

Thailand Utilities - SPP

ผลเสียจากเงินอุดหนุนของ กฟผ. อาจเป็นผลดีต่ออัตรากำไรของโรงไฟฟ้าขนาดเล็ก

- หลังได้รับผลเสียจากราคาก๊าซที่ปรับขึ้นมากกว่าการปรับขึ้นเพิ่มเติมของราคาขาย เราคิดว่าโรงไฟฟ้าขนาดเล็กจะกลับมาดีในช่วง 2H22-23
- เราคิดว่าปริมาณก๊าซที่เพิ่มขึ้นจากแหล่งเอราวัณและบงกช การนำเข้า Spot LNG ที่ลดลงและค่าใช้จ่ายที่ลดลงน่าจะช่วยชดเชยผลกระทบเชิงลบของราคา LNG ในตลาดโลก
- เราคิดว่าโรงไฟฟ้าขนาดเล็กของ BGRIM และ GPSC น่าจะรายงานอัตรากำไรดีขึ้น

หมดภาวะในด้านต้นทุนก๊าซ? ความตึงเครียดในด้านต้นทุนชดเชยได้จากค่าไฟฟ้าอุตสาหกรรมที่เพิ่มในระดับสูง

หลังได้รับผลเสียจากราคาก๊าซที่ปรับขึ้นมากกว่าราคาไฟฟ้าสำหรับผู้ซื้ออุตสาหกรรมที่ปรับขึ้นเพียงเล็กน้อย เราคิดว่าโรงไฟฟ้าขนาดเล็กจะกลับมาดีในช่วง 2H22-23 หลังสำนักงานคณะกรรมการกำกับกิจการพลังงาน (ERC) อนุมัติการขึ้นค่าเชื้อเพลิง (Ft) ในระดับสูงเพื่อลดภาระทางการเงินของ กฟผ. และเพื่อรองรับความต้องการที่อันอยู่เป็นจำนวนมากของผู้ซื้ออุตสาหกรรมหลังการกลับมาของการท่องเที่ยวและการกลับมาเปิดเศรษฐกิจเต็มรูปแบบ เราคิดว่าตั้งแต่ 2Q22 อัตรากำไรของโรงไฟฟ้าขนาดเล็กจากไฟฟ้าที่ขายให้แก่ผู้ซื้ออุตสาหกรรมจะค่อย ๆ ปรับขึ้นเนื่องจากราคาขายที่สูงขึ้นจากค่าเชื้อเพลิงที่ปรับขึ้นน่าจะมีส่วนมากกว่าต้นทุนพลังงานที่สูงขึ้นในเดือน ก.ย. ถึง ธ.ค. 22 อย่างเห็นได้ชัดและสถานการณ์ดังกล่าวน่าจะเกิดต่อเนื่องไปในปี 2023 เนื่องจาก ERC ได้ระบุอย่างชัดเจนแล้วว่าจำเป็นต้องขึ้นค่าเชื้อเพลิงเพื่อช่วยไม่ให้ฐานะทางการเงินของ กฟผ. แย่ลงไปกว่าเดิม

ก๊าซที่เพิ่มขึ้นจากแหล่ง G1 & G2 ที่มีราคาต่ำกว่าน่าจะช่วยเพิ่มกำไรจากการขึ้นค่าเชื้อเพลิงให้สูงขึ้น

ในขณะที่ Downside เพิ่มเติมต่อราคาเชื้อเพลิง (Pool gas price) ในประเทศไทยมีจำกัด เราคิดว่ามี 3 ปัจจัยสำคัญ กล่าวคือก๊าซที่เพิ่มขึ้นในราคาที่ถูกลงจากแหล่งเอราวัณ (G1) และบงกช (G2), การลดการนำเข้า Spot LNG ที่มีราคาสูง, และค่าใช้จ่ายที่ลดลง ที่น่าจะส่งผลบวกมากกว่าผลเสียจากผลกระทบเชิงลบของราคา LNG ในตลาดโลก โดยเฉพาะอย่างยิ่งถ้ารัสเซียตัดสินใจหยุดขายก๊าซผ่านท่อ Nord Stream 1 ไปเยอรมนีอย่างสิ้นเชิงหลังการปิดตามแผนสิ้นสุดในวันที่ 21 ก.ค. 22 หลัง Pool gas price ในประเทศไทยเพิ่มเกือบเท่าตัว y-y ใน 1Q22 เป็น USD10.9/mmbtu ซึ่งทำให้ราคาซื้อขายในขั้นสุดท้ายเพิ่มขึ้นเป็น 440 บาท/mmbtu สำหรับโรงไฟฟ้าขนาดเล็กและ 400 บาท/mmbtu สำหรับโรงไฟฟ้าขนาดใหญ่ เราคิดว่าราคาซื้อขายน่าจะมีความผันผวนอยู่ในช่วง 420-450 บาท/mmbtu ในช่วง 2H22-2023 แม้ว่าเราจะสมมติให้ราคา Spot LNG ในตลาดโลกปรับขึ้นเพิ่มเป็นกว่า USD35/mmbtu เทียบกับ USD30.7/mmbtu ใน 1Q22

การทำประชาพิจารณ์ของ ERC อาจทำให้ค่าเชื้อเพลิงเพิ่มสูงกว่าคาดในเดือน ก.ย. - ธ.ค. 22

เราคิดว่าการทำประชาพิจารณ์ของ ERC เกี่ยวกับข้อเสนอขึ้นค่าเชื้อเพลิงของ กฟผ. จะทำให้ค่าไฟเพิ่มอย่างน้อย 0.6866 บาท/kWh อย่างไรก็ตามตัวเลขดังกล่าวอาจเพิ่มเป็น 1.1436 บาท/kWh จากการประเมินความเป็นไปได้ของ ERC ในสถานการณ์ที่ 1 ในเดือน ก.ย. - ธ.ค. 2022 จากสมมติฐานที่กำหนดให้ปริมาณนำเข้า LNG เพิ่มขึ้นจากเดือน มิ.ย. 22 ถึง ส.ค. 23 ERC ได้สร้าง 3 สถานการณ์สำหรับข้อเสนอขึ้นค่าเชื้อเพลิง

BGRIM และ GPSC เป็นหุ้นเด่นจากอัตรากำไรที่อาจพลิกฟื้น

แม้ว่าราคาซื้อขายและ LNG ในตลาดโลกอาจปรับขึ้นจากการตัดอุปทานก๊าซไปยังสหภาพยุโรปของรัสเซีย เราคิดว่าบริษัทโรงไฟฟ้าไทยโดยเฉพาะอย่างยิ่งบริษัทที่มีโรงไฟฟ้าขนาดเล็กอย่าง BGRIM และ GPSC จะรายงานอัตรากำไรสำหรับไฟฟ้าที่ขายให้แก่ผู้ซื้ออุตสาหกรรมเพิ่มขึ้นอย่างเห็นได้ชัดจากราคาขายไฟฟ้าและไอน้ำที่คาดว่าจะเพิ่มในระดับสูงตามค่าเชื้อเพลิง



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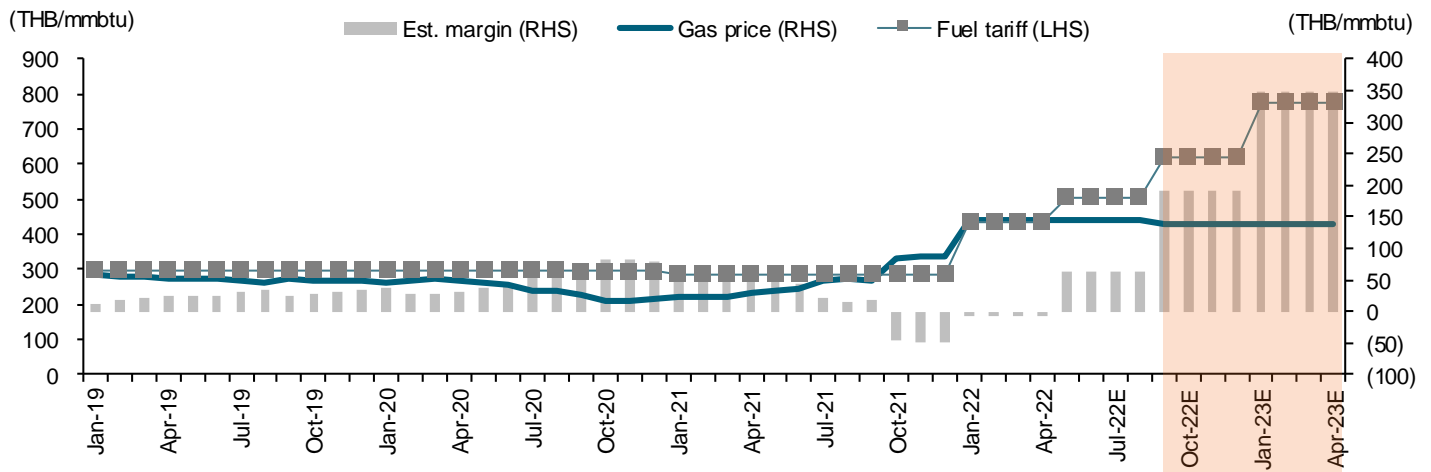
PREPARED BY FSS INTERNATIONAL INVESTMENT ADVISORY SECURITIES CO LTD (FSSIA). ANALYST CERTIFICATION AND IMPORTANT DISCLOSURES CAN BE FOUND AT THE END OF THIS REPORT

