

3 DECEMBER 2021

# Thailand Energy

## Seeking gas alpha amid commodity price volatility

### Global LNG industry: From oversupply to undersupply by 2025

We believe the current gas price hike globally has been caused by 1) significant demand growth in Asia and Latin America; 2) low gas storage inventories in Europe following the cold winter and hot summer in 4Q20-3Q21; 3) a lower global LNG supply due to planned and unplanned shutdowns in many producing countries; and 4) higher LNG imports on top of long-term contracts, the coal supply shortage in China, and rising LNG demand in Japan. Despite the projected LNG supply growth of 2.3-6.9% in 2022-25 by the US Energy Information Administration (EIA), demand growth is expected to outpace supply growth starting in 2023-24, eventually turning the global LNG industry from an oversupplied market in 2021-24 to an undersupplied market by 2025. Hence, we think the price of LNG in 2025 onward is likely to rise and enter an upcycle, based on the EIA's projections.

### US gas supply growth to outpace demand growth in 2022-25

Thanks to the abundant US shale gas supply, the US Henry Hub (HH) gas price has stayed much lower than other international gas price indices. The global LNG spot and forward prices reached record highs in early Oct-21, hitting USD35/mmbtu in northeast Asia and nearly USD40/mmbtu (+30x) in Europe, based on Bloomberg's data. The EIA projects that the HH price will remain high at over USD5/mmbtu from 3Q21 until 1Q22, then soften to USD4/mmbtu by 2Q22 when the demand for gas in the US is expected to decline.

### US LNG exports could continue to flood the global LNG market

The difference in the gas prices in Asia and Europe vs the HH price in the US, even after including the acquisition and delivery costs to US terminals, remains very high. As a result, US LNG exports, whose prices are linked to the HH price, are highly competitive, leading to a 100% utilisation rate for US LNG terminals in Sep-Oct 2021. The EIA projects that the utilisation rate of US LNG terminals will remain high at over 100% this coming winter, even with the additional new liquefaction capacity coming online in 4Q21-1H22.

### Prefer PTTEP, BANPU and BGRIM as three key gas musketeers

PTTEP, BANPU, and BGRIM are our top picks for the gas price uptrend. PTTEP's gas production should benefit from the high gas price in 2022, and could gain from the high LNG price via its Mozambique LNG area 1 project (COD in 2024). BANPU should see strong EBITDA from shale gas in 4Q21-2022, driven by a higher ASP for gas and lower hedging losses. In 4Q21, BGRIM will likely see its gross margin for SPPs squeezed due to the mismatch of the gas price hike vs the fuel tariff rise. Starting in 1Q22, the margin trend should turn around from a weak 4Q21 to rise gradually in 2022, driven by lower gas costs from LNG imports, capacity growth from its five new SPPs, and capacity growth from M&A.



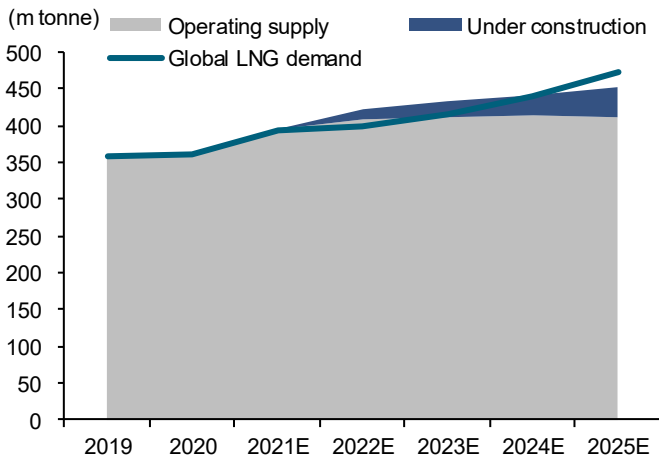
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## Global LNG industry: From oversupply to undersupply by 2025

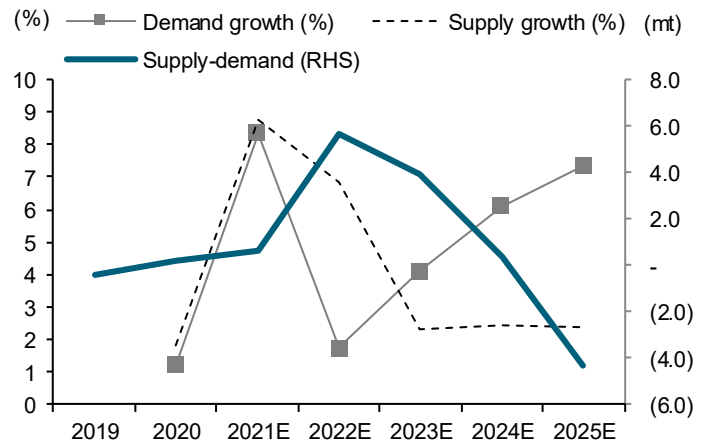
Despite the projected LNG supply growth of 2.3-6.9% in 2022-25 by the EIA, demand growth is expected to outpace supply growth starting in 2023-24, eventually turning the global LNG industry from an oversupplied market in 2021-24 to an undersupplied market by 2025. Hence, we think the price of LNG in 2025 onward is likely to rise and enter an upcycle, based on the EIA's projections.

**Exhibit 1: Global LNG supplies are projected to increasingly outpace demand in 2022-25**



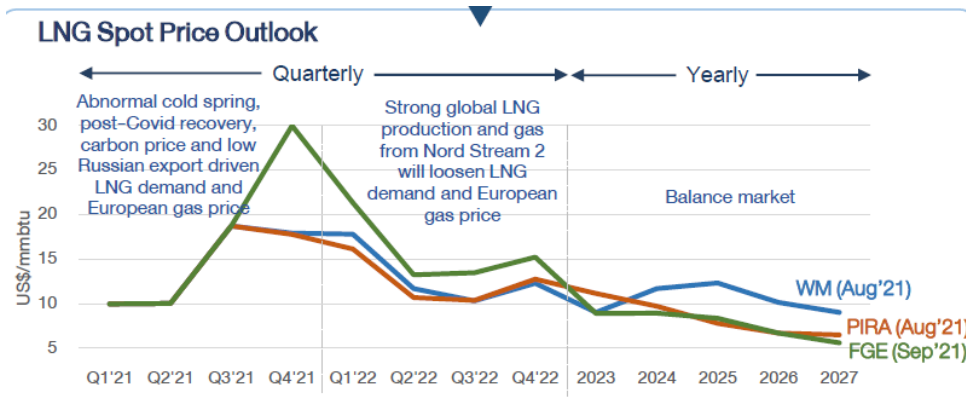
Source: EIA

**Exhibit 2: Global LNG growth in demand, supply and supply-demand**



Source: EIA

**Exhibit 3: LNG price is projected to decline in 2022 onward**



Source: PTTEP (as of Sep-21)

### US gas supply growth to outpace demand growth in 2022-25

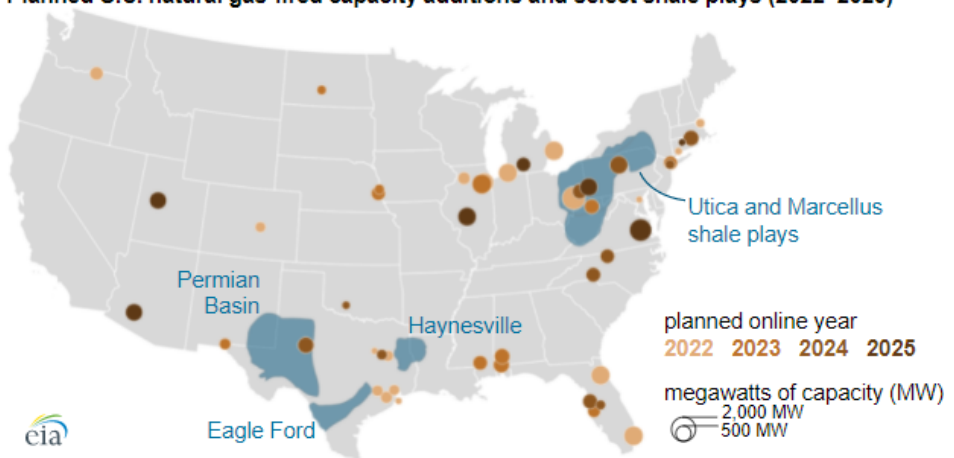
According to the EIA, between 2022-25, there will be 27.3GW of new gas-fired power plant capacity coming online in the US – 6% capacity growth from the current 489.1GW as of Aug-21. Most of the new gas-fired power plants will be located near the major shale areas in the Appalachian region, Texas, and Florida.

Appalachia is where the Marcellus and Utica shale gas production regions are located across the Northeast US, including Ohio, Pennsylvania, and West Virginia. These are the areas that have led the gas production growth in the past five years, accounting for 34% of the total US gas produced in 1H21.

In terms of gas demand, many adjacent states, including Illinois, Michigan, Ohio, and Pennsylvania, with pipeline access to the gas from the Marcellus and Utica shale plays, account for 43% of the new gas-fired capacity planned to come online in 2022-25.

