

# Thailand Energy & Utilities

## Commodity party and utility rally coming this winter

- เราเชื่อว่าราคาของ 3 สินค้าโภคภัณฑ์หลักอันประกอบด้วยก๊าซ ถ่านหิน และน้ำมันจะปรับขึ้นอีกครั้งในฤดูหนาวที่กำลังจะมาถึง (ต.ค. 22 ถึง เม.ย. 23) จากทั้งอุปทานและอุปสงค์
- เราคาดว่าต้นทุนไฟฟ้าที่ผลิตจากการนำเข้า Spot LNG จะสูงกว่าต้นทุนการผลิตไฟฟ้าจากเชื้อเพลิงอื่นและพลังงานหมุนเวียนถึง 3-10x
- เราชอบ PTTEP และ BANPU ในกลุ่มต้นน้ำและ IVL, ESSO, BGRIM, GULF และ EA ในกลุ่มปลายน้ำ

### Upside ในด้านความต้องการจากฤดูหนาวและ Downside ในด้านอุปทานจาก OPEC+

เราเชื่อว่าราคาของ 3 สินค้าโภคภัณฑ์หลักอันประกอบด้วยก๊าซ ถ่านหินและน้ำมันจะปรับขึ้นอีกครั้งในฤดูหนาวที่กำลังจะมาถึง (ต.ค. 22 ถึง เม.ย. 23) หลังราคาปรับลงในเดือน มิ.ย. – ก.ค. 2022 ซึ่งยืนยันมุมมองราคาน้ำมันเชิงบวกของเราในช่วง 2H22-2023 เราคาดว่าราคาน้ำมันดิบดูไบเฉลี่ยจะอยู่ที่ USD120/bbl ในปี 2022 และ USD110/bbl ในปี 2023 โดยปัจจัยบวกสำคัญน่าจะมาจากทั้งปัจจัยด้านอุปทาน (การเพิ่มการผลิตในระดับต่ำของ OPEC+ รวมถึงของน้ำมันและก๊าซจากชั้นหินดินดานในสหรัฐฯ, กำลังการผลิตที่เหลือน้อยของ OPEC, การผลิตที่ลดลงของรัสเซีย, และการส่งออกที่ลดลงจากจีน) และด้านอุปสงค์ (ความต้องการน้ำมันดีเซล, น้ำมันเตาซัลเฟอร์สูง, และน้ำมันเชื้อเพลิงอากาศยานที่โตสูง)

### สมมติฐานราคาของเรายังเป็นเชิงบวก

เราคงสมมติฐานราคาน้ำมันดิบดูไบที่ USD120/110/110 ดอลลาร์เรลในปี 2022-24 เนื่องจากเราคิดว่ากำลังการผลิตที่เหลือน้อย, ความเสี่ยงด้านอุปทานจากน้ำมันดิบรัสเซีย, และการเติบโตของความต้องการน้ำมันเชื้อเพลิงอากาศยานและน้ำมันดีเซลในฐานะเชื้อเพลิงหลักสำหรับทำความร้อนและเชื้อเพลิงทดแทนสำหรับก๊าซจากรัสเซียจะช่วยผลักดันราคาน้ำมันให้ปรับขึ้นอีกครั้ง เราคงสมมติฐานดัชนีราคาถ่านหิน Newcastle ไร่ที่ USD300/250/250 ดอลลาร์ในปี 2022-24 เนื่องจากเราคาดว่าความต้องการถ่านหินของจีนและสหภาพยุโรปจะปรับขึ้นเพื่อปรับสมดุลระหว่างอุปสงค์และอุปทานในปี 2022-24 ให้ดีขึ้นต่อเนื่อง เราคงสมมติฐานดัชนีราคาก๊าซ Henry Hub ไร่ที่ USD7/6/6 ดอลลาร์ในปี 2022-24 เพื่อสะท้อนความต้องการที่อยู่ในระดับสูงสำหรับการส่งออก LNG ไปยังสหภาพยุโรป

### ทางเลือกระหว่างการเพิ่มของต้นทุนไฟฟ้าและความมั่นคงในด้านไฟฟ้า

ภายใต้ราคา Spot LNG ในปัจจุบันที่ USD56/mmbtu เราคาดว่าต้นทุนไฟฟ้าที่ผลิตจากการนำเข้า Spot LNG จะอยู่ที่ 20 บาท/kWh ซึ่งสูงกว่าต้นทุนการผลิตไฟฟ้าจากเชื้อเพลิงอื่นและพลังงานหมุนเวียนประมาณ 3-10x การผลิตก๊าซที่ลดลงจากแหล่งเอราวัณได้ทำให้รัฐบาลไทยพยายามลดการนำเข้า Spot LNG ให้มีน้อยที่สุดและทดแทนการนำเข้าด้วยน้ำมันดีเซล น้ำมันเตาซัลเฟอร์สูง และโรงไฟฟ้าพลังน้ำ BGRIM ยังเป็นผู้ทำขิงที่น่าจะชนะภายใต้ผลกระทบที่เป็นบวกสุทธิของการเพิ่มค่า Ft เมื่อเทียบกับต้นทุนก๊าซที่ปรับขึ้น เนื่องจากเราคาดว่า BGRIM อาจได้รายได้เพิ่มถึง 1.5 พัน ลบ. จากค่า Ft ที่ปรับขึ้น 0.69 บาท/kWh ซึ่งจะชดเชยต้นทุนก๊าซที่คาดว่าจะเพิ่ม 1.2 พัน ลบ. จากราคาก๊าซที่จะปรับขึ้น 20-70 บาท/mmbtu ในช่วง 2H22.

### 7 หุ้นเด่นประกอบด้วย PTTEP, BANPU, IVL, ESSO, BGRIM, GULF, และ EA

ตรงกันข้ามกับมุมมองของตลาด เราเชื่อว่าราคาน้ำมัน ถ่านหินและก๊าซที่อยู่ในระดับสูงจะเป็นแรงผลักดันที่ดีสำหรับการลงทุนในช่วง 2H22-2023 ในกลุ่มพลังงานของไทยเราเลือก PTTEP และ BANPU ในกลุ่มต้นน้ำและ IVL, ESSO, BGRIM, GULF, และ EA ในกลุ่มปลายน้ำเป็น 7 หุ้นเด่นของเราจากประโยชน์ที่ได้ในระดับสูงเมื่อเทียบกับราคาน้ำมัน ถ่านหินและก๊าซในตลาดโลกที่ปรับขึ้น, กำลังการผลิตที่เพิ่มขึ้น (PTTEP, BANPU, และ IVL) ซึ่งส่วนมากมาจากการซื้อกิจการในปี 2020-22, และประโยชน์จากค่า Ft ที่ปรับขึ้น (BGRIM และ EA)



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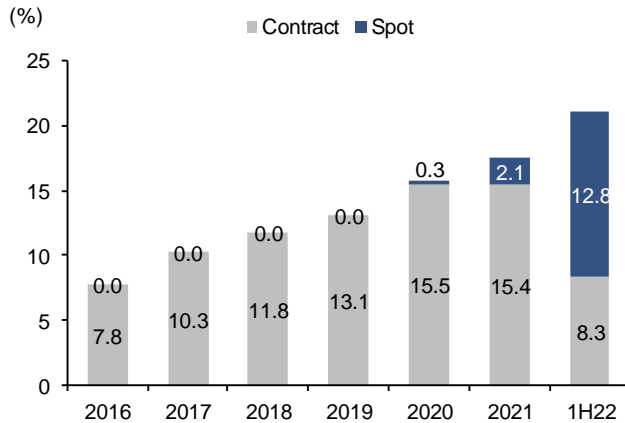
PREPARED BY FSS INTERNATIONAL INVESTMENT ADVISORY SECURITIES CO LTD (FSSIA). ANALYST CERTIFICATION AND IMPORTANT DISCLOSURES CAN BE FOUND AT THE END OF THIS REPORT

บทวิเคราะห์ฉบับนี้แปลมาจากบทวิเคราะห์ของ FSSIA ฉบับวันที่ 22 สิงหาคม 2022

## Commodity party and utility rally are coming this winter

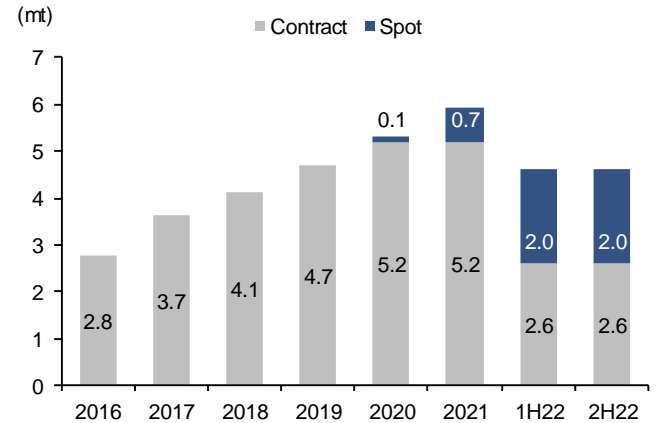
In the past nine months, Thailand has seen its gas cost significantly spike by almost 2x y-y from THB220/mmbtu on average in 2021 to THB430/mmbtu in 1H22, driven mainly by a higher import volume of spot LNG at 2mt in 1H22, up from 0.1mt in 2020 and 0.7mt in 2021. This is thanks to the sharp rise in the spot LNG price due to the sudden tight supply and an abrupt demand jump from the EU to hastily replace its Russian gas imports as a part of the sanctions by the US and the EU in response to Russia's invasion of Ukraine.

**Exhibit 1: LNG imports as % of Thailand's gas supply**



Source: EPPO

**Exhibit 2: LNG import amounts in 2016-1H22**

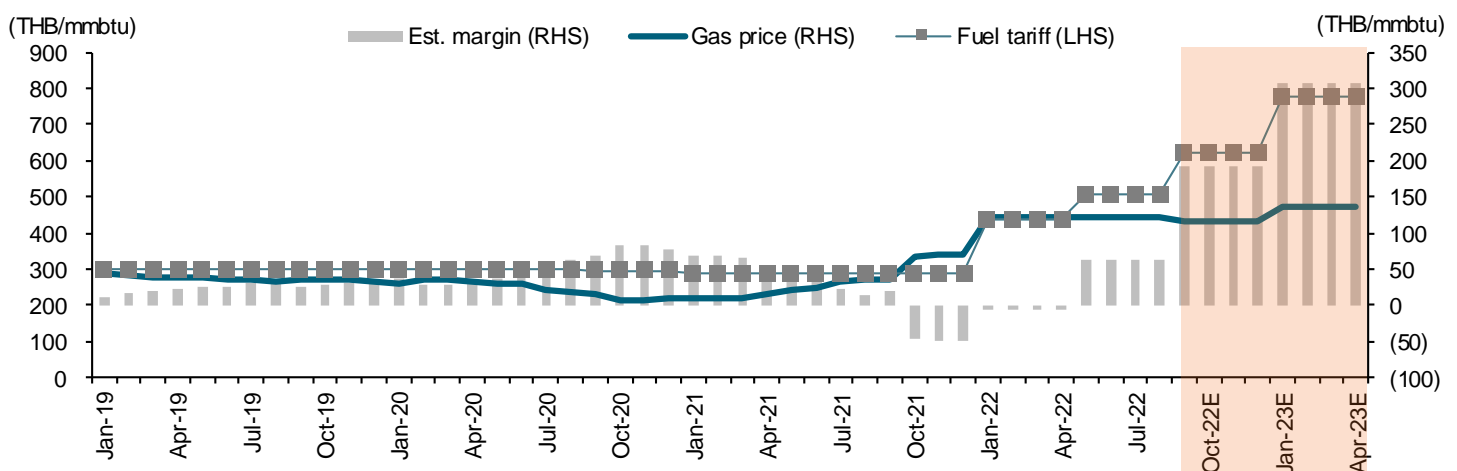


Source: EPPO

According to the Energy Planning Policy Office (EPPO), Thailand has imported a total 4.6mt of LNG in 1H22, comprising 2.6mt of contract LNG and 2.0mt of spot LNG. While the imported amount of spot LNG in 1H22 is lower than the contract LNG amount, the impact on the country's pool gas price – a weighted average gas price from the domestic Gulf of Thailand, imports from Myanmar, and LNG – has been significant, contributing to around a THB100-150/mmbtu rise in the pool gas price due to the high price of USD29/mmbtu vs average gas prices of only USD8/mmbtu for gas from the Gulf of Thailand, USD13/mmbtu for gas from Myanmar, and USD15/mmbtu for contract LNG imports, based on our estimates.

