

# Thailand Energy & Utilities

## Winter inflection point ahead for commodities, SPPs

- We expect SPP gross margins to be depressed in 3Q22 due to the mismatch between gas prices at THB500/mmbtu vs the Ft increase.
- We believe the EU will be able to survive this winter without Russian gas, but the prices of gas, coal, and diesel are likely to rise markedly by the end of 2022.
- We expect Thailand's energy and utility sectors to consolidate in October.

### Depressed 3Q22E earnings for SPPs likely a bottom quarter

While we expect small power producers (SPPs) to see depressed gross margins in 3Q22 due to the mismatch between the gas price at THB500/mmbtu vs the fuel tariff (Ft) hike by THB0.6886/kWh effective from Sep-Dec 2022, we think that in 4Q22 onward, SPPs' gross margins will improve due to the projected lower gas costs on lower average global spot LNG prices and the full impact of the THB0.6886/kWh Ft hike.

### 1.17mt of imported spot LNG in 3Q22 vs THB1.0-2.0/kWh Ft hike in 2023

With the spot LNG price averaging USD40/mmbtu in 3Q22 on 1.17mt of imports, we estimate that the gas price charged to SPPs will be THB500/mmbtu in 3Q22, up from THB430/mmbtu in 2Q22 and THB440/mmbtu (USD13.3/mmbtu) in 1Q22. In 7M22, Thailand imported around 4.7mt of LNG, of which 2mt was spot LNG. We estimate that the average retail electricity tariff in Thailand would have to rise by THB1.0-2.0/kWh in 2023, up from the current THB4.7/kWh, to move closer to the average cost of THB5.5-6.0/kWh given that the cost of production using gas is THB6.5/kWh, coal THB3.7/kWh, and diesel THB5.5/kWh. Given that the price of spot LNG is much higher than oil-linked contract LNG, the country's main impact has been in the form of higher electricity costs from the sharp spike in the global spot LNG price.

### Will Europe survive this winter without Russian gas?

The answer is yes, in our opinion, but amid great hardship. We believe the EU will survive this winter without Russian gas, but the prices of gas, particularly global spot LNG, and other "substitute fuels" such as coal and diesel, are likely to rise markedly by the end of 2022. Although the EU has already exceeded its gas storage target of 80% by 1 Nov-22 with 87.4% of gas storage filled as of 26 Sep-22, according to Enverus Intelligence Research, the EU, without proper gas supply rationing, may exhaust their gas inventories by Feb-23 if winter temperatures are lower than usual. Furthermore, with just a 15% demand reduction as targeted by the EU, Europe may be able to survive the full disruption of Russian gas supply this winter (Oct-22 to Apr-23) if winter temperatures are average.

### Commodities and SPPs face commotion, then illumination

We expect the Thai energy and utility sectors to consolidate in October and likely start rerating by November as winter arrives in Europe. Our top picks include BANPU as an upstream play, TOP and ESSO for refineries, SUSCO and OR for oil stations, BGRIM for SPPs, GULF for IPPs, SSP and GUNKUL for renewables, and EA for EVs as we recommend investors accumulate stocks ahead of a potential rerating by Nov-22.



**Suwat Sinsadok, CFA, FRM, ERP**  
 suwat.sin@fssia.com  
 +66 2611 3558

**Siriluck Pinthusoonthorn**  
 siriluck.pin@fssia.com  
 +66 2611 3562

## This winter could be an inflection point for commodities and SPPs

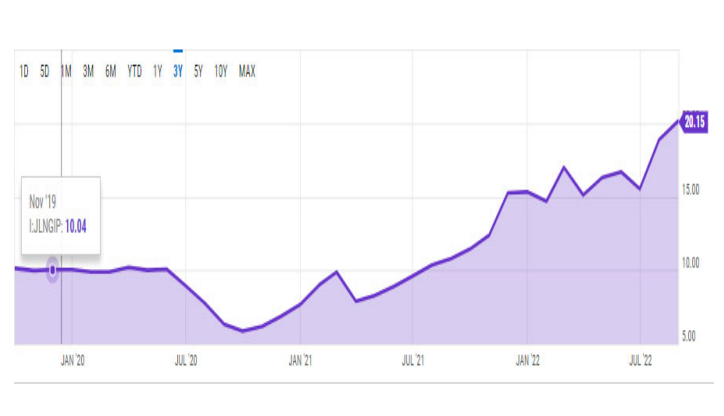
Thanks to the spike in demand for gas in the EU to replace Russian gas due to sanctions, the global LNG market has witnessed a record divergence between the spot Japan/Korea Market (JKM) and long-term Japan Crude Cocktail (JCC) LNG prices as European utilities desperately procure sufficient gas supplies for the coming winter peak demand period.

**Exhibit 1: LNG spot futures Southeast Asia Nov-22 (JKMX22)**



Source: [Barchart.com](https://www.barchart.com)

**Exhibit 2: LNG JCC contract futures Nov-22**



Source: [YCharts.com](https://www.ycharts.com)

However, the impact of the spike in global LNG prices has not been equal globally. Asia, the market where about one-third of LNG volumes are traded at spot prices and most LNG imports are priced against the crude oil price in long-term contracts, is feeling more of a pinch from the higher spot LNG price as European buyers seek to draw cargoes away from the top importing regions.

As the price of crude oil has shown less volatility than the gas price, the LNG JCC price has been much lower than the LNG spot JKM price. Long-term contract LNG prices tend not to be disclosed, but most work on the basis of being priced as a percentage of a benchmark crude oil price, known as the slope. A typical contract might be pegged at c11.0-14.5% of the Brent crude price, close to the JCC benchmark price.

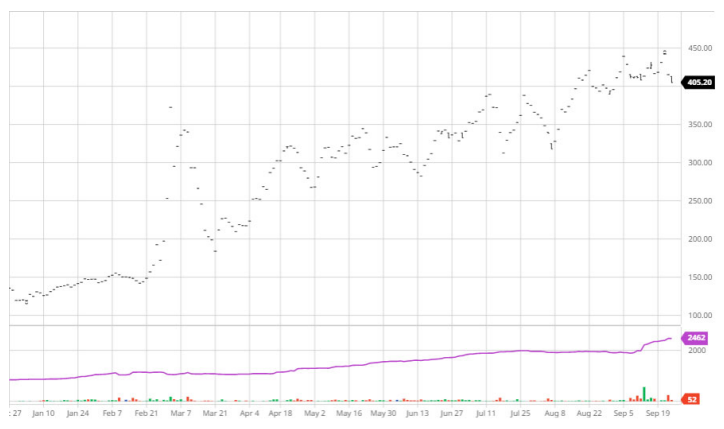
In late August, the JCC price was USD17/mmbtu, only one-third of the JKM spot price of USD54/mmbtu on 31 Aug-22. While the spot price premium over the contract price has narrowed down to USD20-30/mmbtu, the trend is expected to stay high for the premium of spot over contract LNG price, which we expect to be in the range of USD20/mmbtu on average. This is a clear reversal of the trend that has prevailed for most of the past decade, where spot prices tended to trade below the JCC, except for during the peak LNG winter demand season.

**Exhibit 3: Henry Hub futures Nov-22 (NGX22)**



Source: [Barchart.com](https://www.barchart.com)

**Exhibit 4: ICE Newcastle Coal price index Dec-22 (LQZ22)**



Source: [Barchart.com](https://www.barchart.com)

In practical terms, the buyers who were once able to take advantage of lower average spot prices, such as India and Pakistan, are now finding themselves priced out of the market due to the unaffordably high spot LNG prices.

On the other hand, Japan and South Korea, the world’s second- and third-largest LNG buyers, are relatively better placed as most of their LNG purchases are under long-term contracts.

China, which took over Japan as the world’s largest LNG buyer in 2021, has significantly enjoyed the benefits of cheap spot LNG from Russia and can now even resell the LNG to European buyers at lucrative prices. However, China imported 4.8mt of LNG in August, down from 5.1mt in July. In 8M22, China imported a total of 41mt of LNG, down 22% y-y from 52mt in 8M21, due to the impact of lockdowns. With Europe’s LNG imports up around 63% y-y in 8M22 to 85.3mt, we believe that many LNG cargoes are being drawn to the countries most able to pay high spot prices.

**High gas storage levels may not be a panacea for EU’s gas supply pain**

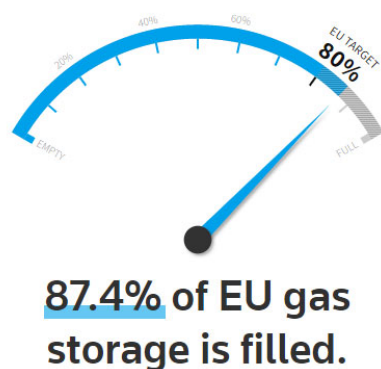
Since the beginning of Sep-22, the EU has accelerated its gas storage restocking and has already refilled 87.4% of its gas storage capacity, surpassing its 1 Nov-22 target of 80%. But the key question remains: “Will Europe survive this winter without Russian gas?”

According to EU economy commissioner Paolo Gentiloni, the EU bloc is now well prepared to resist Russia’s use of the gas weapon. Germany, in particular, has imposed tough energy-saving measures and refilled its gas storage to over 90% as of 26 Sep-22.

