158	3,544	19,345	13.83	2.53	19.17	7.0	5.31	9.97
	Price (14 Apr, VND)	36,950	2020A	123,919	629	988	723	17,364	70.97	2.95	4.47	1.6	1.95	24.00
	Market cap. (VND bn)	46,948	2021A	169,009	2,784	2,839	2,344	19,773	22.06	2.61	12.27	4.5	2.32	13.73
			2022A	304,080	985	1,480	1,156	19,333	27.41	1.64	5.96	2.1	3.79	12.80
PV Oil	Recommendation	Not-rated	2018A	61,171	430	381	369	9,189	39.8	1.60	3.99	1.5	-	15.20
(OIL)	TP (VND)	N/A	2019A	79,862	275	215	184	9,308	43.9	0.87	1.99	0.8	-	9.70
	Price (14 Apr, VND)	9,400	2020A	50,028	(371)	(112)	(108)	9,174	61.8	1.27	(1.17)	(0.5)	-	1,095.75
	Market cap. (VND bn)	9,722	2021A	57,836	616	605	507	9,680	32.8	1.72	5.38	2.5	-	13.17
			2022A	104,214	655	651	493	9,872	16.0	0.80	5.04	2.3	4.4	0.31
Binh Son Refinery (BSR: UpCoM)	Recommendation	Not-rated	2018A	111,952	3,950	3,606	1,163	10,083	11.55	1.33	11.00	6.2	-	7.07
	TP (VND)	N/A	2019A	102,824	2,869	2,914	898	10,960	9.02	0.74	8.54	5.5	-	4.23
	Price (14 Apr, VND)	16,800	2020A	57,959	(3,046)	(2,819)	(909)	10,010	11.11	0.98	(8.67)	(5.1)	-	4.23
	Market cap. (VND bn)	52,088	2021A	101,080	6,511	6,716	2,108	12,117	10.82	1.88	19.06	10.9	-	7.01
			2022A	167,124	14,673	14,726	4,750	16,531	2.80	0.80	33.16	20.3	2.26	1.49

Source: Respective company data, Bloomberg, KISVN

Table 2. Peer valuation

Company	Ticker	Market cap (USD mn)	NP growth in 2022(%)	PE (x)		PB (x)		ROE (x)		DY (%)	
				2022F	2023F	2022F	2023F	2022F	2023F	2022F	2023F
China Oilfield-H	2883 HK Equity	8,942	-53.8	12.1	9.5	0.8	0.8	6.9	8.4	2.4	3.4
Velesto Energy B	VEB MK Equity	360	-10.5	14.6	11.4	0.7	0.7	5.1	6.2	-	-
Petronas Gas Bhd	PTG MK Equity	7,348	-17.3	17.4	17.1	2.4	2.4	13.9	13.8	5.0	4.9
Gas Malaysia Bhd	GMB MK Equity	963	56.1	10.7	11.2	3.0	2.9	24.0	22.3	7.8	7.4
Gail India Ltd	GAIL IN Equity	8,253	99.7	9.6	8.6	1.1	1.0	10.4	11.3	3.7	4.2

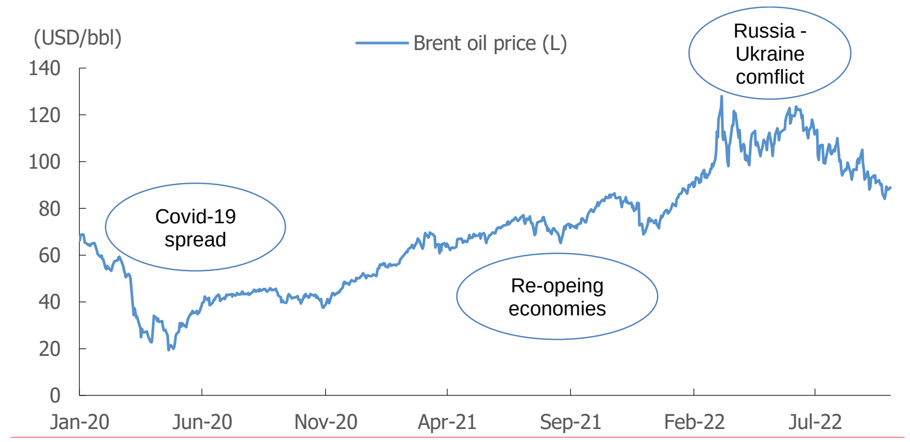
Source: Bloomberg, KISVN

II. Stable oil prices in 2023F

1. Oil prices may go sideways in 2023F

In 2022, the Brent price was so volatile, got a peak at nearly USD130/bbl (barrel) and averaged at USD101/bbl, which was much higher than USD71/bbl in 2021 due to too much worrying about supply constraints caused by the Russia-Ukraine conflict. However, Russian oil production and exports have proved resilient, besides, IEA member countries released nearly 230 mb (mn barrel) of government stocks from Mar through Oct 2022. Moreover, the world oil supply increased by 5 mb/d (mn barrel/day) yoy to 101.3 mb/d, prompting an oil large surplus in 2H22. Thus, Brent crude oil futures slipped below USD80/bbl in early Dec-22, the lowest level of this year, and more than USD50/bbl below a June peak.

Figure 1. The oil rocketed in early 2022 and slid as of end-22



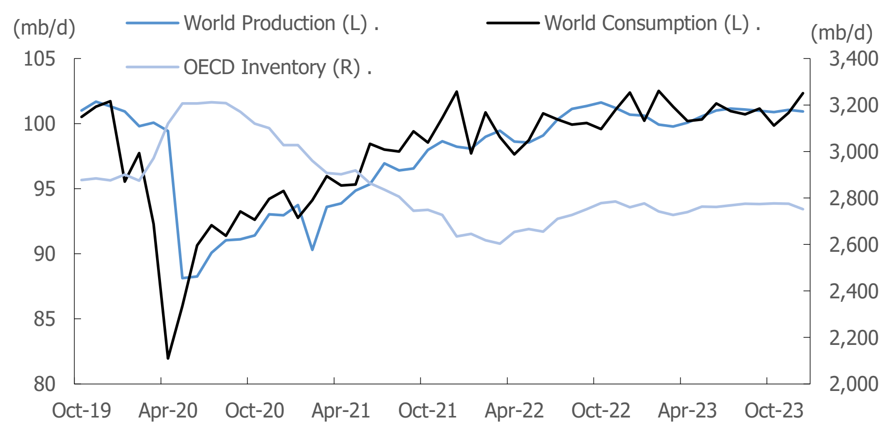
Source: Bloomberg, KISVN

In 2023F, we see a deteriorating economy and reopening in China continue to weigh on oil market sentiment. And we expect Brent oil prices to go sideways in 2023F because we see the balance of supply and demand, along price cap to restrain oil prices. (1) IEA forecasts 2023F crude oil demand growth of 1.6 mb/d to nearly 102 mb/d, mainly from the expectation of China reopening offsetting bleak global economy, (2) EIA forecasts world supply growth to increase by 1.6 mb/d to 101.5 mb/d in 2023 supported by non-OPEC supply growth at 1.5 mb/d to compensate for a potential decrease of OPEC+, and (3) G7 and EU approved the price cap which has been set at a maximum price of USD60 per barrel for crude oil and is adjustable. The price cap has been specifically designed to cool global oil prices while keeping global energy markets stable through continued supplies. Thus, we forecast Brent prices to drop to USD85/bbl and USD79/bbl in 2023F and 2024F, respectively, and will be stable at USD76/bbl in 2025-28F.

1.1 Balancing of supply and demand in 2023F

Per IEA, global oil consumption averaged nearly 99.9 mb/d in 2022, which is 8.2% and 2.5% higher than in 2020 and 2021 respectively but 0.6% lower than in 2019. Consumption has been significantly impacted by the COVID-19 pandemic, with lockdowns and mobility restrictions affecting global industrial activity, commuting, and leisure travel. As vaccination programs rolled out in 2021 and global economic growth rebounded, oil consumption recovered in 2021 and 2022. However, higher prices and worsening weak macroeconomics have started to affect oil demand, but strong power generation use and recovery of OECD nations are providing a partial offset. IEA forecasts world consumption to rise by 1.6 mb/d yoy to reach 102 mb/d in 2023F, led by a resurgent China and a strong growth trajectory in non-OECD other Asia countries.

Figure 2. Balancing of Crude oil world supply-demand in 2023F

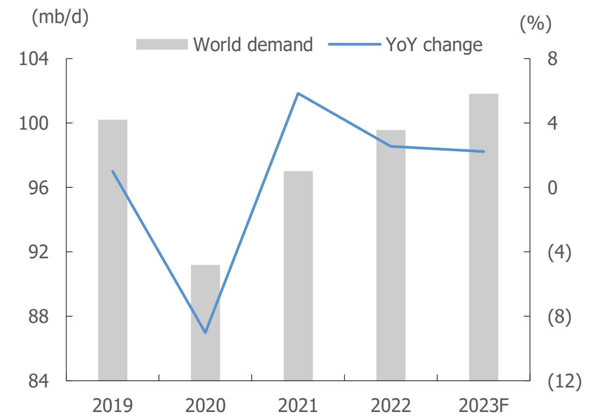


Source: Bloomberg, KISVN

1.2 China's oil demand recovers in 2023F

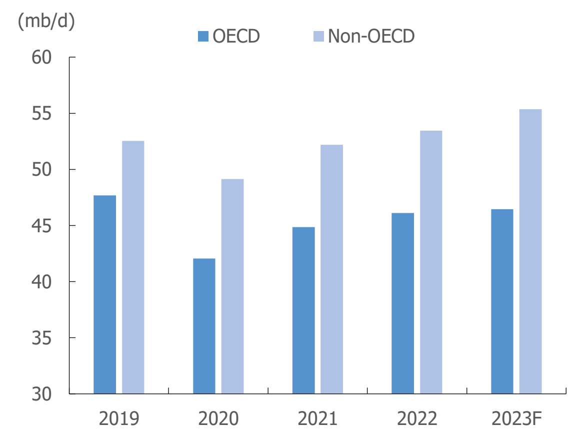
While most nations have all but removed their pandemic-era movement restrictions, China's zero-Covid policy sees it continue to impose strict lockdowns in response to new cases, undermining economic growth and oil demand. The second biggest consumer faces its biggest annual drop in oil demand in more than three decades as Covid-19 lockdowns and a property crisis weigh on growth in this country. Chinese oil demand will decline by 420,000 b/d, or 2.7% in 2022, the first annual drop since a 1% retreat in 1990.