#### Exhibit 4: US new gas-fired power plants by location (2022-25)

Planned U.S. natural gas-fired capacity additions and select shale plays (2022–2025)



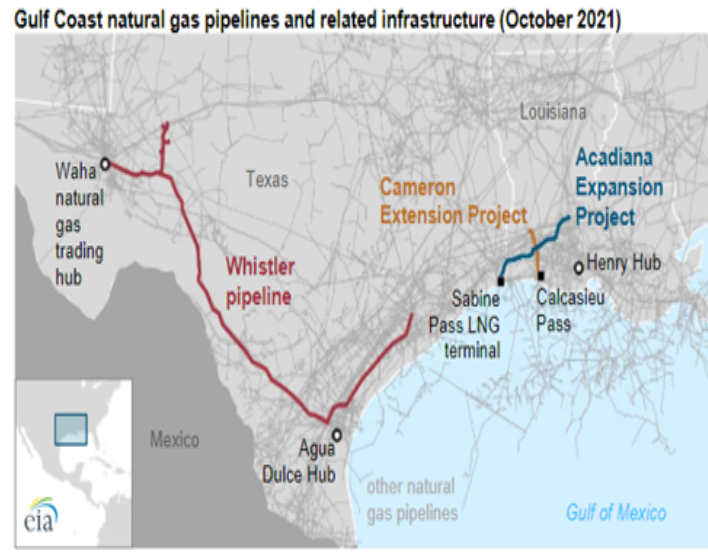
Source: EIA

However, Texas is now the most important gas producing state in the US, with most of the gas production coming from the Haynesville, Permian and Eagle Ford formations. As of Aug-21, 70.7GW of gas-fired capacity is in operation in Texas, and an additional 2.6GW of new capacity is planned to come online in 2022-25.

The growth in gas production in Texas has triggered new gas-fired capacity and a regional pipeline expansion to accommodate the growing gas exports to Mexico, as well as record high LNG exports from the terminals in South Texas and Louisiana.

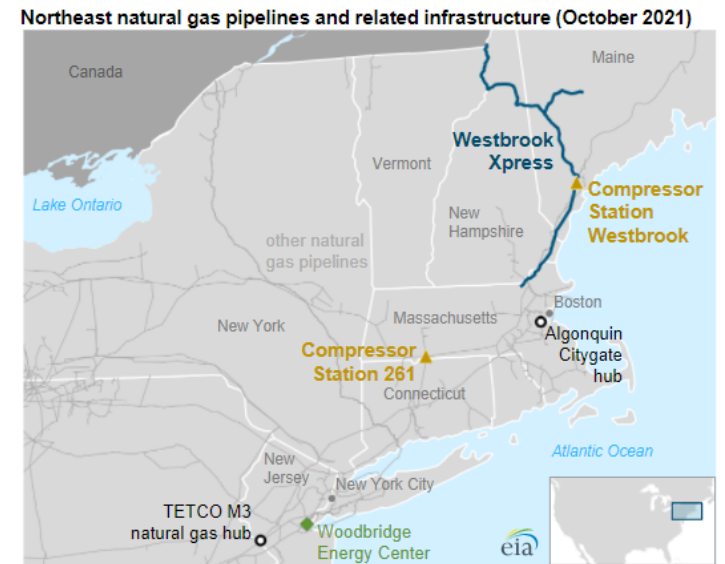
**New gas pipelines accommodate new gas-fired power plants.** The EIA projects that over 4b cubic feet per day (cfpd) of new gas pipeline capacity has already come on stream in 3Q21, primarily supplying the demand for the Gulf Coast and Northeast markets. Many other gas pipelines have also entered service, increasing gas supplies to constrained demand markets in the Northeast.

**Exhibit 5: New natural gas pipeline capacity expands access to export and Northeast markets (Oct-21)**



Source: EIA

**Exhibit 6: Northeast natural gas pipeline projects (Oct-21)**



Source: EIA

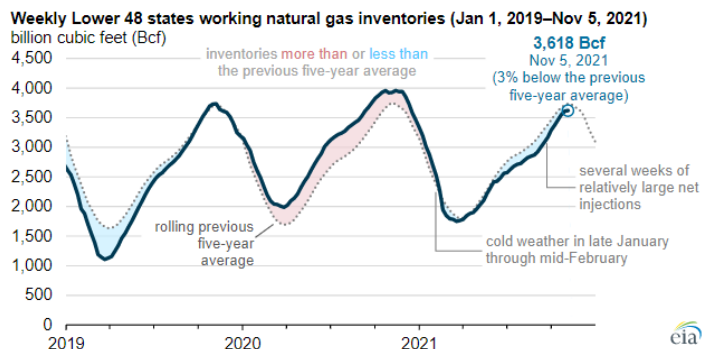
**Gas inventory remains low ahead of the coming winter season in the US.**

Meanwhile, US gas in storage remains 3% below its recent average due to the high demand and slow supply growth to replenish the gas in storage ahead of the coming seasonally high demand for gas in the US. Hence, we think that the HH gas price should remain high at over USD5/mmbtu until 2Q22.

In its latest “Short-Term Energy Outlook” report, the EIA expects less US working natural gas to be in storage than the previous five-year average through the winter, totalling 1,486b cubic feet at the end of Mar-22, 12% less than the previous five-year average for that time of year.

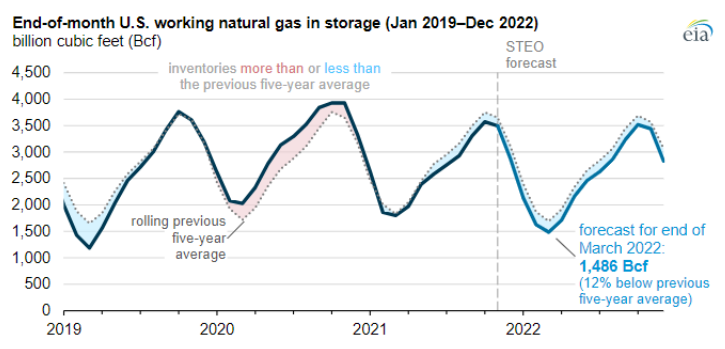
The EIA’s forecast for inventories is highly uncertain as it depends both on natural gas demand this winter, especially for space heating in the residential and commercial sectors, and on supply conditions as natural gas producers respond to higher natural gas prices, similar to what happened in Feb-21 when the cold weather significantly reduced the gas inventory level.

**Exhibit 7: US gas in storage in first half of Nov-21 remains 3% below the recent average**



Source: EIA

**Exhibit 8: End-of-month working gas in storage (Jan-19 to Dec-22)**



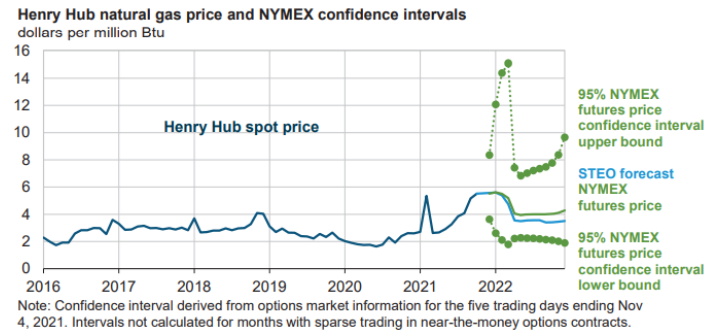
Source: EIA

### US gas price vs international gas price

Thanks to the abundant US shale gas supply, the US HH gas price has stayed much lower than other international gas price indices. The global LNG spot and forward prices reached record highs in early Oct-21, hitting USD35/mmbtu in northeast Asia (+20x from a record low in summer 2020) and nearly USD40/mmbtu (+30x) in Europe, based on Bloomberg’s data.

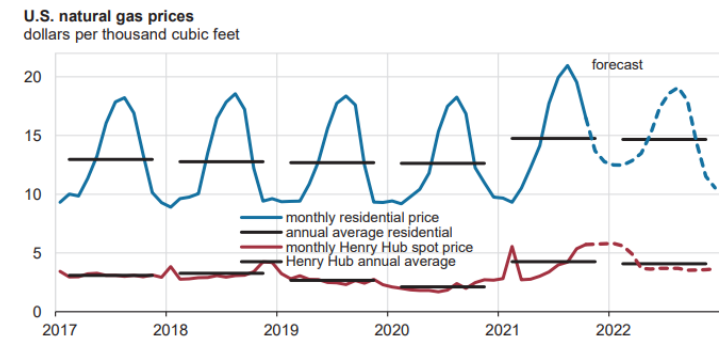
The EIA projects that the HH price will remain high at over USD5/mmbtu from 3Q21 until 1Q22, then soften to USD4/mmbtu by 2Q22 when the demand for gas in the US is expected to decline and the new supply is projected to rise.

**Exhibit 9: Henry Hub gas price and Nymex confidence intervals**



Source: EIA

**Exhibit 10: US gas price projections by EIA**



Source: EIA

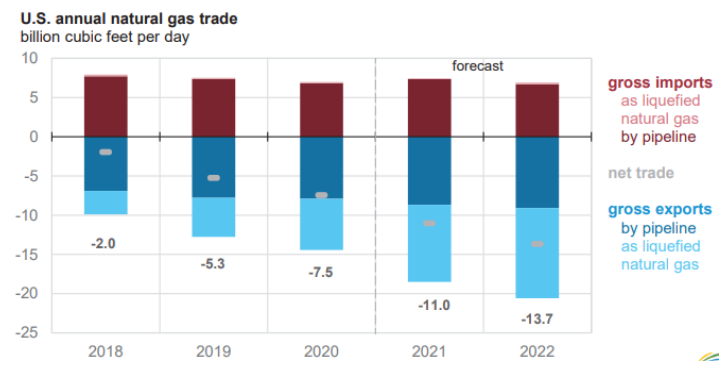
**Reasons for the gas price spikes** include 1) significant demand growth in Asia and Latin America; 2) low gas storage inventories in Europe following the cold winter and hot summer in 4Q20-3Q21; and 3) a lower global LNG supply due to planned and unplanned shutdowns in many producing countries.