บทวิเคราะห์ฉบับนี้แปลมาจากบทวิเคราะห์ของ FSSIA ฉบับวันที่ 21 กรกฎาคม 2022

Relieving EGAT's subsidy pain could be SPPs' margin gain

Since 4Q21, all SPPs have suffered from significantly plunging margins on their electricity and steam sales due to the sharp rise in the gas cost that has far outpaced the increases in electricity tariffs, which are linked to the Ft-driven national power grid price. B.Grimm Power (BGRIM TB, BUY) and Global Power Synergy (GPSC TB, HOLD), Thailand's two leading SPPs with large proportions of their volumes of electricity and steam sold to IUs, have been hit particularly hard.

Exhibit 1: SPPs' estimated margin vs gas price and their tariffs

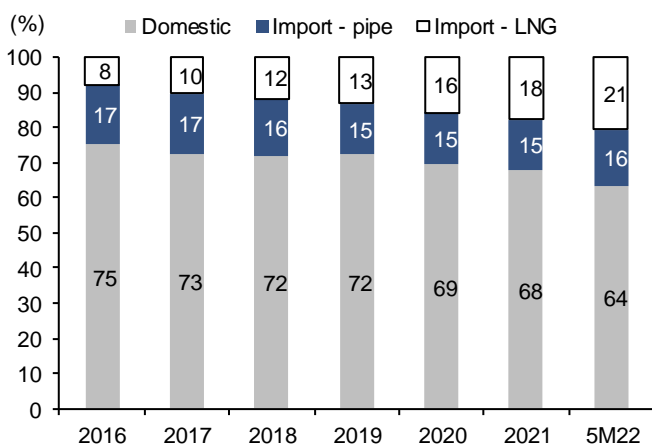


Sources: EGAT; BGRIM; FSSIA estimates

Why has Thailand's gas cost risen significantly since 4Q21? According to the Department of Mineral Fuels (DMF) and the Energy Policy and Planning Office (EPPO), the key culprit for the spike in gas cost is the decline in the gas production at Erawan, Thailand's largest gas field. From its historical peak of over 1,200mmscfd in mid-2020 (27% of Thailand's total supply), Erawan's gas production plunged to 471mmscfd in Apr-22 before bouncing back to 620mmscfd in May-22.

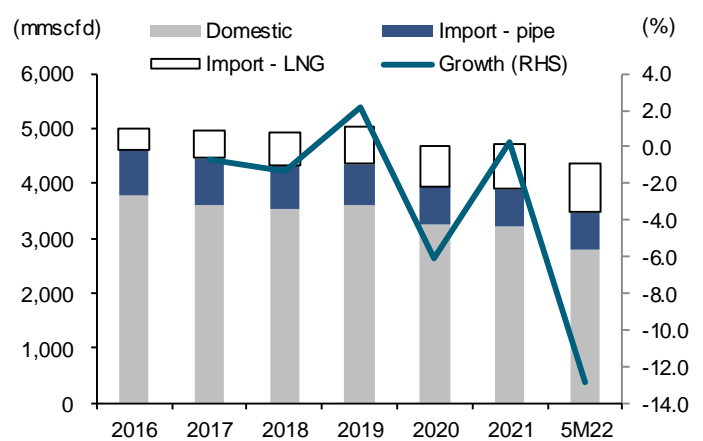
As a result, the gas supply from the Gulf of Thailand, which normally contributes around three-quarters of the country's total gas supply, has continued to decline from 72% in 2019 to only 64% in 5M22. To compensate for the domestic gas supply shortfall, Thailand has been forced to increase its imports of both contract and spot LNG. Despite the weaker gas demand for electricity generation due to multiple lockdowns during the 2020-21 Covid-19 pandemic, the proportion of imported LNG still rose from an average of 15% in 2019-9M21 to 19.6% during Oct-21 to May-22.

Exhibit 2: Thailand's gas supply breakdown by source (%)



Sources: DMF; EPPO

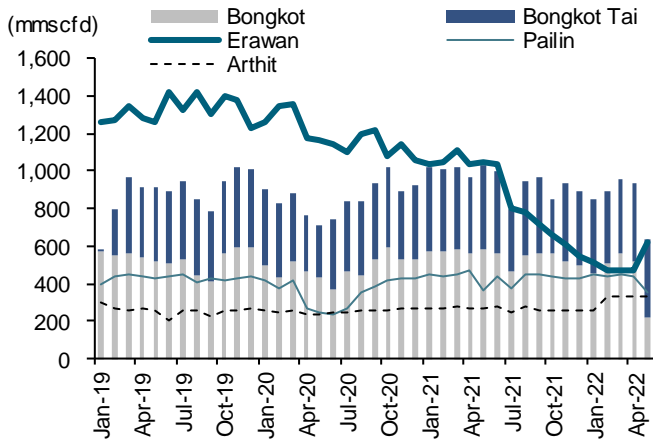
Exhibit 3: Thailand's gas supply breakdown by source



Sources: DMF; EPPO

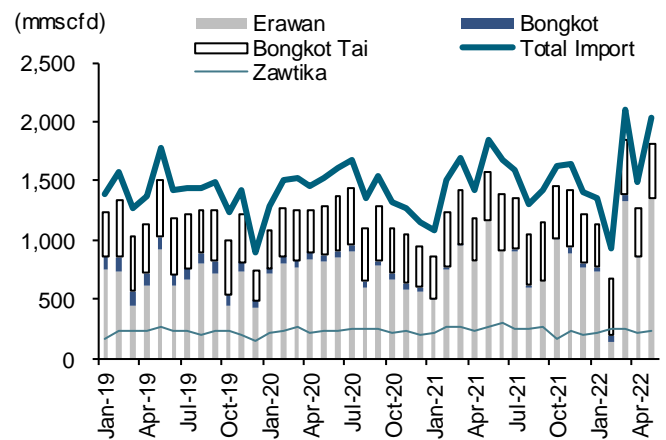
Gas production from Erawan is projected to drop to 250-300mmscfd in Aug-Sep 2022 due to production interruptions caused by longer-than-expected delays in negotiations between the Energy Ministry's DMF and Erawan's former operator Chevron (Thailand) over the disputed de-commissioning cost after Chevron ended its concession in Apr-22.

Exhibit 4: Gas production from major fields



Sources: DMF; EPPO

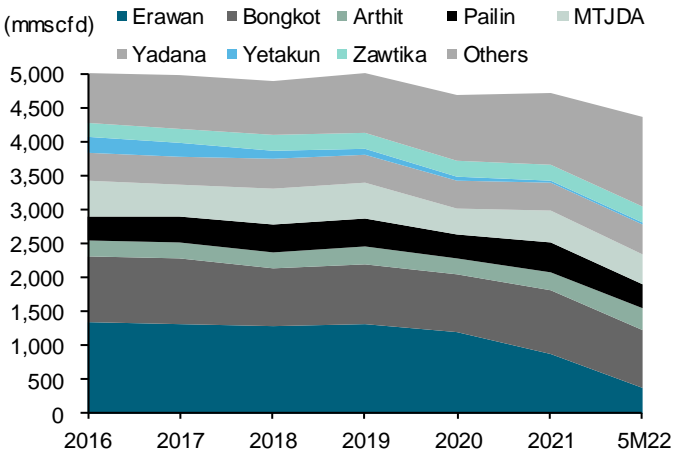
Exhibit 5: Gas production from major fields vs imports



Sources: DMF; EPPO

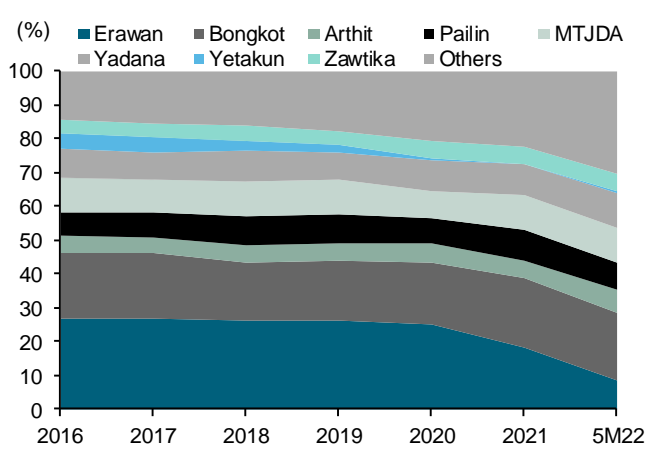
The drop in gas production of 600-1,000mmscfd (15-18% of total gas supply) from Erawan alone has forced PTT (PTT TB, BUY), Thailand's sole importer and distributor of gas, to import 5.2mtpa of contract and spot LNG to compensate for the gas supply shortfall, despite additional gas production from Bongkot and Bongkot South, Arthit, and MTJDA.