Figure 3. Growth of world oil demand



Source: EIA, KISVN

Figure 4. Demand of OECD and non-OECD



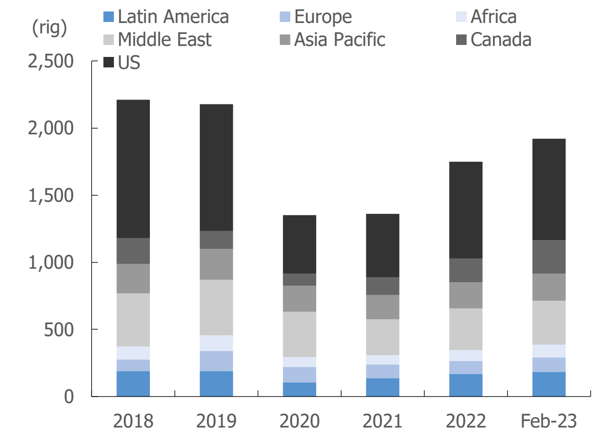
Source: EIA, KISVN

However, September data suggest that Chinese oil demand is likely to remain healthy throughout 4Q22. With projected GDP growth of 3.1%, demand is expected to rise as COVID-19 restrictions are eased further. Air travel has also staged a gradual recovery. There is also expected increased demand from the petrochemical industry in 4Q22. Following a decline in 3 consecutive quarters, oil demand is projected to recover from 4Q22. In 2023, China's economy is projected to grow by 4.8% as the COVID-19 situation improves. The gradual easing of lockdowns will push considerably mobility and manufacturing activity. According to OPEC, oil demand in China is projected to grow by 0.5 mb/d yoy to 15.4 mb/d in 2023F.

1.3 US and OPEC + recover their oil production

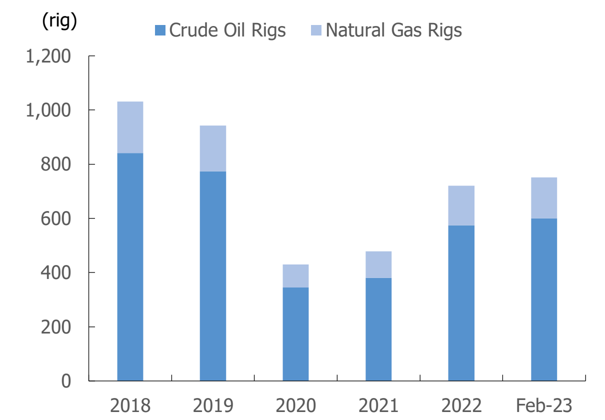
Per IEA, Russia shut in nearly 1 mb/d in Apr-22, driving down the world oil supply by 710 kb/d to 98.1 mb/d. Over time, steadily rising volumes from Middle East OPEC+ and the US along with a slowdown in demand growth is expected to fend off an acute supply deficit amid a worsening Russian supply disruption. Excluding Russia, output from the rest of the world is set to rise by 3.1 mb/d from May through December. Other drivers of non-OPEC supply growth in 2022 are anticipated to be Brazil, Canada, and Norway. In 2022, non-OPEC+ production is expected to surpass pre-COVID-19 levels, averaging 48 mb/d.

Figure 5. US leads growth of rig count in 2022



Source: EIA, KISVN

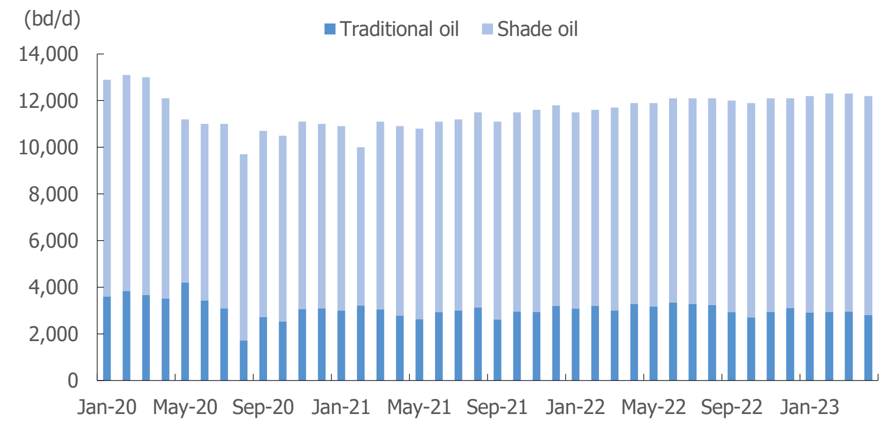
Figure 6. Structure of drilling rigs in US



Source: EIA, KISVN

We see a continued increase in the number of actively drilling onshore rigs in the US indicating an ongoing rise in activity. Rig counts in the US recovered strongly from 2Q22, but have not yet reached their pre-COVID levels. Given the current high price levels and the recently imposed sanctions on US imports of Russian crude, this promoted US producers to ramp up output. The EIA forecasts US crude oil production reaches 12 mb/d in 2022F and 13 mb/d in 2023F, which would surpass the previous record for annual average output of 12.3 mb/d set in 2019. It is driven by high oil prices that encourage increased exploitation.

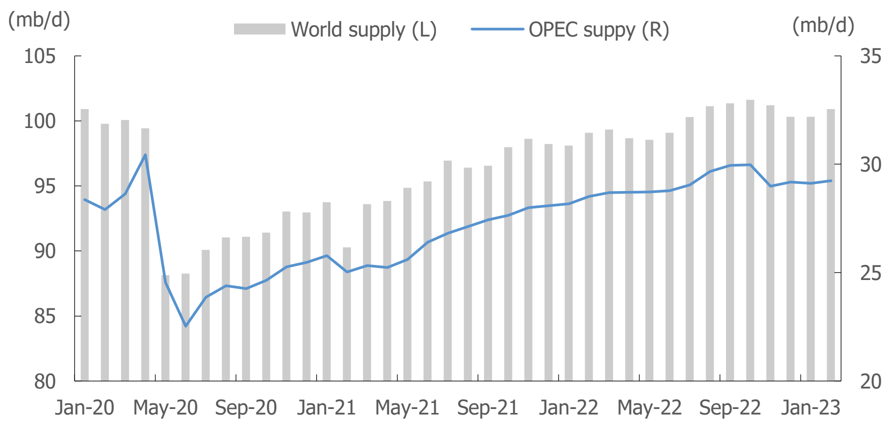
Figure 7. US production volume is recovering



Source: Bloomberg, KISVN

OPEC+ is the world's biggest oil supply organization, which accounts for nearly 40% of global oil production. OPEC+ includes OPEC (~30% of global oil supply), Russia, and some countries. OPEC+ has been easing that cut gradually after a historic production cut of nearly 10 mb/d in 2020, equivalent to 10% of global oil demand. OPEC+ recovered fully its capacity to pre-pandemic level through production increases throughout 2021 and 2022. However, in Oct-22, a group of oil producers led by Saudi Arabia decided to cut oil production quotas by 2 mb/d starting in Nov-22 due to their bearish view of the global economic outlook.

Figure 8. OPEC led the world supply increase in 2021-2022

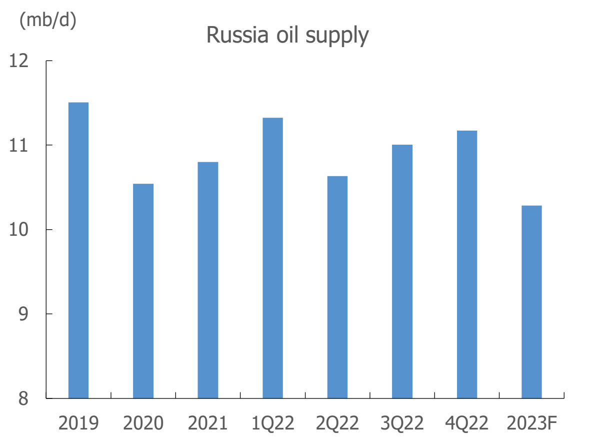


Source: IEA

1.4 Keep eye on the Russian supply variable

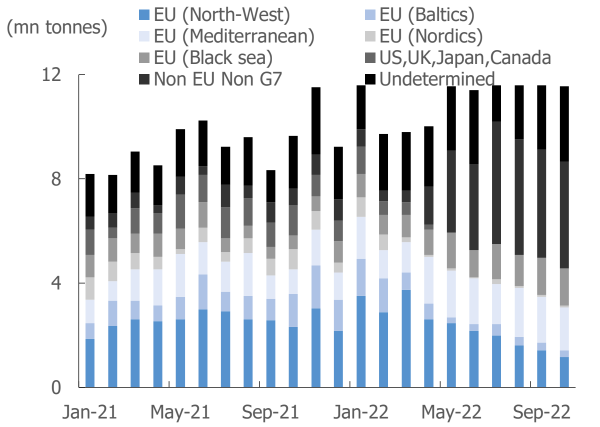
Since early 2022, the Russia - Ukraine conflict made concern about an oil supply shortage, lifting oil prices to the highest level of this decade. Russia is the world's third-largest producer of liquid fuels (after the United States and Saudi Arabia). Russian produced production averaged 10 mb/d of crude oil and exported nearly 7.8 mb/d in 2021. Russia's invasion of Ukraine has created considerable uncertainty regarding Russian crude oil and products on the global market. While Russia's production and export volume will likely remain largely, there is significant uncertainty about how many countries will continue to import Russian oil. Thus, the impact of Russia's invasion of Ukraine on the global oil market continues to evolve and push oil prices to the highest levels in the decade in 2022.