Germany claims to have successfully sourced its gas from other producers, reducing its gas supply reliance on Russia to zero, down from 55% of its total gas supply in Feb-22.

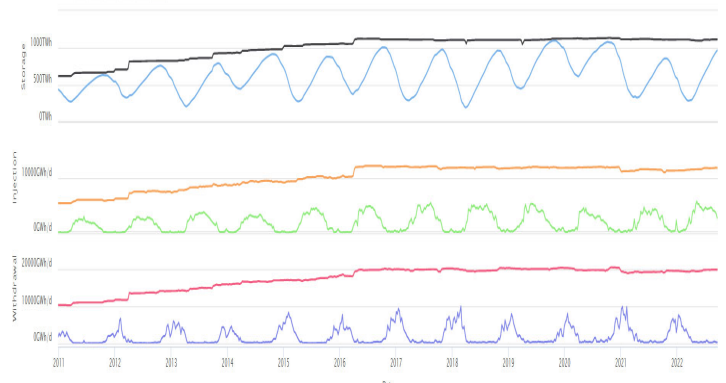
Energy-saving measures mandated by the government, effective since 1 Sep-22, state that most public buildings can only be heated to 66 degrees Fahrenheit and cannot be externally lit after 10pm.

**Exhibit 5: Average gas storage level as of 24 Sep-22**



Source: [Reuters](#)

**Exhibit 6: EU gas storage levels as of 26 Sep-22 at 970TWh (87.4% of 1,113TWh total capacity)**



Source: [Aggregated Gas Storage Inventory](#)

**EU’s price cap policy may drive up the price of imported gas.** While the EU has already successfully cooled down spot gas prices, including Title Transfer Facility (TTF), UK gas, and global spot LNG, we think the gas price cap policy for households, in particular, could backfire on the EU, potentially driving up the price of Europe’s gas imports and create a vicious cycle of costlier imports and larger subsidies. Creating incentives for households to reduce their gas consumption, in our view, would be more effective in getting Europe through the coming winter without rationing.

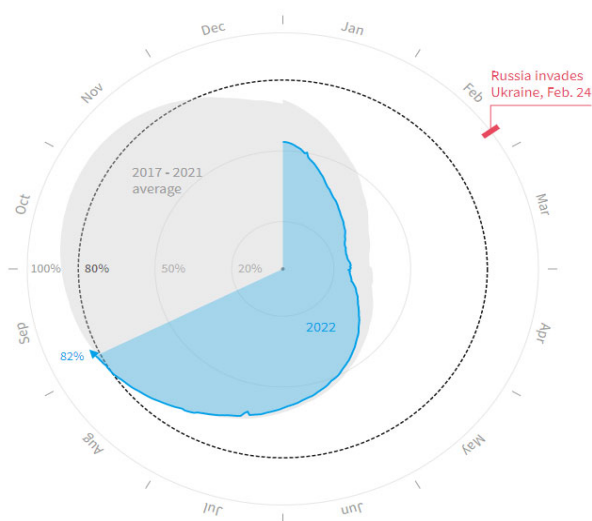
On the savings front, Europe’s record to date has been a mixed bag, with industry cutting back on gas consumption, using alternative fuels, and reducing or halting production entirely. German companies reportedly lowered their gas usage by around 20% y-y in Aug-22.

Households, the biggest users of gas for heating in winter, remain a key variable. If the winter is colder, it would be almost impossible to convince households to cut back on heating their homes. European governments are already imploring consumers to turn down their thermostats and take fewer hot showers, but these measures may be too little or too late.

Although the gas price has already doubled y-y since Aug-21, many consumers have not yet felt the impact as they use much less gas during the summer months and pay fixed monthly amounts that can only be revised upward later.

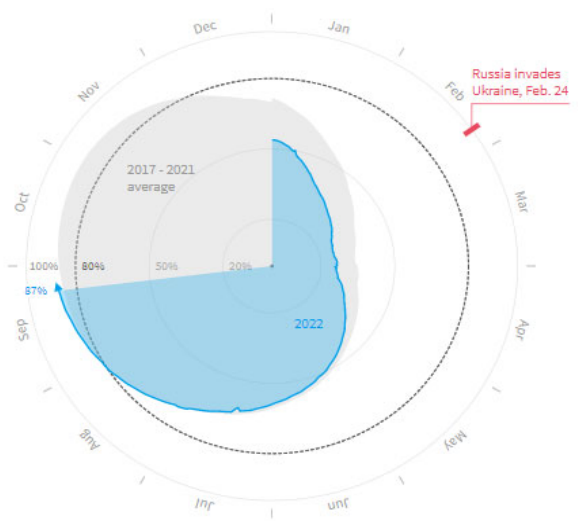
A number of European governments have subsidised gas prices to reduce the prices paid by consumers. France has capped gas and electricity prices and Italy has lowered the value-added tax for gas, resulting in a relatively stable gas price in France despite the 20% y-y hike in Germany, and the 15% higher y-y household gas price in Italy. However, the lower-than-expected gas and electricity prices may lead to demand for gas to fall more slowly than it otherwise would, potentially leading to higher gas import volumes at higher prices.

**Exhibit 7: EU gas storage levels as of 6 Sep-22**



Source: [Reuters](#)

**Exhibit 8: EU gas storage levels as of 26 Sep-22**



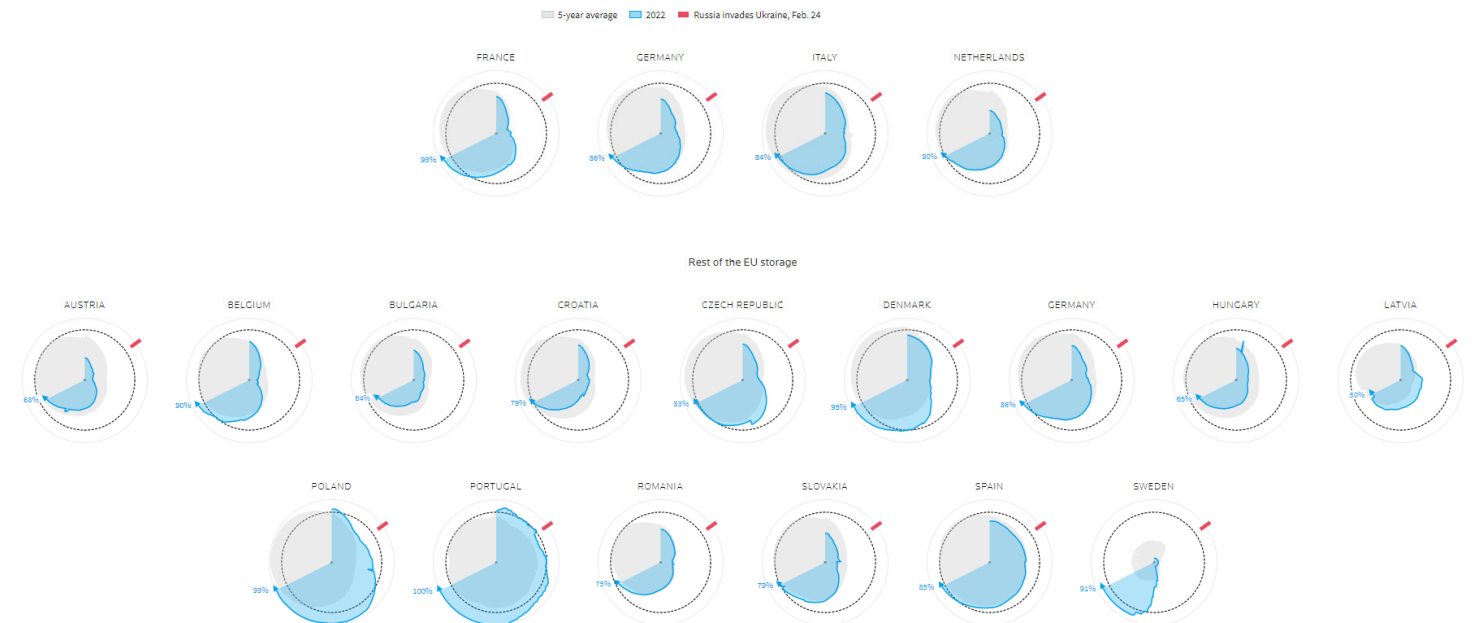
Source: [Reuters](#)

**Where else can EU get gas?** We think the EU’s survival this coming winter without Russian gas and avoiding rationing will hinge on its ability to source additional gas supply during the winter. However, most gas producers are already at peak capacity and will be unable to increase their output in the next few months. Therefore, the only potential source of additional gas is LNG diverted from Asia in the spot market, which could further increase the global spot LNG price.

The complicating factor is that Japan and South Korea, could also enact household gas price caps, which could be the real reason why the global spot LNG price was high even before the Russia-Ukraine war broke out in Feb-22. Asian household price caps could send the global spot LNG price even higher this coming winter and a “war for gas” could erupt amid widespread public unrest during the freezing winter.

According to Aggregated Gas Storage Inventory, the average gas storage level in the EU countries was at 87.4% as of 26 Sep-22, up from 82% on 6 Sep-22, higher than the five-year average for this time of year at 85%.