Exhibit 6: Thailand's gas production by field



Source: DMF

Exhibit 7: Thailand's gas production by field (%)

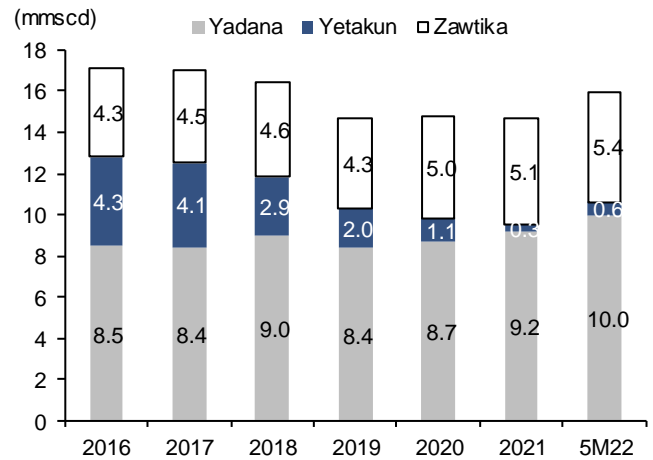
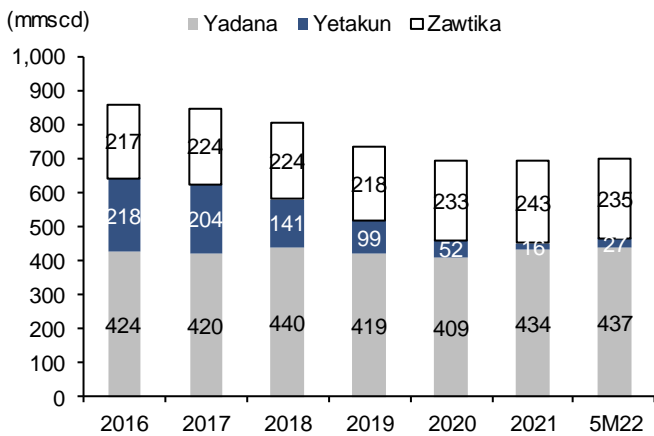


Source: DMF

In addition, imports from Myanmar’s three gas fields have also declined from an average of 20% of Thailand’s total gas supply in the past decade to only 14% in 5M22, due mainly to the near-depletion of gas production at Yetakun, which produced only 15-25mmscfd in 2021-5M22 and accounted for less than 0.5% of Thailand’s total gas supply in the same period.

Exhibit 8: Gas production of three fields in Myanmar

Exhibit 9: Gas productions of three fields in Myanmar (%)



Sources: DMF; EPPO

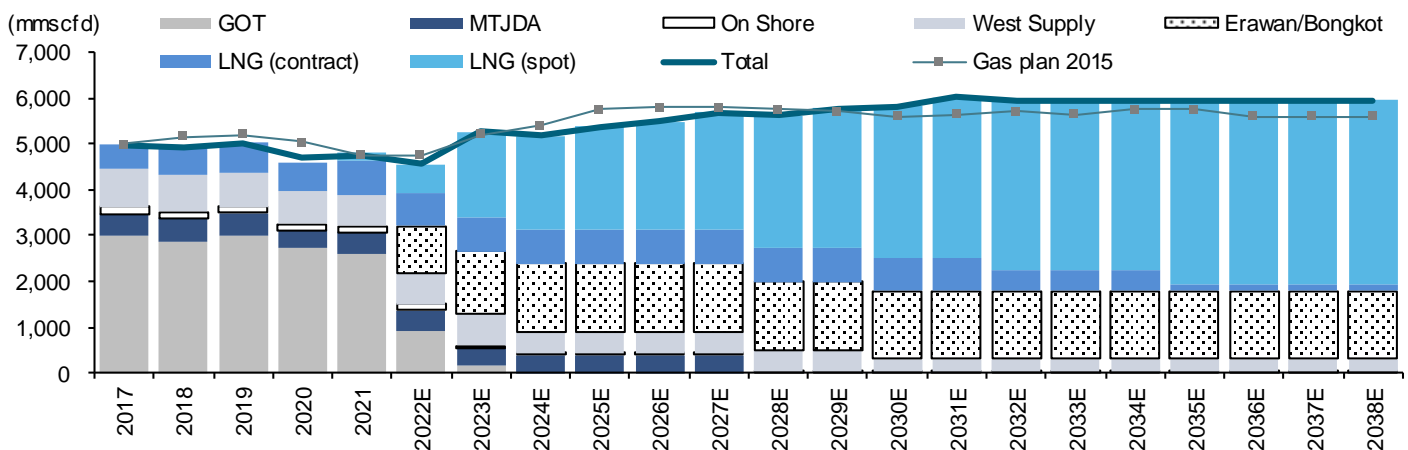
Sources: DMF; EPPO

LNG is increasingly becoming Thailand’s gas supply lifeline

We believe that starting from 2022 onward, Thailand will need to import more LNG to meet its gas supply requirements given the structural gas supply reductions from Myanmar and the Gulf of Thailand – mainly from Erawan in the short term in 2022-24 – but also long term from both Erawan (G1 under the new production service contract (PSC) established in Apr-22) and Bongkot and Bongkot South (Bongkot Tai) (known as G2 under the new PSC effective Apr-22 for Bongkot South and Apr-23 for Bongkot).

Using the gas supply projections in the Energy Ministry’s latest Power Development Plan 2018 Revision 1 and the Gas Plan 5, we have revised our gas supply projections to incorporate 1) the lower-than-expected gas production of G1 and G2 in 2022-24 as a result of production development interruptions in 2022; 2) the faster-than-expected depletion of Yetakun, which since 2021 has produced only 15-25mmscfd of gas; and 3) the need for higher imports of spot LNG.

Exhibit 10: Thailand’s projected gas supply by source

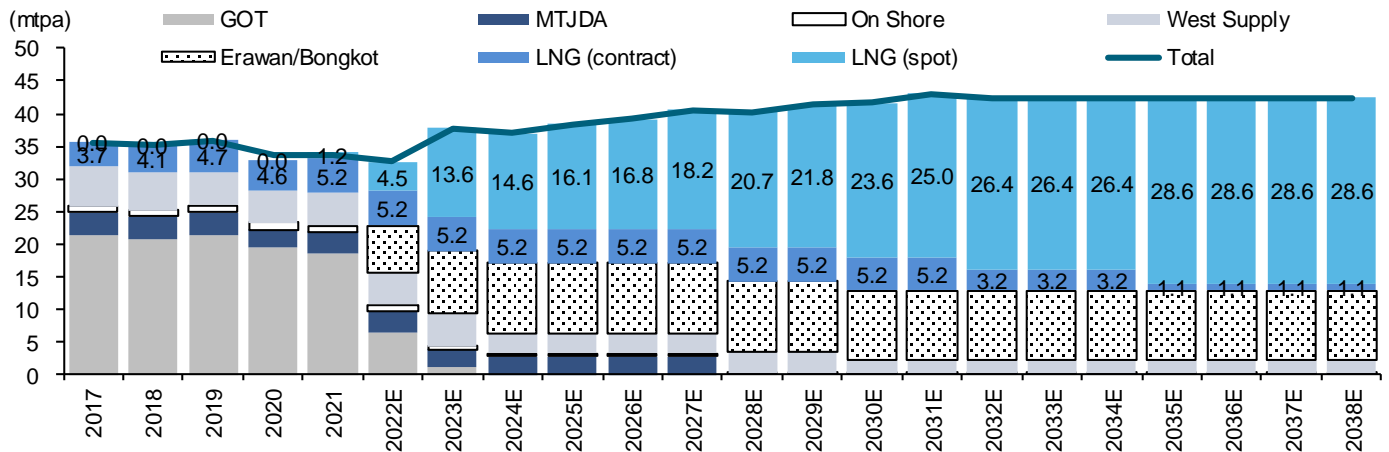


Sources: EPPO; FSSIA estimates

We believe that in 2022 onward, Thailand will have to rely on a significant amount of LNG imports, which are projected to increase from 6.4mt in 2021 to 9.7mt in 2022, 18.8mt in 2023, and 19.8mt in 2024 before peaking at 30.2mt in 2031, according to the EPPO.