Figure 9. Russia's quarterly liquids production



Source: OPEC, KISVN

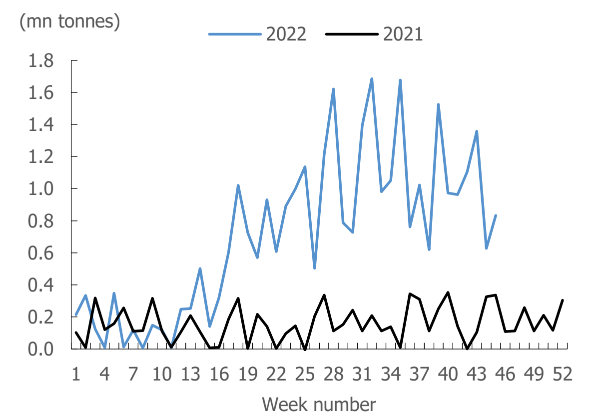
Figure 10. The rocketed Russian oil export to Asia



Source: CREA - Bruegel, KISVN

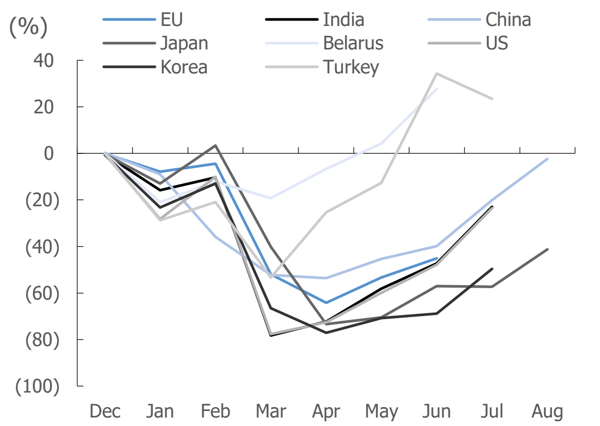
Per OPEC, Russian liquids oil output is forecasted to increase yoy by 133 tb/d to an average of 10.9 mb/d in 2022 despite previous supply concerns. For 2023F, Russian oil production is projected to drop by 0.85 mb/d to an average of 10.1 mb/d. However, OPEC noted that Russia's oil forecast remains high uncertainty. Additionally, according to data from CREA, a new independent research organization, oil leaving the 4 biggest Russian ports, there has been a small reduction in Russian exports to the EU, meanwhile, India, and China have increased strongly purchasing of Russian oil, more than compensating for the loss of the EU market. However, when European demand disappears, third countries will find it easier to negotiate discounts and these countries currently buy Russian oil at a significant discount to global prices because. This data shows that Russian oil export volume increased significantly yoy, thereby easing concerns about Russia's supply at the beginning of the war, causing oil prices to plummet in 2H22.

Figure 11. Weekly Russian Crude Oil Arriving in Ports



Source: Bruegel based on national authorities, KISVN

Figure 12. Russian oil shifted to Asia in 2022



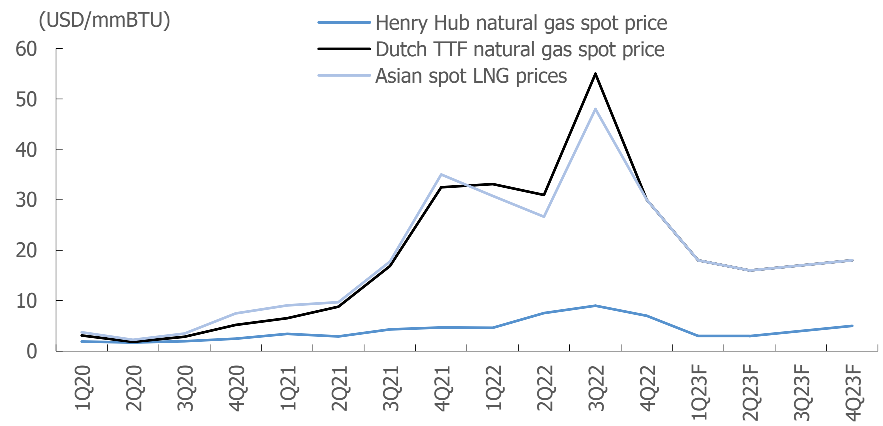
Source: Bruegel based on national authorities., KISVN

2. Natural gas prices cool from the peak

Unprecedented prices for LNG prices in 2022

Russia's steep supply cuts to the EU amid soaring gas demand for power generation drove European hub (Dutch TTF) prices, and indirectly Asian spot LNG, to all-time highs in 2022. Henry Hub, European, and Asian spot gas surged to all-time high levels and averaged at USD6, USD38, and USD34/mm BTU in 2022. TTF and Asian spot LNG prices are higher than eight and five times their five-year average during 2016-2020. Dutch TTF is usually traded at a premium of USD3-5/mmBTU above Asian spot LNG, enabling higher LNG inflow into Europe. However, easing market fundamentals put downward pressure on spot prices from 4Q22, LNG prices decreased sharply by nearly 70-80% from the peak in 3Q22, although they remained well above historic averages in Asia and Europe. IEA forecasts Henry Hub and LNG prices to stay flat at current levels in 2023F, TTF is set to average USD 17/MBtu, with Asian spot LNG averaging just below USD 17/MBtu and Henry Hub averaging USD 2.8 /MBtu in 2023F.

Figure 13. High natural gas prices are set to linger through the rest of 2022F

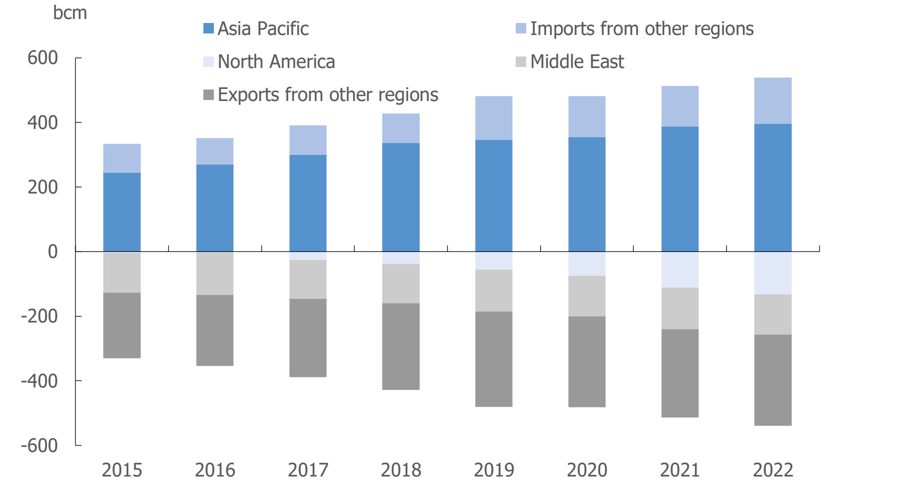


Source: Bloomberg, Chicago Mercantile Exchange (CME), KIS Research

Global LNG trade is expected to grow than 4% in 2023

In 2022, global LNG trade expanded by 5.4% yoy, (vs 6% growth rate in 2021) to 400.4 mn tonnes. The growth in 2022 was driven by Europe with a sharp 63% increase, compensating for a sharp drop in pipeline gas imports from Russia. In contrast, Asia imports dropped 8% due to the slow economic growth of China and high prices. On the supply side, Qatar and Australia were the leading exporters, followed closely by the US. Exports from Qatar grew by 3%, while deliveries from Australia remained broadly stable at elevated levels, despite some upstream production constraints. North America's LNG exports increased by 11% yoy in 2022 thanks to new liquefaction capacity additions. EIA expects the 2023 volume of global LNG trade to increase by 4.3% yoy due to the expansion of LNG demand from European imports with new import infrastructure and a recovery in Asia demand following a decline in 2022.