### Exhibit 9: Percentage of total gas storage already filled in EU member states as of 26 Sep-22



Source: [Reuters](#)

**EU gas supply may only last until Feb-23 without proper rationing.** Enverus Intelligence Research, a subsidiary of Enverus, has stated that without proper gas supply rationing, EU countries may exhaust their gas inventories by Feb-23 if winter temperatures are lower than usual.

The research firm added that with the 15% reduction in demand as targeted by the EU, Europe may be able to survive without Russian gas this winter (Oct-22 to Apr-23) if winter temperatures are average. Key findings from Enverus' research include:

- TTF futures could rise further from the current USD51/mmbtu (€175/MWh) as of 26 Sep-22 to USD54-56/mmbtu (€184-190/MWh) in 4Q22-1Q23 if the EU successfully implements a 15% gas consumption reduction and the winter weather is normal.
- Even with zero gas supplies from Russia this winter from Sep-22 onward, Europe should emerge from an average European winter in April with stocks at similar levels seen in Apr-22, if the EU bloc successfully achieves a 15% demand reduction.
- If the demand for gas is 15% higher than average – whether due to colder than normal winter temperatures, or the 15% demand reduction fails to materialise – European gas storage would be empty by Feb-Mar 2023.
- At the current filling rate, EU gas storage should average more than 90% full by Nov-22.
- Higher gas prices have already reduced gas demand by 12% vs the five-year average for the EU residential and commercial sectors and 30% for the industrial sector.
- To counter the inflationary and economic impact of the high gas price, the EU is expected to announce new regulatory and policy measures for gas and power markets aimed at reducing gas demand, institute a windfall tax on energy companies to finance reduced costs for consumers, and intervene in the power market to decouple the gas price from the power price.

**Are higher prices for gas, coal, and diesel inevitable this winter?** We think so. We believe the EU may be able to survive this winter without Russian gas, but the prices of gas, particularly global spot LNG, and other “substitute fuels” such as coal and diesel, are likely to rise markedly by the end of 2022.

Based on the 26 Sep-22 price for all three commodities, we found that the economic value of coal at USD405/t remains at a 59% discount to the spot LNG price of USD38/mmbtu, while diesel at USD130/bbl is also 37% cheaper.

#### Exhibit 10: Comparison of heating values and prices of coal, diesel, and spot LNG

Fuel	Heat rate (kcal/kg)	Heat rate multiple to coal (x)	Price	Unit	Price per 6,700kcal heat rate (USD/kg)	Price multiple over spot LNG (x)	Price discount to spot LNG (%)
Coal (NEX)	6,700	1.0	405	USD/tonne	0.41	2.5	(59)
Diesel	10,000	1.5	130	USD/bbl	0.63	1.6	(37)
Spot LNG	12,500	1.9	38	USD/mmbtu	1.00	1.0	

Sources: Bloomberg; FSSIA estimates

#### Even if full, EU gas storage accounts for only 46-48% of winter gas demand.

Based on data from the European Commissioner, the total gas storage capacity in the EU is 1,113TWh (77mt of LNG). Historically, this has accounted for only 46.4% of the total gas demand in the winter of 2020/21 and 48.5% in the winter of 2021/22.

Even with its 1,113TWh of total gas storage filled to the brim, we believe the EU is still highly exposed to the risk of gas supply shortages this coming winter, which we think will require somewhere between the 2,288TWh (158.4mt of LNG) consumed during the winter of 2021/22 and the 2,392TWh (165.6mt of LNG) required for the winter of 2020/21.

#### Exhibit 11: Top EU gas suppliers over the past two winter seasons

Gas supplier	Gas demand	
	Winter 2021/22 (Oct-21 to Apr-22) (TWh)	Winter 2020/21 (Oct-20 to Apr-21) (TWh)
1 Russia	866	855
2 Norway	719	697
3 LNG	468	697
4 Germany	201	112
5 Canada	21	20
6 Algeria	14	11
<b>Total</b>	<b>2,288</b>	<b>2,392</b>
<b>Gas storage capacity as % of gas demand (%)</b>	<b>48.52</b>	<b>46.41</b>

Source: [European Council](#)

At 15% lower gas consumption, gas demand this winter would fall to between 1,945TWh (134.6mt) and 2,034TWh (140.8mt) based on gas demand during the winters of 2021/22 and 2020/21. Hence, we remain convinced that without supplies of Russian gas, EU countries face a high risk of supply shortfalls this winter.

#### Exhibit 12: Gas supply from storage vs demand

	Winter 2021/22 (Oct-21 to Apr-22) (TWh)	Winter 2020/21 (Oct-21 to Apr-22) (TWh)
Gas demand	2,288	2,392
Gas storage as of 26 Sep-22	970	970
Gas demand shortage (TWh)	(1,318)	(1,422)
Gas demand shortage (mt of LNG)	(91.2)	(98.4)

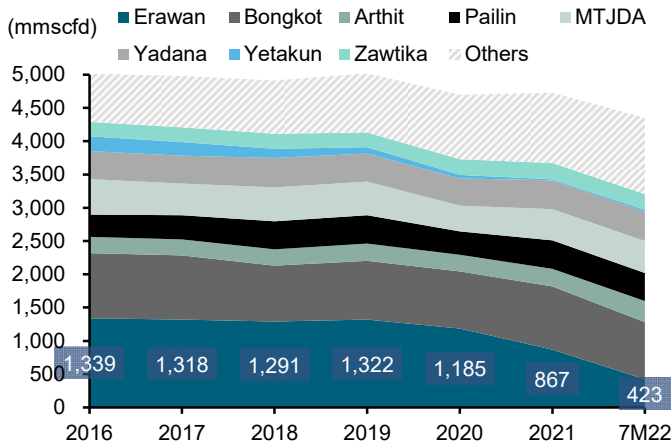
Source: [European Council](#)



### Higher gas price drives up Thailand's electricity cost

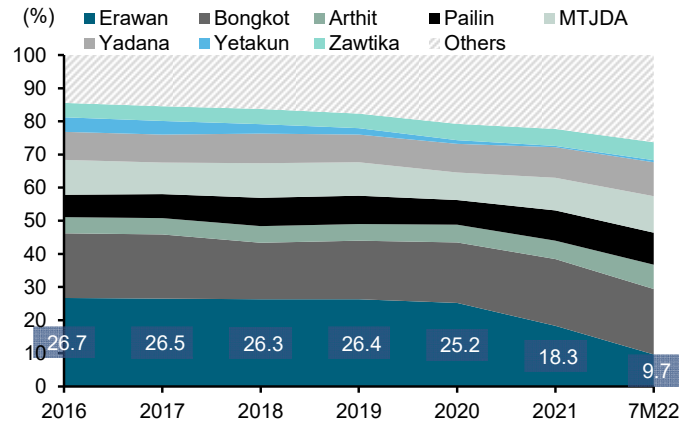
Thailand has felt the pinch of rising global spot LNG prices thanks to its higher imports of LNG to replace the gas supply shortfall from the Erawan gas field, Thailand's largest gas field. Erawan's gas production has plunged from over 1,100mmscfd in 2020, down to 238mmscfd in Jul-22, based on figures from the Energy Planning and Policy Office (EPPO). Erawan now accounts for only 9.7% of Thailand's total gas supply as of Jul-22, down significantly from over one-fourth in 2016-20.

**Exhibit 13: Gas production breakdown by field**



Source: EPPO

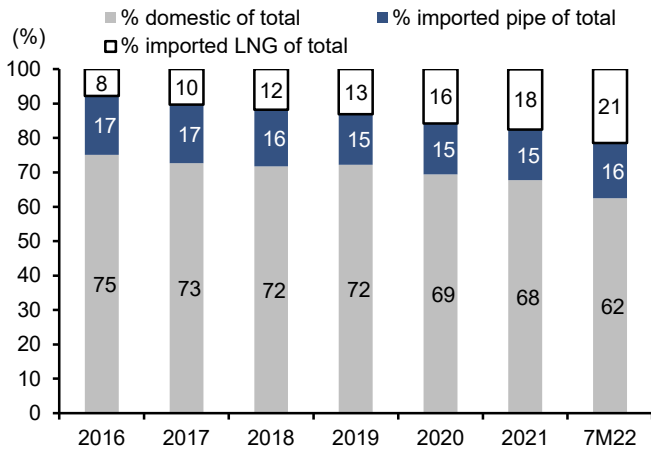
**Exhibit 14: Gas production breakdown by field (%)**



Source: EPPO

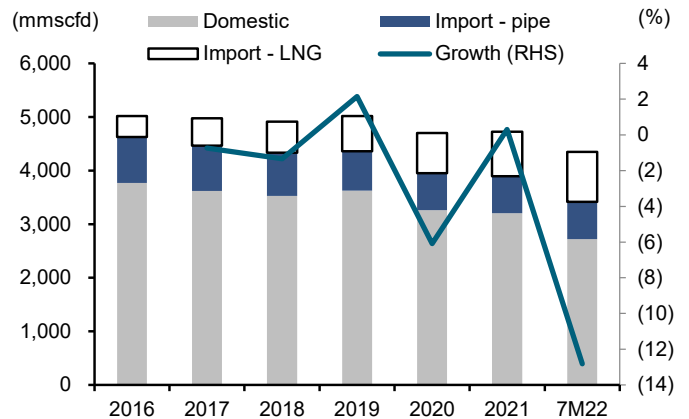
As a result of the gas production plunge from Erawan, Thailand needs to import more spot LNG, which has now risen from 8% to 21% of total gas supply and is expected to remain high at above 20% in 2H22 into 2023 as gas production from Erawan gradually increases to reach the targeted production volume of 800mmscfd under the terms of the field operator's production service contract.