The sharp rise in the pool gas price has in turn greatly driven the electricity tariff cost up by over 60% as Thailand's gas-fired power generation accounts for two-thirds of the total. To help alleviate high living costs and tame inflation, the Thai government decided to delay the increase in the national electricity tariff by increasing the fuel tariff (Ft), which will be adjusted every four months for Jan-Apr, May-Aug, and Sep-Dec, to reflect the increase in the average energy costs for electricity production.

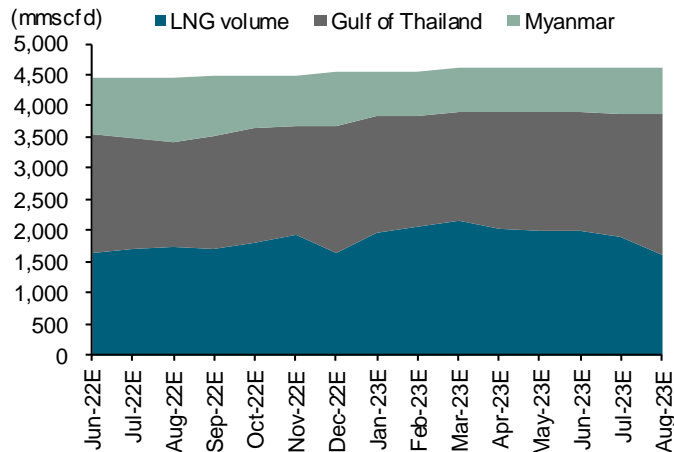
**Exhibit 3: Gas price, fuel tariff, and estimated margins for SPPs**



Sources: EGAT; BGRIM; FSSIA estimates

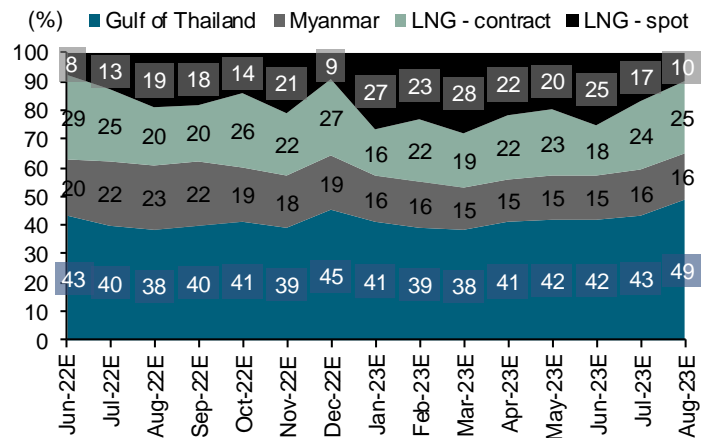
Based on the Energy Regulatory Commission (ERC)'s public hearing, Thailand plans to import a higher spot LNG volume in Jun-22 to Aug-23 as a result of the plunging gas supply from the Erawan gas field, Thailand's largest gas field, due to the "de-commissioning expense" dispute between Chevron (Thailand), the former operator of Erawan field, and the regulator, the Department of Mineral Fuels (DMF).

**Exhibit 4: Thailand's gas supply breakdown by source**



Source: ERC

**Exhibit 5: Thailand's gas supply breakdown by source (%)**

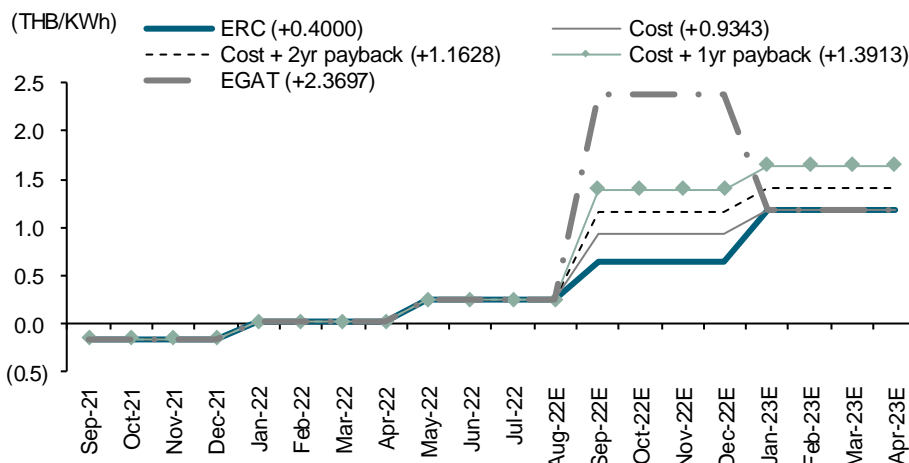


Source: ERC

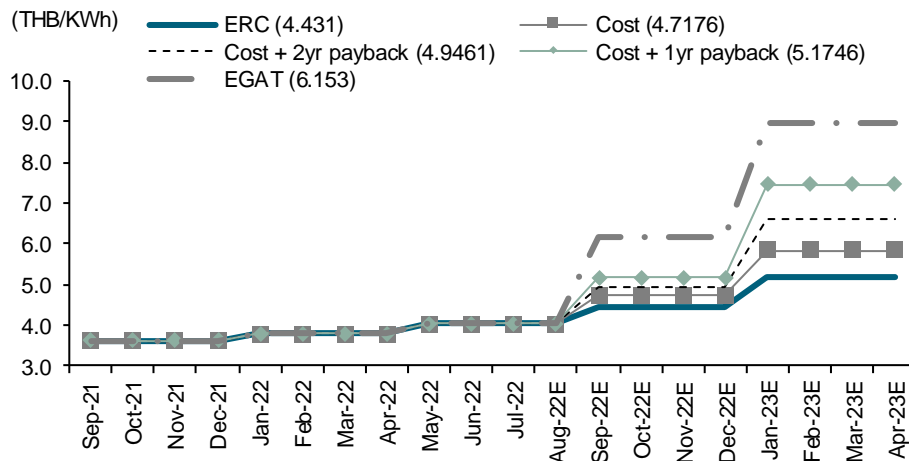
Under a number of scenarios for the Ft hike to cover different degrees of energy cost increases, both in the future and retroactively, the ERC decided to proceed with the THB0.69/kWh hike in the Ft, which would bring the national grid electricity tariff to THB4.72/kWh, up by THB0.69/kWh, for the period of Sep-Dec 2022.

The government had pushed the brakes twice on the ERC's proposal due to concerns over the rising cost of living for low-income people, but eventually on 15 Aug-22, the ERC finally announced the THB0.69/kWh Ft increase to bring the total Ft to THB0.93/kWh and the grid tariff to THB4.72/kWh, in line with the previously proposed scenario by the ERC.

**Exhibit 6: ERC's proposed cases for the FT hike**



Source: ERC

**Exhibit 7: Electricity tariff under different cases proposed by the ERC**

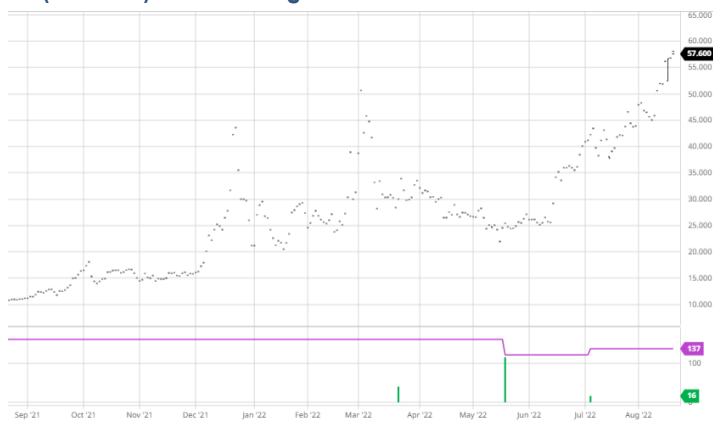
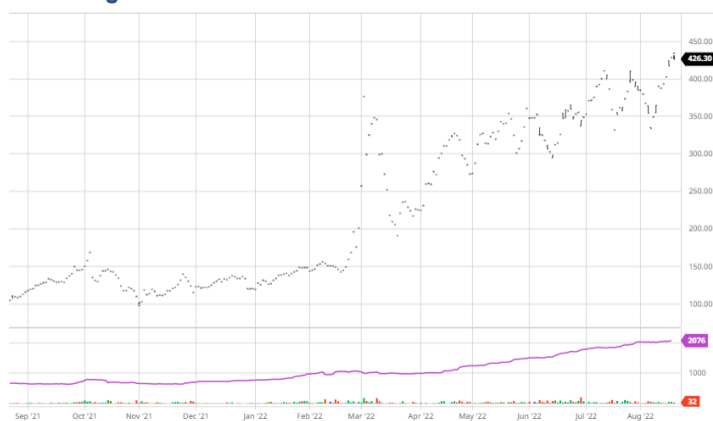
Source: ERC

Under the approved THB0.69/kWh Ft hike, however, we estimate that the Ft increase will cover only 60-70% of the projected increase in the energy cost for electricity production in Sep-Dec 2022, due mainly to a higher-than-expected price for spot LNG imports.

As of 19 Aug-22, the Japan-Korea Market (JKM) spot LNG index benchmark futures have jumped to USD57/mmbtu, a historical record high, driven by the demand for gas to restock and consume for electricity production in EU countries in an attempt to cut Russian gas imports completely by the end of 2022, according to the US Energy Information Administration (EIA).

Meanwhile, the prices of other “substitute” fuels, including coal and oil, have surged in relation to the spike in the LNG price, as a result of the higher demand for electricity production, based on both economic (much cheaper than gas cost) and strategic reasons (sanctions).

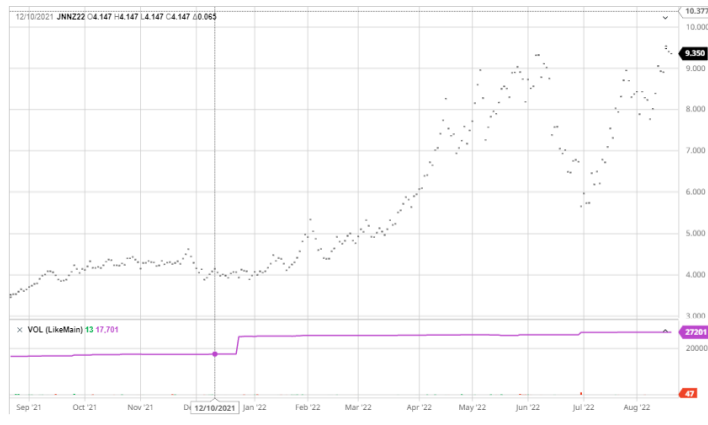
The Newcastle coal price index has similarly surged to a historical record high at USD426/tonne as of 19 Aug-22, and we expect the Newcastle index to rise further as we come closer to the upcoming winter, as the demand for coal as a substitute fuel for Russian gas and the exorbitantly expensive spot LNG should surge while the coal supply remains tight.