Figure 14. LNG trading volume increased steadily

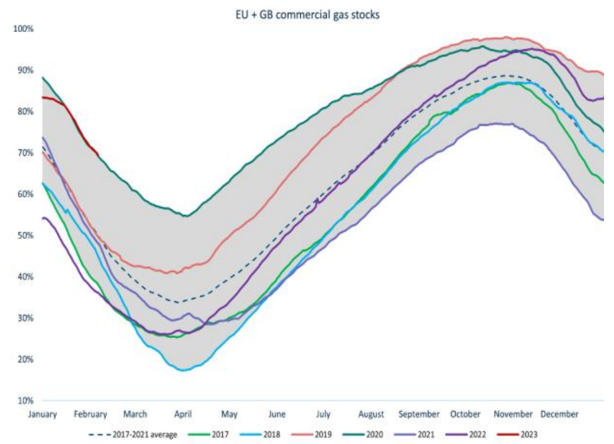


Source: EIA

EU is shifting away from its dependence on Russian energy imports

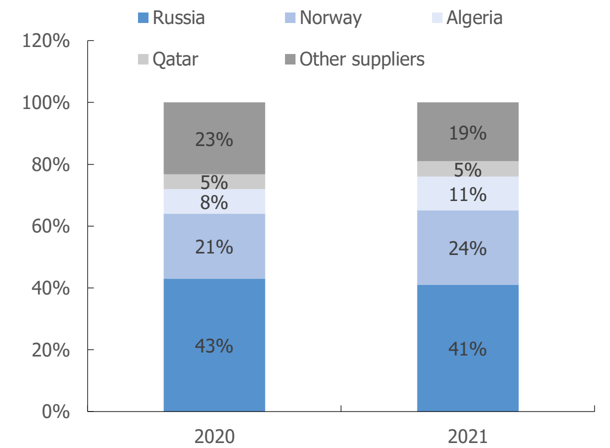
In 2021, Russia supplied nearly 155 cubic meters (bcm) of natural gas to EU, 40% of annual gas demand, of which, 15 bcm was LNG and the remaining was imported through gas pipelines and the EU pays Russia around USD430bn annually for oil & gas imports. However, the Russian invasion of Ukraine has forced the EU to consider how to rapidly shift away from its dependence on Russian energy imports, primarily natural gas. Consequently, the EU said that they would end Russia's energy imports (oil, gas, and coal) by 2027F. And the US, soon to become the global leader in LNG export capacity, is likely to play a major role in the future of EU energy security. In 2022, the US exported 55 bcm (+150% yoy) of gas to EU, supplying more than half of Europe's imported LNG and helping the region weather a more than 54% plunge in piped shipments from Russia. Furthermore, the EC will work with member states to guarantee demand for 50 bcm of additional US LNG until at least 2030, almost 50% more than the US's current export capacity. Over the long run, an additional 50 bcm of LNG exports from the US could account for 32% of the EU's total imports

Figure 15. EU's members' gas storage levels



Source: European Commission, KIS Research

Figure 16. Russia has been the major supplier of the EU's gas imports



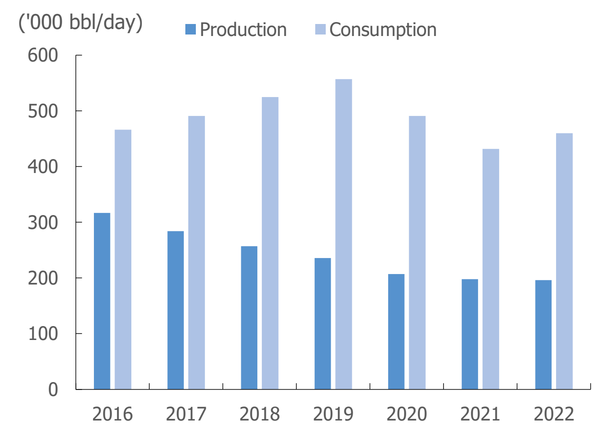
Source: European Commission, KIS Research

III. Unbalanced domestic O&G supply -demand dynamics

1. Vietnam's gas production revives in the long-term horizon

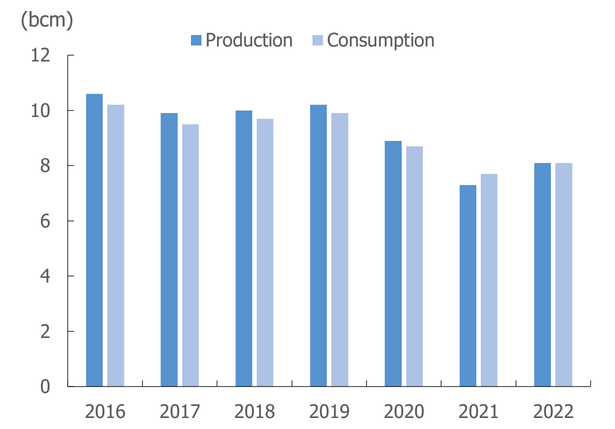
Vietnam has been becoming a net importer of oil since 2018 when the Nghi Son Refinery factory (NSR) ran commercial production and used mostly imported crude oil from the Middle East. Dung Quat refinery primarily using domestic crude oil has also started to diversify its feedstock by importing crude oil due to weak domestic reserves. The situation is similar for natural gas reserves that are declining if no new major gas fields come into operation. While nationwide electricity demand is increasing, this forced Vietnam to import natural gas to serve gas-fired power plants in the next coming years.

Figure 17. Oil production and consumption in Vietnam



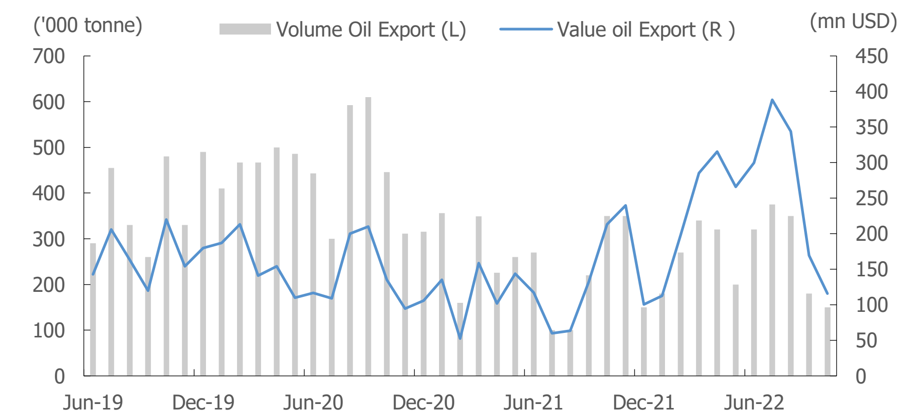
Source: KISVN, PVN

Figure 18. Natural gas production and consumption



Source: KISVN, PVN

Figure 19. A decrease in the oil export volume of Vietnam

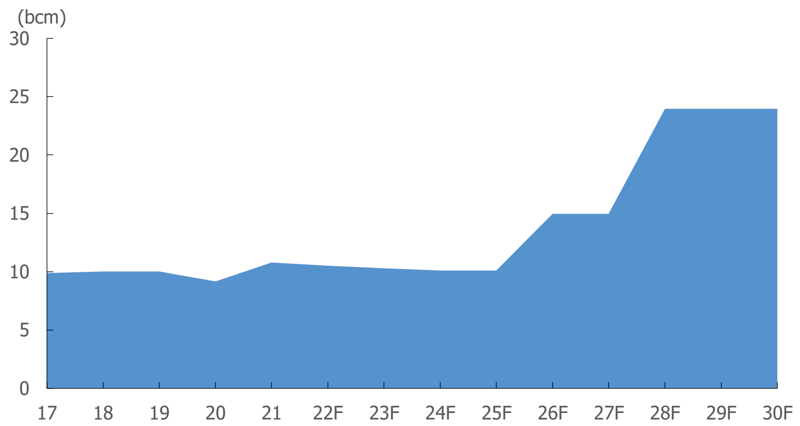


Source: KISVN, PVN

Vietnam is a coastal country with seven tertiary sedimentary basins have been identified. Major gas reserves have been found in four of the seven offshore basins: Song Hong, Nam Con Son, Cuu Long, and Malay-Tho Chu. The total proven and probable gas reserves are nearly 700 (bcm). Large-scale gas extraction has been carried out since 1995 at oil and gas fields in Cuu Long and Nam Con Son basins, and lately in the Malay-Tho Chu basin. Vietnam's gas market has scaled up rapidly during the 20 years since its inception, with a primary focus on supplying gas-fired power generation. Annual output reached 9.2 bcm in 2021, which went down from the last 5 years averaging 10 bcm.

In the medium term, the country's natural gas options will remain prominent in the central and southwestern regions due to the commercialization of large-scale gas discoveries, namely Block B – O Mon, Blue Whale… However, new fields are expected to come online in the near term, notably Block B in 2026F and Blue Whale in 2027. In addition, despite the potential for new sizable gas fields, natural gas projects are generally notorious for delays amid offshore tensions, which underlines the import of LNG to meet continued demand growth.

Figure 20. Vietnam's potential gas production could go up from 2025F

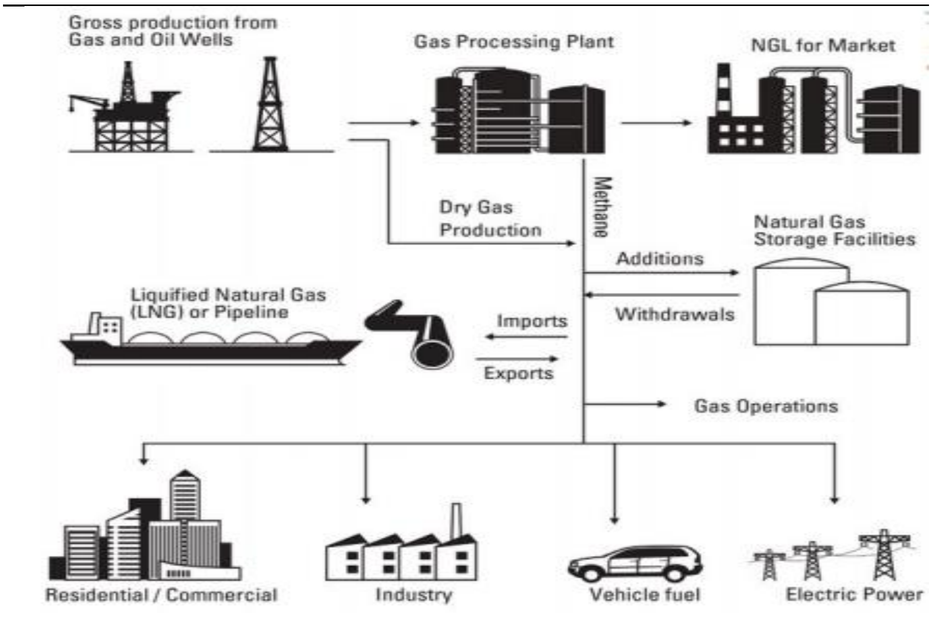


Source: KISVN, PVN

2. Natural gas demand could soar strongly

Natural gas is used almost entirely limited in Vietnam. Gas demand in 2021 was 9.2 bcm and was concentrated in the southwest near the major production sources. Power generation is the largest market segment, accounting for more than 85 percent of total gas demand. Fertilizer plants are the next most important segment at 11 percent of total demand. The remaining 4% are used by other industries. The plans to expand gas consumption in power, and fertilizer industries depend on the development of new supply sources.