**Exhibit 11: US gas demand, supply, and net imports (import-export)**



Source: EIA

**Exhibit 12: Higher projected LNG exports in 2022, up by 25% y-y**



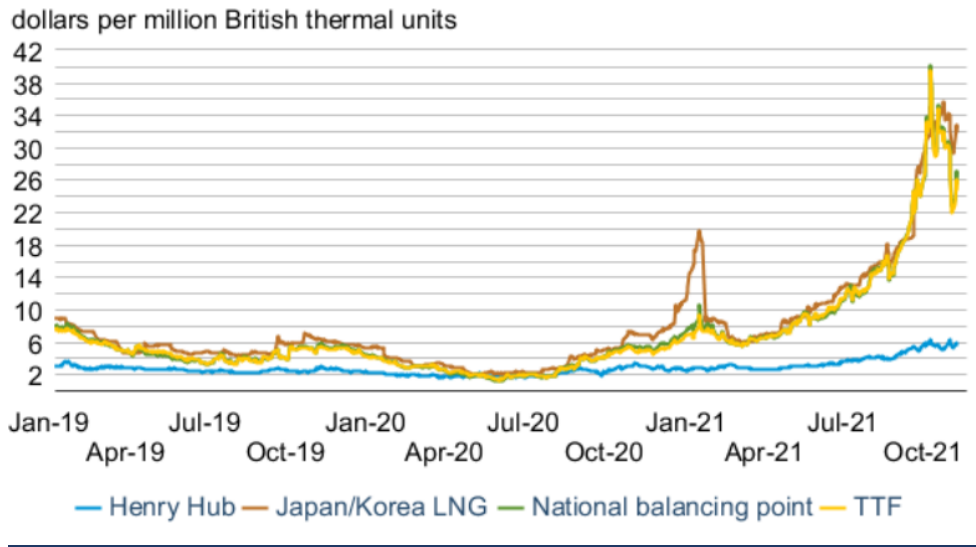
Source: EIA

A significant jump in China’s LNG imports on top of long-term contracts has played a major role in driving up the global LNG spot price as a result of the coal supply shortage in China. Rising LNG demand in Japan and lower electricity production levels for nuclear power plants in South Korea have further exacerbated the already tight demand-supply balance of the global LNG market.

In addition, the 2021 gas inventory in Europe remains low at only 77% of capacity, much lower than the 95% level during the same period last year and the 91% five-year average, according to the EIA.

The difference in the gas prices in Asia and Europe vs the HH price in the US, even after including the acquisition and delivery costs to US terminals, remains very high. As a result, US LNG exports, whose prices are linked to the HH price, are highly competitive, leading to a 100% utilisation rate for US LNG terminals in Sep-Oct 2021. The EIA projects that the utilisation rate of US LNG terminals will remain high at over 100% this coming winter, even with the additional new liquefaction capacity coming online in 4Q21-1H22.

**Exhibit 13: Global gas prices**



Source: EIA

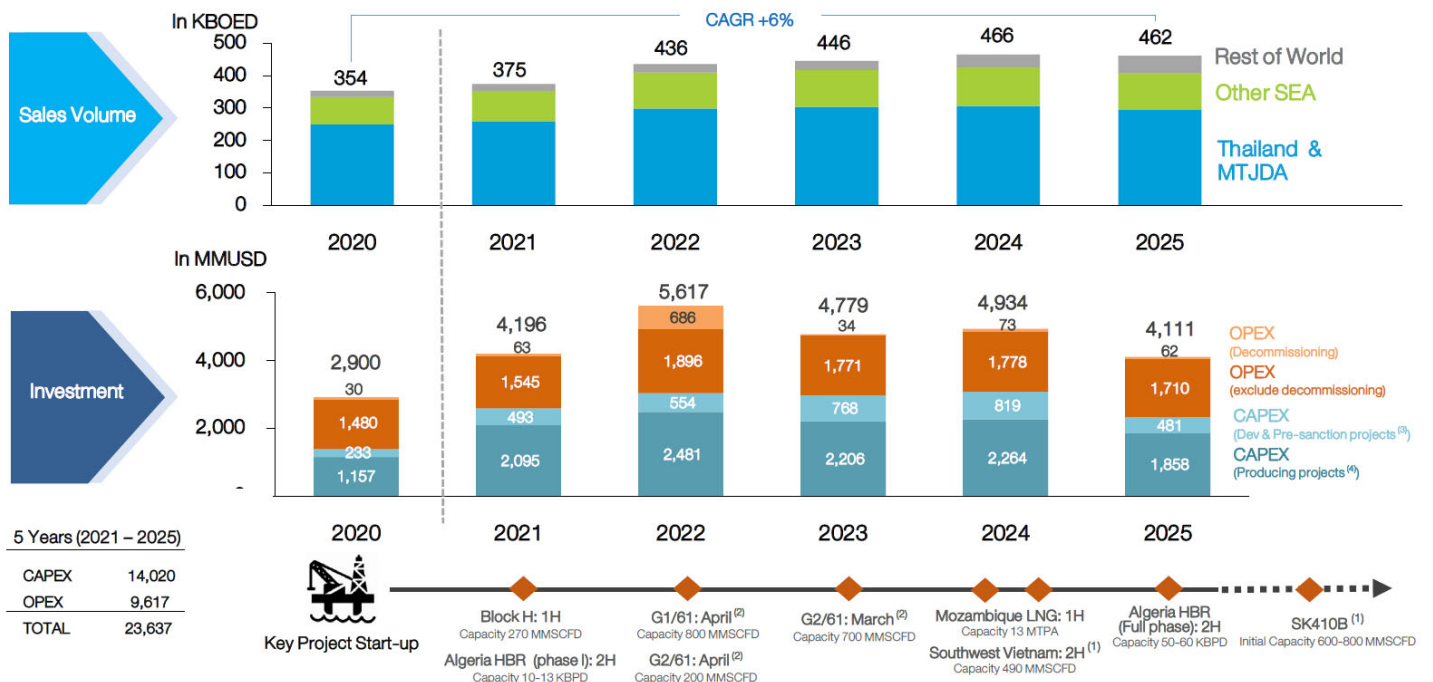
### PTTEP: First LNG sales volume in 2025

PTTEP is one of Thailand’s energy companies that should timely benefit from the projected upcycle of the global LNG price in 2025 onward via its 8.5% stake in the Mozambique Area 1 project that is scheduled to commence its commercial operation date (COD) in 4Q24 and fully operate in 2025, based on the company’s guidance.

With committed CAPEX of USD23.6b for 2021-25, PTTEP projects its production volume to grow by 6% CAGR from 2020-25, rising from 354k barrels of oil equivalent per day (boed) in 2020 to 462kboed in 2025. The major growth drivers include:

- 1) G2/61 (formerly known as Bongkot) gas field in Thailand with a production volume estimated at 200mmscfd in 2022 and 700mmscfd in 2023;
- 2) G1/61 (formerly known as Erawan gas field) in Thailand with a production volume of 800smmscfd in 2023; a one-year delay from its original schedule due to the delay in PTTEP’s entry into the area after the exit of the former operator, Chevron (Thailand);
- 3) Mozambique LNG area 1 project with a 13mtpa capacity (1,820mmscfd) and an equity capacity of 155mmscfd or 25.8kboed to PTTEP in 2025 onward;
- 4) Southwest Vietnam project with a 490mmscfd capacity of gas with a COD in 2H24;
- 5) Algeria HBR with 60k bpd of oil capacity, COD in 2H25.

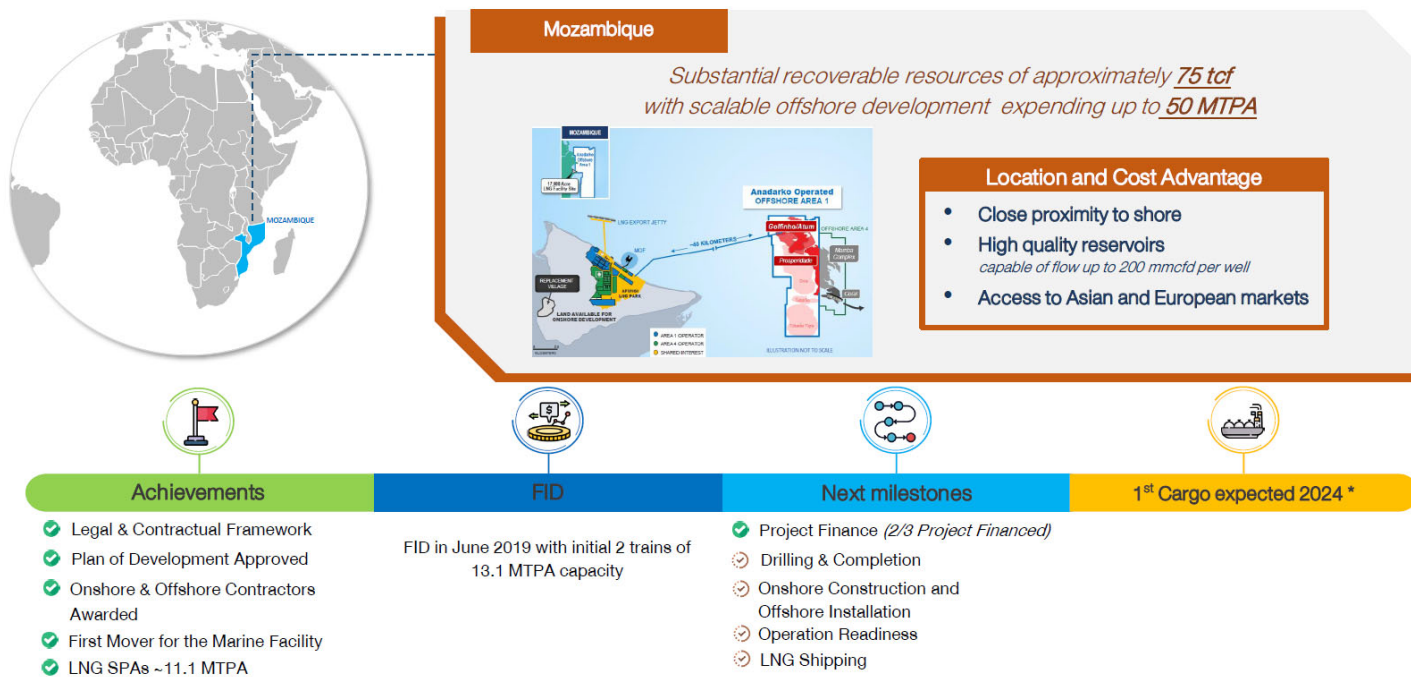
Exhibit 14: PTTEP’s production volume growth projection for 2021-25



Source: PTTEP

**Mozambique LNG project (MZB).** Of all of PTTEP’s growth projects, only its Mozambique LNG area 1 project will produce LNG for export, while the remaining growth projects will be pipeline gas production sites and oil production sites. PTTEP already announced its final investment decision to proceed with the construction and funding of MZB in Jun-19.