Gas production from the Gulf of Thailand is expected to drop sharply in 2022-23 before recovering to 1,500mmscfd in 2024 when production at G1 (Erawan) is projected to rise from an average of 400mmscfd in 2022 to 800mmscfd. Meanwhile, gas production from G2 (Bongkot) is to be normalised down from 850-900mmscfd in 2022 to 700mmscfd in 2024 after gas production from G1 reaches its target.

Exhibit 11: LNG imports are projected to rise substantially in 2022 onward



Sources: EPPO; FSSIA estimates

LNG terminal capacity is sufficient for rising LNG imports. In 2023, Thailand will open its gas market, mainly for LNG imports, to private sector companies such as BGRIM, Gulf Energy Development (GULF TB, BUY), and Electricity Generating Company (EGCO TB, BUY). These companies, which have long been PTT's key gas customers, are expected to begin importing gas to produce electricity at their IPP and SPP facilities.

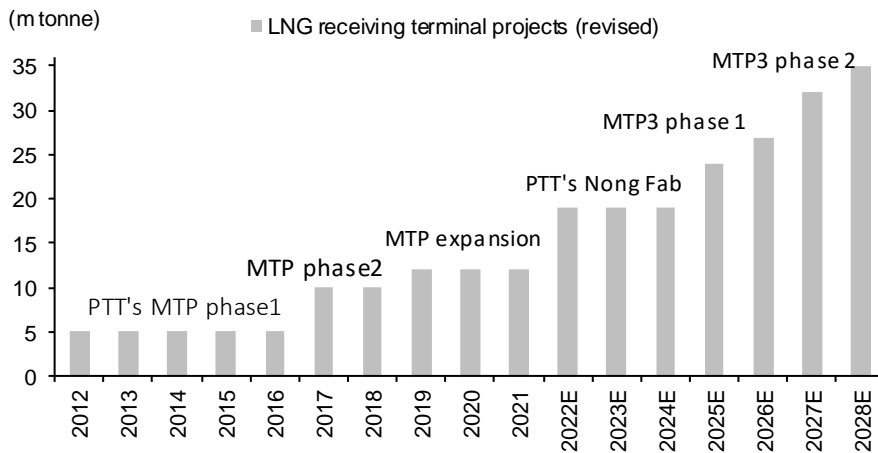
Exhibit 12: Private companies with shipper licenses to import LNG starting in 2023

Company	Import quota	
	(mtpa)	(mmscfd)
1 PTT	n/a	n/a
2 EGAT	n/a	n/a
3 GULF	0.3	42
4 HKH	1.4	196
5 BGRIM	1.2	168
6 EGCO	0.25	35
7 PTTGL	n/a	n/a
8 SCC	n/a	n/a
Total	3.15	441

Source: Companies

We think Thailand will have sufficient LNG terminal capacity to accommodate rising LNG imports that we project to quadruple in 2021-28 to 30mt in 2026. After PTT's Nong Fab LNG terminal is completed in 4Q22, which would bring PTT's total LNG terminal capacity to 19mtpa, the next 10mtpa expansion in LNG terminal capacity will be undertaken by a JV between GULF (70%) and PTT (30%) under the Maptaphut phase 3 agreement, which is scheduled to commence its commercial operation date (COD) in 2025-28.

Exhibit 13: Thailand's LNG import terminal facility expansion schedule



Sources: PTT; FSSIA estimates

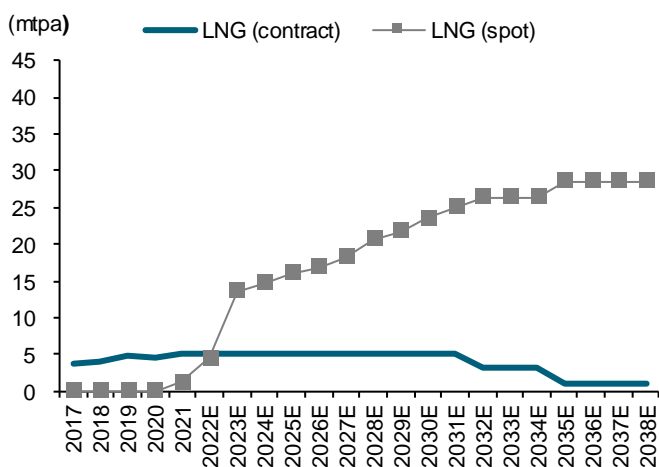
While PTT has a total of 5.2mtpa of LNG imports contracted with major LNG producers, spot LNG imports will also be executed by PTT on an ad hoc basis to compensate for any gas supply shortfalls from other sources.

Over the long term, Thailand will have to import significantly higher volumes of spot LNG in addition to the 5.2mtpa of contract LNG imported by PTT. By 2025, up to 3.15mtpa of LNG imports will be pursued by private companies, which have been granted shipper licenses to begin their own LNG imports under a contract pricing formula in 2023 onward.

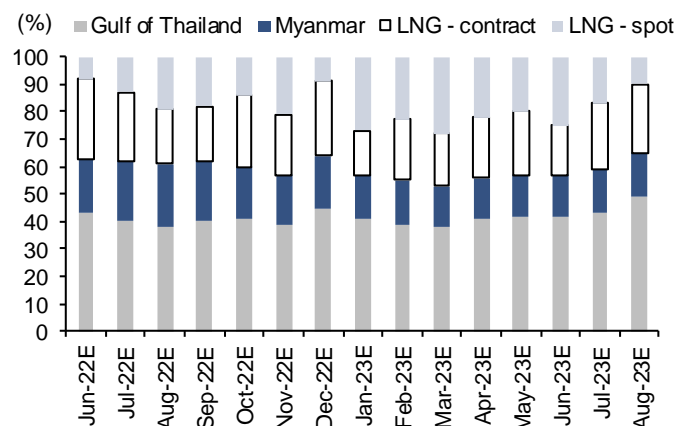
In the short term, we think PTT will need to import higher amounts of spot LNG given the gas supply shortages from G1 and Yetakun.

Exhibit 14: Projected LNG imports (contract and spot)

Exhibit 15: Projected LNG imports in Jun-22 to Aug-23



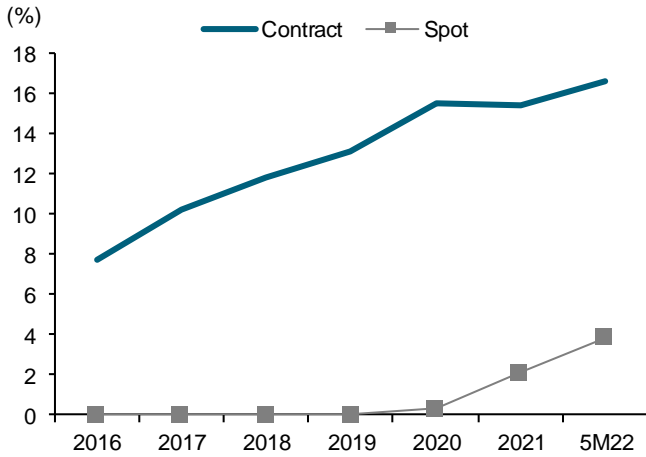
Sources: EPP0; PTT



Source: ERC

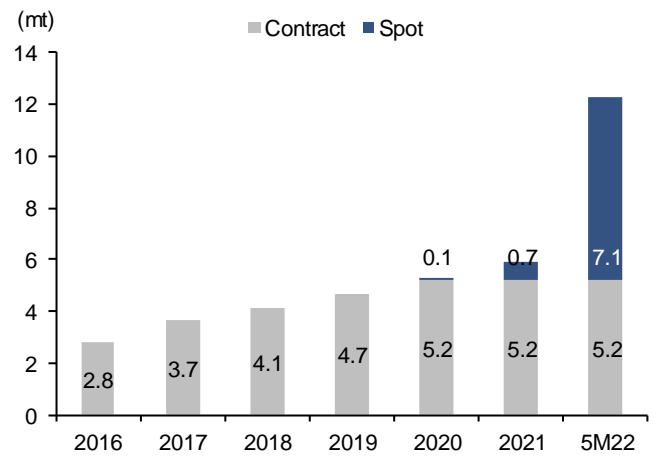
From 2016 to May-22, Thailand imported an increasing amount of LNG to meet the country's energy needs, with the imported contract LNG volumes rising from 2.8mtpa in 2016 to the maximum limit of 5.2mtpa in 2020. After reaching the import volume cap for contract LNG, PTT had no choice but to import spot LNG, which is far more expensive than contract LNG, gas imported from Myanmar, and gas produced in the Gulf of Thailand.