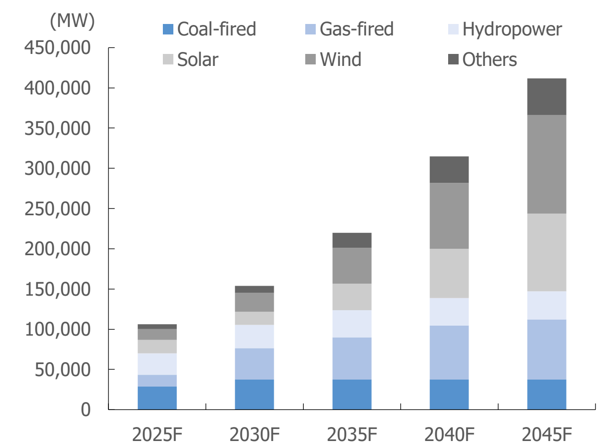
Figure 21. Natural gas production and consumption process



Source: IEA, KISVN

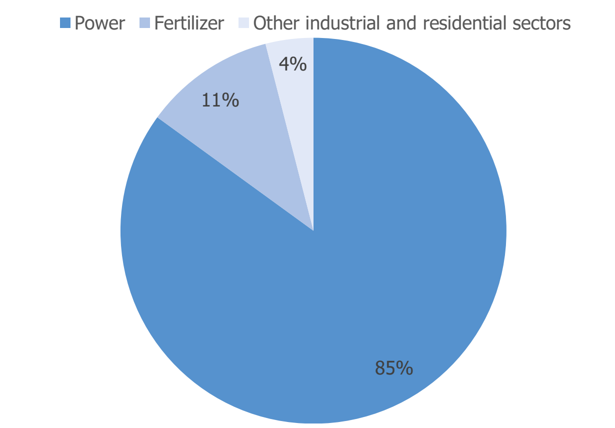
Vietnam's Gas Master Plan (GMP) forecasts a doubling of demand for gas between 2020 and 2030F, reaching about 20 bcm per year. This surge in demand will be driven by power plans to increase gas-fired generation capacity from around 9 GW in 2021 to 39 GW by 2030. Much of this demand will be met by new fields that will be increasingly costly to develop due to deeper water and more complex geology. Therefore, it will also be necessary to import LNG beginning in early 2023 to complement dwindling domestic natural gas production.

Figure 22. Vietnam increases its emphasis on gas-fired power in 2025F-2045F



Source: PDP8, KIS Research

Figure 23. Vietnam's natural gas demand by industry in 2022



Source: KIS Research

We believe that domestic demand for oil & gas is rapidly increasing. We estimate that the total natural gas required for power generation will increase with an annual average growth of 15% for 2023-2030F. This huge demand will push the country to change Petroleum Law to accelerate the upstream project and increase LNG imports.

IV. LNG imports to shore up the gas supply gap

1. LNG imports to quantify the gas supply gap

LNG imports to quantify the gas supply gap

According to the World Bank, Vietnam's power consumption ranks second among ASEAN countries and is expected to grow at an 8% rate annually through 2030F. Vietnam's need for LNG projects is greater than ever due to the instability of the power system, and power shortages caused by delayed investment in other power projects. Vietnam's coal and gas reserves are running out, while renewable energy is unstable and depends on weather conditions. As a result, imported LNG and gas thermal power emerge as alternatives to ensure energy security.

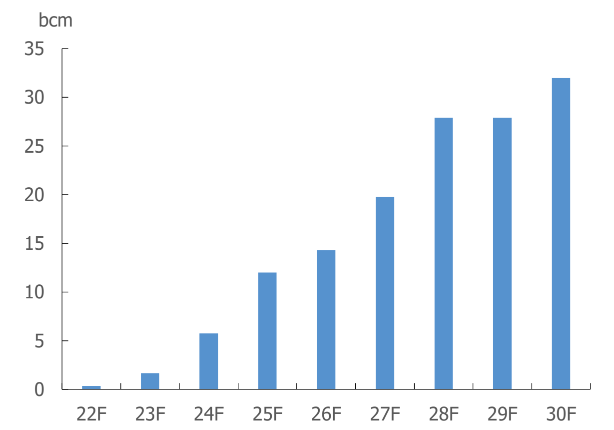
PDP8 highlights the importance of new LNG-powered plants

The need for LNG has been further confirmed in the latest Revised Power Development Plan VIII (PDP8) which underlines the roadmap for Vietnam's energy security in 2020-2045F. The LNG power development should reach 38,830 MW (including 23,900 MW of new investment and 14,930 MW from domestic natural gas) by 2030 and 46,300 MW (as 31,400 MW of new investment and 14,930 MW from domestic natural gas) by 2045F. PDP8 targets to add up an additional 28,200MW of flexible gas & hydrogen-running thermal power source by 2045F.

However, the exact timing of LNG-powered electric plants is uncertain

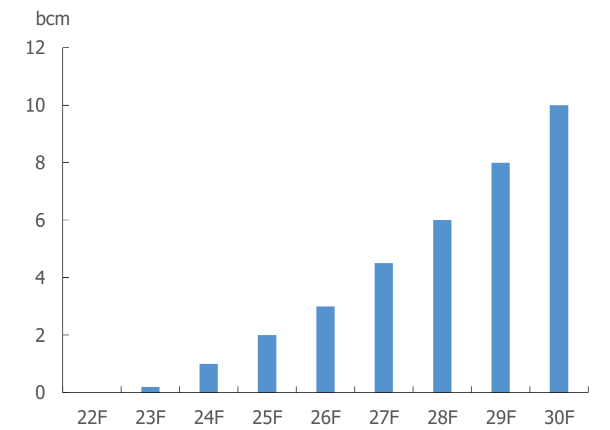
Consequently, demand for LNG imports will bolster to 14-18 bcm in 2030F and 23-26 bcm in 2045F, much higher than the predetermined target of 8 bcm and 15 bcm in 2030F and 2045F, respectively, as per Resolution 55. Moreover, sometimes, Asian LNG spot prices have surged roughly fivefold in 2022, owing to global geopolitical conflicts, hovering at more than USD40/mmBTU, which boosted the LNG-to-power bidding price to USD0.15-0.2/kWh, meanwhile Vietnam's current power price is at USD0.06-0.07/kWh. Amid the rising price trend, we raise concerns about the financial performance of Vietnam's upcoming gas projects when Vietnam will be reliant on as much as 16.4% of LNG imports for power generation. Although, PVN is expecting to commence LNG import from 2023 onward before.

Figure 24. LNG capacity from new terminals, FY22-30



Source: KIS Research
Note: 1 million tonne LNG = 1.36 bcm

Figure 25. LNG imported volume of PV GAS estimated



Source: KIS Research

So far, no a single LNG-powered electric plant has completed construction, even though many projects have been approved according to PDP8 and implementation of the plans is still uncertain. Only the 1,500MW Nhon Trach 3&4 projects with a total investment of USD1.4bn is about to start construction since it signed the EPC deal with Samsung C&T and Lilama in Mar-2022. At present, there are 9 LNG power projects that accepted the investment policy under Independent Power Producer (IPP) form, among their 5 projects already have investors and may go to PPA negotiation with EVN while for the large projects as LNG power Long Son, Ca Na and Quang Ninh there are not official investors or the official investors have been promulgated not long ago.

PV GAS is continuously preparing LNG sources for the trial phase of Thi Vai LNG Terminal, the main supplier for Nhon Trach 3 & 4 which is expected to start in 4Q22 and officially commercialize in 2023-2027. In 2021, PV GAS closed 8 Master Sale & Purchase Agreement (MSPA) deals with suppliers from North America, Australia, The Middle East, Europe, and Asia-Pacific.