**Exhibit 8: LNG futures based on South East Asian price Oct-22 (JKMV22) as of 19 Aug-22**Source: [Barchart.com](https://www.barchart.com)**Exhibit 9: ICE Newcastle coal price index Oct-22 (LQV22) as of 19 Aug-22**Source: [Barchart.com](https://www.barchart.com)

The Henry Hub gas price index in the US market has soared to a historical record high at USD9.35/mmbtu, even surpassing its previous peak at USD9.31/mmbtu on 6 Jun-22, despite the loss of the LNG export capacity by 20% since the fire incident at the Freeport LNG terminal in Jun-22, the US' largest LNG terminal.

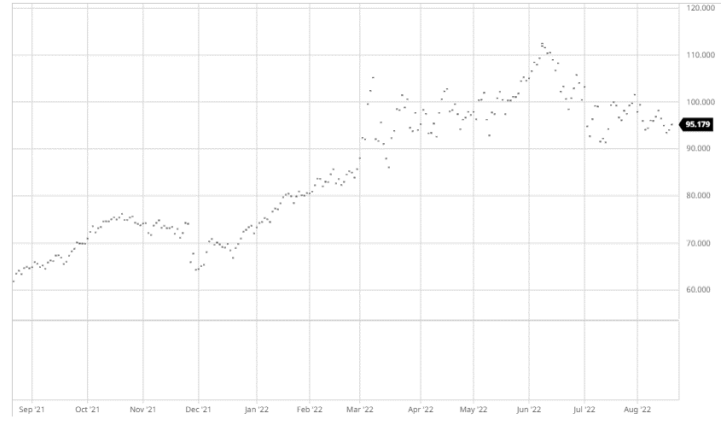
Other substitute fuels for gas and LNG are diesel and high sulphur fuel oil (HSFO), whose prices will directly impact the global crude oil price as diesel and HSFO combined account for over 40% of the global oil demand.

**Exhibit 10: Henry Hub gas swap Dec-22 (JNNZ22) as of 19 Aug-22**



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

**Exhibit 11: Dubai crude oil swap futures Aug-22 (JDQ22) as of 19 Aug-22**

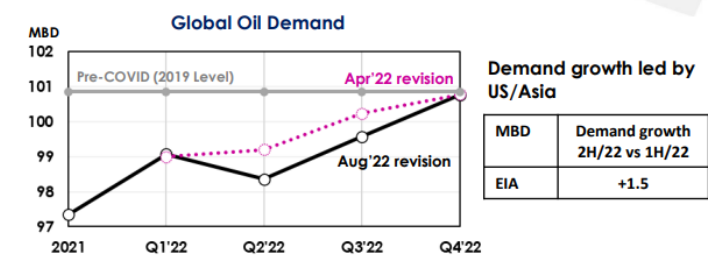


Source: [Barchart.com](https://www.barchart.com)

While we disagree with the EIA on the annual demand and supply growth outlook, we agree with the EIA's demand growth forecast of a 4mbpd increase in 2H22 to reach 101mbpd by Dec-22. As a result, we think that the global oil supply risk remains high and demand growth should rise at a higher rate than the EIA projects in 4Q22.

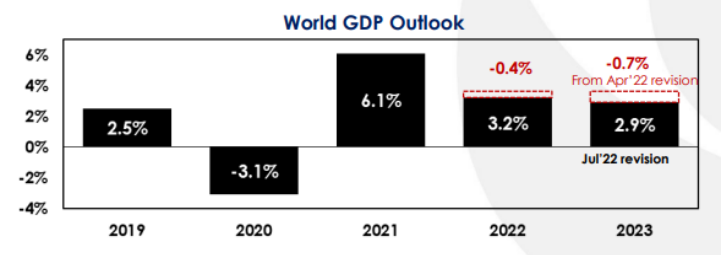
We can identify seven reasons that substantiate our bullish oil price view in 2H22-2023 to reach an average of USD120/bbl in 2022 and USD110/bbl in 2023.

**Exhibit 12: Global oil demand growth to accelerate in 2H22**



Sources: EIA; TOP

**Exhibit 13: GDP outlook remains healthy in 2022-23**



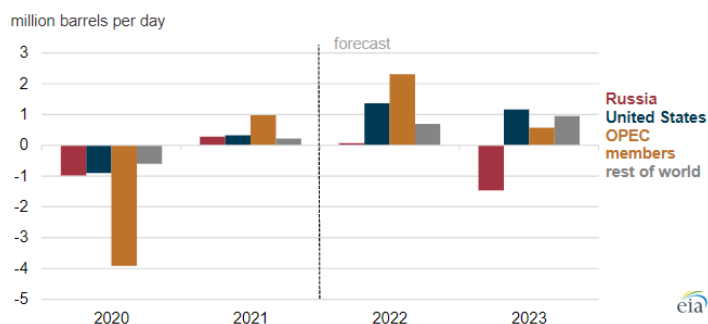
Sources: EIA; TOP

**Driver #1: 4Q22 oil demand could rise by 4mbpd y-y to 101mbpd, as projected**

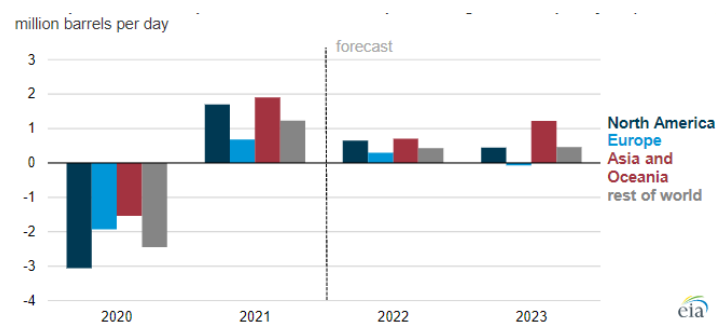
**by the EIA.** On a seasonal basis, the EIA still expects the global oil demand to grow to 101mbpd in 4Q22, up almost 4mbpd y-y from a mere 97.2mbpd in 4Q21, as a result of the rising demand for seasonal heating oil and as a substitute fuel for Russian gas for electricity production in many countries.

**But, the EIA expects the oil price to decline, with supply growth exceeding**

**demand growth in 2H22.** According to the EIA, the global oil supply growth is expected to surpass the oil demand growth in 2H22, premised on OPEC+'s decision to change the group's oil production to a higher target in 2H22-2023. Under the optimistic oil supply rise scenario, the EIA believes that the demand growth for oil will be around 2mbpd in 2022 as a result of the high inflation and rising interest rate. The EIA projects the global oil demand to reach 99.4mbpd in 2022, up 2mbpd y-y from 97.4mbpd in 2021, and grow by 1.9mbpd y-y to 101.5mbpd in 2023.

**Exhibit 14: Global oil supply growth projections by the EIA**

Source: EIA

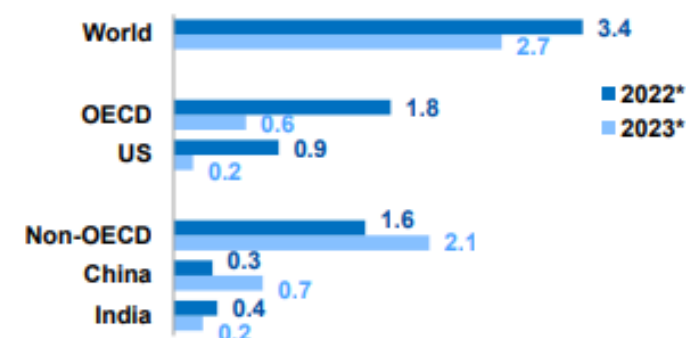
**Exhibit 15: Global oil demand growth projections by the EIA**

Source: EIA

**Driver #2: OPEC+ unlikely to raise production meaningfully.** We believe the supply from OPEC+ is likely marginally due to Russia and Saudi Arabia's cooperation to maintain the global oil price at a high level, while demand growth is likely to exceed 2mbpd in 2022, even under the high inflation and interest rate environments.

**Exhibit 16: Global oil demand growth forecasts by OPEC**

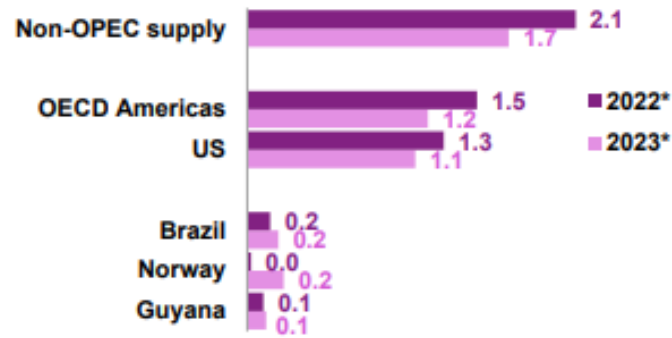
y-o-y changes, mb/d



Source: OPEC Monthly Oil Market Report – July 2022

**Exhibit 17: Global non-OPEC supply growth forecasts by OPEC**

y-o-y changes, mb/d

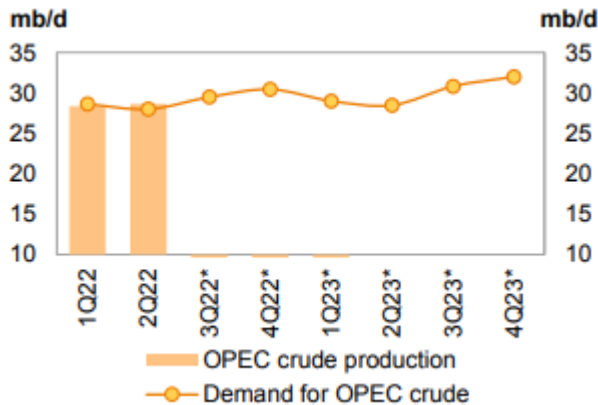


Source: OPEC Monthly Oil Market Report – July 2022

We believe OPEC+, not the US and other non-OPEC+ producers, is the most critical factor for the global oil price in 2H22-2023 thanks to the group's tight control over the global oil balance, which calls for higher oil production by OPEC+ ahead of the rising demand for oil for heating in the Northern Hemisphere in the coming winter.

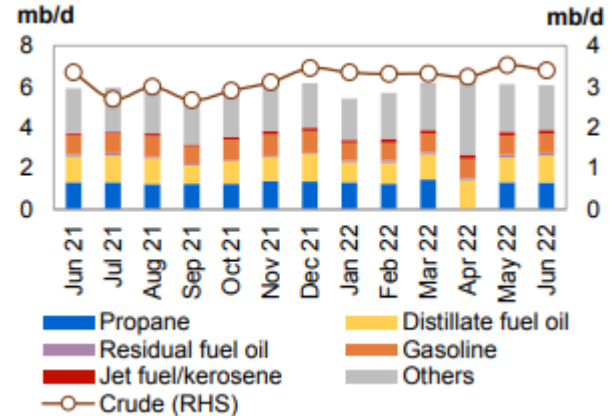
**Driver #3: US production increase is only marginal.** In 1H22, even with the sharp rise in the global oil price, the US has increased its oil exports at only a marginal level, despite the more than 1mbpd projected oil production increase, as domestic demand remains strong and the oil pipeline bottleneck still persists.