**Exhibit 15: Gas supply breakdown by source (%)**



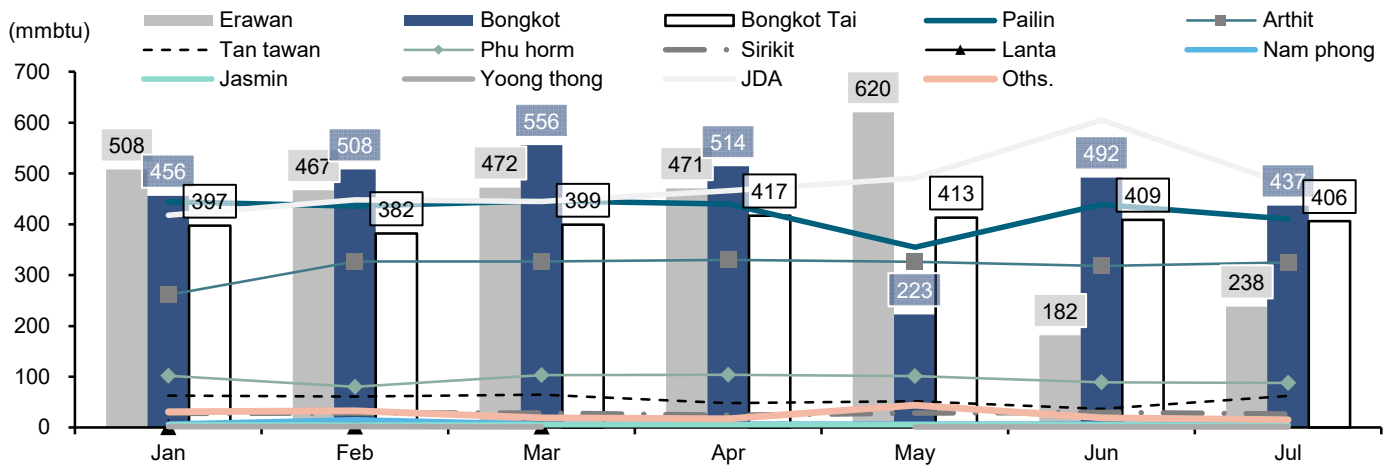
Source: EPPO

**Exhibit 16: Gas supply breakdown by source**



Source: EPPO

**Exhibit 17: Gas production by field in Thailand**

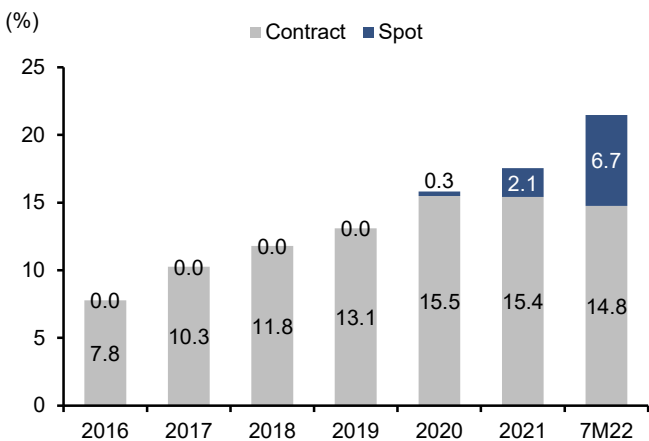


Source: EPPO

**Spot LNG imports to rise to 1.17mt in 3Q22.** In 7M22, Thailand imported around 4.7mt of LNG, comprising 2.7mt of contract LNG and 2mt of spot LNG. Given that the price of spot LNG is much higher than the oil-linked contract LNG, the sharp spike in the global spot LNG price has led to significantly higher electricity costs.

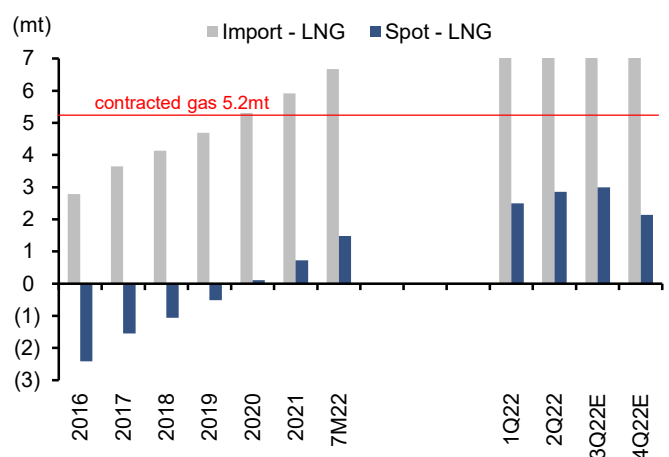
PTT (PTT TB, BUY), the country's main importer of LNG on behalf of the Thai government, stated that in 3Q22 a total of 18 shipments of LNG containing 65kt each would be imported at the spot price. This implies that the aggregate import amount of spot LNG in 3Q22 should be c1.17mt, up from 0.9mt in 2Q22 and 1.1mt in 1Q22, as gas production from Erawan plunges to below 300mmscfd in 3Q22.

**Exhibit 18: Thailand's LNG imports by price category**



Sources: PTT; EPPO

**Exhibit 19: Thailand's LNG import volumes by price category**



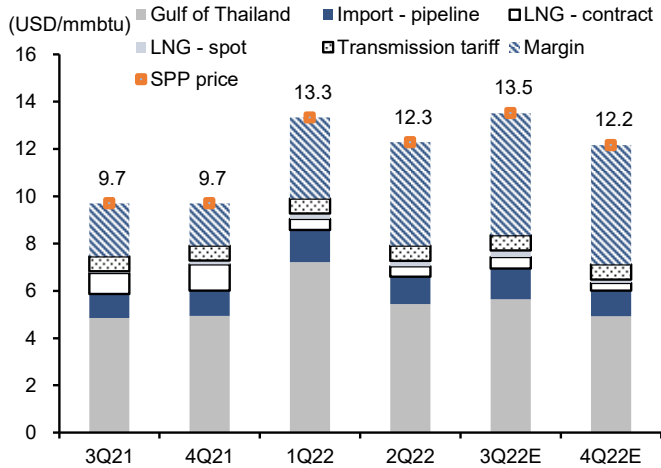
Sources: PTT; EPPO



Based on the average spot LNG price of USD40/mmbtu in 3Q22 for the 1.17mt import amount, we estimate that the gas price charged to SPPs will be THB500/mmbtu (USD13.5/mmbtu) in 3Q22, up from THB430/mmbtu (USD12.3/mmbtu) in 2Q22 and THB440/mmbtu (USD13.3/mmbtu) in 1Q22.

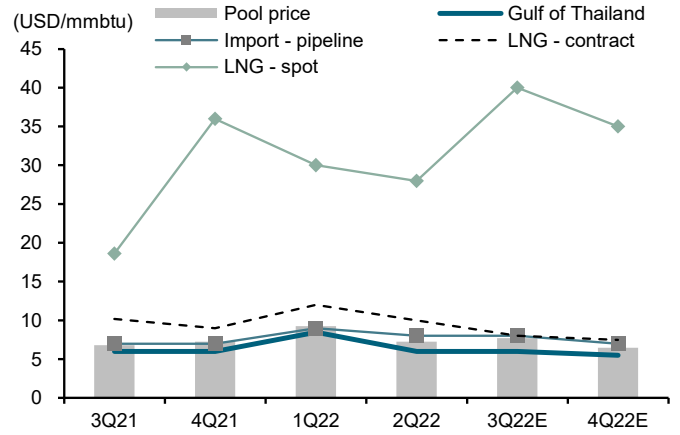
The THB500/mmbtu cost is higher than our previous projection for the gas price charged to SPPs at THB470/mmbtu, and it effectively wipes out any benefit from the Ft hike of THB0.6886/kWh from Sep-Dec 2022.

**Exhibit 20: Gas price structure of SPPs**



Sources: PTT; FSSIA estimates

**Exhibit 21: Gas price by source**

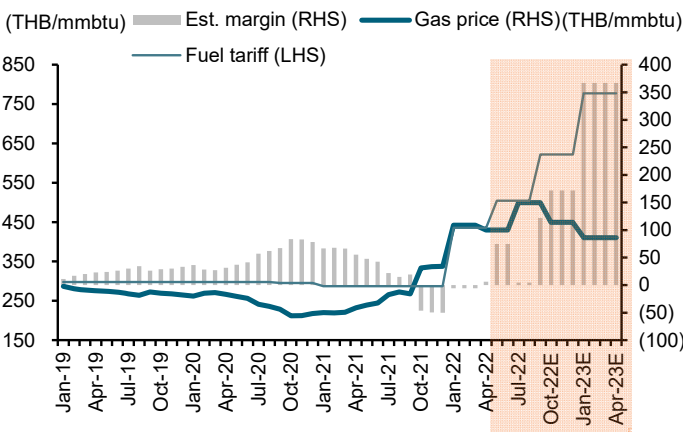


Sources: PTT; FSSIA estimates

**Depressed gross margins for SPPs in 3Q22 due to the gas cost hike to THB500/mmbtu.** We now expect SPPs to see depressed gross margins due to the mismatch between the gas price at THB500/mmbtu in 3Q22 vs the Ft increase by THB0.6886/kWh effective in Sep-Dec 2022. However, in 4Q22, we project their gross margins to significantly improve as the average global spot LNG price declines and the full impact of the THB0.6886/kWh Ft hike is realised.