Table 3. Vietnam's upcoming LNG terminals, 2022-2030F, million tonnes per annum (MTPA)

LNG import terminal	Start year	Capacity (MTPA)	Supplies to LNG-powered electric plants	Investors
Thi Vai (Ba Ria Vung Tau)	4Q22 (phase 1) 2023-2024 (phase 2)	1 MT (phase 1) 3-6 MT (phase 2)	Nhon Trach 3 & 4	-
Son My (Binh Thuan)	2025 – 2026 (phase 1) -	3.6 MT (phase 1) 6 MT (phase 2)	Son My 1 & 2	PV Gas (61%), AES (US, 39%)
Southeast LNG terminal (Tien Giang)	-	4-6 MT	-	-
My Giang (Khanh Hoa)	2030 - 2035	3 MT	-	Sumitomo
Cat Hai (Hai Phong)	-	-	-	-
Nam Van Phong (Khanh Hoa)	2025	1 MT	Phu My	-
Hai Linh (Ba Ria Vung Tau)	-	0.22 MT (phase 1) 0.1 MT (phase 2)	Phu My	Vingroup
Hai Lang (Quang Tri)	2026 - 2027	1.5 MT	-	T&T Group (Vietnam); KOGAS, KOSPO, Hanwha (Korea),
FSRU Thai Binh	2026	0.2 – 0.5 MT	-	

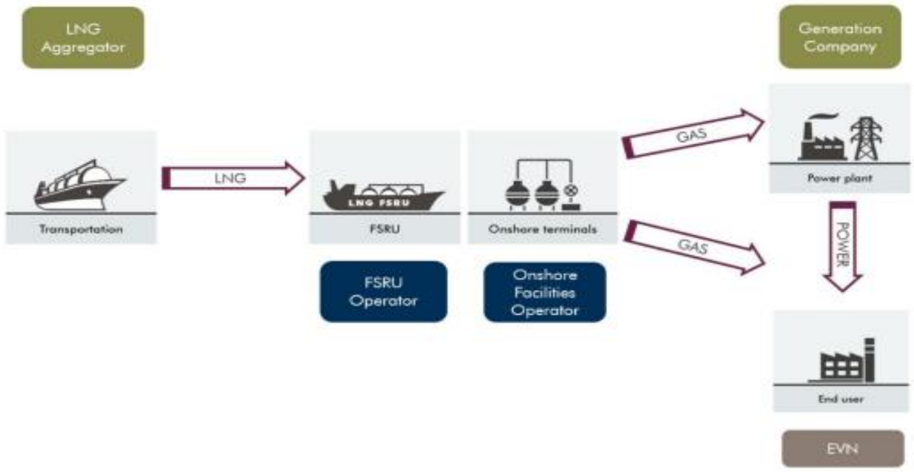
Source: Vietnam gas master plan, KIS Research

2. Currently- imported LNG prices are still high

The government has yet to release any details on the imported LNG pricing scheme

Vietnam's government has yet to announce any details on the potential pricing scheme for LNG imports. However, after examining the LNG import pricing schemes in other Asian markets (Thailand, Malaysia, Indonesia…), LNG prices are typically based on Brent oil prices or Henry Hub natural gas prices. We maintain our assumptions that Vietnam's future LNG import prices could be primarily benchmarked on Brent oil prices. A likely scenario for Vietnam includes using a pooling system to set the selling price of natural gas to power plants as a blend of domestic wellhead prices and lower LNG import prices. This would effectively allow power producers to use both sources of natural gas to lower their average fuel cost while allowing LNG importers to sell supply at market prices.

Figure 26. LNG import and consumption in Vietnam



Source: Watson Farley & Williams, KISVN

LNG import prices should be lower to compete with the prices of domestic new gas fields

As mentioned above, European (Dutch TTF) and Asian spot gas prices (Japan – Korea Platts Marker) to average at all-time high levels of USD38 and USD35/mmBTU in 2022, respectively. However, LNG prices decreased sharply in early 2023, Asian spot and futures LNG averaging just below USD 17/MBtu and USD 14/MBtu, respectively. However, these prices are still higher than the input price levels in feasibility studies of Vietnam's imported LNG-powered projects (~USD10/mmBTU). Vietnam's major new gas fields include Block B located in Malay – Tho Chu basin and Blue Whale located in Song Hong Basin. Industry estimates put wellhead prices at about USD13/mmBTU for Block B and Blue Whale.

Table 4. Vietnam's upcoming LNG-powered plants, 2023-2030F

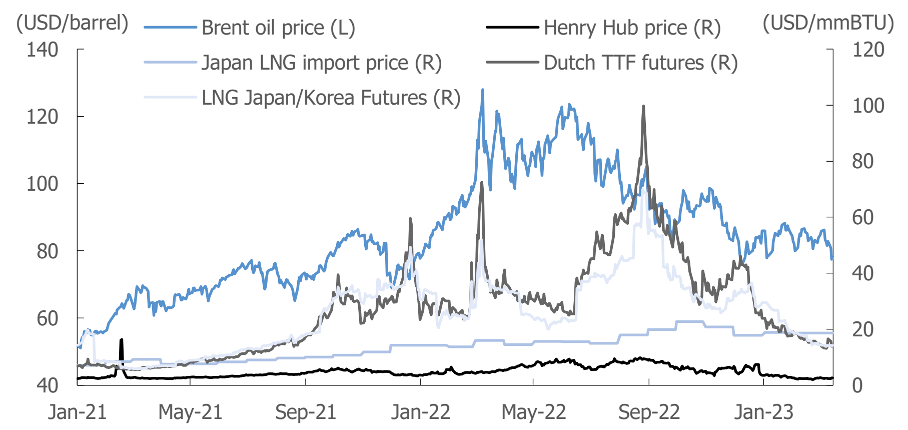
LNG powered plants	Start year	Capacity (MW)	Owner	Note
Bac Lieu	2025 (phase 1) 2027 (phase 2)	750 MW (phase 1) 2,450 MW (phase 2)	Delta Offshore Energy Pte. Ltd	
Nhon Trach 3 (Dong Nai)	2025	750 MW	PVN	
Nhon Trach 4 (Dong Nai)	2025	750 MW	PVN	
Hiep Phuoc 1 (Ho Chi Minh city)	2023	1,200 MW	Hai Linh Ltd.	oil-fired power converted to LNG-powered plant
Son My 1 (Binh Thuan)	2026	2,250 MW	EDF, Kyushu, Sojitz and Pacific	
Son My 2 (Binh Thuan)	2026	2,250 MW	AES Group (US)	
Long An 1	Early 2026	1,500 MW	VinaCapital, GS Energy (US)	
Ca Na 1 (Ninh Thuan)	Q2/2026	1,500 MW		
Quang Ninh 1	Q3/2027	1,500 MW	PV Power, Colavi, Tokyo Gas and Marubeni	
Long Son (Ba Ria Vung Tau)	2025	1,500 MW	GENCO 3, Thanh Thanh Cong, PECC2, Pacific, Mitsubishi and General Electric	
Hai Lang (Quang Tri)	2026 - 2027	1,500 MW	T&T Group (Vietnam); KOGAS, KOSPO, Hanwha (Korea)	
Thai Binh	2028 – 2029	1,500 MW		
Nghi Son (Thanh Hoa)	After 2028	1,500 MW		
Quynh Lap (Nghe An)	After 2028	1,500 MW		coal-fired power converted to LNG-powered plant
Quang Trach 2 (Quang Binh)	After 2028	1,500 MW		coal-fired power converted to LNG-powered plant

Source: PDP7, PDP8, KIS Research

Note: This includes the plants in PDP7 and the newly proposed plants in PDP8.

The global gas market was subjected to a particularly turbulent year in 2021, with prices spiking as a longer-term preference for gas over coal in power generation, coupled with Europe and Asia's rising dependence on imported LNG, resulted in the two regions competing directly for marginal gas supply. A tightened supply boosted the spot gas prices in Asia and Europe to a high level when the two continents competed for LNG cargoes. Since Feb-22, the Russia-Ukraine conflict and disruption to Russian oil & gas supplies triggered a rocket rise in European gas prices, boosting future LNG prices to a new record high of USD100/mmBTU in Aug-22. As a result, futures and spot LNG prices in Asia followed a similar trajectory due to heightened competition with European buyers for LNG cargos when term LNG prices in Asia jumped to the peak at USD68/mmBTU, and USD22/mmBTU, respectively.

Figure 27. Natural gas and LNG prices rocketed in 2022



Source: Bloomberg, KIS Research

3. Global LNG's pricing scheme for long-term contracts could relieve

In the LNG market, the majority of the cargoes are sold on a long-term contractual basis at prices either indexed to the cost of the feed gas, floating price in the destination market, or indexed to oil or other commodities. Supply-and-demand factors that can influence natural gas prices include variables such as production levels, gas storage injections and withdrawals, weather patterns, pricing and availability of competing energy sources, and market participants' views of future trends in any of these or other variables.

Group 1: Gas –on –gas Competition (GOG): spot and short-term contracts based on

The natural gas price is determined by the interplay of supply and demand – gas-on-gas competition. This includes the LNG linked to dominant benchmarks like Henry Hub, Japan Korea Marker, and Dutch Title Transfer Facility. This is divided into North America, the United Kingdom, and north-western Europe – the most liberal and traded gas markets in the world and all other markets which are mainly importing spot and short-term priced LNG cargoes, which is almost every other LNG importing country – Japan taking the largest volume – but also includes countries like China, India, Korea, Turkey, Spain, Argentina and Brazil

The following is a typical US LNG export pricing formula:

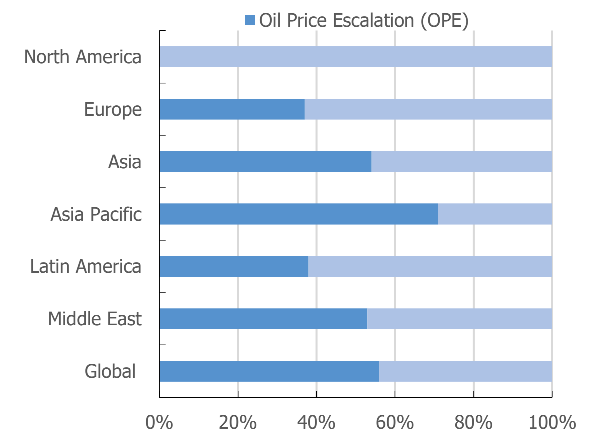
P_{LNG} = $P_{US\ Henry\ Hub}$ + feed gas pipeline tariff + energy retainage + liquefaction costs + shipping cost

Group 2: Oil Price Escalation (OPE): contracts based on crude oil prices

The price is usually linked through a base price to competing fuels, typically crude oil or fuel oil under the majority of long-term contracts. In some cases, coal prices or even electricity can be used as the base price. This group includes mostly Asia Pacific (Japan, Korea, Taiwan) followed by Asia (China, India, and Pakistan), Southern Europe (Spain, Turkey, France, Portugal, and Italy) and to a lesser extent, South East Asia. Predictably, during periods of relatively high oil prices, when oil product–linked gas prices rise more than gas supply-versus-demand fundamentals would suggest, gas buyers, question the value and logic of linking these disparate commodities. The trend toward delinking oil & gas is established and there will be fewer gas markets in this group in the future.