**Exhibit 15: Mozambique Area 1 LNG project**



Source: PTTEP

We believe MZB should benefit from the potentially high LNG price in 2025 onward, as the EIA’s projected demand of 474m tonnes (mt) would be higher than the supply at 453mt in 2025.

As of 3Q21, MZB has already secured long-term gas sales contracts with eight clients for a total contracted LNG sales volume of 11.18mtpa. We believe the selling price formula for each contract should be favourable for MZB, and the remaining 2mtpa capacity should command a higher spot LNG selling price thanks to the projected strong demand in 2025.

**Exhibit 16: Mozambique LNG project’s gas sales contracts by customer**

Customers	Country	Amount (MTPA)
JERA (Japan) and CPC (Taiwan)	Japan / Taiwan	1.60
Electricite de France, S.A. (EDF)	France	1.20
Tohoku Electric Power Co., Inc.	Japan	0.28
CNOOC	China	1.50
Shell	Global Portfolio	2.00
Tokyo Gas & Centrica	Japan / UK	2.60
Bharat Gas	India	1.00
Pertamina	Indonesia	1.00
<b>Total</b>		<b>11.18</b>

Source: PTTEP



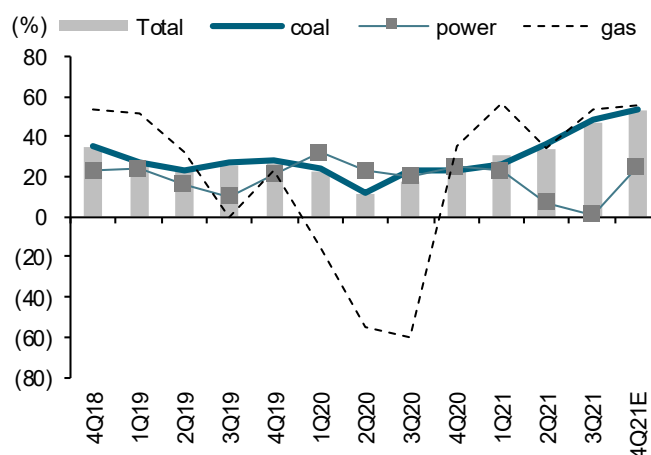
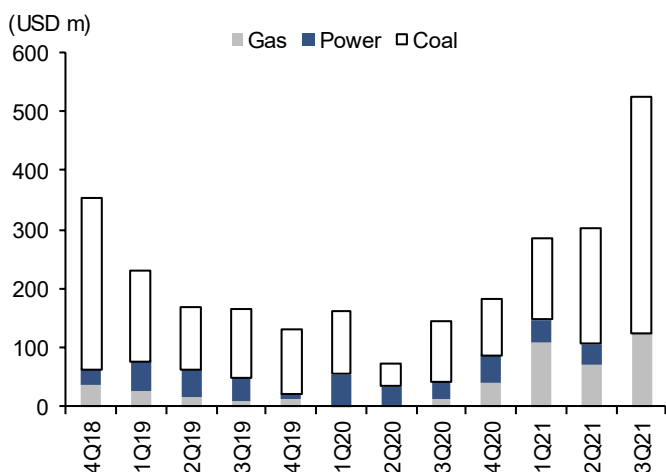
### BANPU: Winner on the high price of shale gas in the US

BANPU is one of the major producers of shale gas in the US, operating in two major shale areas, Marcellus and Barnett. EBITDA from its shale gas has jumped significantly in 9M21 thanks to the much higher gross margin, from negative in 2020 to over 40% in 3Q21.

3Q21 shale gas EBITDA rose to USD530m (+74% q-q). The sales volume for shale gas inched up to 62bcf in 3Q21, up 3% q-q and 309% y-y, due to the incorporation of the Barnett shale area's sales volume of 50bcf and the strong demand in the US after the economic reopening. The average selling price (ASP) for gas jumped 43% q-q to USD3.68/mcf vs the USD0.98/mcf cost, with a slightly higher cost of gathering, processing, and transportation, resulting in a higher GPM at 53% in 3Q21, up from 34% in 2Q21 and from -60% in 3Q20.

Exhibit 17: BANPU's EBITDA breakdown by business

Exhibit 18: BANPU's gross margin by business



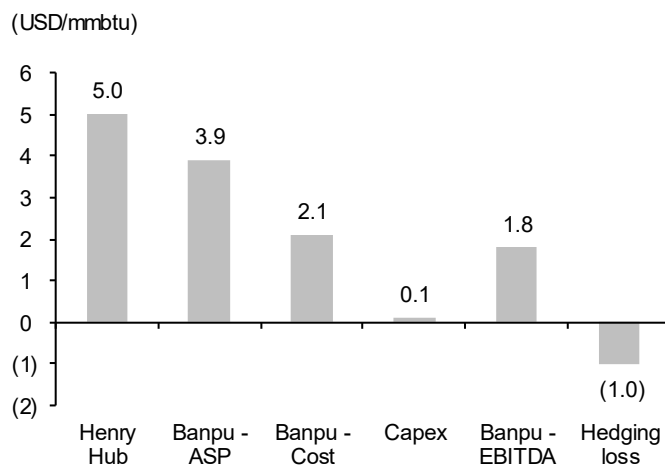
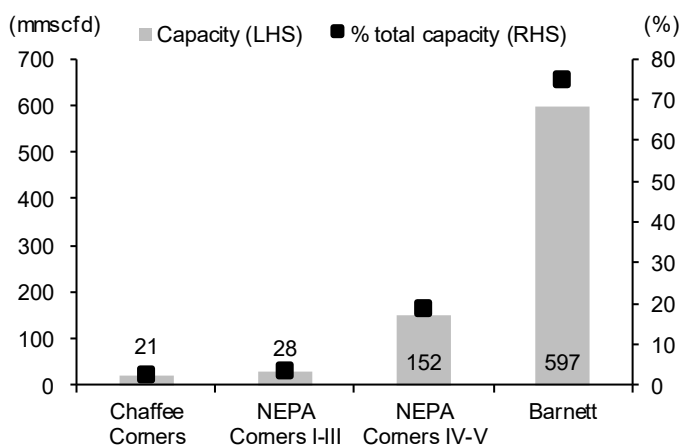
Source: BANPU

Source: BANPU

BANPU's shale capacity stands at 798mmscfd, comprising 597mmscfd of capacity from Barnett and 201mmscfd of capacity from the Marcellus formations. Thanks to its relatively fixed cost structure of USD2.2/mmbtu (operating cost of USD2.1/mmbtu plus CAPEX of USD0.1/mmbtu), BANPU enjoyed a much higher EBITDA margin of USD1.8/mmbtu in 3Q21 when its ASP hit USD3.9/mmbtu. However, its reported EBITDA after hedging loss was only USD61m (USD122m operating EBITDA minus hedging loss of USD61m), 50% of its operating EBITDA.

Exhibit 19: BANPU's shale gas capacity by field

Exhibit 20: BANPU's shale gas ASP, cost, CAPEX, EBITDA and hedging loss



Source: BANPU

Sources: BANPU; FSSIA estimates

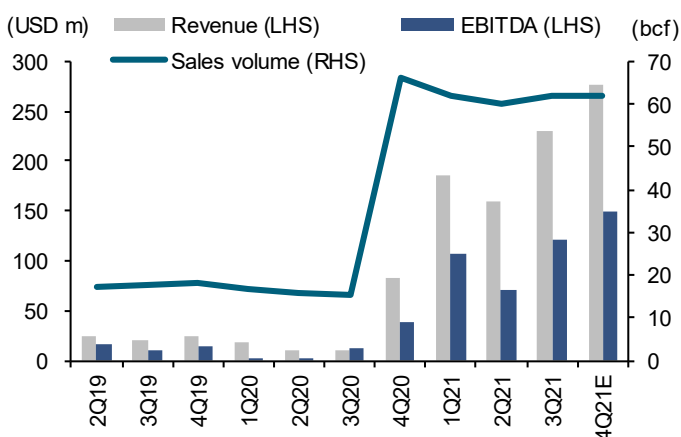
**More upsides from the higher gas price in 4Q21-1H22.** Unlike in 3Q21, when BANPU reported a net profit of only USD106m, hurt by the surprisingly large hedging losses of USD102m for coal and USD61m for gas, we think that in 4Q21 onward, BANPU's strong core earnings from coal and gas will not be greatly diluted by hedging losses again, thanks to the higher ASP and lower hedging volume.

According to management, BANPU's coal hedging loss is projected to plunge significantly q-q to USD55m in 4Q21 (based on a 0.675mt hedging volume at a USD80/t hedging loss margin) and should be lower than USD6m a quarter in 1Q-3Q22 (0.125mt hedging volume per quarter at a USD40-50/t hedging loss margin).

For the shale gas unit, however, the hedging loss will likely remain large at USD60m-70m per quarter under the HH price of over USD4.8/mmbtu, as BANPU's hedging gas price is USD3.0/mmbtu on a 55bcf hedging volume vs its quarterly gas production volume of 60-65bcf.