**Exhibit 18: Balance of oil supply and demand in 2022-23 as projected by OPEC in Jul-22**



Source: OPEC

**Exhibit 19: US exports of crude and products in 1H22**

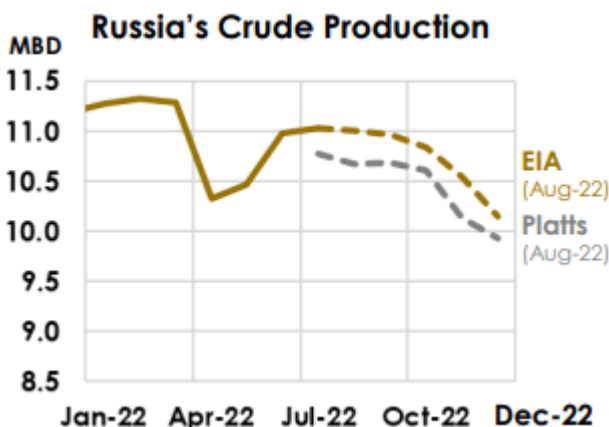


Source: EIA

**Driver #4: Russian oil production still has a downside in 2H22-2023.** Against the backdrop of the prolonged and intensifying sanctions against Russia by the US and its allies, we think Russian oil production is likely to decline by more than the current 1mbpd decline since the country was first sanctioned by the US and its allies.

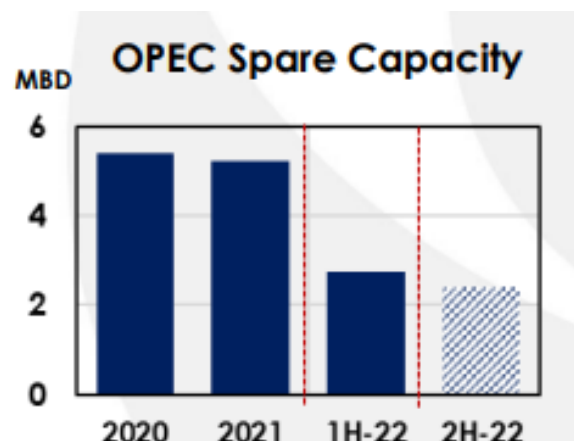
The main reason is the potential logistics disruptions as Russia needs to deploy small vessels to transport its oil and oil products to the buyers in Asia, mainly China and India. With the monsoon season coming, we think there is the potential that Russian crude shipments could be disrupted, resulting in a lower-than-expected oil supply from Russia, and hence globally.

**Exhibit 20: Russian oil production drop by 1mbpd could decline further in 2H22**



Source: EIA

**Exhibit 21: OPEC's spare capacity is low**



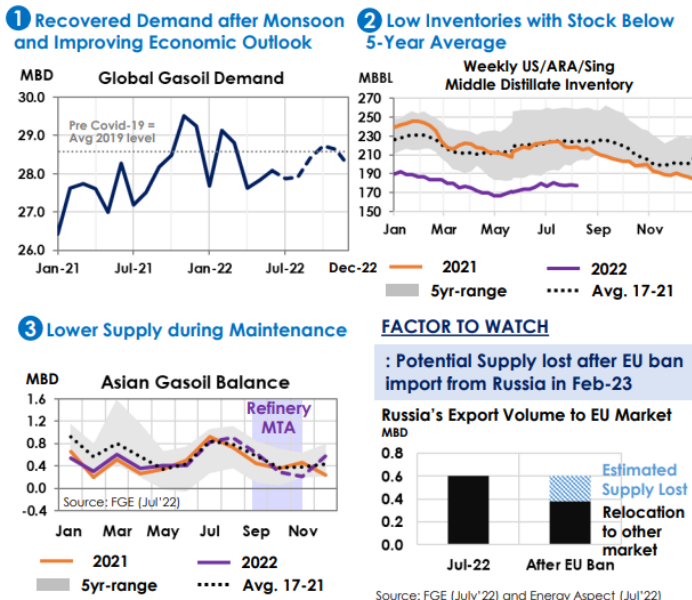
Source: OPEC



**Driver #5: OPEC's low spare capacity.** As of Aug-22, according to the EIA, OPEC's spare capacity remains extremely low at 2.2mbpd, down from 2.4mbpd in 1H22 and 5.7mbpd in 2021, as OPEC needed to ramp up its production to fill the supply loss from Russia and serve the strong demand growth in 1H22.

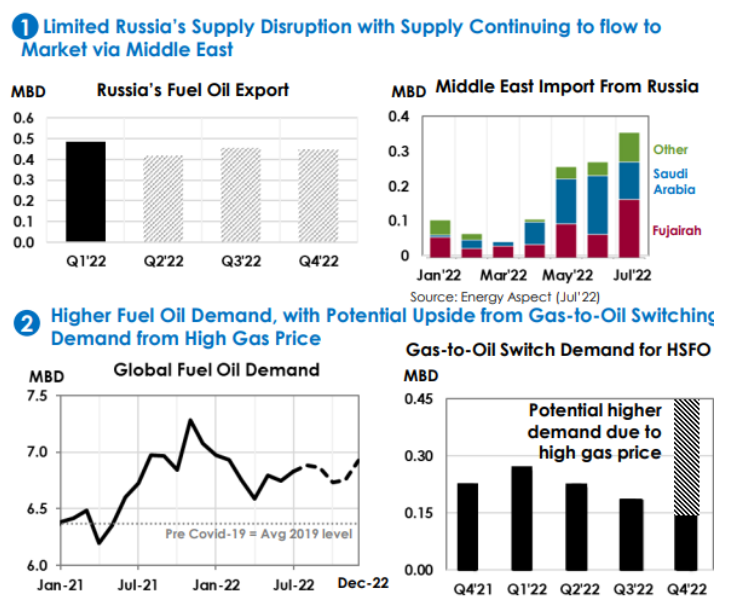
We would like to highlight that the current 2mbpd spare capacity for OPEC is almost equal to the level that OPEC had back in 2007-08 when the global oil price had risen to hit the demand-rationing level of USD147/bbl in 2008, as the global demand growth had markedly exceeded the supply growth and hence eventually drove up the oil price to the historically high level.

#### Exhibit 22: Gasoil (diesel) demand and inventory



Source: TOP

#### Exhibit 23: HSFO demand and inventory



Source: TOP

**Driver #6: Stronger-than-expected demand for diesel and HSFO in the coming winter.** We strongly believe that in the coming winter, regardless of how cold the weather will be, the demand for diesel and HSFO will be strong and likely exceed market expectations, driven by both seasonal demand for heating and as a substitute fuel for Russian gas and oil for electricity production globally, particularly in the EU, to prevent any fatalities from the cold winter in the northern hemisphere.

**Diesel demand growth could surprise on the upside in 4Q22-1Q23.** According to Thai Oil (TOP TB, BUY, TP THB70)'s 2Q22 presentation, in addition to the demand for gasoil being projected to rise by over 1mbpd in this coming winter for seasonal heating, the demand for diesel should be further boosted as a substitute fuel for the Russian gas used for electricity generation in the EU as the sanctions would likely cut Russian gas imports, both via pipeline and LNG terminals, to the EU by the end of 2022.

Meanwhile, global inventories of diesel have been standing at far lower than historical averages, including in the US, the EU, and Asia, thereby potentially leading to a sudden spike in the diesel price and margin over Dubai crude price, as we think only a marginal demand increase would greatly tighten the already tight diesel market.

HSFO is a wildcard fuel which could see a stronger margin over the Dubai crude oil price in the coming winter, as the Russian supply of HSFO is projected to stabilise, according to TOP. The sales volume losses to the EU market should be supplanted by rising demand in the Middle East market, as that region imports cheap Russian HSFO for power generation in exchange for higher exports of other refined oil products.

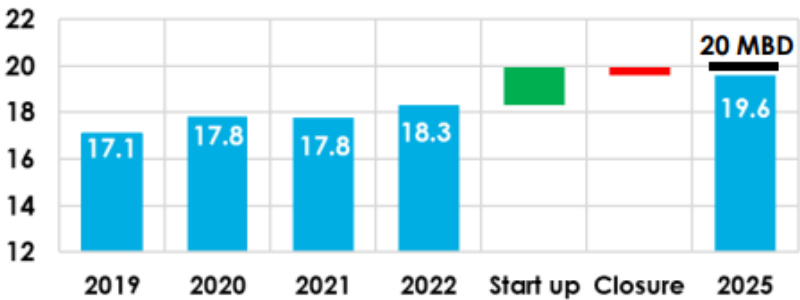


**Driver #7: Structurally lower exports from China.** China has continued to increase its refinery capacity to meet its targets in 2022-26 to achieve self-sufficiency in the long term and ensure energy and power security in the short term after its power blackout in 4Q21. According to TOP, China is expected to reduce its exports of refined oil products, including gasoline, jet, and gasoil in 2022-25 from 0.8mbpd in 2021 down to 0.6mbpd in 2023 and 0.2mbpd by 2025. This should bode well for the structurally bullish global GRM, in our view.

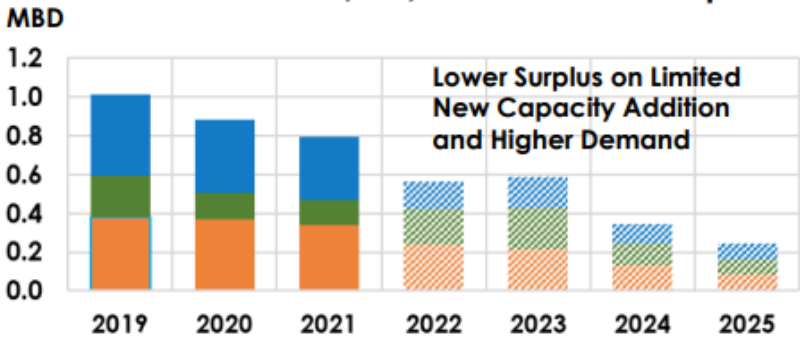
Exhibit 24: Lower exports of refined oils from China

**China Dual Policy (Oct'21) : Cap CDU capacity at max. 20 MBD by 2025 & force small refineries to be consolidated and limited new refinery addition to control emission**

**MBD China's Refinery Capacity Change 2022-2025**



**China's Gasoline/Jet/Gasoil Product Export**



Source: TOP

## Maintain bullish view on commodity price assumptions in 2022-24

With our projections of tighter supply and rising demand due to the rising demand for heating and as substitute fuels in this coming winter, along with the continued strong pent-up demand following the full reopening of the global economy, we maintain our bullish assumptions for oil, coal, and gas in 2022-24.

We believe the prices of three major commodities – gas, coal, and oil – are likely to rise again in the coming winter (Oct-22 to Apr-23) after the price corrections in Jun-Jul 2022. The key catalysts should come from both supply-side factors (low production increases from OPEC+ and US shale oil and gas, OPEC's low spare capacity, the decreasing production from Russia, and lower exports from China) and demand-side factors (solid demand growth for diesel, HSFO, and jet).

**Oil:** We maintain our Dubai oil price assumptions of USD120/110/110 per bbl for 2022-24 as we think the low spare capacity, the supply risks for Russian oil, and the demand growth for jet, gasoline, and particularly diesel as a key fuel for heating and a substitute fuel for Russian gas, will likely drive up the oil price again. If China decides to reopen its economy and allow its people to travel abroad, we think this will be a surprisingly positive catalyst to support the Dubai oil price in 2022.

**Coal:** Our Newcastle coal price index assumptions of USD300/250/250 per tonne for 2022-24 are based on our expectation of stronger demand for coal from China and the EU to further tighten the demand-supply balance in 2022-24.

**Gas:** We keep our assumptions for the Henry Hub gas price index of USD7/6/6 per mmbtu in 2022-24 to reflect the strong demand for LNG exports to the EU and the rising demand for gas in the domestic market. We also maintain our assumptions for the JKM spot LNG price at USD20/15/15 per mmbtu in 2022-24, supported by the impact of the rising demand in the EU and the limited supply growth outside the US.