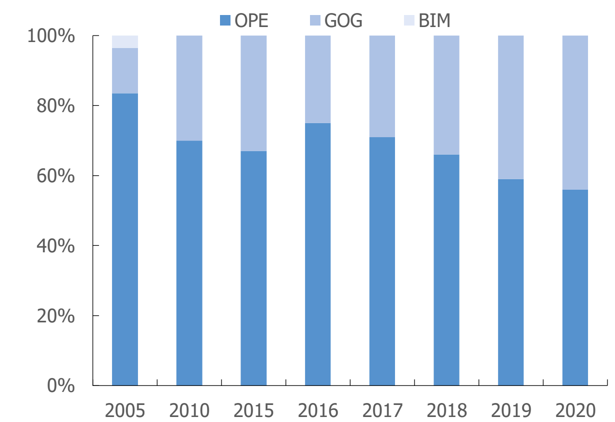
In 2020, LNG imports are split 56% OPE (258 bcm) and 44% GOG (200 bcm). In Europe, 63% of LNG imports are now GOG.

Figure 28. Regional Price Formation 2020 – LNG imports



Source: IGU, KIS Research

Figure 29. World Price Formation 2005 to 2020 - LNG imports



Source: IGU, KIS Research

Long-term LNG contracts are gaining popularity to reduce exposure to spot-priced market volatility

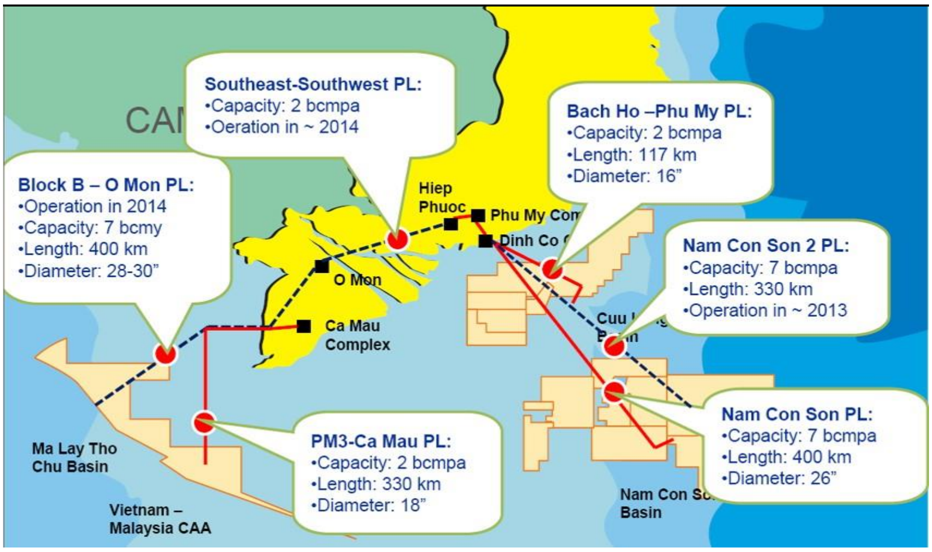
The conflict had added further pressure and uncertainty to an already tight natural gas market. LNG has been historically correlated with Brent crude oil prices; however, the correlation is not very strong as LNG has not been as widely traded as crude oil. In addition, in recent years, global natural gas prices showed a tendency to shift away from crude oil prices. The European market, which has been purchasing most of its LNG from the spot and futures markets, was particularly exposed to price shocks in 2021 and 2022. With lower volumes flowing from Russia, Europe's reliance on cargoes from the US, Africa, and the Middle East increased. China was to some extent shielded from high gas prices, due to its preference for long-term oil-indexed contracts over spot cargoes. A higher share of long-term LNG contracts can be used to minimize exposure to market volatility.

V. Block B – O Mon project might start in 2023F

1. The huge potential is paving the way

Block B–O Mon: The second critical upstream gas development is the PVN-owned Block B–O Mon project. Block B gas projects consist of Block B, 48/95 & 52/97 field development projects and Block B – O Mon gas pipeline project. This project is expected to produce 5 bcm/year for 20 years for consumption at the O Mon power center and the Ca Mau gas-power-fertilizer complex to meet the demand for electricity in Southern region and South West region particularly. The gas reserves in Block B are contained in numerous small, compartmentalized reservoirs, making them complicated and expensive to exploit. In 2017, PVN submitted a gas field development plan to the MOIT calling for up to 1,000 wells and a total investment requirement of up to USD 10bn. The high gas price required to support such high-cost development has been a long-standing roadblock to the commercial development of Block B, and the timeline for future development is still uncertain. Block B will require a high take or pay factor to be commercially viable.

Figure 30. Some main natural gas basins in the South



Source: PVN, KISVN

PVS, PVD, and GAS could benefit from Block B – O Mon gas pipeline project

Block B – O Mon gas power project chain with USD10 bn is expected to get an investment certificate in 2023F. The project is located in the Malay-Tho Chu basin, southwest Vietnam, including the development of a gas field and pipeline, and is one of the most significant gas projects in the country. With a total reserve of 107 bcm, Block B - O Mon could offset the rapid depletion at long-term gas fields and add up to USD 19bn to the state budget over the project's 20-year lifespan. In addition, four gas-fired power plants in the project with a total capacity of 3,810 MW will supplement the power supply in the southern region.

As a key investor for the project's gas pipeline (51% of the total investment), PV Gas will be the main beneficiary owing to the additional gas source from Block B and gas transportation charge. Moreover, leading companies in the industry have more opportunities to participate and benefit from the project, including upstream service providers such as PVS and PVD. The construction of more than 700 exploitation wells in the Block B - O Mon project could bring lots of benefits for drilling service providers in the coming years.

2. Revised Petroleum Law will accelerate project upstream progress

The Petroleum Law released in 1993 is having many problems in exploiting oil and gas and attracting foreign investors. Some laws related to the operation of the oil and gas industry, such as Law on Public Investment, Law on Investment and Law on Enterprise, and Law on Management and Use of State Capital enacted after the Petroleum Law in 1993 led to overlapping that needed to be fixed. In addition, the terms of oil and gas contracts are not as attractive as those in other regional countries. As a result, there were very few oil & gas contracts in the last few years.

The 2022 Petroleum laws would be expected to push upstream projects due to:

(1) Amending regulations on accounting, and handling of expenses in oil and gas exploration activities for State-owned companies such as PVN, and PVP.

(2) Lower incentives tax to attract investment in oil and gas activities:
• For Oil and gas fields receive investment incentives: Remaining Corporate income tax at 32%, crude oil export tax is 10%, and the maximum cost recovery rate is 70% on oil production exploitation during the year.
• For Oil and gas fields receive special investment incentives: Adding lower incentives Corporate income tax is 25%, crude oil export tax is 5%, and the maximum cost recovery rate is 80% on oil production exploitation during the year.

(3) Completing regulations on oil and gas contracts in a convenient and flexible way for investors: Extending the oil and gas contract term by 5 years (the normal project is 30 years and the investment incentives project is 35 years).

(4) Supplement and complete regulations for the development of oil and gas projects in-chain and marginal field projects

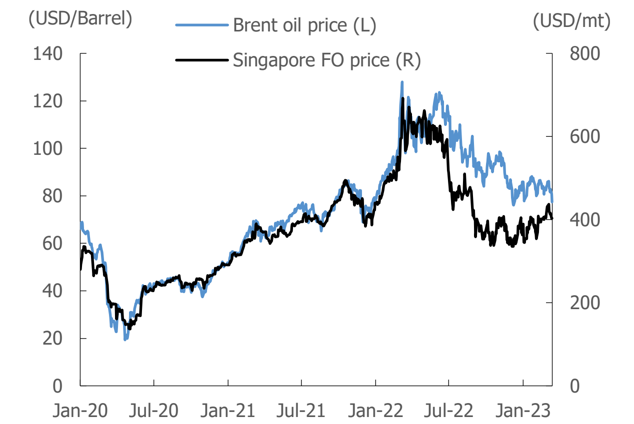
(5) Increase authority for PetroVietnam, let PVN could focus on developing new E&P projects and cover full-chain projects.