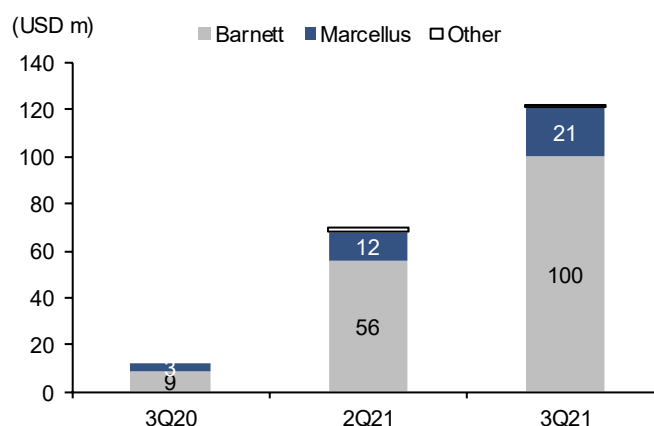
We project that BANPU's shale gas ASP could hit USD4/mmbtu in 4Q21, up from USD3.9/mmbtu in 3Q21, driven by the higher HH price that should continue into 2022, based on the EIA's forecast.

**Exhibit 21: BANPU's shale gas revenue, EBITDA, and sales volume**



Sources: BANPU; FSSIA estimates

**Exhibit 22: BANPU's shale gas EBITDA breakdown by area**



Sources: BANPU; FSSIA estimates

**Exhibit 23: SoTP valuation**

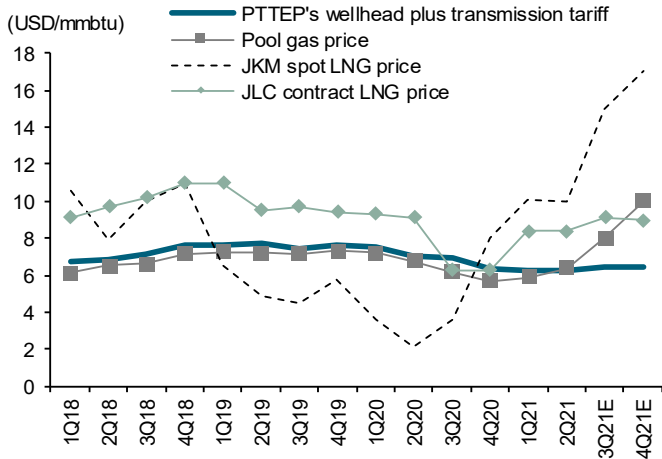
Banpu's valuation breakdown	THB/share	
ITMG (65%) (A)	10.4	DCF 9% WACC, terminal growth is zero for mines
China coal	2.2	DCF 9% WACC, terminal growth is zero for mines
Australian coal (Centennial)	10.0	DCF 9% WACC, terminal growth is zero for mines
<b>Net value of non-ITMG coal (B)</b>	<b>22.6</b>	
<b>Value of power business</b>		
BLCP	0.2	DCF 7.1% WACC, terminal growth is zero at the end of PPA
China power	2.5	DCF 7.1% WACC, terminal growth is zero at the end of PPA
Hongsa	4.3	DCF 7.1% WACC, terminal growth is zero at the end of PPA
SLG	1.2	DCF 7.1% WACC, terminal growth is zero at the end of PPA
NIGGC	1.2	DCF 4% WACC, terminal growth is zero at the end of PPA
Solar farms (Japan, Thailand, China)	1.0	DCF 7.1% WACC, terminal growth is zero at the end of PPA
<b>Net value of power (C)</b>	<b>10.5</b>	
<b>Net value of shale gas (D)</b>	<b>3.0</b>	<b>DCF 7.1% WACC, terminal growth is zero at the end of PPA</b>
Banpu's net debt	(19.2)	at end-2022E
<b>Net value of Banpu (A+B+C+D)</b>	<b>16.9</b>	<b>Target price</b>

Sources: BANPU; FSSIA estimates

### BGRIM: A loser on high gas price in 4Q21 but winner on 2022 capacity growth

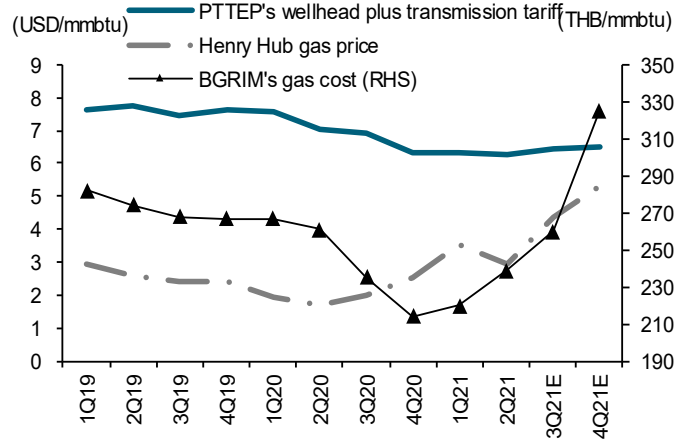
We believe small power producer (SPP)-driven companies like BGRIM, GULF, and GPSC could face potential earnings downsides in 4Q21 as a result of the high gas cost that we expect to rise by USD2/mmbtu q-q in 4Q21, or +25% q-q. The high gas price could be driven by the higher price of imported LNG (21% of total gas supply in 3Q21) and the gas price adjustment of Bongkot and Arthit (1/3 of total gas supply) to reflect the higher fuel oil price in the past six months.

**Exhibit 24: PTTEP's wellhead average gas price, Thailand's pool gas price, JKM spot LNG price, and JLC contract LNG price**



Sources: PTT; Bloomberg; PTTEP

**Exhibit 25: PTTEP's average gas selling price plus transmission tariff, US Henry Hub gas price, and BGRIM's gas cost**

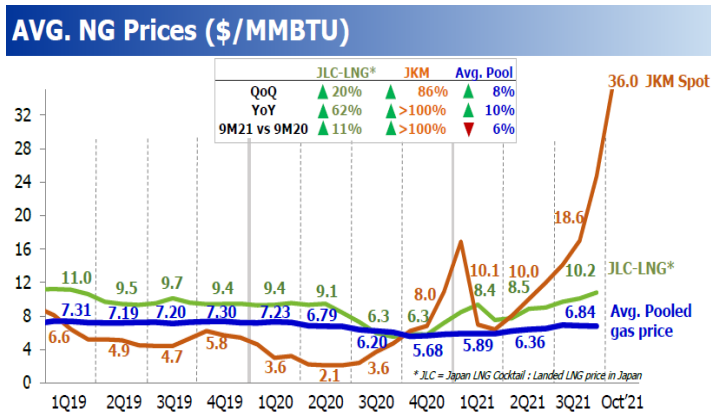


Sources: PTTEP, BGRIM, Bloomberg

We estimate that the 25% higher price gas price – the electricity tariff could be stagnant as a result of the government's subsidies – could lead to earnings downsides of 10% for BGRIM, 8% for GPSC, 3% for GULF, and 1-2% for RATCH and EGCO (independent power producers (IPPs)) in 4Q21.

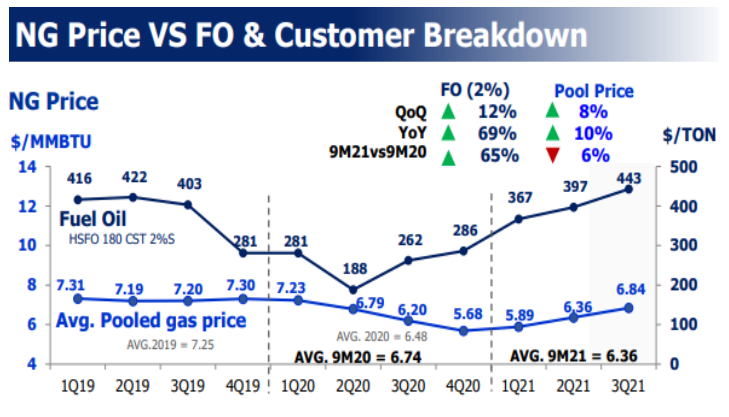
While the pool gas price was only USD6.84/mmbtu in 3Q21, the LNG price imported by PTT was USD9/mmbtu, still lower than the USD36/mmbtu Japan Korea Market (JKM) spot LNG price and USD10.2/mmbtu Japan LNG Cocktail price.

**Exhibit 26: Thailand's pool gas price vs JKM spot LNG price and JLC contract LNG price**



Source: PTT

**Exhibit 27: Thailand's pool gas price vs fuel oil price**



Source: PTT

In 3Q21, the gas cost for SPPs purchasing from PTT rose to THB260/mmbtu, driven by the higher import LNG price of USD9.8/mmbtu, based on the blended price of 1.3mt and 0.195mt spot LNG.