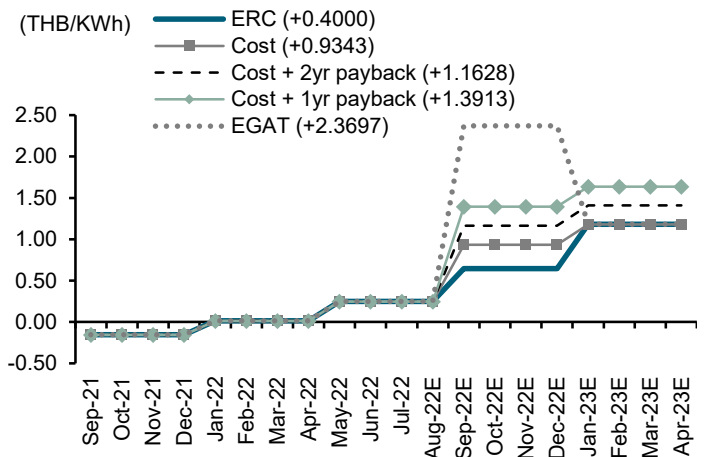
Note that the THB0.6886/kWh Ft hike for Sep-Dec 2022 would still likely be insufficient to cover the impact of the energy price hike in the same period, given that the prices of coal (15.8% of Thailand’s power generation capacity as of 7M22), LNG, and oil (combined gas-fired capacity represents 54% of total), have all soared q-q. We expect the Ft to continue to rise in 2023, mainly to compensate for the subsidy losses of over THB100b currently being carried by the state-owned Electricity Generating Authority of Thailand (EGAT).

**Exhibit 22: Gas price, fuel tariff, and estimated gross margins for SPPs**



Sources: BGRIM; PTT; FSSIA estimates

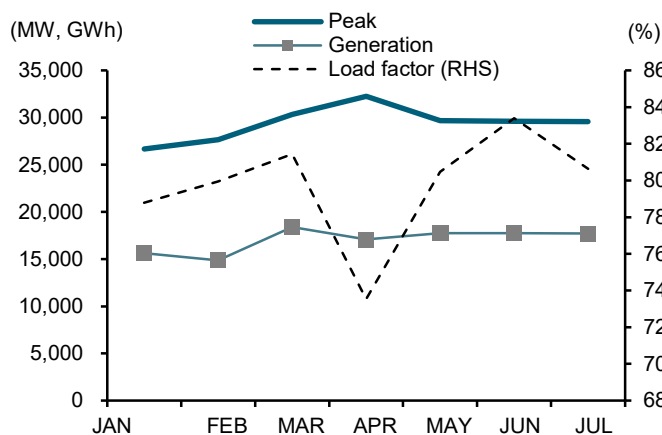
**Exhibit 23: Ft hike scenarios**



Source: Energy Regulatory Commission

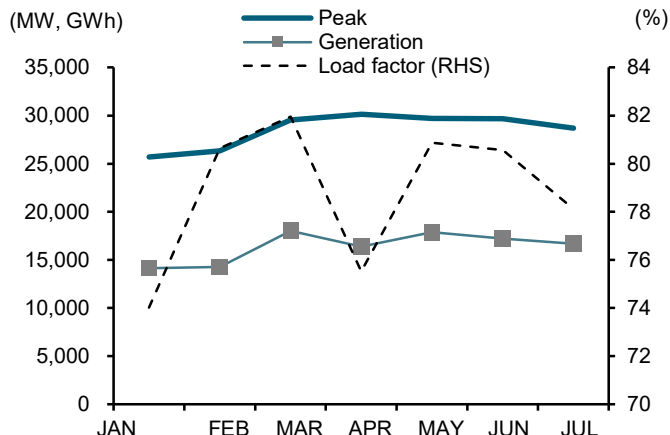
Despite the 50-70% higher electricity price y-y, peak power demand in Thailand in 7M22 continued to rise y-y, mainly due to improving demand from tourism and the export-driven industrial sector.

**Exhibit 24: Thailand's peak power demand, power generation, and load factor in 7M22**



Source: EPPO

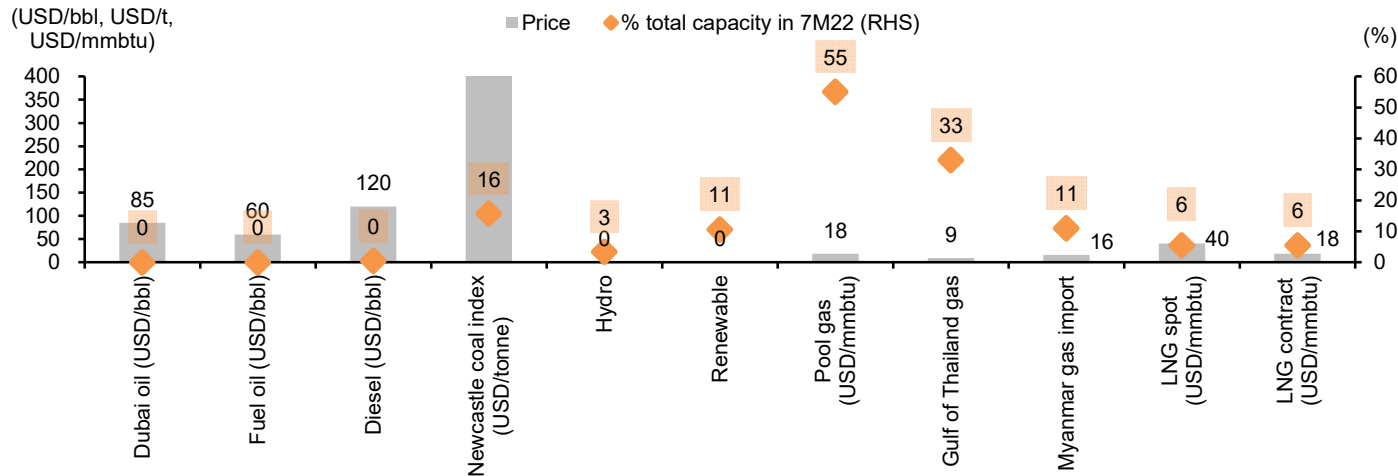
**Exhibit 25: Thailand's peak power demand, power generation, and load factor in 7M21**



Source: EPPO

**Cost of electricity production in Thailand.** With a blend of 54% gas, 15.8% coal, 10% renewable, 3.4% domestic hydropower, and 16% imported power mainly from dams in Laos, we estimate that Thailand should see continued electricity price hikes in 2023 in the form of higher Ft adjustments every four months (Jan-Apr, May-Aug, Sep-Dec) to compensate for the significant subsidy losses shouldered by EGAT.

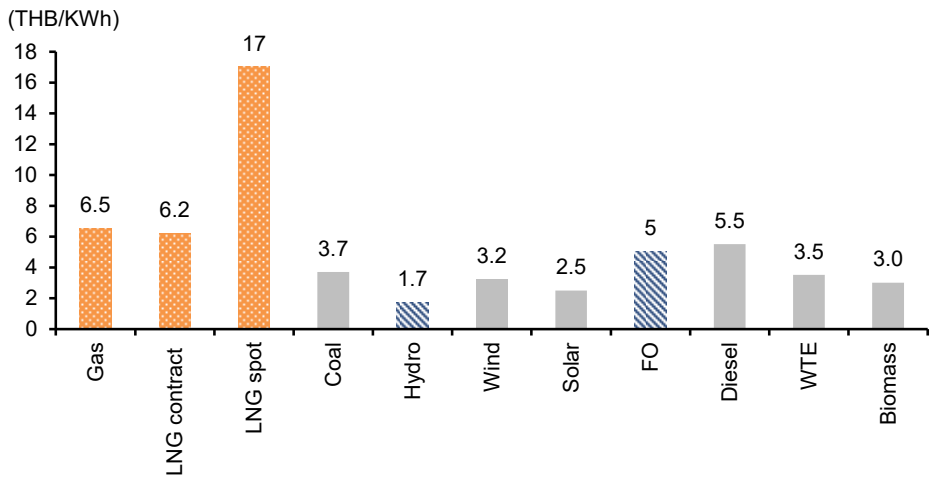
**Exhibit 26: Prices of fuels and % of their generating capacity in Thailand**



Sources: EGAT; EPPO; FSSIA estimates

**THB1.0-THB2.0/kWh higher Ft increase is likely in 2023.** We estimate that the average retail electricity tariff in Thailand would have to rise by THB1.0-THB2.0/kWh in 2023, up from the current THB4.7/kWh, to move closer to the average production cost of THB5.5-6.0/kWh given the cost for gas is THB6.5/kWh, coal THB3.7/kWh, and diesel THB5.5/kWh.