VI. Crack spreads hiked on tightened supply

1. Crack spreads jumped following oil price trends

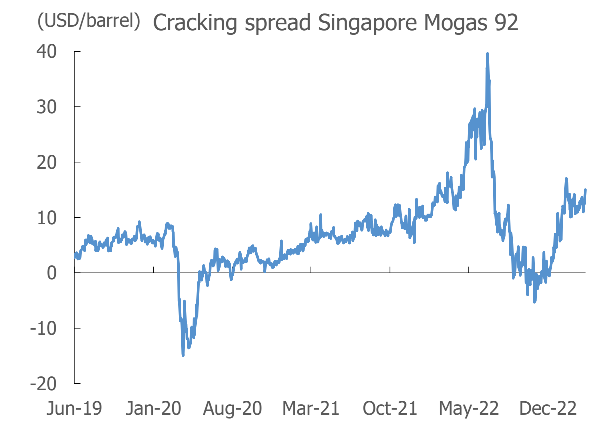
Margins for making fuel dropped sharply owing to the pandemic in 2020. However, the situation has reversed, and the world fuel demand has rebounded to nearly pre-pandemic levels in 2022, therefore, the combination of sanctions on Russia weakens refiners' ability to meet the world demand. Global refinery margins have surged to extraordinarily high levels, and the average price of Singapore RON92 gasoline continued to rise strongly in 2Q22 following a recovered demand for transportation activities. While crude prices got a peak in Mar-22, diesel, and gasoline cracks surged to record levels in June-22, pulling up refinery margins and end-user prices. Thus, BSR which is the only listed refinery released its booming 2Q22 financial results with a record-high NPAT of VND9.9tn (+488% yoy).

Figure 31. The oil price rocketed in early 2022



Source: Bloomberg, KISVN

Figure 32. Surging Asia cracking spreads in 2022

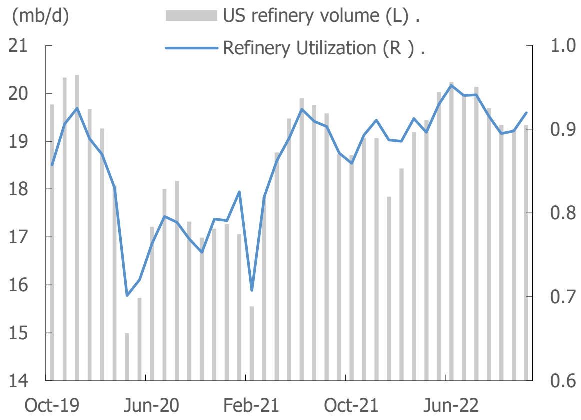


Source: Bloomberg, KISVN

2. Global refinery maintenance and capacity constraints are exacerbating dislocations

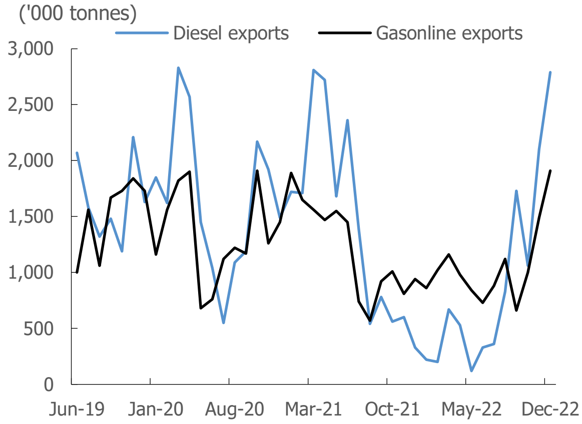
Besides, global refinery maintenance and capacity constraints are exacerbating dislocations caused by Russia's war in Ukraine. In 1H22, limited spare capacity in the global refining system, together with reduced exports of Russian fuel oil and export quotas in China have aggravated the tightness in product markets, China and Russia are two of the three biggest refining countries, after the United States. Additionally, distillate reserves in the world reached their lowest levels since 2008. Meanwhile, refining capacity in the US was lower than at the end of 2019. However, refinery utilization improved in 3Q22 to help bring refining margins down from record levels and continue to ease in 2023F.

Figure 33. US refinery volume recovered in 2Q22



Source: Bloomberg, KISVN

Figure 34. A drop in China diesel and gas online exports in 1H22

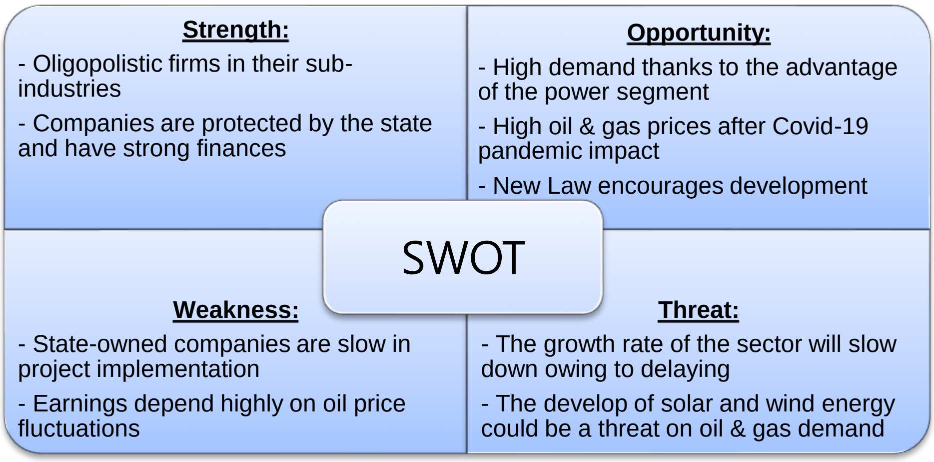


Source: Bloomberg, KISVN

VII. Conclusion and rating

Up-trend commodities prices plus the Russia-Ukraine war lead to a concern about an imbalance in the global oil and gas supply and energy security issue. This would push the countries to accumulate oil and gas, resulting in high demand in short term and pushing up oil & gas prices to the highest level in the decade. However, we see a deteriorating economy and strong recovery of Russia's oil output weigh on oil prices in late 2022 and 2023F. Thus, we rate the sector **OVERWEIGHTED** to reflect the headwinds of the favorable oil and gas prices and the better upstream activities outlook. However, unpredictable oil prices are the biggest risk that could change quickly upstream outlook than expectation.

Ticker	PVD	PVS	GAS	BSR	PLX	OIL
Segment	Upstream	Upstream	Midstream	Midstream	Downstream	Downstream
Sub-segment	Rigs for rent	Construction	Gas pipeline	Refinery	Retail	Retail
Main markets	Southeast Asia,	South Vietnam	Vietnam	Mid and South Area	Vietnam	Vietnam
Revenue in 2022 (VNDbn)	5,413	16,412	100,723	167,124	304,080	104,213



Our top picks are PVD (BUY, TP: VND28,800) and GAS (BUY, TP: VND117,700), based on:
1) PVD is a leader in the rig renting market in Vietnam with about 50% and has already expanded the business into the South East Asia market.
2) GAS is the monopoly company of natural gas transporting & trading in Vietnam. It provides input fuel for gas thermal power plants, fertilizer factories, and industrial parks in Vietnam. Besides, GAS is a leader in the LPG market and plans to supply liquefied natural gas (LNG).

■ **Guide to Korea Investment & Securities Co., Ltd. stock ratings based on 12-month forward share price performance relative to the market index**
- BUY: Expected to outperform the market index by 15%p or more
- Hold: Expected to underperform or outperform the market index by less than 15%p
- Underweight: Expected to underperform the market index by 15%p or more
- Korea Investment & Securities does not offer target prices for stocks with Hold or Underweight ratings.

■ **Guide to Korea Investment & Securities Co., Ltd. stock rating allocation (as of December 31, 2019)**

BUY	Hold	Underweight (Sell)
80.6%	19.4%	0%

Note: % of companies under coverage with this rating

■ **Guide to Korea Investment & Securities Co., Ltd. sector ratings for the next 12 months**
- Overweight: Recommend increasing the sector's weighting in the portfolio compared to its respective weighting in the Kospi (Kosdaq) based on market capitalization.
- Neutral: Recommend maintaining the sector's weighting in the portfolio in line with its respective weighting in the Kospi (Kosdaq) based on market capitalization.
- Underweight: Recommend reducing the sector's weighting in the portfolio compared to its respective weighting in the Kospi (Kosdaq) based on market capitalization.

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true friend Korea Investment
& Securities Co., Ltd.

HEAD OFFICE
YEONG KEUN JOO, Managing Director, Head of International Business Division (ykjoo@truefriend.com, +822 3276 5157)
PAUL CHUNG, Sales Trading (pchung@truefriend.com +822 3276 5843)
27-1 Yoido-dong, Youngdeungpo-ku, Seoul 150-745, Korea
Toll free: US 1 866 258 2552 HK 800 964 464 SG 800 8211 320
Fax: 822 3276 5681~3
Telex: K2296

NEW YORK
DONG KIM, Managing Director (dkim@kisamerica.com +1 212 314 0681)
HOON SULL, Head of Sales (hoonsull@kisamerica.com +1 212 314 0686)
Korea Investment & Securities America, Inc.
1350 Avenue of the Americas, Suite 1110
New York, NY 10019
Fax: 1 212 314 0699

HONG KONG
DAN SONG, Managing Director, Head of HK Sales (dan.song@kisasia.com +852 2530 8914)
GREGORY KIM, Sales (greg.kim@kisasia.com, +822 2530 8915)
Korea Investment & Securities Asia, Ltd.
Suite 2220, Jardine House
1 Connaught Place, Central, Hong Kong
Fax: 852-2530-1516

SINGAPORE
ALEX JUN, Managing Director, Head of Singapore Sales (alex@kisasia.com.sg +65 6501 5602)
CHARLES AN, Sales (alex.jun@kisasia.com.sg +65 6501 5601)
Korea Investment & Securities Singapore Pte Ltd
1 Raffles Place, #43-04, One Raffles Place
Singapore 048616
Fax: 65 6501 5617

LONDON
Min Suk Key, Managing Director (peterkey@kiseurope.com +44 207 065 2766)
Korea Investment & Securities Europe, Ltd.
2nd Floor, 35-39 Moorgate
London EC2R 6AR
Fax: 44-207-236-4811