Exhibit 16: LNG import volume (contract and spot) as % of total gas supply in 2016-5M22



Sources: DMF; EPPO

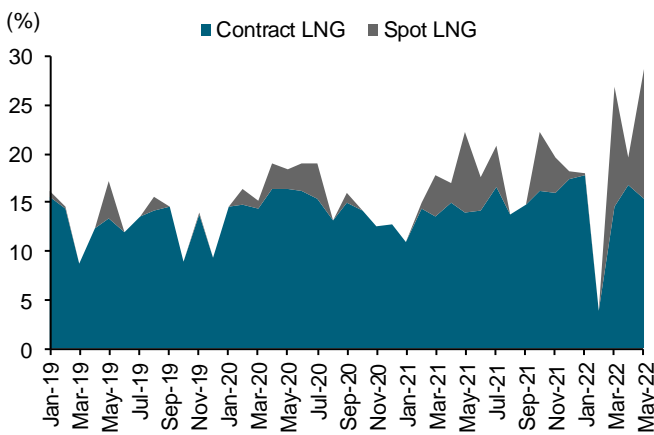
Exhibit 17: LNG import volume (contract and spot) in 2016-5M22



Note: 5M22 amounts for spot and contract LNG import volumes are annualised figures from the actual 5M22 amounts
Sources: DMF; EPPO

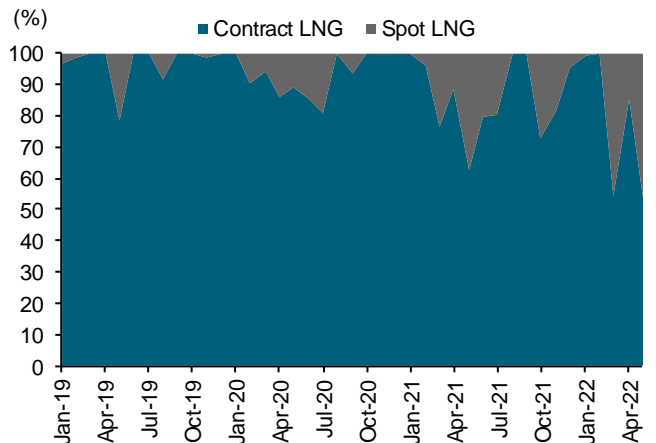
LNG imports now account for over 25% of the total gas supply in Thailand as of Apr-22, according to the DMF. The cap on the contract LNG import volume at 5.2mt has forced PTT, as a state-owned enterprise acting on behalf of the Thai government to ensure national energy security, to import over 2mtpa of spot LNG. This trend of rising imports is expected to increase in 2022 onward as gas production from G1 and G2 combined falls by 800mmscfd to 1,500mmscfd, compared to the previous concession holder's contracted volume of 2,100mmscfd.

Exhibit 18: Thailand's LNG import volumes (contract and spot) as % of total gas supply



Sources: DMF; EPPO

Exhibit 19: Thailand's LNG import volumes (contract and spot) as % of total LNG supply



Sources: DMF; EPPO

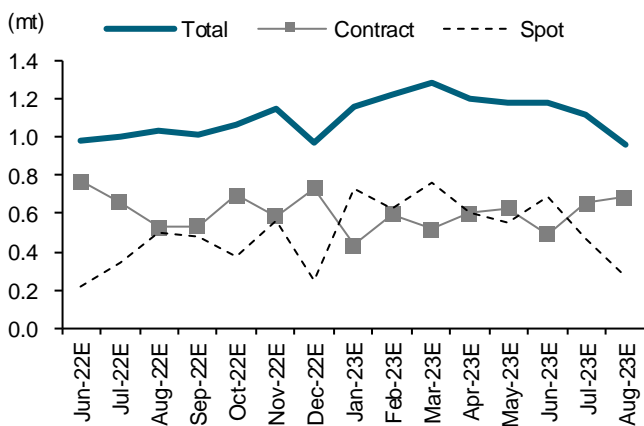
At least 1mt of contract LNG and 0.2mt of spot LNG will need to be imported

According to the public hearing document dated 12 Jul-22, the ERC is now conducting hearings ahead of the proposed Ft hike in Sep-Dec 2022. The ERC projects that Thailand needs to import LNG at a volume of at least 1mt monthly or 3-3.5mt quarterly over the next 14 months, from Jun-22 to Aug-23.

The need for such high volumes of spot and contract LNG imports is based on expectations of a temporary gas production shortfall from G1. Production is projected to rise from 200-300mmscfd in 3Q22 to 450mmscfd by end-2022 and reach 600mmscfd by end-2023 before eventually hitting the target of 800mmscfd by 1H24.

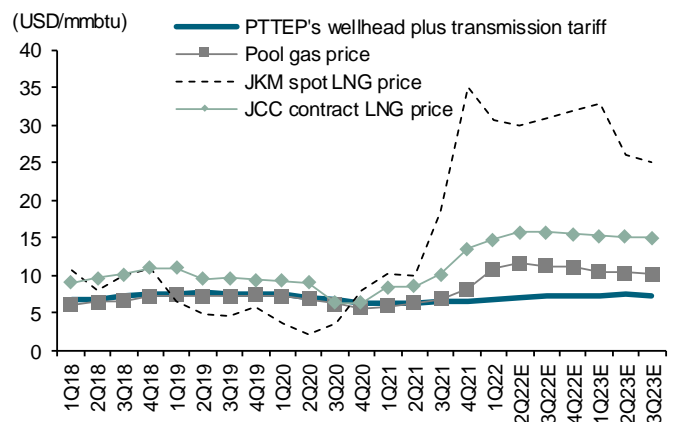
2Q22 spot LNG import volume to drop q-q to 0.9mt. According to PTT, imports of spot LNG dropped to 0.9mt in 2Q22, down slightly from 1.1mt in 1Q22. The import volume of contract LNG remains capped at the maximum amount of 1.1-1.3mt per quarter in 3Q22-3Q23.

Exhibit 20: Projections of monthly LNG import volumes



Source: ERC

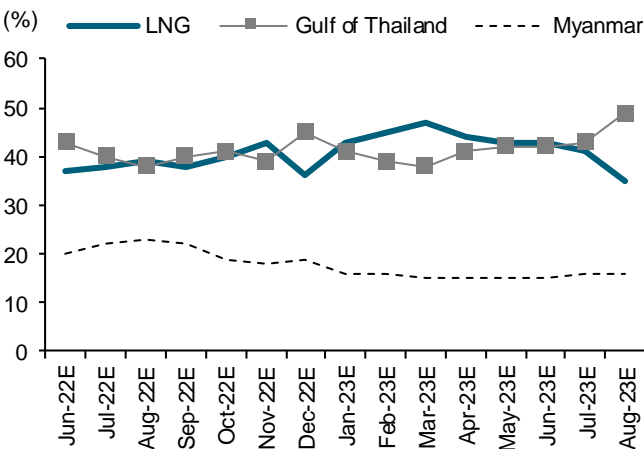
Exhibit 21: PTTEP's gas price, Thailand's pool gas price, JKM spot LNG price, and JCC contract LNG price (quarterly)



Sources: PTTEP; PTT; FSSIA estimates

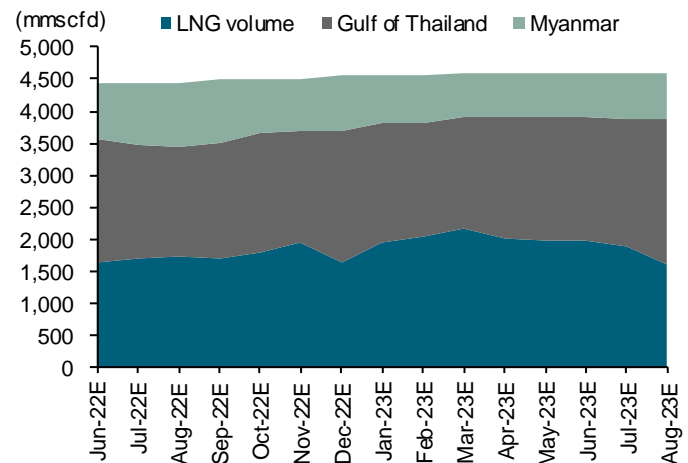
Unfortunately, the price of spot LNG imports will be much higher than gas produced in the Gulf of Thailand or imported from Myanmar, which we estimate to be priced at a 50-70% discount to imported LNG.