### Exhibit 25: FSSIA's commodity price assumptions

	2022E	2023E	2024E
	(USD/t)	(USD/t)	(USD/t)
Newcastle coal price index	300	250	250
	(USD/bbl)	(USD/bbl)	(USD/bbl)
Dubai crude oil price	120	110	110
	(USD/mmbtu)	(USD/mmbtu)	(USD/mmbtu)
Henry Hub gas price	7.0	6.0	6.0
	(USD/mmbtu)	(USD/mmbtu)	(USD/mmbtu)
Spot JKM LNG price	20	15	15

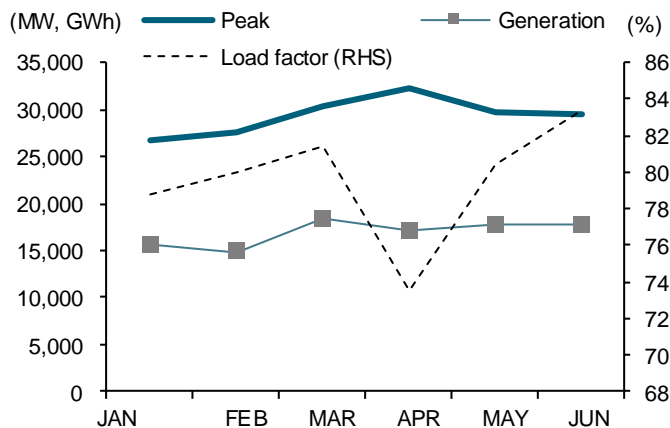
Source: FSSIA estimates

## Thailand's power industry: Tariff dilemma on higher price vs energy security

Thanks to the country's demand recoveries for oil and power as a result of the strong number of tourist arrivals, continued solid exports, and rising domestic consumption, Thailand has seen the demand for electricity increase slightly y-y. It is projected to grow further on a y-y basis due to the tourism demand, according to the forecast by the Electricity Generating Authority of Thailand (EGAT).

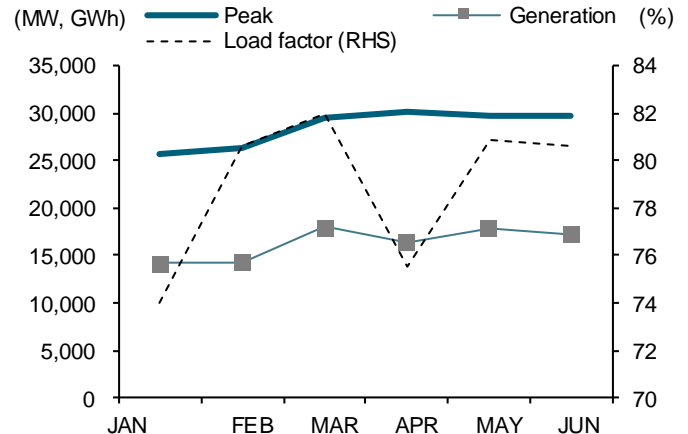
In Apr-22, Thailand's power peak demand hit 33GW, up from 29GW in Apr-21, despite the still weak demand from tourism in 1H22. We believe the demand for electricity in 2H22 will surpass that in 1H22 and 2H21 amid the gas supply shortfall, mainly from the gas production disruption from the Erawan gas field since 1Q22.

**Exhibit 26: Power peak demand, load factor, and generation in 1H22**



Source: EPPO

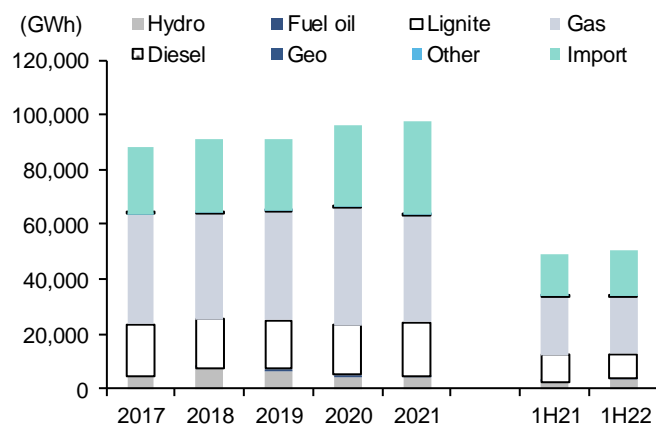
**Exhibit 27: Power peak demand, load factor, and generation in 1H21**



Source: EPPO

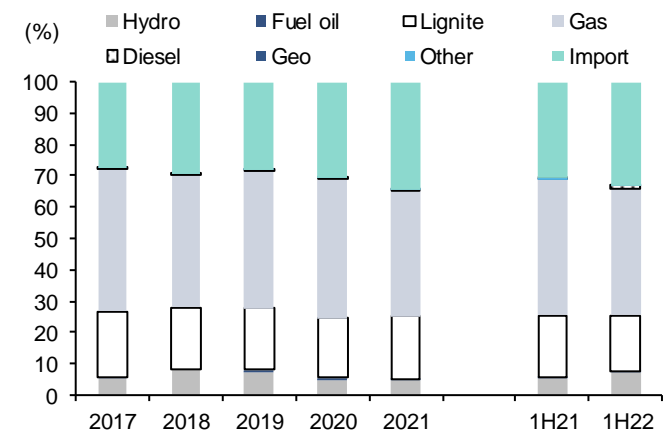
Gas-fired power plants, both independent power producers (IPPs) and small power producers (SPPs), have remained the country's most important source of power, accounting for 45-50% of total power generating production in 1H22, based on the EPPO's numbers.

**Exhibit 28: Thailand's power production breakdown by fuel type**



Source: EPPO

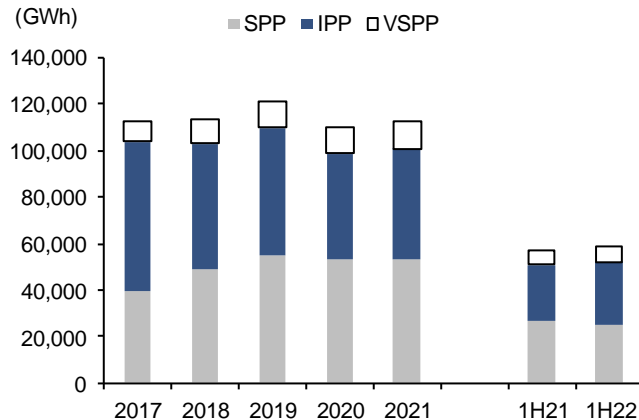
**Exhibit 29: Thailand's power production breakdown by fuel type (%)**



Source: EPPO

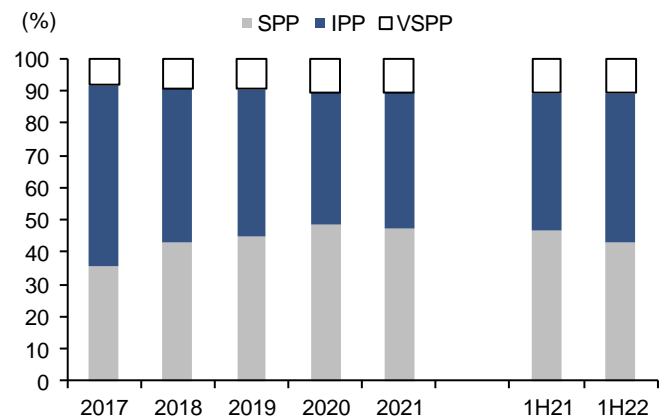
Under private power producers, including large-scale IPPs (0.7GW-2GW), small-scale SPPs (10-150MW), and very small power producers (VSPPs), Thailand consumes an average of 4,500mmscf of gas, around one-third of this being imported from Myanmar via piped gas and from a number of LNG exporters of contract and spot LNG.

**Exhibit 30: Thailand's power production breakdown by power plant type**



Source: EPPO

**Exhibit 31: Thailand's power production breakdown by power plant type (%)**

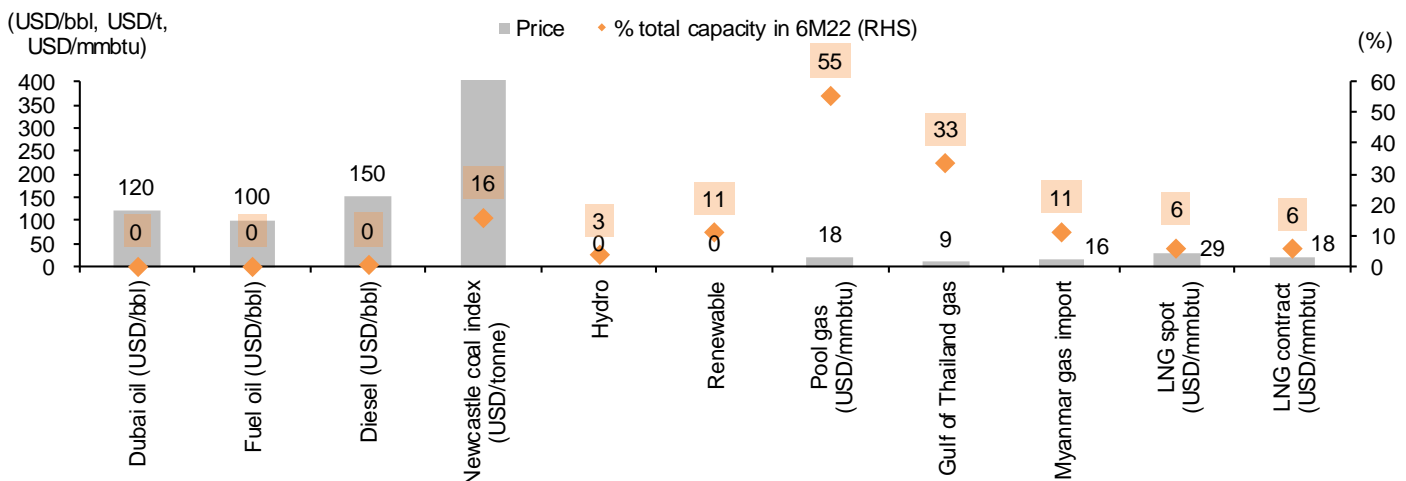


Source: EPPO

As the energy prices have jumped markedly due to the rising supply risk from the Russian energy supply disruptions and the impact of the sanctions, Thailand has seen its electricity production cost rise by over 2x y-y in 1H22. The key culprit for the spike in electricity production cost is the higher price of imported spot LNG, which has surged by over 10x YTD.

While spot LNG accounted for only 6% of total power generation in 1H22, its price impact has affected the overall electricity generation cost. The price of spot LNG, which averaged USD29/mmbtu in 1H22 for Thailand, is far above the prices of other fuels used for electricity generation, including fossil fuels like coal, diesel, HSFO, and renewable energy like wind, solar, biomass, and waste-to-energy (WTE) power plants.

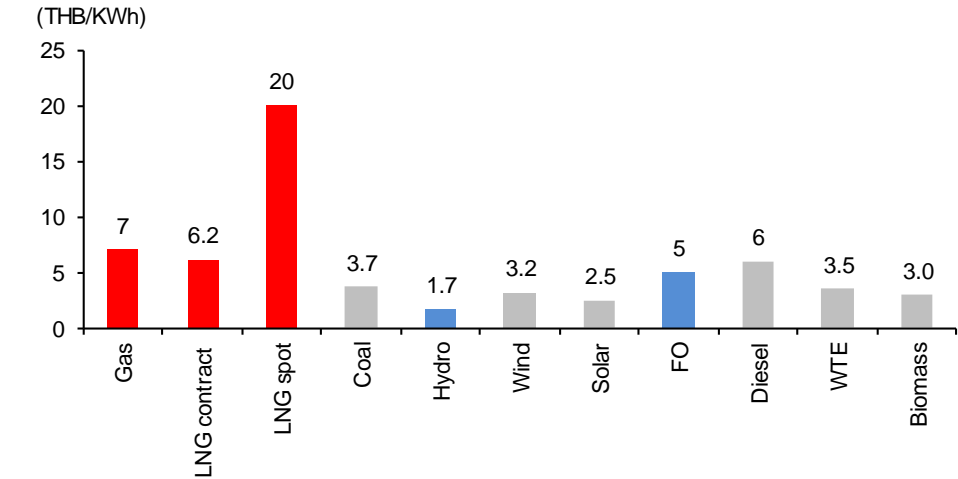
**Exhibit 32: Thailand's electricity prices and % share of capacity by fuel sources and types**



Sources: EGAT; EPPO; FSSIA estimates

**Spot LNG-based power generation cost is 3-10x higher than other power sources.** Under the current USD56/mmbtu spot LNG price, we estimate that the cost of electricity produced by spot LNG imports would be USD20/kWh, around 3-10x higher than the electricity production costs of other fuels and renewables. This led to Thai government to attempt to minimise the import of spot LNG and replace it with diesel, HSFO, and hydropower plants.