**Exhibit 27: Estimated electricity production costs in Thailand by fuel type**

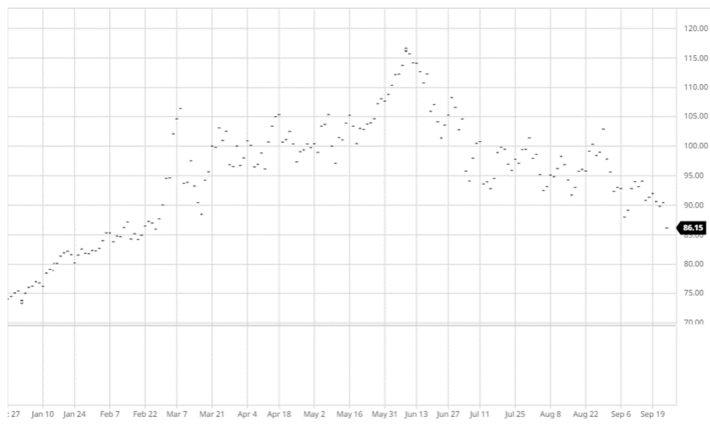


Sources: EGAT; EPPO; FSSIA estimates

## Expect commodity prices to rebound in the coming winter

The Brent oil price has weakened to below USD90/bbl recently while the TTF benchmark gas price has plunged by almost 50% from its recent peak due to the intervention by EU governments to cap the prices of electricity and gas and accelerate the restocking of gas inventory ahead of the coming winter. We expect the price of gas, including TTF and spot LNG, to rise by the end of 2022, driven by the higher demand for winter heating.

Exhibit 28: Brent crude futures Nov-22 (SCX22)



Source: [Barchart.com](https://www.barchart.com)

Exhibit 29: Dutch TTF gas price Oct-22 (TGV22)



Source: [Barchart.com](https://www.barchart.com)

**“The end of the era of abundance”.** This quote from France’s president Emmanuel Macron describes the current energy crisis, which was triggered by the EU’s sanctions against Russia over its invasion of Ukraine. In our view, the “era of abundance” for Europeans is now indeed coming to an end, amid a sharp rise in the cost of living and soaring inflation.

While a number of public protests have occurred in many EU countries, we think whether European societies will massively oppose their governments’ support for Ukraine and even call for lifting the sanctions against Russia mostly depends on the severity of the coming winter. If the winter is a hard one and the cost of living becomes unbearable, then the tide could turn in favour of Russia. However, many Europeans remain firm in their belief that they are a force for good against the “forces of darkness”, namely Russia.

We think Europe is being manipulated by the US in defiance of Europe’s own interests and Washington’s desire to maintain an old hegemony. We believe Europe is still not ready to face the steeply increased living and energy costs for its citizens – even if sufficient imports of LNG can be found at a price 3-4x higher than the piped gas imported from Russia. The EU, and in particular Germany, has long enjoyed cheap Russian energy as the backbone of their strong industrial competitiveness, in our view.

**Is the true winner China?** We believe the current paradigm shift in global energy and economic trading flows, driven mainly by Russia shifting its commodity sales from Europe to Asia, would greatly benefit China at the expense of both Europe, Russia, and even the US.

We think China benefits on many fronts from the sanctions against Russia imposed by the US and the EU. First, China is now securing cheap energy sources from Russia via both pipeline and LNG for gas and oil, replacing Germany as Russia’s largest energy market customer. This, in our view, could significantly shift the long-term competitive advantage of Germany’s industrial sector over to China, further accelerating China’s ambitious “made in China” goal to provide high quality products to the world.

Second, China has taken advantage of the EU’s sanctions against Russia, effectively buying cheap gas and LNG from Russia and then re-exporting it to the EU as the global LNG market is becoming increasingly integrated with much more globalised pricing. The redirection of energy flows serves the interests of all parties involved, allowing Europe to fill up its gas storage at a faster rate than otherwise.

China has already imported a large amount of gas via the 2,500-mile “Power of Siberia” gas pipeline, which makes Russia its the second-largest piped gas supplier after Turkmenistan. Russia already inked two major gas deals with China in 2014.

Gazprom and China National Petroleum Corporation signed a USD400b deal for 38bcm of Russian gas via the Power of Siberia pipeline for 30 years, and deliveries to China began in Dec-19. A second deal was struck worth USD284b during the Asia Pacific Economic Cooperation (APEC) meeting in 2014 that would deliver an additional 30bcm of gas via the Altai gas pipeline, which, unlike the Power of Siberia pipeline, would be able to redirect Russian gas from Europe to China.

**China’s gas demand vs Russia’s gas supply.** The Power of Siberia and Altai deals make China the largest importer of Russian gas, surpassing Germany, and roughly account for half of Europe’s total gas imports from Russia in 2021. Russia has further strengthened its energy ties with China via the Power of Siberia 2 gas deal, with construction to begin by 2024.

Power of Siberia 2, which will connect Russia’s Siberian gas fields to China via Mongolia, once completed in 2030, will deliver gas from western Siberian fields that was formerly bound for Europe to China for the first time. Power of Siberia 2 is expected to transport 50bcm of gas annually from Russia to China, marking a boost from the current 38bcm capacity of Power of Siberia 1.

**China’s gas demand to equal 76% of European demand by 2030.** With two existing gas pipelines, Power of Siberia 1 (38bcm) and Altai (30bcm), and the proposed Power of Siberia 2 (50bcm), China’s total gas purchases from Russia would rise to 118bcm, around 76% of the 155bcm of gas that Russia sold to Europe in 2021.

**Exhibit 30: Power of Siberia 1 gas pipeline connects Russia to China’s gas market**



Source: [American Security Project](#)

**Exhibit 31: Power of Siberia 2 gas pipeline connecting Russia’s Siberian gas fields to China via Mongolia**



Source: [Asia Times](#)

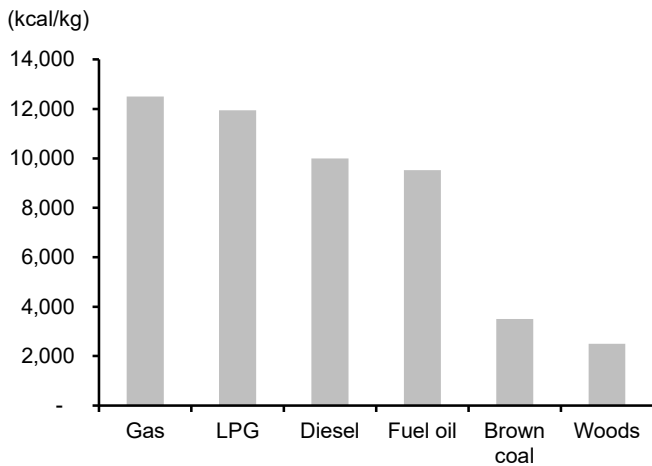
Chinese LNG companies have increased the amount of gas supplied to overseas markets in response to rising demand, selling 4mt of LNG in international markets as of Aug-22, which represents around 7% of Europe’s gas consumption in 1H22. Russia is now emerging as China’s fourth-largest gas supplier, surpassing Indonesia and the US.

Sinopec Group, China’s largest refinery firm, recently indicated that it had channelled 45 cargoes or around 3.15mt of excess LNG into the international market – mainly to Germany’s floating LNG terminals as Germany attempts to wean itself off Russian gas. Germany has already leased four floating LNG terminals to allow the import of LNG to replace Russian gas.

After withdrawing its approval for the recently completed €9.5b Nord Stream 2 gas pipeline connecting Russia and Germany, the German government has aimed to free itself from dependence on the cheap Russian energy that has long benefited Germany’s industrial sector.

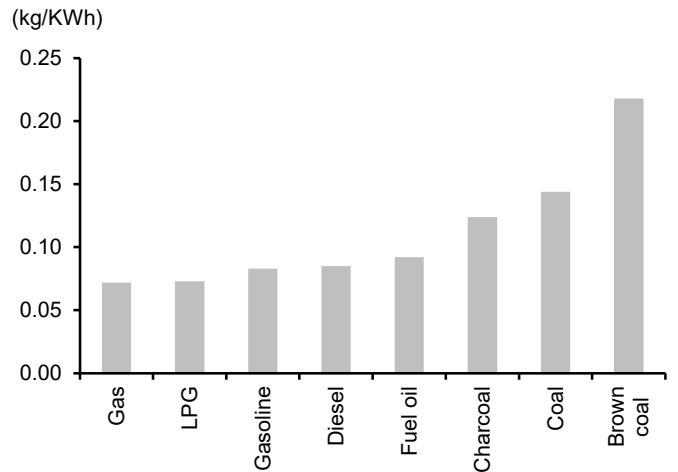
We believe that in the coming winter, Europe will be forced to use alternative fuels to supplement its heating needs in light of the gas supply shortage. Given that diesel and coal are the most widely available and useful fuels for power production and heating, we expect the prices of coal and diesel to rise meaningfully by Nov-Dec 2022 when we expect the gas supply from other sources, including LNG imported from the US, Qatar, and the United Arab Emirates, and the EU’s storage facilities, to start depleting at a faster rate than the market expects.