Exhibit 22: Projected gas supply breakdown by source (%) in Jun-22 to Aug-23



Source: ERC

Exhibit 23: Projected gas supply breakdown by source (mmscfd) in Jun-22 to Aug-23



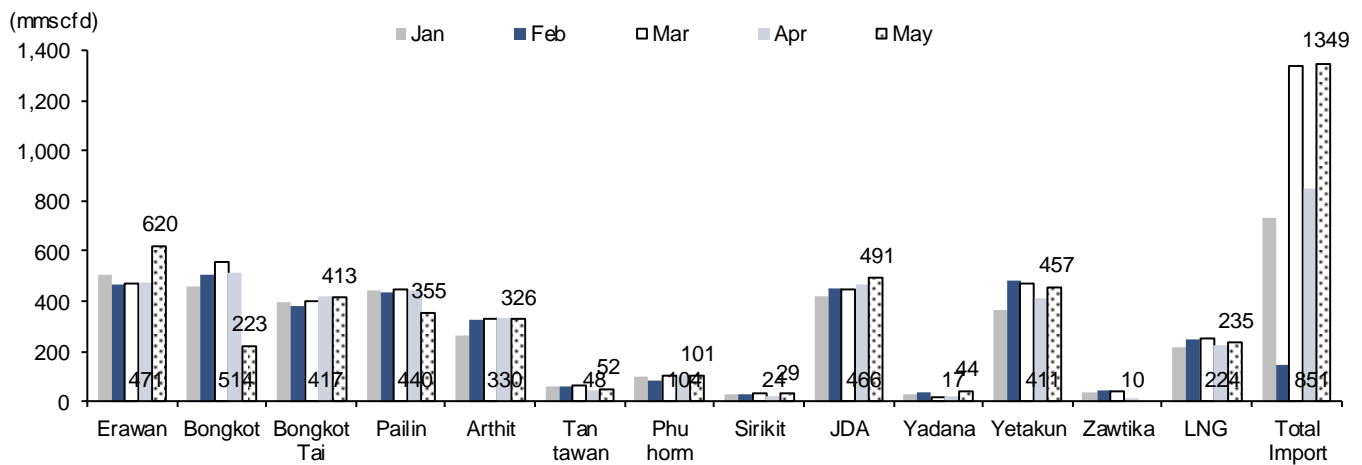
Source: ERC

The ERC forecasts that in Jun-22 to Aug-23, Thailand will need to import a higher proportion of spot LNG amounting to between 9% to 28% of the total monthly gas supply. The proportion of contract LNG imports will also vary in the range of 18% to 26%, given the maximum limit of 5.2mtpa of contract LNG to be imported by PTT.

As of 5M22, PTT has already imported over 4.0mt, comprising 2.2mt of contract LNG and 1.8mt of spot LNG. Unfortunately for Thailand, the price of global LNG has soared, particularly in terms of the spot Japan Korea Market (JKM) benchmark price and the contract Japan Crude Cocktail (JCC) price.

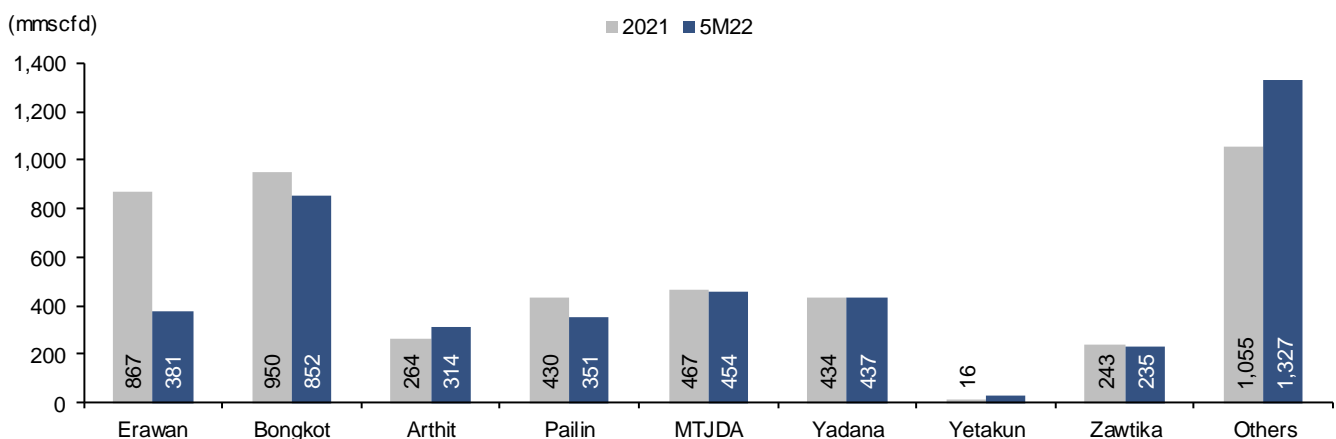
We believe the projected higher import volumes of spot LNG are being caused by the sharp drop in Erawan’s gas production in 2022-23, which are expected to recover to 800mmscfd by 1H24, based on PTT Exploration and Production (PTTEP TB, BUY)’s guidance. YTD, the gas production shortfall from Erawan has been offset not only by the imports of spot LNG but also by the higher gas production of Bongkot, JDA, and Yetakun.

Exhibit 24: Gas production by field (Jan-May 2022)



Sources: DMF; EPPO

Exhibit 25: Gas production by field (2021 vs 5M22)

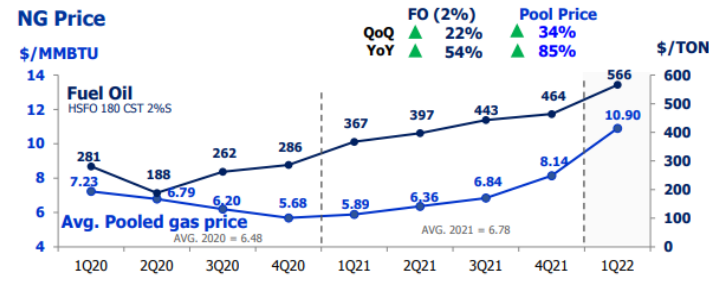


Sources: DMF; EPPO

Higher-priced LNG imports to be offset by lower-priced gas from G1 & G2

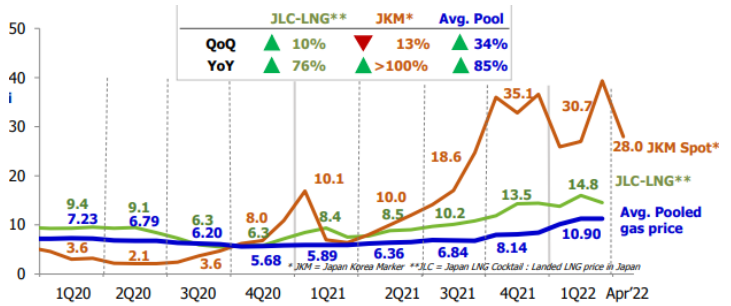
After the pool gas price in Thailand almost doubled y-y in 1Q22 to USD10.9/mmbtu, sending the final gas price soaring to THB440/mmbtu for SPPs and THB400/mmbtu for IPPs, we think the gas price trend is likely to stabilise in the range of THB420-450/mmbtu in 2H22-2023, even if we assume that the global LNG spot price will rise further to over USD35/mmbtu vs USD30.7/mmbtu in 1Q22.