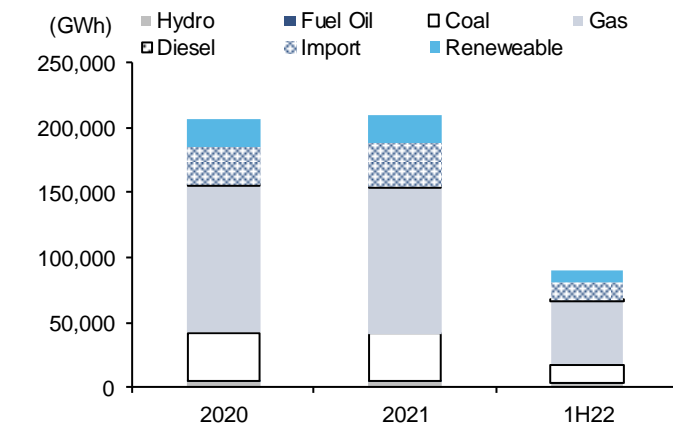
**Exhibit 33: Estimated cost of electricity production by fuel**



Sources: EGAT; EPPO; FSSIA estimates

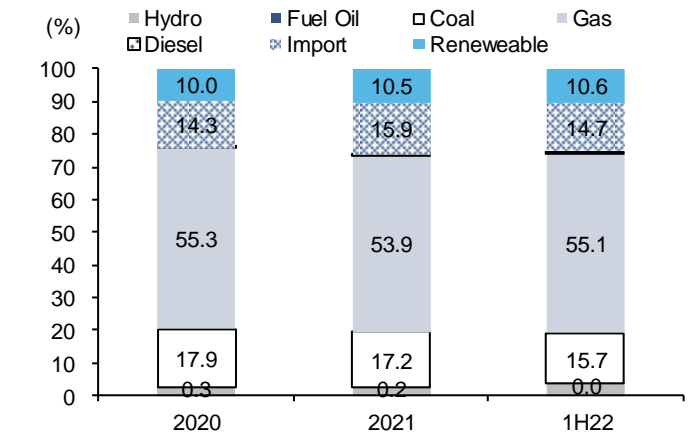
Unfortunately, the potential power generation substituted by other non-LNG sources will be limited due to seasonality (hydro, renewables), availability and logistics problems (diesel, coal, HSFO), and technical and transmission constraints (imports of power). Hence, Thailand is still facing a high supply risk and high price risk for the electricity industry in 2H22, in our view.

**Exhibit 34: Thailand's power generation breakdown by source**



Source: EPPO

**Exhibit 35: Thailand's power generation breakdown by source (%)**

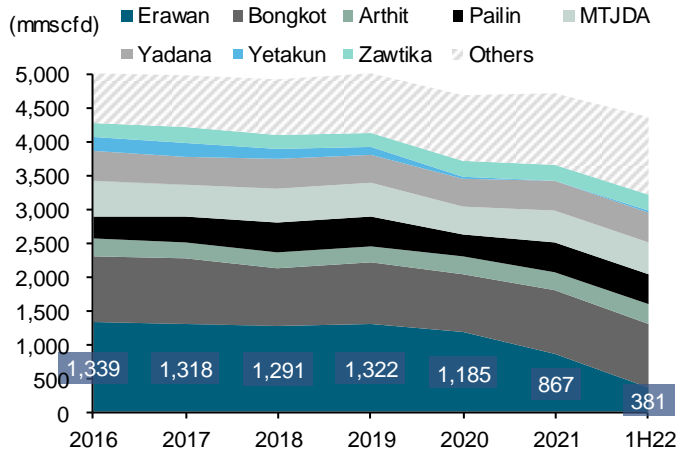


Source: EPPO

**Erawan gas production: Thailand's current Achilles heel.** Thanks to the dispute between the DMF and Chevron (Thailand), the gas production of Erawan has sharply fallen from 1,322mmscfd in 2019 to 1,185mmscfd in 2020, 867mmscfd in 2021, and precipitately plunged to only 381mmscfd in 1H22.

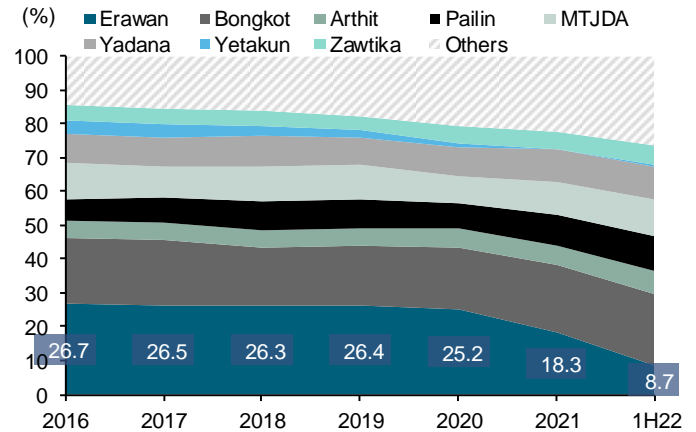
Under the new production service contract (PSC) for Erawan, the gas production will decline from 1,200mmscfd to 800mmscfd, while the actual gas production has now dropped to below 400mmscfd – a 400mmscfd (2.9mt of LNG) shortfall under the new PSC and 800mmscfd (5.7mt of LNG) shortage from the previous concession.

**Exhibit 36: Gas production by field**



Sources: DMF; EPPO

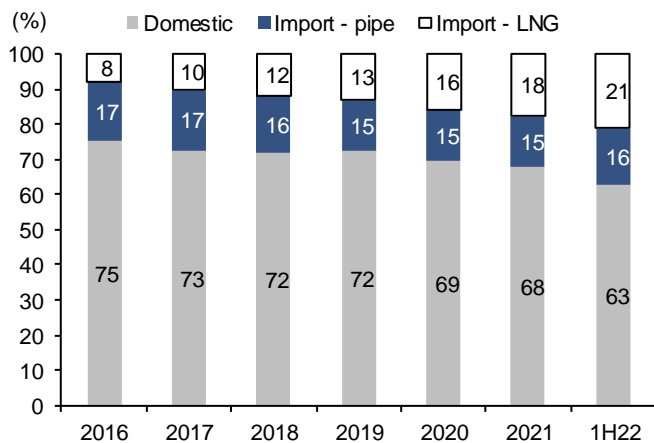
**Exhibit 37: Gas production by field (%)**



Sources: DMF; EPPO

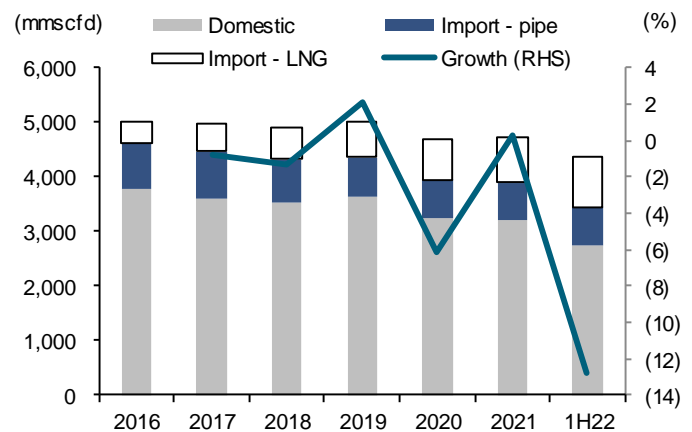
According to PTTEP, the new operator of Erawan under PSC, the gas production of Erawan will stay below 300mmscfd in 2H22 before gradually increasing to 500-600mmscfd by the end of 2023 and reaching the 800mmscfd target by mid-2024. Hence, Thailand needs to import more LNG during 2022-24 to replace the gas supply shortfall from Erawan.

**Exhibit 38: Thailand's gas supply breakdown by source (%)**



Source: EPPO

**Exhibit 39: Thailand's gas supply breakdown by source**

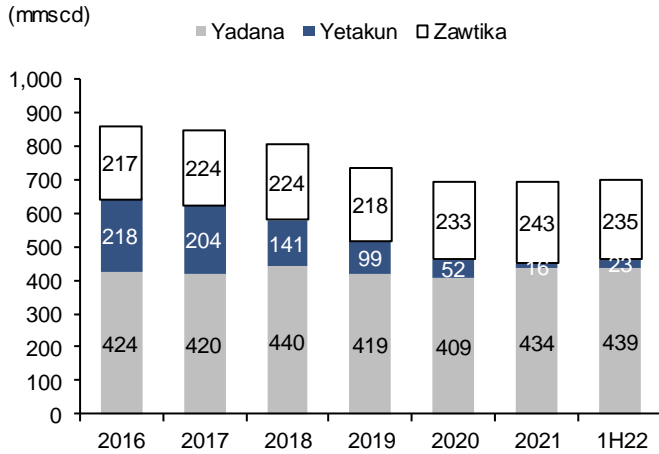


Source: EPPO



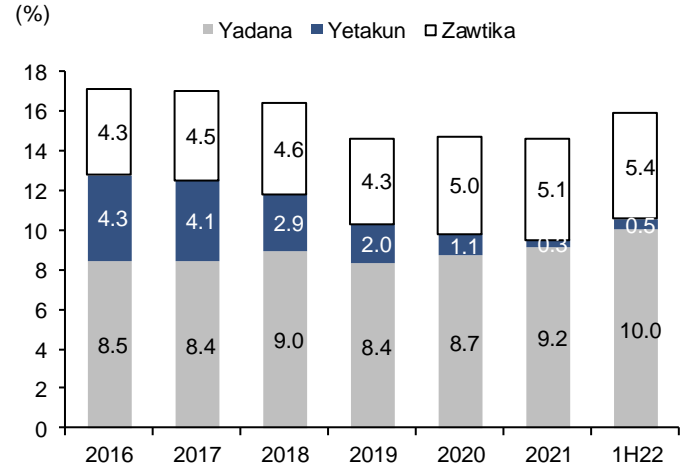
**Gas imports from Myanmar to decline in 2H22-2024.** Even after the return of the gas pipeline to normal operations after the transmission leak for the gas produced from three gas fields in Myanmar's offshore sea – Yadana, Yetakun, and Zawtika – the gas supply from Myanmar is projected to decline by 100-200mmscfd in 2H22 onward due to the natural depletion of the Yetakun gas field, further tightening the gas supply for Thailand in 2022-24, according to the DMF.