**Exhibit 32: Heating values of fuels**



Sources: Energy Information Administration (EIA)

**Exhibit 33: Estimated energy cost per unit of power by fuel type**



Sources: EIA; FSSIA estimates



## Accumulate ahead of outperformance expected by Nov-22

We maintain our OVERWEIGHT call for the Thai energy sector. We expect the sector derating to end by mid-October as it starts rerating with the onset of winter in Europe. We believe suppliers of alternative fuels such as coal and diesel stand to benefit the most from Europe's tight gas supply-demand balance.

**Upstream for coal.** Under our projections for commodity price rallies by Nov-22, we prefer Banpu (BANPU TB, BUY) as our top pick for the upstream sector over PTT Exploration and Production (PTTEP TB, BUY) and PTT given that the coal price is the most sustainable and has the highest upside toward USD500/t by the end of 2022, potentially driving BANPU's net profit growth significantly higher to over THB10b a quarter, based on our estimates.

**Refinery.** Thai Oil (TOP TB, BUY) and Esso (Thailand) (ESSO TB, BUY) are our preferred refinery picks thanks to the attractive earnings growth upsides from TOP's high diesel production yield and the overhang removal after completing its capital increase. ESSO remains our top pick in the Thai refinery sector thanks to its higher upsides from rising utilisation rates at its refinery plant and the continued earnings growth from its downstream oil stations.

**Oil stations.** We like Susco (SUSCO TB, BUY) and PTT Oil and Retail Business (OR TB, BUY) for their earnings growth momentum from rising oil sales volumes, the improving margins of their non-oil businesses, and their higher sales volumes for jet fuel.

**Conventional power.** We prefer SPPs over independent power producers (IPPs) with B.Grimm Power (BGRIM TB, BUY) as our top SPP pick and Gulf Energy Development (GULF TB, BUY) for IPPs based on their earnings growth potential and recoveries on the back of structurally lower gas costs and the rising Ft over the next 12 months in Thailand. The potential capacity growth upsides from the new round of bidding on 5.2GW of renewable energy and the soon-to-be-announced Power Development Plan 8 in Vietnam should further catalyse the long-term earnings growth of both GULF and BGRIM, in our view.

**Renewable.** In renewable energy, we like Sermuang Power (SSP TB, BUY) and Gunkul Engineering (GUNKUL TB, BUY) for their potential earnings upsides of over THB0.2b-0.4b annually from the higher Ft alone in 2023, their potential capacity growth from the bidding on 5.2GW of renewable energy in Thailand in Nov-22, and the organic growth from new solar projects for SSP and GUNKUL's earnings from hemp and cannabis.

**Electric Vehicles (EV).** Energy Absolute (EA TB, BUY) and Nex Point (NEX TB, BUY) stand out as two winners on Thailand's EV market growth in 2023-24 as they should benefit from their first-mover position with the most fully integrated EV value chain in Thailand, plus the expected delivery of over 1,000 e-buses by Dec-22. We think rising energy prices could be the key catalyst for turning around NEX's profitability and meaningfully driving EA's new S-curve EV and battery venture to the next level.

## Corporate Governance report of Thai listed companies 2021

EXCELLENT LEVEL – Score range 90-100										
AAV	BCPG	CPALL	GCAP	K	MSC	PLANET	SAMART	SPI	THRE	TVD
ADVANC	BDMS	CPF	GFPT	KBANK	MST	PLAT	SAMTEL	SPRC	THREL	TVI
AF	BEM	CPI	GGC	KCE	MTC	PORT	SAT	SPVI	TIPCO	TVO
AH	BGC	CPN	GLAND	KKP	MVP	PPS	SC	SSSC	TISCO	TWPC
AIRA	BGRIM	CRC	GLOBAL	KSL	NCL	PR9	SCB	SST	TK	U
AKP	BIZ	CSS	GPI	KTB	NEP	PREB	SCC	STA	TKT	UAC
AKR	BKI	DDD	GPSC	KTC	NER	PRG	SCCC	STEC	TMT	UBIS
ALT	BOL	DELTA	GRAMMY	LALIN	NKI	PRM	SCG	STI	TNDT	UV
AMA	BPP	DEMCO	GULF	LANNA	NOBLE	PROUD	SCGP	SUN	TNITY	VGI
AMATA	BRR	DRT	GUNKUL	LH	NSI	DRSH	SCM	SUSCO	TOA	VIH
AMATAV	BTS	DTAC	HANA	LHFG	NVD	PSL	SDC	SUTHA	TOP	WACOAL
ANAN	BTW	DUSIT	HARN	LIT	NWR	PTG	SEAFCO	SVI	TPBI	WAVE
AOT	BWG	EA	HMPRO	LPN	NYT	PTT	SEAOIL	SYMC	TQM	WHA
AP	CENTEL	EASTW	ICC	MACO	OISHI	PTTEP	SE-ED	SYNTEC	TRC	WHAUP
ARIP	CFRESH	ECF	ICHI	MAJOR	OR	PTTGC	SELIC	TACC	TRU	WICE
ARROW	CHEWA	ECL	III	MAKRO	ORI	PYLON	SENA	TASCO	TRUE	WINNER
ASP	CHO	EE	ILINK	MALEE	OSP	Q-CON	SHR	TCAP	TSC	ZEN
AUCT	CIMBT	EGCO	ILM	MBK	OTO	QH	SIRI	TEAMG	TSR	
AWC	CK	EPG	INTUCH	MC	PAP	QTC	SIS	TFMAMA	TSTE	
AYUD	CKP	ETC	IP	MCOT	PCSGH	RATCH	SITHAI	TGH	TSTH	
BAFS	CM	FPI	IRPC	METCO	PDG	RS	SMK	THANA	TTA	
BANPU	CNT	FPT	ITEL	MFEC	PDJ	S	SMPC	THANI	TTB	
BAY	COM7	FSMART	IVL	MINT	PG	S & J	SNC	THCOM	TTCL	
BBL	COMAN	GBX	JSP	MONO	PHOL	SAAM	SONIC	THG	TTW	
BCP	COTTO	GC	JWD	MOONG	PLANB	SABINA	SPALI	THIP	TU	
VERY GOOD LEVEL – Score range 80-89										
2S	ASIMAR	CHOW	FLOYD	IT	LOXLEY	OCC	RPC	SKY	TCC	TVT
7UP	ASK	CI	FN	ITD	LRH	OGC	RT	SLP	TCMC	TWP
ABICO	ASN	CIG	FNS	J	LST	PATO	RWI	SMIT	TEAM	UEC
ABM	ATP30	CMC	FORTH	JAS	M	PB	S11	SMT	TFG	UMI
ACE	B	COLOR	FSS	JCK	MATCH	PICO	SA	SNP	TFI	UOBKH
ACG	BA	CPL	FTE	JCKH	MBAX	PIMO	SAK	SO	TIGER	UP
ADB	BAM	CPW	FVC	JMART	MEGA	PJW	SALEE	SORKON	TITLE	UPF
AEONTS	BC	CRD	GEL	JMT	META	PL	SAMCO	SPA	TKN	UPOIC
AGE	BCH	CSC	GENCO	KBS	MFC	PM	SANKO	SPC	TKS	UTP
AHC	BEC	CSP	GJS	KCAR	MGT	PMTA	SAPPE	SPCG	TM	VCOM
AIT	BEYOND	CWT	GYT	KEX	MICRO	PPP	SAWAD	SR	TMC	VL
ALL	BFIT	DCC	HEMP	KGI	MILL	PPPM	SCI	SRICHA	TMD	VPO
ALLA	BJC	DCON	HPT	KIAT	MITSIB	PRIME	SCN	SSC	TMI	VRANDA
ALUCON	BJCHI	DHOUSE	HTC	KISS	MK	PRIN	SCP	SSF	TMILL	WGE
AMANAH	BLA	DOD	HYDRO	KOOL	MODERN	PRINC	SE	STANLY	TNL	WIJK
AMARIN	BR	DOHOME	ICN	KTIS	MTI	PSG	SFLEX	STGT	TNP	WP
APCO	BROOK	DV8	IFS	KUMWEL	NBC	PSTC	SFP	STOWER	TOG	XO
APCS	CBG	EASON	IMH	KUN	NCAP	PT	SFT	STPI	TPA	XPG
APURE	CEN	EFORL	IND	KWC	NCH	QLT	SGF	SUC	TPAC	YUASA
AQUA	CGH	ERW	INET	KWM	NETBAY	RBF	SIAM	SWC	TPCS	
ASAP	CHARAN	ESSO	INSET	L&E	NEX	RCL	SINGER	SYNEX	TPS	
ASEFA	CHAYO	ESTAR	INSURE	LDC	NINE	RICHY	SKE	TAE	TRITN	
ASIA	CHG	ETE	IRC	LEO	NRF	RML	SKN	TAKUNI	TRT	
ASIAN	CHOTI	FE	IRCP	LHK	NTV	ROJNA	SKR	TBSP	TSE	
GOOD LEVEL – Score range 70-79										
A	BGT	CITY	GIFT	JTS	MDX	PK	SGP	SUPER	TQR	YGG
AI	BH	CMAN	GLOCON	JUBILE	MJD	PLE	SICT	SVOA	TTI	ZIGA
AIE	BIG	CMO	GREEN	KASET	MORE	PPM	SIMAT	TC	TYCN	
AJ	BLAND	CMR	GSC	KCM	MUD	PRAKIT	SISB	TCCC	UKEM	
ALPHAX	BM	CPT	GTB	KK	NC	PRAPAT	SK	THMUI	UMS	
AMC	BROCK	CRANE	HTECH	KKC	NDR	PRECHA	SMART	TNH	UNIQ	
APP	BSBM	CSR	HUMAN	KWI	NFC	PTL	SOLAR	TNR	UPA	
AQ	BSM	D	IHL	KYE	NNCL	RJH	SPACK	TOPP	UREKA	
ARIN	BTNC	EKH	IIG	LEE	NOVA	RP	SPG	TPCH	VIBHA	
AS	BYD	EMC	INGRS	LPH	NPK	RPH	SQ	TPIPL	W	
AU	CAZ	EP	INOX	MATI	NUSA	RSP	SSP	TIPIP	WIN	
B52	CCP	F&D	JAK	M-CHAI	PAF	SABUY	STARK	TPLAS	WORK	
BEAUTY	CGD	FMT	JR	MCS	PF	SF	STC	TPOLY	WPH	