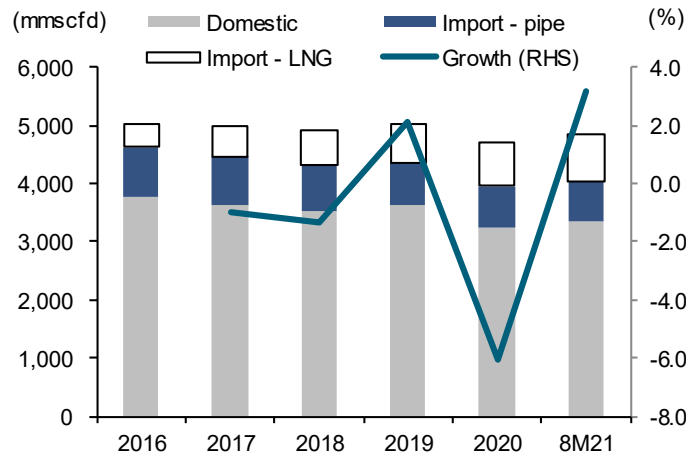
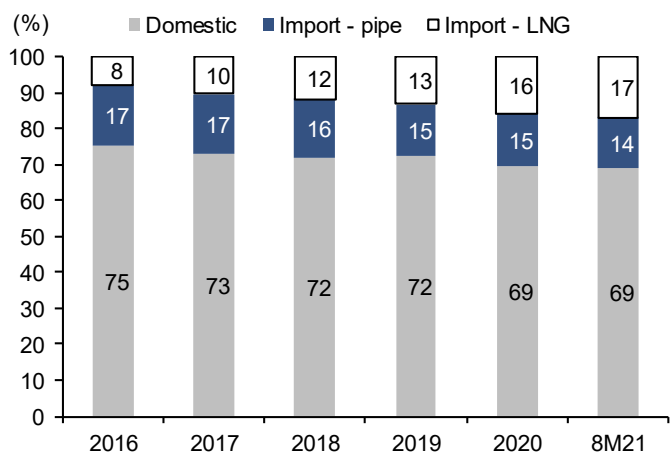
This consisted of 65kt imported by PTT and 130kt imported by the Electricity Generating Authority of Thailand (EGAT) from two ships in Sep-21 (65kt per ship) and later in Oct-21 (130kt from two ships) to supply EGAT's new Bangpakong IPP, based on our estimate. The remaining 240kt quota for LNG imports in Nov-Dec 2021 remains open, pending the ERC's rectification of conditions to incentivise importers.

**Thailand's gas price should subside in 1Q22 onward.** We expect a higher gas price for SPPs by USD2/mmbtu in 4Q21 before it starts to decline in 1Q22, when we expect the pool gas price in Thailand to weaken to reflect the new gas price from the Bongkot gas field (20-30% of Thailand's gas supply) under the new production service contract. The new gas price could be up to 20% lower than the current gas price for Bongkot under the existing concession.

However, the high gas cost impact should significantly subside in 1Q22 onward as 1) BGRIM and GULF will start to import LNG at lower contract prices than USD1/mmbtu (all-inclusive cost); and 2) we project the gas price to be relatively flat y-y, as the LNG and fuel oil prices are likely to soften by 2Q22 after the peak winter season.

**Exhibit 28: Thailand's gas supply, breakdown by source (%)**

**Exhibit 29: Thailand's gas supply, breakdown by source**



Sources: Department of Mineral Fuels (DMF) and PTT

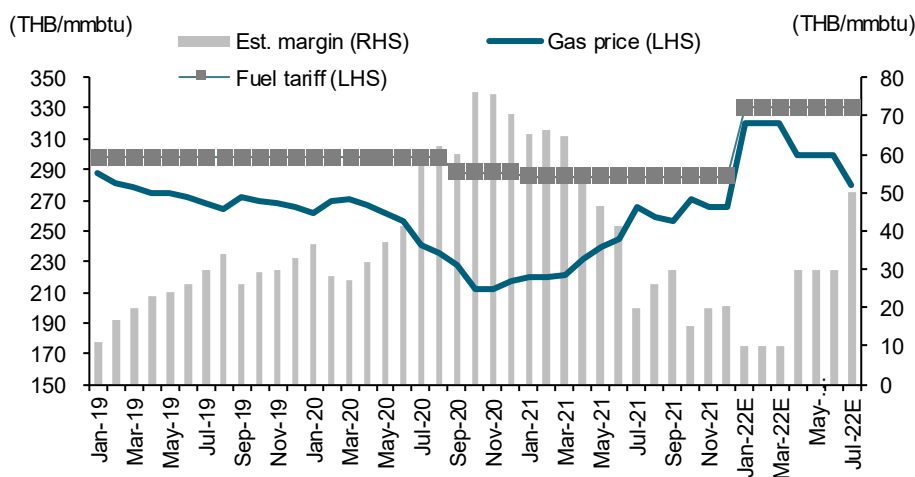
Sources: Department of Mineral Fuels (DMF) and PTT

Although we expect that the higher gas prices for imported gas via pipeline from the three gas fields (14% of total gas supply) in Myanmar will drive up Thailand's pool gas price by USD0.2-0.4/mmbtu, based on a USD1-2/mmbtu q-q higher projected gas price in 4Q21, we think the most significant factor that could impact the gas prices for SPPs will come from a sharp rise in the imported LNG price by USD2-3/mmbtu q-q. We think this will occur as a result of the higher oil price, which is linked to the contract gas prices paid by PTT as an importer of LNG under long-term contract.

According to the Energy Regulatory Commission (ERC), the higher gas cost by THB60/mmbtu in 4Q21 would have to be matched by a THB0.5/kWh increase in the fuel tariff (Ft) for Jan-Apr 2022, bringing the Ft up from THB-0.1532/kWh (Jan-Dec 2021) to THB0.35/kWh vs THB-0.1243/kWh in 2020.

**Ft increasing by only THB0.1671/kWh in Jan-Apr 2022.** In response to the gas price hike, the ERC has decided to raise the Ft by only THB0.1671/kWh, which could result in a gross margin decline from an estimated THB20-22/mmbtu in 3Q21 down to THB16/mmbtu in Jan-Apr 2022. We estimate that this could later decline to THB8/mmbtu in May-Aug 2022 and eventually reach the breakeven point in Sep-Dec 2022 when we expect the Ft to rise by THB0.1671/kWh twice in May-Sep and Oct-Dec 2022. However, we believe BGRIM should see an improving gross margin from the import of 0.5mt of LNG, whose price could be USD1/mmbtu lower than the current gas price paid to PTT.

**Exhibit 30: BGRIM's gas price, tariff, and estimated margin**



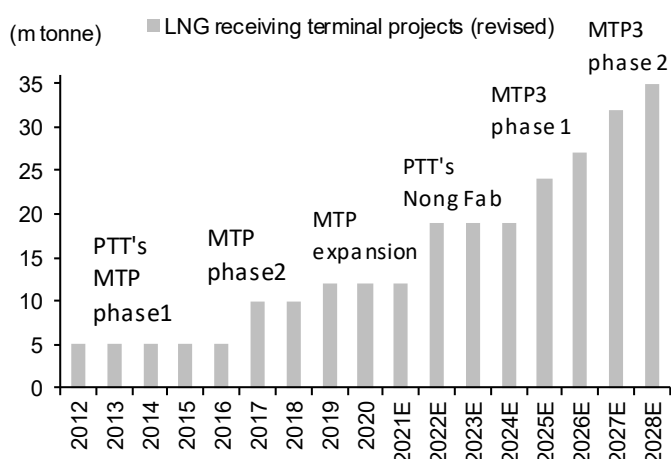
Sources: BGRIM; PTT; FSSIA estimates

**LNG importers: Beneficiaries of the lower gas cost in 2022**

Unlike in 2021, the seven companies granted shipper licences to import LNG – EGAT, GULF, BGRIM, Hin Kong Holding, EGCO, SCC, and PTT Global LNG (collectively ‘LNG7’) – are interested in importing LNG in 2022 with a quota of 1.74mt and in 2023 with a quota of 3.02mt. The LNG7 could import LNG at a contract price lower than the spot price and PTT’s current pool gas price (USD5.5/mmbtu contract price vs over USD10/mmbtu spot price and USD7-8/mmbtu for PTT’s pool gas price).

BGRIM has already indicated its interest to import 0.5mt of LNG in 2022. In addition, the demand for imported LNG should be consumed by BGRIM’s five new SPPs in 2022 and three new SPPs in 2023, while other companies in the LNG7 plan to use the imported LNG for the 15% gas demand under the existing power purchase agreements (PPAs) with PTT. Hence, we believe that by 1Q22, SPP-driven companies with shipper licences, like BGRIM and GULF, should see lower gas costs thanks to the contract LNG price that should weigh down the average gas cost for those companies in 2022 onward.

**Exhibit 31: LNG terminals in Thailand**



Source: PTT

**Exhibit 32: Owners of LNG shipper import licences in Thailand**

Company	Import quota	
	(mtpa)	(mmscfd)
1 PTT	n/a	n/a
2 EGAT	n/a	n/a
3 GULF	0.3	42
4 Hin Kong Power Holding	1.4	196
5 BGRIM	1.2	168
6 EGCO	0.2	35
7 PTT Global LNG	n/a	n/a
8 SCC	n/a	n/a
<b>Total</b>	<b>3.1</b>	<b>441</b>

Source: PTT

## Winners on the gas price bonanza

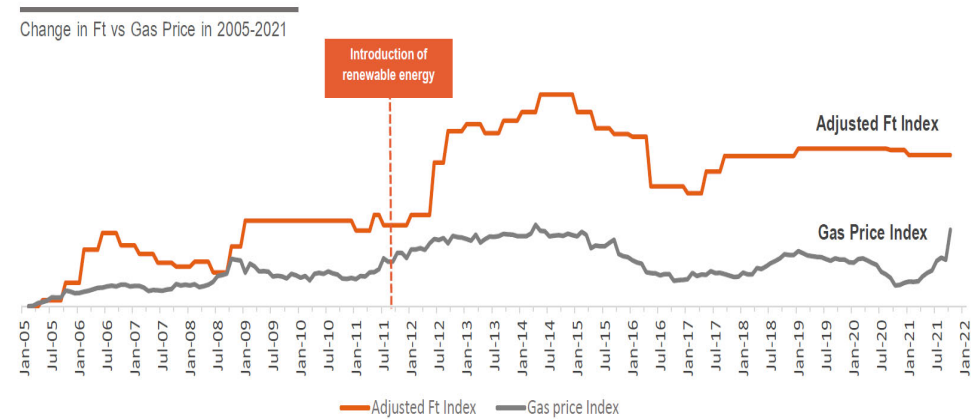
Among Thai power companies, PTTEP, BANPU, and BGRIM are our top picks for the coming gas price uptrend.