**Exhibit 40: Gas production of three fields in Myanmar**



Source: DMF

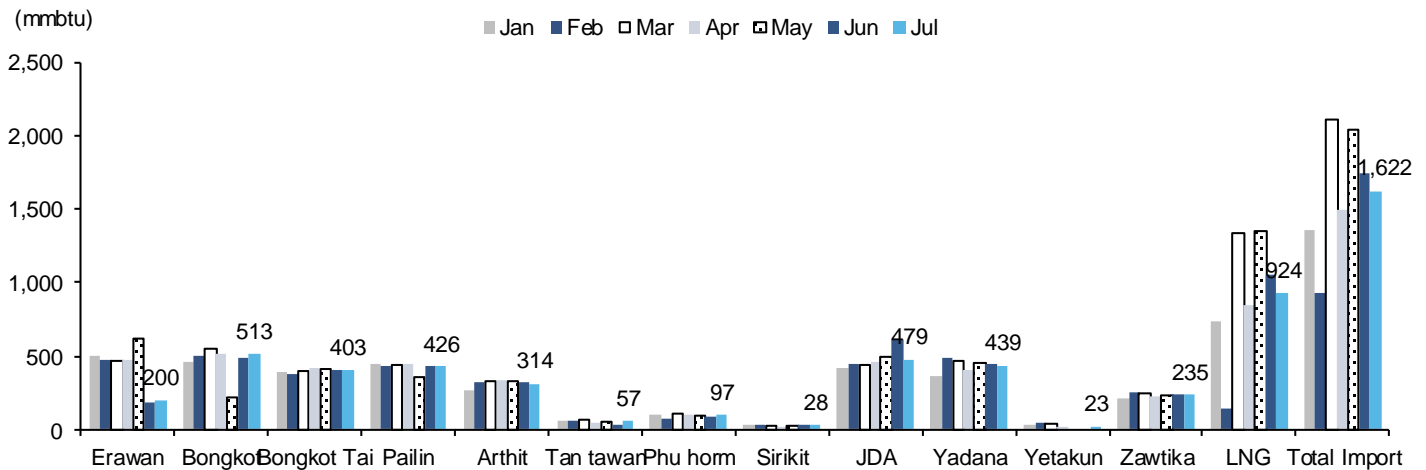
**Exhibit 41: Gas production of three fields in Myanmar (%)**



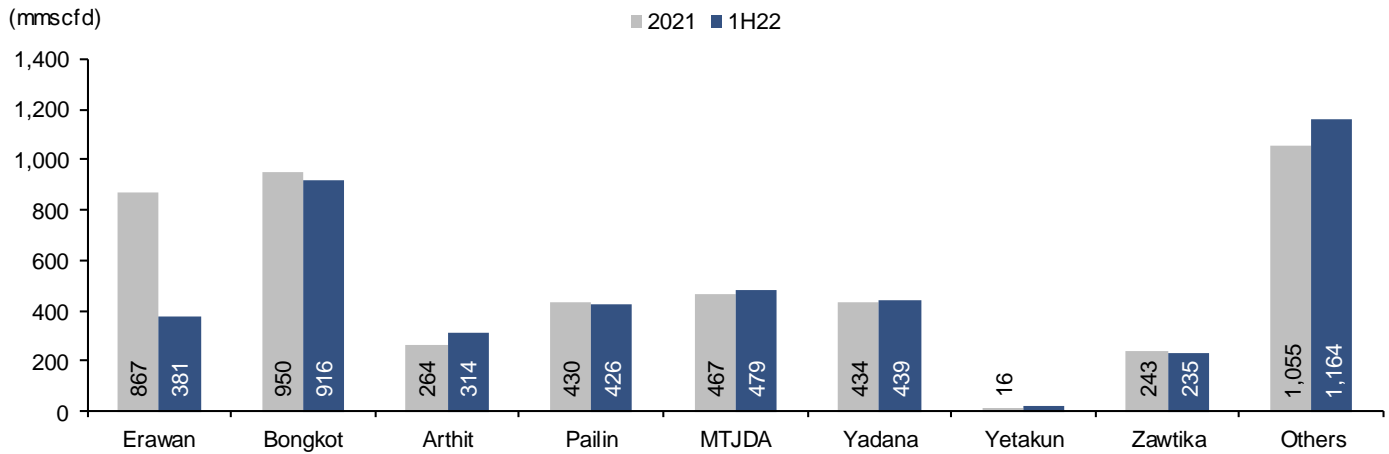
Source: DMF

In 1H22, according to the DMF, the gas production from Erawan has significantly shrunk from 500mmscf in January to only 185mmscf in Jun-22, and is projected to remain low under 250mmscf in 2H22. Despite the additional gas supplies from the rising gas production from other fields in the Gulf of Thailand, the gas supply shortfall from Erawan should remain substantial at 300-400mmscf, requiring higher imports of LNG, both contract and spot, to ensure power supply security in Thailand.

**Exhibit 42: Thailand's gas production by field**



Source: DMF

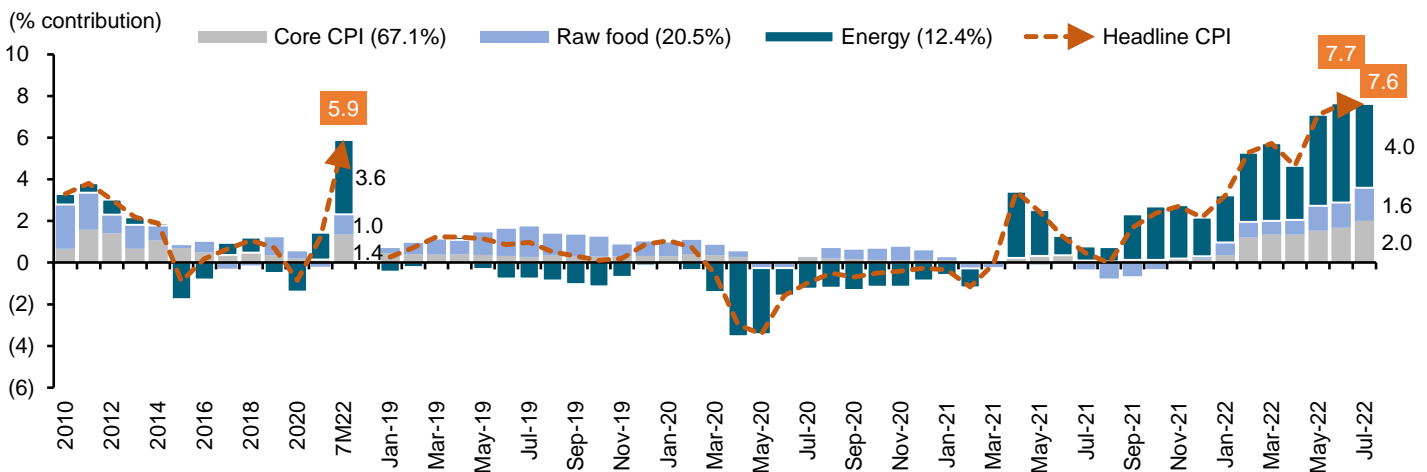
**Exhibit 43: Thailand's gas production by major field in 2021 and 1H22**

Source: DMF

**Inflation subsided on lower energy prices**

Thanks to the softening price of energy, Thailand's inflation rate declined marginally from 7.7% in June to 7.6% in Jul-22, with core inflation rising slightly to 2.0% in Jul-22. We think energy prices are the only major source of inflationary pressure in Thailand, not food, thanks to the country's large exports of fresh, frozen, and dried food and fruits.

However, the increase in the Ft by THB0.93/kWh for Sep-Dec 2022 would raise Thailand's headline inflation by 0.1-0.2% in the same period, based on our estimate. Hence, we expect the impact of the higher price of spot LNG imports to continue to be the most critical factor for Thailand's electricity tariff and headline inflation.

**Exhibit 44: Thailand's inflation rate at the end of Jul-22 declined to 7.6%, down from 7.7% in the prior month**

Data in brackets of legend indicate weighting of each component to headline CPI

Sources: Ministry of Commerce; FSSIA's compilation

## Winners under elevated prices of oil, coal, and gas and the higher Ft

Contrary to the consensus view, we believe that high oil, coal, and gas prices will provide a strong impetus for investment in 2H22-2023. In the Thai energy sector, we prefer both upstream PTT Exploration and Production (PTTEP TB, BUY, TP THB180) and Banpu (BANPU TB, BUY, TP THB18.80) and downstream Indorama Ventures (IVL TB, BUY, TP THB65), Esso Thailand (ESSO TB, BUY, TP THB13), B.Grimm Power (BGRIM TB, BUY, TP THB44), Gulf Energy Development (GULF TB, BUY, TP THB60), and Energy Absolute (EA TB, BUY, TP THB101) as our “Awesome Seven”, thanks to their high leverage over the higher global prices for oil, coal, and gas, capacity growth, mostly from inorganic acquisitions in 2020-22, including IVL’s acquisition of Huntsman’s and Oxiten’s integrated oxide and derivatives (IOD) assets and PTTEP’s acquisition of oil and gas assets in Malaysia, Oman, Myanmar, and Thailand.

**Oil & gas upstream (PTTEP as our top pick): PTTEP over PTT.** In Thailand’s energy sector, we continue to prefer PTTEP over PTT (PTT TB, BUY, TP THB50) in the upstream oil & gas segment, given PTTEP’s higher earnings leverage over the oil and gas price changes (1.2-1.5x over the price changes for oil & gas) and its production volume growth.

PTT, as a state-owned enterprise, should still face high subsidies for natural gas for vehicles (NGV), LPG for households and public transportation, its gas separation plants for LPG feedstock, and indirect subsidies via its associates’ downstream refinery and petrochemical companies.

We think the most visible catalyst for PTT’s share price and earnings will come from its EV manufacturing plant via the JV with Foxconn, scheduled to commence its commercial operation date in 1H24.

**Refinery downstream (ESSO): ESSO and SPRC over BCP and TOP.** We prefer two US-owned refiners, Star Petroleum Refining (SPRC TB, BUY, TP THB14.60) (owned by Chevron) and ESSO (owned by ExxonMobil) based on 1) no downsides from hedging losses; 2) higher upsides from the strong market GRMs on the back of high diesel and jet yields; 3) earnings growth from oil stations for ESSO; and 4) upsides from a higher utilisation rate for ESSO to serve the stronger domestic oil demand and ESSO’s oil station expansion.

**Petrochemical downstream (IVL): IVL and SCC over PTTGC and IRPC.** IVL stands as our top pick in the Thai petrochemical sector thanks to its high pricing power for the necessity polyester and PET bottle products with low demand elasticity, superior cost control, and strong inorganic growth. Most importantly, IVL’s regional pricing power from its production presence in every major continent should greatly benefit the company from the ongoing de-globalisation trend between the “West” of the US, the EU, and their allies and the “East”, led by the Sino-Russo stronghold and other countries in the BRICS group (Brazil, Russia, India, China, and South Africa).

We believe the recent weakness in IVL’s share price is due to investors’ concerns over the weaker margins of integrated PET-PTA in the West following the declining prices of oil and gas, which in turn reduced the import parity benefit for IVL’s margins of integrated PET-PTA. We expect the impact of the margin weakness to be more than offset by rising margins of IOD products and a margin turnaround of IVL’s ethane cracker in the US.

Despite the continued margin downsides for its chemical unit, Siam Cement (SCC TB, BUY, TP THB466) is now emerging as one of our preferred picks in the Thai petrochemical sector, based on 1) its well-diversified asset portfolio of packaging (SCG Packaging (SCGP TB, BUY, TP THB67)), cement and building materials, and petrochemicals; and 2) the visibly improving competitiveness and capacity growth from its new Longsan petrochemical complex in Vietnam, scheduled to be commercially running in 2023.

Both PTT Global Chemical (PTTGC TB, REDUCE, TP THB40) and IRPC (IRPC TB, HOLD, TP THB3.20) are likely to see continued weak earnings outlooks in 2H22-2023, mainly due to the chronic oversupply and high feedstock cost of naphtha. In addition, hedging losses from their product price swap hedging should remain key drags on their earnings in 2H22, based on our estimate.