**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

Sources: Thai Institute of Directors Association (IOD); FSSIA's compilation; data as of 26 October 2021

## Anti-corruption Progress Indicator

CERTIFIED										
2S	BCH	CPALL	GC	K	MFC	PE	QLT	SNP	THCOM	TU
7UP	BCP	CPF	GCAP	KASET	MFEC	PG	QTC	SORKON	THIP	TVD
ADVANC	BCPG	CPI	GEL	KBANK	MILL	PHOL	RATCH	SPACK	THRE	TVI
AF	BE8	CPN	GFPT	KBS	MINT	PK	RML	SPALI	THREL	TVO
AI	BEYOND	CSC	GGC	KCAR	MONO	PL	RWI	SPC	TIDLOR	TWPC
AIE	BGC	DCC	GJS	KCE	MOONG	PLANB	S & J	SPI	TIPCO	U
AIRA	BGRIM	DELTA	GPI	KGI	MSC	PLANET	SAAM	SPRC	TISCO	UBE
AKP	BJCHI	DEMCO	GPSC	KKP	MST	PLAT	SABINA	SRICHA	TKS	UBIS
ALPHAX	BKI	DIMET	GSTEEL	KSL	MTC	PM	SAPPE	SSF	TKT	UEC
AMA	BLA	DRT	GUNKUL	KTB	MTI	PPP	SAT	SSP	TMD	UKEM
AMANAHA	BPP	DTAC	HANA	KTC	NBC	PPPM	SC	SSSC	TMILL	UOBKH
AMATA	BROOK	DUSIT	HARN	KWC	NEP	PPS	SCB	SST	TMT	UPF
AMATAV	BRR	EA	HEMP	KWI	NINE	PR9	SCC	STA	TNITY	UV
AP	BSBM	EASTW	HENG	L&E	NKI	PREB	SCCC	STOWER	TNL	VGI
APCS	BTS	ECL	HMPRO	LANNA	NMG	PRG	SCG	SUSCO	TNP	VIH
AQUA	BWG	EGCO	HTC	LH	NNCL	PRINC	SCN	SVI	TNR	WACOAL
ARROW	CEN	EP	ICC	LHFG	NOBLE	PRM	SEAOIL	SYMC	TOG	WHA
AS	CENTEL	EPG	ICHI	LHK	NOK	PROS	SE-ED	SYNTEC	TOP	WHAUP
ASIAN	CFRESH	ERW	IFEC	LPN	NSI	PSH	SELIC	TAE	TOPP	WICE
ASK	CGH	ESTAR	IFS	LRH	NWR	PSL	SENA	TAKUNI	TPA	WIJK
ASP	CHEWA	ETE	ILINK	M	OCC	PSTC	SGP	TASCO	TPP	XO
AWC	CHOTI	FE	INET	MAKRO	OGC	PT	SINGER	TBSP	TRU	ZEN
AYUD	CHOW	FNS	INSURE	MALEE	ORI	PTG	SIRI	TCAP	TRUE	
B	CIG	FPI	INTUCH	MATCH	PAP	PTT	SITHAI	TCMC	TSC	
BAFS	CIMBT	FPT	IRC	MBAX	PATO	PTTEP	SKR	TFG	TSTE	
BAM	CM	FSMART	IRPC	MBK	PB	PTTGC	SMIT	TFI	TSTH	
BANPU	CMC	FSS	ITEL	MC	PCSGH	PYLON	SMK	TFMAMA	TTA	
BAY	COM7	FTE	IVL	MCOT	PDG	Q-CON	SMPC	TGH	TTB	
BBL	COTTO	GBX	JKN	META	PDJ	QH	SNC	THANI	TTCL	
DECLARED										
AJ	CHG	DDD	ETC	JR	MAJOR	NUSA	RS	SSS	TQM	YUASA
ALT	CPL	DHOUSE	FLOYD	JTS	NCAP	NYT	SAK	STECH	TSI	ZIGA
APCO	CPR	DOHOME	GULF	KEX	NCL	OR	SCGP	STGT	VARO	
B52	CPW	ECF	III	KUMWEL	NOVA	PIMO	SCM	TKN	VCOM	
BEC	CRC	EKH	INOX	LDC	NRF	PLE	SIS	TMI	VIBHA	

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)

**Disclaimer:**

The disclosure of the Anti-Corruption Progress Indicators of a listed company on the Stock Exchange of Thailand, which is assessed by Thaipat Institute, is made in order to comply with the policy and sustainable development plan for the listed companies of the Office of the Securities and Exchange Commission. Thaipat Institute made this assessment based on the information received from the listed company, as stipulated in the form for the assessment of Anti-corruption which refers to the Annual Registration Statement (Form 56-1), Annual Report (Form 56-2), or other relevant documents or reports of such listed company. The assessment result is therefore made from the perspective of Thaipat Institute that is a third party. It is not an assessment of operation and is not based on any inside information. Since this assessment is only the assessment result as of the date appearing in the assessment result, it may be changed after that date or when there is any change to the relevant information. Nevertheless, FSS International Investment Advisory Company Limited does not confirm, verify, or certify the accuracy and completeness of the assessment results.

Note: Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of 26 October 2021) are categorised into: 1) companies that have declared their intention to join CAC, and; 2) companies certified by CAC.

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

## GENERAL DISCLAIMER

### ANALYST(S) CERTIFICATION

Suwat Sinsadok, CFA, FRM, ERP FSS International Investment Advisory Securities Co., Ltd

The individual(s) identified above certify(ies) that (i) all views expressed in this report accurately reflect the personal view of the analyst(s) with regard to any and all of the subject securities, companies or issuers mentioned in this report; and (ii) no part of the compensation of the analyst(s) was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed herein.

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Company	Ticker	Price	Rating	Valuation & Risks
Banpu	BANPU TB	THB 12.70	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.
Thai Oil	TOP TB	THB 52.25	BUY	Downside risks to our EV/EBITDA-based TP are 1) a sharp fall in oil price; 2) weak demand for refined oil products; 3) customer concentrations; 4) currency risk; 5) interest rate risk; and 6) a raw material shortage.
Esso Thailand	ESSO TB	THB 12.70	BUY	The downside risks to our SoTP-based TP on ESSO include 1) lower-than-expected demand for petroleum products; 2) a higher crude premium; and 3) unplanned shutdowns of its refinery and petrochemical plants.
Susco	SUSCO TB	THB 4.68	BUY	The downside risks to our SOTP-based TP include: 1) lower-than-expected demand for petroleum products; 2) a lower marketing margin; and 3) weaker-than-expected jet fuel demand.
PTT Oil and Retail Business	OR TB	THB 26.25	BUY	The downside risks to our SOTP-based TP include: 1) lower-than-expected demand for petroleum products; 2) a lower marketing margin; and 3) weaker-than-expected jet demand.
B.Grimm Power	BGRIM TB	THB 35.25	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 53.00	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.
Sermuang Power Corp	SSP TB	THB 10.20	BUY	The downside risks to our SoTP-based TP for SSP include 1) a lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) project start-up delays.
Gunkul Engineering	GUNKUL TB	THB 5.20	BUY	The downside risks to our SoTP-based TP on GUNKUL include 1) lower-than-expected demand for electricity in Thailand, 2) declining EPC backlogs, and 3) lower-than-expected utilisation rates for solar and wind farms
PTT PCL	PTT TB	THB 36.75	BUY	Risks to our SoTP-based valuation are the oil price and potential earnings downsides from government intervention.
PTT Explor & Prod	PTTEP TB	THB 164.50	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.
Nex Point	NEX TB	THB 17.80	BUY	Downside risks to our SOTP-based TP include: 1) a lower-than-expected bus sales volume; 2) delays in bus deliveries; and 3) risk from regulatory changes.
Energy Absolute	EA TB	THB 88.25	BUY	Downside risks to our SoTP-based TP include: 1) lower-than-expected demand for electricity in Thailand; 2) lower crude prices; and 3) lower-than-expected demand for batteries.

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

FSSIA may incorporate the recommendations and target prices of companies currently covered by FSS Research into equity research reports, denoted by an 'FSS' before the recommendation. FSS Research is part of Finasia Syrus Securities Public Company Limited, which is the parent company of FSSIA.

All share prices are as at market close on 27-Sep-2022 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.