Exhibit 26: Thailand's pool gas price vs fuel oil price



Sources: PTT; Bloomberg

Exhibit 27: Thailand's pool gas price vs spot LNG price (JKM) and contract LNG price (JCC)

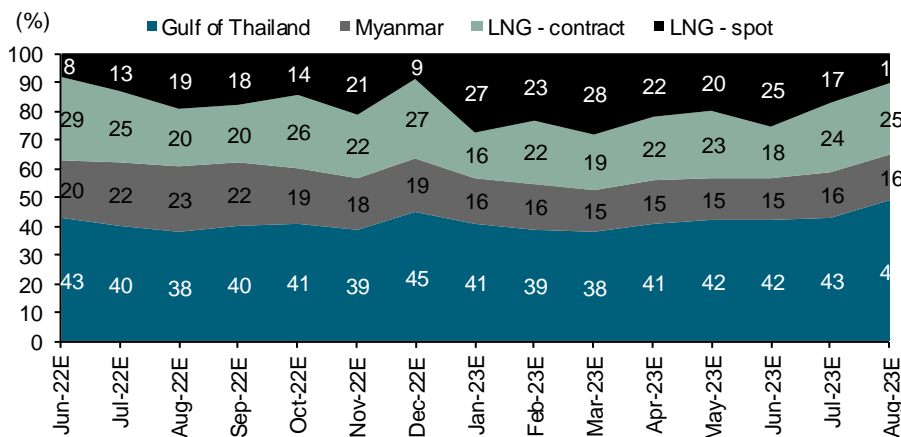


Sources: PTT; Bloomberg

While further downside remains to Thailand's pool gas price, which is derived from the weighted prices of gas from three main sources, namely the Gulf of Thailand (64%), Myanmar (16%), and LNG (20%) as of 1Q22, we think three key factors could more than offset the negative impact of the global LNG price, particularly if Russia decides to completely halt its gas sales via the Nord Stream 1 pipeline connecting Russia to Germany after its planned shutdown ends on 21 Jul-22.

Factor #1: Lower LNG imports on lower spot LNG prices in 2023. Thanks to the projected gradual increase in the gas production of Erawan from its bottom at 250mmscfd in 3Q22 to 450mmscfd in Dec-22, based on PTTEP's guidance, we expect PTT to import less spot LNG during Jun-Dec 2022. However, imports of spot LNG will likely rise again in 1H23 when gas supplies from the Gulf of Thailand are projected to drop, mainly from the planned shutdowns of Bongkot and Arhit, and due to a reduction in the gas imported from Myanmar, mainly from the natural depletion of Yetakun.

Exhibit 28: Projected gas supply breakdown by source from Jun-22 to Aug-23



Source: ERC

We believe the lower imports of spot LNG in 2Q22-4Q22 will be timely and should lead to a drop in the pool gas price by USD1-2/mmbtu from the peak level seen in 1Q21. Although PTT may import higher spot LNG volumes in 1H23, we think the global spot LNG price is likely to soften y-y in 2023 as we expect the supply tightness from the Russia-Ukraine war to at least moderate or subside after over a year of conflict.

Based on the LNG gas swap futures published by Barchart.com, the South East Asian price (Sep-22 contract, JKMU22) is expected to soften from USD35-40/mmbtu in Sep-22 to Jan-23 down to USD30/mmbtu in Feb to Dec-23.

The USD30/mmbtu price in 2023 is on par with the spot LNG price that PTT paid in 1Q22 when energy market volatility, particularly for LNG, substantially intensified as a result of Russia's invasion of Ukraine on 24 Feb-22.

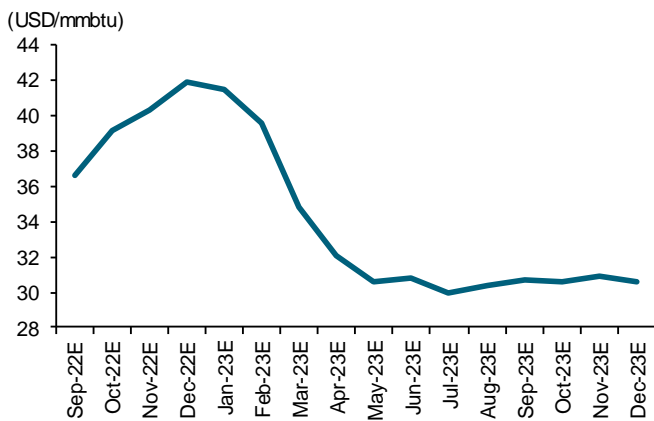
Based on the ERC's projections, the proportion of spot LNG import volumes will rise from 10% in 1Q22 to a peak of 28% in Mar-23. However, the impact of higher priced LNG imports on the pool gas price in Thailand should be greatly offset by the much lower prices of gas from G1 and G2, in our view.

Factor #2: The higher supply of lower-priced gas from G1 & G2. We believe the most significant impact on our stable-to-declining pool gas price estimate in 2023 will come from a gradual increase in gas production from G1 & G2 in 2H22-2024.

We estimate that under our current USD100/bbl Dubai crude oil price projection, the price of gas from G1 and G2 (at a 1,200-1,500mmscf volume combined or 28-34% of the total gas supply in Thailand) could be as low as USD7-8/mmbtu, representing a significant discount in the range of 70-80% from the spot LNG price of USD30-35/mmbtu.

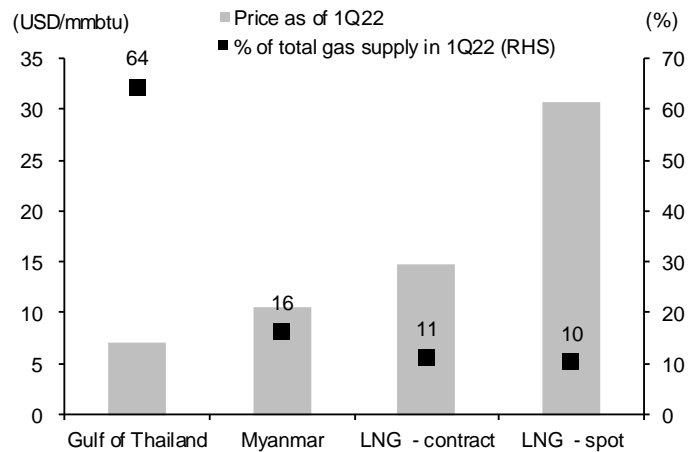
Hence, the negative impact of the high prices of both contract and spot LNG imports would be more than offset by the higher supply of lower-priced gas from G1 & G2.

Exhibit 29: LNG gas swap futures on South East Asian price (Sep-22, JKMU22)



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

Exhibit 30: Gas price components of Thailand's pool gas price vs Henry Hub gas price in 1Q22



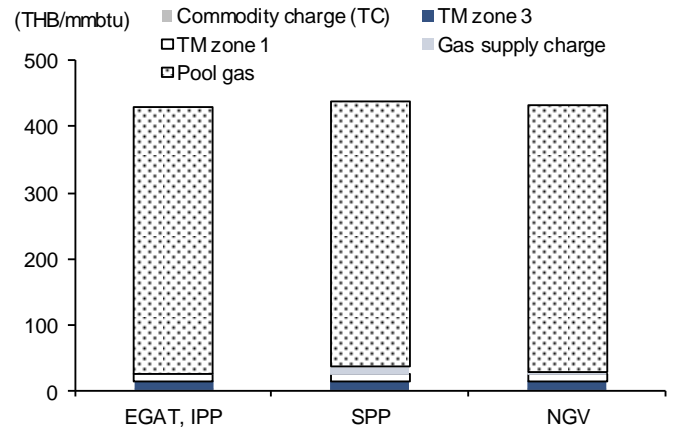
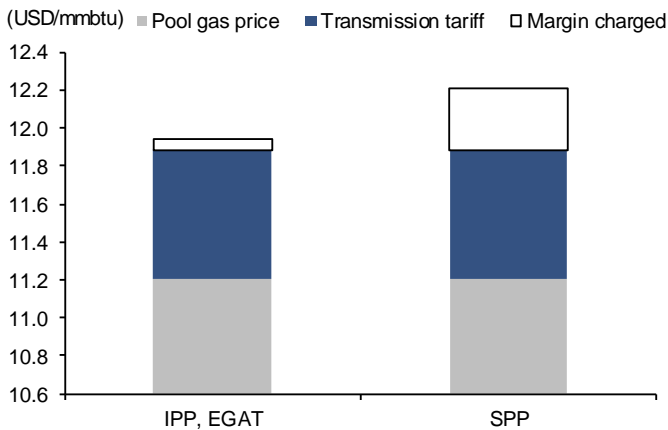
Sources: PTT; FSSIA estimates

Factor #3: lower gas pipeline transmission tariff (TM). Thanks to the government's liberalisation of the gas market beginning in 1Q23, we expect the transmission tariff to decline from the current THB23.3/mmbtu (THB13.4/mmbtu for TM zone 3 plus THB9.9/mmbtu for TM zone 1) to only THB13.4/mmbtu (TM zone 3).

TM is one of the key cost components for PTT to calculate the final gas price charged to IPPs, EGAT, SPPs, and IUs. This is based on the historical assumption that all gas buyers will on average use the gas pipeline zone 1 (offshore pipeline in Rayong), which brings the gas produced in the Gulf of Thailand to Rayong's shore where most IPPs and SPPs are located in Maptaphut industrial estates and the Eastern Economic Corridor.