**Coal & gas (BANPU):** BANPU stands out as our only top pick to greatly benefit from the spikes in global coal and gas prices, thanks to its reliable coal production in Indonesia, Australia, and China, and its fast-expanding shale gas portfolio via multiple timely acquisitions to capture the gas and LNG price hikes in 2022-24.

With our projected higher-for-longer coal price outlook towards USD500/t for the Newcastle index by end-2022, we expect Banpu's quarterly net profits in 2H22 to surpass the THB10b mark, potentially beating the market's expectations with a 3-4x 2022E P/E.

**SPPs (BGRIM):** BGRIM remains a strong contender to win under the net positive impact of the Ft hike over the gas cost rise. We estimate that BGRIM could earn up to an additional THB1.5b in revenue from the recent THB0.69/kWh hike to more than offset the projected THB1.2b rise from a THB20-70/MMBtu hike in the gas cost in 2H22, which we think is the worst-case scenario for BGRIM.

The gradual addition of five new SPPs in 2H22 and two new SPPs in 2H23 would further enhance BGRIM's operational competitiveness. We expect the company to gain an additional THB0.3b-1.0b in revenue when all seven new SPPs are complete and fully running by 1Q24.

Global Power Synergy (GPSC TB, HOLD, TP THB70) could still face an earnings downside from the net loss contributed from its acquired asset, Avaada, and the suboptimal operational performance of the acquired power plant assets from Glow Energy due to the frequent unplanned shutdowns.

**Conventional IPPs (GULF).** GULF and Ratch Group (RATCH TB, BUY, TP THB60) stand as two preferred IPPs for their strong and visible earnings growth outlooks from their multiple growth projects in the pipeline. In addition, GULF is likely to secure additional meaningful capacity growth from the soon-to-announce Power Development Plan 8 by Vietnam's government within 2022.

**EVs (EA):** EA's share price has consolidated at THB80-85 in the past two months due to the delays in its e-bus deliveries from 1Q22 and 2Q22 to 2H22. However, in 3Q22, EA's earnings growth should accelerate markedly, driven by the delivery of 800 e-buses in 3Q22, and the deliveries of EVs should continue into 2023 thanks to its large backlog of both e-buses and e-trucks, based on management's guidance.

#### Exhibit 45: Summary of key valuations of companies under coverage

Company	-- Share price --		Up (down)		Recur profit		NP growth		P/E		PBV		2022E			
	BBG	Rec	Current (THB)	Target (THB)	side (%)	22E (THB m)	23E (THB m)	22E (%)	23E (%)	22E (x)	23E (x)	22E (x)	23E (x)	ROE (%)	Div (%)	EV/EBITDA (x)
<b>Energy &amp; Utilities</b>						354,712	381,254	41.0	7.5	18.9	16.4	2.5	2.2	14.5	3.9	10.9
<b>Oil &amp; Gas</b>						265,096	283,815	37.5	7.1	12.4	10.8	1.4	1.3	13.5	4.8	6.5
PTT PCL	PTT TB	BUY	37.00	50.00	35	118,570	128,103	32.9	8.0	8.9	8.2	1.0	0.9	11.4	4.1	4.9
PTT Explor & Prod	PTTEP TB	BUY	157.50	180.00	14	54,880	51,174	13.1	(6.8)	11.4	12.2	1.4	1.4	12.9	5.6	4.6
PTT Oil & Retail	OR TB	BUY	26.50	32.00	21	11,654	13,879	(1.1)	19.1	27.3	22.9	3.0	2.8	11.3	1.8	15.8
Bangkok Aviation	BAFS TB	BUY	27.50	36.00	31	120	408	nm	240.4	146.3	43.0	3.9	3.5	2.6	0.3	21.8
Thai Oil	TOP TB	BUY	57.50	70.00	22	13,238	13,825	5.2	4.4	8.9	8.5	0.9	0.9	10.6	5.1	10.9
Star Petroleum Refin	SPRC TB	BUY	12.80	14.60	14	15,451	6,881	697.5	(55.5)	3.6	8.1	1.1	1.0	37.0	3.1	2.1
Bangchak Corp	BCP TB	BUY	33.25	41.00	23	13,119	4,129	285.7	(68.5)	3.5	11.1	0.7	0.7	22.7	14.3	3.7
PTG Energy	PTG TB	BUY	15.40	18.30	19	1,784	2,263	77.3	26.8	14.4	11.4	2.7	2.4	20.3	1.3	5.0
Esso Thailand	ESSO TB	BUY	12.30	13.00	6	20,866	6,968	2,167.5	(66.6)	2.0	6.1	1.1	1.0	73.4	4.1	1.7
Susco	SUSCO TB	BUY	3.66	3.50	(4)	303	365	29.6	20.5	13.3	11.0	1.0	0.9	8.1	2.2	9.6
Scan Inter	SCN TB	BUY	2.30	3.10	35	118	225	70.0	91.5	23.5	12.3	1.0	0.9	4.3	2.2	22.5
Banpu	BANPU TB	BUY	13.90	18.80	35	28,728	29,682	20.7	3.3	3.5	4.2	0.9	0.9	30.4	16.1	3.7
WP Energy	WP TB	BUY	4.56	5.90	29	189	225	0.0	0.0	12.5	10.5	1.8	1.7	14.7	5.5	3.1
<b>Petrochemical</b>						57,832	64,859	(17.9)	12.2	10.6	9.1	1.1	1.0	10.8	5.7	7.7
Indorama Ventures	IVL TB	BUY	43.75	65.00	49	36,355	38,465	66.1	5.8	6.8	6.4	1.2	1.1	20.4	8.2	5.6
IRPC PCL	IRPC TB	HOLD	3.46	3.20	(8)	7,301	13,273	(55.6)	81.8	9.7	5.3	0.8	0.7	8.4	5.2	4.9
PTT Global Chem	PTTGC TB	REDUCE	46.75	40.00	(14)	29,027	28,054	(7.4)	(3.4)	7.3	7.5	0.7	0.7	9.1	7.0	7.4
Global Green Chem	GGC TB	BUY	15.00	13.50	(10)	576	802	(25.7)	39.4	26.7	19.1	1.5	1.4	5.7	2.0	11.7
<b>Building materials</b>						63,830	67,812	24.3	6.2	8.3	7.8	1.2	1.1	15.5	4.7	8.8
Siam Cement	SCC TB	BUY	363.00	466.00	28	35,011	46,340	(25.8)	32.4	12.4	9.4	1.1	1.1	9.4	4.7	12.9
Eastern Polymer Group	EPG TB	BUY	9.60	16.00	67	1,448	1,670	20.9	15.3	18.6	16.1	2.3	2.1	12.7	2.5	13.7
Tipco Asphalt	TASCO TB	BUY	16.60	22.50	36	2,949	2,230	(1.6)	(24.4)	8.9	11.8	2.0	2.1	20.7	10.8	8.2

Share prices as of 19 Aug 2022

Sources: Bloomberg; FSSIA estimates



## 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	BDM5	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	PSH	SCM	SUSCO	TOA	VIH
AMATAV	BTS	DTAC	HANA	LHFG	NVD	PSL	SDC	SUTHA	TOP	WACOAL
ANAN	BTW	DUSIT	HARN	LIT	NWR	PTG	SEAFECO	SVI	TPBI	WAVE
AOT	BWG	EA	HMPRO	LPN	NYT	PTT	SEAOL	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	MTSIB	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
AMANA	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	SEAOL	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
PTT PCL	PTT TB	THB 37.00	BUY	Risks to our SoTP-based valuation are the oil price and potential earnings downsides from government intervention.
PTT Explor & Prod	PTTEP TB	THB 157.50	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.
PTT Oil and Retail Business	OR TB	THB 26.50	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.
Bangkok Aviation Fuel Services	BAFS TB	THB 27.50	BUY	Downside risks to our SoTP-based target price include a slower-than-expected vaccination rate, leading to slower demand in tourism activities, and uncertainty in the fuel volume demand in the north which could lead to volatility in Fuel Pipeline Transportation Limited (FPT)'s income.
Thai Oil	TOP TB	THB 57.50	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) the customer concentrations; 4) the currency risk; 5) the interest rate risk; and 6) the raw material shortage.
Star Petroleum Refining	SPRC TB	THB 12.80	BUY	TP is based on EV/EBITDA. Downside risks are a sharp rise in oil price and weak demand for refined oil products.
Bangchak Corp	BCP TB	THB 33.25	BUY	The downside risks to our SoTP-based TP include: 1) lower-than-expected demand for petroleum products; 2) higher crude premiums; and 3) unplanned shutdowns of the company's refinery plants.
PTG Energy	PTG TB	THB 15.40	BUY	The downside risks to our SoTP-based TP include 1) a government cap on oil prices; and 2) weaker demand for diesel and gasoline.
Esso Thailand	ESSO TB	THB 12.30	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 3.66	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.
Scan Inter	SCN TB	THB 2.30	BUY	The downside risks to our SOTP-based TP include 1) a sharp decline in oil prices; and 2) weaker demand for NGV and delays in new NGV projects.
Banpu	BANPU TB	THB 13.90	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.
WP Energy	WP TB	THB 4.56	BUY	The downside risks to our SOTP-based TP include: 1) lower-than-expected demand for LPG gas; and 2) a lower marketing margin.
Indorama Ventures	IVL TB	THB 43.75	BUY	The key downside risks to our EV/EBITDA-based TP are weaker-than-expected margins for PX-PTA and PET-PTA, lower demand for polyester, and delays in IVL's projects.
IRPC PCL	IRPC TB	THB 3.46	HOLD	Key upside risks to our neutral view and EV/EBITDA-based target price are rising margins of PP-naphtha, SM and ABS-benzene, and a higher market GRM, while downside risks are weak demand for refinery and petrochemical products and a higher naphtha price.
PTT Global Chemical	PTTGC TB	THB 46.75	REDUCE	The key upside risks to our EV/EBITDA-based TP are a stronger-than-expected HDPE price and HDPE-naphtha margin.
Global Green Chemicals	GGC TB	THB 15.00	BUY	Downside risks to our EV/EBITDA-based target price include: 1) a sharp decline in crude palm oil price; 2) a change in government policy for biodiesel from the current B7; and 3) a narrower fatty alcohol margin due to the new supply in the US
Siam Cement	SCC TB	THB 363.00	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.
Eastern Polymer Group	EPG TB	THB 9.60	BUY	Downside risks to our EV/EBITDA-based target price include 1) a sharp rise in feedstock prices, driven mostly by a higher oil price; and 2) lower-than-expected demand for plastics used for insulators and the automobile and packaging industries.

Tipco Asphalt	TASCO TB	THB 16.60	REDUCE	Downside risks to our EV/EBITDA multiple based TP include 1) a lower asphalt margin due to a oversupply in Asia on the back of faster recovery of utilisation rate for global refiners; and 2) a lower-than-expected supply of alternative crudes and asphalt.
SCG Packaging	SCGP TB	THB 58.00	BUY	Downside risks to our EV/EBITDA-based TP include a lower-than-expected demand for packaging, rising raw material costs of recycled paper and higher energy costs.
Global Power Synergy	GPSC TB	THB 68.75	HOLD	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. Upside risks are a lower gas price and higher sales volume.
B.Grimm Power	BGRIM TB	THB 37.25	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 49.25	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.
Energy Absolute	EA TB	THB 83.25	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.
Ratch Group	RATCH TB	THB 42.25	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.

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 Finansia 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 Finansia Syrus Securities Public Company Limited, which is the parent company of FSSIA.

All share prices are as at market close on 19-Aug-2022 unless otherwise stated.

## RECOMMENDATION STRUCTURE

### Stock ratings

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