**PTTEP: A key gas producer.** As a key producer of gas, PTTEP should benefit from the high gas price for the gas produced in the Gulf of Thailand, Myanmar, and Malaysia in 2022. It could also gain from the high LNG price via its 8.5%-owned Mozambique LNG area 1 project, scheduled to COD in 2024 when the global LNG price should be higher as a result of a tighter demand-supply balance, based on the EIA's forecast.

**BANPU: A key shale gas play.** BANPU should see its EBITDA from shale gas rise in 4Q21-2022, driven by a higher ASP for gas and lower hedging losses. We expect quarterly EBITDA of over USD100m in 4Q21-2022, further strengthening its earnings from coal and power.

**BGRIM: From a loser to a winner on gas price trend.** In 4Q21, we expect BGRIM to suffer from the gross margin squeeze for its SPPs due to the mismatch of the gas price hike vs the lower Ft rise. However, starting in 1Q22, the margin trend could turn around from the bottom in 4Q21 to gradually rise in 2022, driven by lower gas costs from LNG imports, the improving operational efficiency of its five new SPPs (COD in 2H22), and capacity growth from M&A.

### Exhibit 33: Correlation between the gas price and Ft charge



Source: BGRIM

### Exhibit 34: Peer comparisons

Company	BBG code	Rec	Share Price (LCY)	Target price (LCY)	Up side (%)	Market Cap (USD m)	3Y EPS CAGR (%)	PE		ROE		PBV		EV / EBITDA	
								21E (x)	22E (x)	21E (%)	22E (%)	21E (x)	22E (x)	21E (x)	22E (x)
<b>THAILAND</b>															
PTT	PTT TB	BUY	36.75	60.00	63	31,145	38.1	8.7	8.1	13.0	12.9	1.1	1.0	4.6	3.9
PTT Explor & Prod	PTTEP TB	BUY	118.00	158.00	34	13,900	24.6	10.5	10.2	12.3	12.1	1.3	1.2	4.7	5.1
PTT Global Chemical	PTTGC TB	BUY	57.25	75.00	31	7,659	nm	8.0	10.2	11.2	8.7	0.9	0.9	10.3	9.6
Siam Cement	SCC TB	BUY	376.00	520.00	38	13,388	21.9	7.5	7.2	17.6	16.3	1.2	1.1	8.4	7.8
B Grimm Power	BGRIM TB	BUY	39.50	58.00	47	3,055	31.8	35.7	26.0	10.2	13.4	3.6	3.4	13.1	11.6
Gulf Energy Development	GULF TB	BUY	40.00	56.00	40	13,925	44.1	71.2	37.2	10.0	17.6	6.9	6.2	48.8	25.7
Global Power Synergy	GPSC TB	BUY	73.50	100.00	36	6,149	16.3	24.8	20.9	8.0	9.3	2.0	1.9	16.0	15.6
Electricity Generating	EGCO TB	BUY	167.50	245.00	46	2,616	26.2	6.8	5.2	12.3	14.5	0.8	0.7	13.4	9.8
Ratch Group	RATCH TB	BUY	43.50	60.00	38	1,871	13.4	8.2	7.3	12.2	15.7	1.0	0.9	10.9	11.3
Banpu	BANPU TB	BUY	10.60	16.90	59	2,128	nm	5.3	6.0	15.7	14.7	0.7	0.8	4.1	5.1
<b>Average (all)</b>						<b>95,837</b>	<b>24.3</b>	<b>19.6</b>	<b>13.9</b>	<b>12.6</b>	<b>13.5</b>	<b>2.1</b>	<b>1.9</b>	<b>13.4</b>	<b>9.6</b>

Share price as of 1 December 2021

Sources: Bloomberg; FSSIA estimates

## Corporate Governance report of Thai listed companies 2020

EXCELLENT LEVEL										
AAV	ADVANC	AF	AIRA	AKP	AKR	ALT	AMA	AMATA	AMATAV	ANAN
AOT	AP	ARIP	ARROW	ASP	BAFS	BANPU	BAY	BCP	BCPG	BDMS
BEC	BEM	BGRIM	BIZ	BKI	BLA	BOL	BPP	BRR	BTS	BWG
CENTEL	CFRESH	CHEWA	CHO	CIMBT	CK	CKP	CM	CNT	COL	COMAN
COTTO	CPALL	CPF	CPI	CPN	CSS	DELTA	DEMCO	DRT	DTAC	DTC
DV8	EA	EASTW	ECF	ECL	EGCO	EPG	ETE	FNS	FPI	FPT
FSMART	GBX	GC	GCAP	GEL	GFPT	GGC	GPSC	GRAMMY	GUNKUL	HANA
HARN	HMPRO	ICC	ICI	III	ILINK	INTUCH	IRPC	IVL	JKN	JSP
JWD	K	KBANK	KCE	KKP	KSL	KTB	KTC	LANNA	LH	LHFG
LIT	LPN	MAKRO	MALEE	MBK	MBKET	MC	MCOT	METCO	MFEC	MINT
MONO	MOONG	MSC	MTC	NCH	NCL	NEP	NKI	NOBLE	NSI	NVD
NYT	OISHI	ORI	OTO	PAP	PCSGH	PDJ	PG	PHOL	PLANB	PLANET
PLAT	PORT	PPS	PR9	PREB	PRG	PRM	PSH	PSL	PTG	PTT
PTTEP	PTTGC	PYLON	Q-CON	QH	QTC	RATCH	RS	S	S & J	SAAM
SABINA	SAMART	SAMTEL	SAT	SC	SCB	SCC	SCCC	SCG	SCN	SDC
SEAFCO	SEOIL	SE-ED	SELIC	SENA	SIRI	SIS	SITHAI	SMK	SMPC	SNC
SONIC	SORKON	SPALI	SPI	SPRC	SPVI	SSSC	SST	STA	SUSCO	SUTHA
SVI	SYMC	SYNTEC	TACC	TASCO	TCAP	TFMAMA	THANA	THANI	THCOM	THG
THIP	THRE	THREL	TIP	TIPCO	TISCO	TK	TKT	TTB	TMILL	TNDT
TNL	TOA	TOP	TPBI	TQM	TRC	TRC	TSC	TSR	TSTE	TSTH
TTCL	TTW	TU	TVD	TVI	TVO	TWPC	U	UAC	UBIS	UV
VGI	VIH	WACOAL	WAVE	WHA	WHAUP	WICE	WINNER	TRUE		

VERY GOOD LEVEL										
2S	ABM	ACE	ACG	ADB	AEC	AEONTS	AGE	AH	AHC	AIT
ALLA	AMANAHA	AMARIN	APCO	APCS	APURE	AQUA	ASAP	ASEFA	ASIA	ASIAN
ASIMAR	ASK	ASN	ATP30	AUCT	AWC	AYUD	B	BA	BAM	BBL
BFIT	BGC	BJC	BJCHI	BROOK	BTW	CBG	CEN	CGH	CHARAN	CHAYO
CHG	CHOTI	CHOW	CI	CIG	CMC	COLOR	COM7	CPL	CRC	CRD
CSC	CSP	CWT	DCC	DCON	DDD	DOD	DOHOME	EASON	EE	ERW
ESTAR	FE	FLOYD	FN	FORTH	FSS	FTE	FVC	GENCO	GJS	GL
GLAND	GLOBAL	GLOCON	GPI	GULF	GYT	HPT	HTC	ICN	IFS	ILM
IMH	INET	INSURE	IRC	IRCP	IT	ITD	ITEL	J	JAS	JCK
JCKH	JMART	JMT	KBS	KCAR	KGI	KIAT	KOOL	KTIS	KWC	KWM
L&E	LALIN	LDC	LHK	LOXLEY	LPH	LRH	LST	M	MACO	MAJOR
MBAX	MEGA	META	MFC	MGT	MILL	MITSIB	MK	MODERN	MTI	MVP
NETBAY	NEX	NINE	NTV	NWR	OCC	OGC	OSP	PATO	PB	PDG
PDI	PICO	PIMO	PJW	PL	PM	PPP	PRIN	PRINC	PSTC	PT
QLT	RCL	RICHY	RML	RPC	RWI	S11	SALEE	SAMCO	SANKO	SAPPE
SAWAD	SCI	SCP	SE	SEG	SFP	SGF	SHR	SIAM	SINGER	SKE
SKR	SKY	SMIT	SMT	SNP	SPA	SPC	SPCG	SR	SRICHA	SSC
SSF	STANLY	STI	STPI	SUC	SUN	SYNEX	T	TAE	TAKUNI	TBSP
TCC	TCMC	TEAM	TEAMG	TFG	TIGER	TITLE	TKN	TKS	TM	TMC
TMD	TMI	TMT	TNITY	TNP	TNR	TOG	TPA	TPAC	TPCORP	TPOLY
TPS	TRITN	TRT	TRU	TSE	TVT	TWP	UEC	UMI	UOBKH	UP
UPF	UPOIC	UT	UTP	UWC	VL	VNT	VPO	WIJK	WP	XO
YUASA	ZEN	ZIGA	ZMICO							

GOOD LEVEL										
7UP	A	ABICO	AJ	ALL	ALUCON	AMC	APP	ARIN	AS	AU
B52	BC	BCH	BEAUTY	BGT	BH	BIG	BKD	BLAND	BM	BR
BROCK	BSBM	BSM	BTNC	CAZ	CCP	CGD	CITY	CMAN	CMO	CMR
CPT	CPW	CRANE	CSR	D	EKH	EP	ESSO	FMT	GIFT	GREEN
GSC	GTB	HTECH	HUMAN	IHL	INOX	INSET	IP	JTS	JUBILE	KASET
KCM	KKC	KUMWEL	KUN	KWG	KYE	LEE	MATCH	MATI	M-CHAI	MCS
MDX	MJD	MM	MORE	NC	NDR	NER	NFC	NNCL	NPK	NUSA
OCEAN	PAF	PF	PK	PLE	PMTA	POST	PPM	PRAKIT	PRECHA	PRIME
PROUD	PTL	RBF	RCI	RJH	ROJNA	RP	RPH	RSP	SF	SFLEX
SGP	SISB	SKN	SLP	SMART	SOLAR	SPG	SQ	SSP	STARK	STC
SUPER	SVOA	TC	TCCC	THMUI	TIW	TNH	TOPP	TPCH	TIPIP	TPLAS
TTI	TYCN	UKEM	UMS	VCOM	VRANDA	WIN	WORK	WPH		

## Description

## Score Range

Excellent

90-100

Very Good

80-89

Good

70-79

## Disclaimer:

The disclosure of the survey results of the Thai Institute of Directors Association ("IOD") regarding corporate governance is made pursuant to the policy of the Office of the Securities and Exchange Commission. The survey of the IOD is based on the information of a company listed on the Stock Exchange of Thailand and the Market for Alternative Investment disclosed to the public and able to be accessed by a general public investor. The result, therefore, is from the perspective of a third party. It is not an evaluation of operation and is not based on inside information.

The survey result is as of the date appearing in the Corporate Governance Report of Thai Listed Companies. As a result, the survey results may be changed after that date. FSS International Investment Advisory Company Limited does not confirm nor certify the accuracy of such survey results.

\* CGR scoring should be considered with news regarding wrong doing of the company or director or executive of the company such unfair practice on securities trading, fraud, and corruption SEC imposed a civil sanction against insider trading of director and executive; \*\* delisted

Source: Thai Institute of Directors Association (IOD); FSSIA's compilation

## Anti-corruption Progress Indicator 2020

CERTIFIED										
2S	ADVANC	AI	AIE	AIRA	AKP	AMA	AMANAH	AP	AQUA	ARROW
ASK	ASP	AYUD	B	BAFS	BANPU	BAY	BBL	BCH	BCP	BCPG
BGC	BGRIM	BJCHI	BKI	BLA	BPP	BROOK	BRR	BSBM	BTS	BWG
CEN	CENTEL	CFRESH	CGH	CHEWA	CHOTI	CHOW	CIG	CIMBT	CM	CMC
COL	COM7	CPALL	CPF	CPI	CPN	CSC	DCC	DELTA	DEMCO	DIMET
DRT	DTAC	DTC	EASTW	ECL	EGCO	FE	FNS	FPI	FPT	FSS
FTE	GBX	GC	GCAP	GEL	GFPT	GGC	GJS	GPSC	GSTEEL	GUNKUL
HANA	HARN	HMPRO	HTC	ICC	ICHI	IFS	INET	INSURE	INTUCH	IRPC
ITEL	IVL	K	KASET	KBANK	KBS	KCAR	KCE	KGI	KKP	KSL
KTB	KTC	KWC	L&E	LANNA	LHFG	LHK	LPN	LRH	M	MAKRO
MALEE	MBAX	MBK	MBKET	MC	MCOT	MFC	MFEC	MINT	MONO	MOONG
MPG	MSC	MTC	MTI	NBC	NEP	NINE	NKI	NMG	NNCL	NSI
NWR	OCC	OCEAN	OGC	ORI	PAP	PATO	PB	PCSGH	PDG	PDI
PDJ	PE	PG	PHOL	PL	PLANB	PLANET	PLAT	PM	PPP	PPPM
PPS	PREB	PRG	PRINC	PRM	PSH	PSL	PSTC	PT	PTG	PTT
PTTEP	PTTGC	PYLON	Q-CON	QH	QLT	QTC	RATCH	RML	RWI	S & J
SABINA	SAT	SC	SCB	SCC	SCCC	SCG	SCN	SEAOIL	SE-ED	SELIC
SENA	SGP	SIRI	SITHAI	SMIT	SMK	SMPC	SNC	SNP	SORKON	SPACK
SPC	SPI	SPRC	SRICHA	SSF	SSSC	SST	STA	SUSCO	SVI	SYNTEC
TAE	TAKUNI	TASCO	TBSP	TCAP	TCMC	TFG	TFI	TFMAMA	THANI	THCOM
THIP	THRE	THREL	TIP	TIPCO	TISCO	TKT	TTB	TMD	TMILL	TMT
TNITY	TNL	TNP	TNR	TOG	TOP	TPA	TPCORP	TPP	TRU	TSC
TSTH	TTCL	TU	TVD	TVI	TVO	TWPC	U	UBIS	UEC	UKEM
UOBKH	UWC	VGI	VIH	VNT	WACOAL	WHA	WHAUP	WICE	WIJK	XO
ZEN	TRUE									
DECLARED										
7UP	ABICO	AF	ALT	AMARIN	AMATA	AMATAV	ANAN	APURE	B52	BKD
BM	BROCK	BUI	CHO	CI	COTTO	DDD	EA	EFORL	EP	ERW
ESTAR	ETE	EVER	FSMART	GPI	ILINK	IRC	J	JKN	JMART	JMT
JSP	JTS	KWG	LDC	MAJOR	META	NCL	NOBLE	NOK	PK	PLE
ROJNA	SAAM	SAPPE	SCI	SE	SHANG	SINGER	SKR	SPALI	SSP	STANLY
SUPER	SYNEX	THAI	TKS	TOPP	TRITN	TTA	UPF	UV	WIN	ZIGA

Level	
Certified	This level indicates practical participation with thoroughly examination in relation to the recommended procedures from the audit committee or the SEC's certified auditor, being a certified member of Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) or already passed examination to ensure independence from external parties.
Declared	This level indicates determination to participate in the Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC)

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Note: Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of June 24, 2019) are categorised into: 1) companies that have declared their intention to join CAC, and; 2) companies certified by CAC.

Source: The Securities and Exchange Commission, Thailand; \* FSSIA's compilation



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#### Suwat Sinsadok FSS International Investment Advisory Securities Co., Ltd

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Company	Ticker	Price	Rating	Valuation & Risks
PTT PCL	PTT TB	THB 36.75	BUY	Risks to our SoTP-based valuation are the oil price and potential earnings downside from government intervention.
PTT Explor & Prod	PTTEP TB	THB 118.00	BUY	Risks our TP, which is based on EV/EBITDA, are a sharp decline in oil price and a potential earnings downside from government intervention.
PTT Global Chemical	PTTGC TB	THB 57.25	BUY	The key downside risks to our EV/EBITDA-based TP are the weaker-than-expected HDPE price and HDPE-naphtha margin.
Siam Cement	SCC TB	THB 376.00	BUY	Downside risks to our SOTP based TP include 1) a lower-than-expected demand for chemicals, CBM, and packaging; 2) rising coal costs for its cement and packaging units; and 3) weaker demand from the automobile industry that could erode the demand for SCC's chemical unit and its dividend contributions.
B.Grimm Power	BGRIM TB	THB 39.50	BUY	The downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand, 2) a lower crude price, and 3) unplanned shutdowns of its SPPs.
Gulf Energy Development	GULF TB	THB 40.00	BUY	The downside risks to our SoTP-based TP on GULF include 1) lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) delays in project commercial operation dates.
Global Power Synergy	GPSC TB	THB 73.50	BUY	The downside risks to our SoTP-based TP on GPSC include 1) lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) lower-than-expected demand from industrial users.
Electricity Generating	EGCO TB	THB 167.50	BUY	Downside risks to our SoTP-based TP include 1) lower-than expected demand for electricity in Thailand; 2) delays in project commencement or commercial operation dates (COD); and 3) government intervention in electricity tariff subsidies.
Ratch Group	RATCH TB	THB 43.50	BUY	The downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand; 2) lower crude price; and 3) delays in starting new projects.
Banpu	BANPU TB	THB 10.60	BUY	We see downside risks to our SoTP-based TP from lower coal prices, higher diesel costs and any unplanned shutdowns of its power plants.

Source: FSSIA estimates

#### Additional Disclosures

Target price history, stock price charts, valuation and risk details, and equity rating histories applicable to each company rated in this report is available in our most recently published reports. You can contact the analyst named on the front of this note or your representative at Finasia Syrus Securities Public Company Limited

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All share prices are as at market close on 01-Dec-2021 unless otherwise stated.

## RECOMMENDATION STRUCTURE

### Stock ratings

Stock ratings are based on absolute upside or downside, which we define as  $(\text{target price}^* - \text{current price}) / \text{current price}$ .

**BUY (B).** The upside is 10% or more.

**HOLD (H).** The upside or downside is less than 10%.

**REDUCE (R).** The downside is 10% or more.

Unless otherwise specified, these recommendations are set with a 12-month horizon. Thus, it is possible that future price volatility may cause a temporary mismatch between upside/downside for a stock based on market price and the formal recommendation.

\* In most cases, the target price will equal the analyst's assessment of the current fair value of the stock. However, if the analyst doesn't think the market will reassess the stock over the specified time horizon due to a lack of events or catalysts, then the target price may differ from fair value. In most cases, therefore, our recommendation is an assessment of the mismatch between current market price and our assessment of current fair value.

### Industry Recommendations

**Overweight.** The analyst expects the fundamental conditions of the sector to be positive over the next 12 months.

**Neutral.** The analyst expects the fundamental conditions of the sector to be maintained over the next 12 months.

**Underweight.** The analyst expects the fundamental conditions of the sector to be negative over the next 12 months.

### Country (Strategy) Recommendations

**Overweight (O).** Over the next 12 months, the analyst expects the market to score positively on two or more of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

**Neutral (N).** Over the next 12 months, the analyst expects the market to score positively on one of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

**Underweight (U).** Over the next 12 months, the analyst does not expect the market to score positively on any of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.