Exhibit 31: Thailand's gas price structure for large buyers (IPPs and EGAT) and SPPs (USD/mmbtu)

Exhibit 32: Gas price structure for buyers (THB/mmbtu)



Sources: PTT; FSSIA estimates

Sources: PTT; FSSIA estimates

According to PTT, for the potential TM charges under new assumption of “actual usage” rather than an “average usage” basis, the new TM charges on the LNG imports by private companies are likely to include TM zone 3 only at THB16/mmbtu, 42.5% lower than the THB23.3/mmbtu currently paid by SPPs, IPPs, and EGAT to PTT.

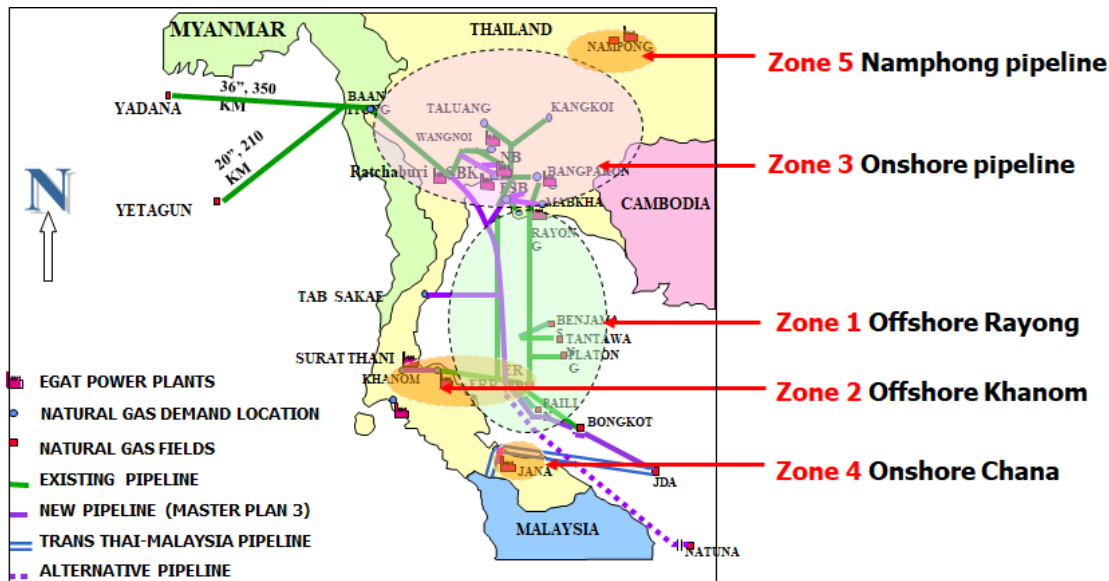
Exhibit 33: TM pipeline tariff breakdown by zone

Transmission pipeline tariff	Area	Fixed tariff		Variable tariff	
		(THB/mmbtu)		(THB/mmbtu)	
Area 1: offshore pipeline in Rayong	East coast	8.59		1.30	
Area 2: offshore pipeline in Khanom	South coast	14.22		1.30	
Area 3: nearshore pipeline	On the coast	12.07		1.30	
Area 4: onshore pipeline in Chana	West inland	2.49		0.13	
Area 5: offshore pipeline in Namphong	Northeast inland	1.13		0.00	
Total transmission pipeline (Area 1-5)		38.49		4.04	
LNG terminal fee		18.00		0.86	

Sources: ERC; PTT

The exclusion of the TM zone 1 offshore pipeline in Rayong is highly understandable as the LNG imports will not have to use the zone 1 offshore gas pipeline, which is the most expensive investment among all of PTT's gas pipelines, but will only employ TM zone 3 (onshore pipeline) for regasification and then transmit the re-gassed LNG back into the pipeline network to be delivered to the destined IPPs, SPPs, or EGAT.

Exhibit 34: Thailand's gas pipeline network



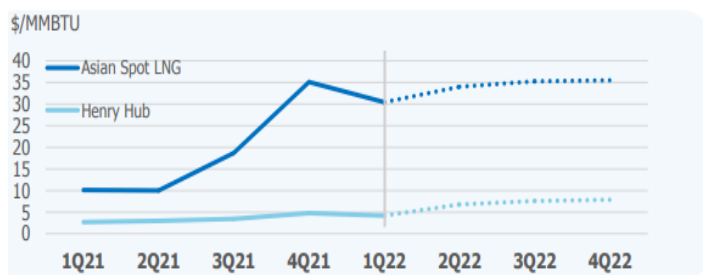
Source: PTT

Impact of weakening THB currency; expect THB/USD to weaken to THB38/USD by end-2022 before appreciating to THB35/USD in 1H23. In the past few months, the THB currency exchange rate against the USD has depreciated from THB30.4/USD in 1Q21 to THB36.5/USD as of 19 Jul-22. The main driver is the US Federal Reserve (Fed)'s rate hike that has significantly widened the interest rate differential between the THB and USD from near zero in 1Q22 to the current 100bps (Fed's policy rate at 1.5% vs Bank of Thailand's policy rate at 0.5%).

We expect the weakening THB to be transient, pending the USD to depreciate once the US economy turns into a recession, possibly by 1H23. We think the THB/USD should sustain in the range of THB36-38/USD in 2H22 and strengthen back to THB35/USD by 1H23, supported by 1) the projected depreciation of the USD; 2) the relatively strong nominal effective exchange rate, a better indicator for the country's currency value against a weighted average of several foreign currencies.

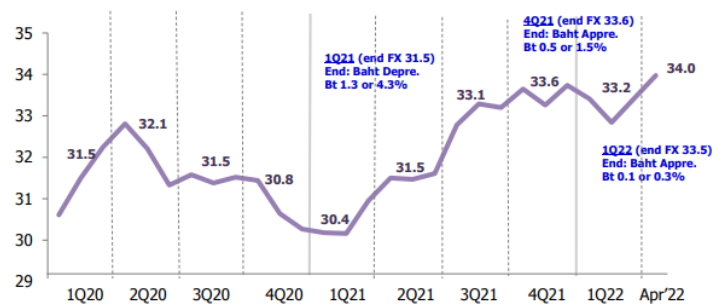
For the gas cost in Thailand, the major components that will have impacts from the weakening THB include the pool gas price linked to the USD-denominated gas prices of contract and spot LNG and the gas pricing formula for the gas imports from Myanmar and the gas produced in the Gulf of Thailand.

Exhibit 35: Asian spot LNG and Henry Hub price projections



Sources: PTT; Bloomberg

Exhibit 36: THB/USD exchange rate



Source: PTT

Rising pricing power, though on the mandatory Ft hikes

After suffering from the mismatch between the gas price spike and the piecemeal rises in the selling prices of electricity to IUs for SPPs, we think that in 2H22-23 the fortune will reverse for SPPs, considering the ERC's move to hike the Ft by a large scale to alleviate EGAT's financial distress and to accommodate the strong pent-up demand for IUs after the return of tourism and the full resumption of economic activities.

ERC's hearing scheme to hike Ft by at least THB0.6866/kWh in Sep-Dec 2022.

The ERC's hearing on the proposals by EGAT for the consideration of the Ft hike covering Sep-Dec 2022 is scheduled to be conducted during 12-25 Jul-22. With its assumptions of rising volumes of LNG imports in Jun-22 to Aug-23, the ERC has delineated three cases covering the Ft hike proposals.

Case 1 (Ft +THB1.1436/kWh): Cost for energy (Sep to Dec-22) and a 1-year breakeven for EGAT's subsidies. The FT hike would cover 1) the energy cost hike in Sep-Dec 2022 at THB0.9343/kWh (A); and 2) the partial cost of EGAT's subsidies to reach breakeven in one year by adding a THB0.4570/kWh Ft (B). The total Ft hike in case 1 would be THB1.3913/kWh.

Case 2 (Ft +THB0.9151/kWh): Cost for energy (Sep to Dec-22) and a 2-year breakeven for EGAT's subsidies. The FT hike would cover 1) the energy cost (A); and 2) the partial cost of EGAT's subsidies to achieve two years of breakeven by adding a THB0.2285/kWh Ft (C). The total Ft hike in case 2 would be THB1.1628/kWh.

Case 3 (Ft +THB0.6866/kWh): Costs for energy (Sep to Dec-22) will only be covered by the Ft hike in Case 3. This case is likely to be the mostly probable case in our opinion, given that the FT hike would be at the lowest level at THB0.9343/kWh, delaying the reimbursement for EGAT's subsidies in exchange for cost-of-living relief.

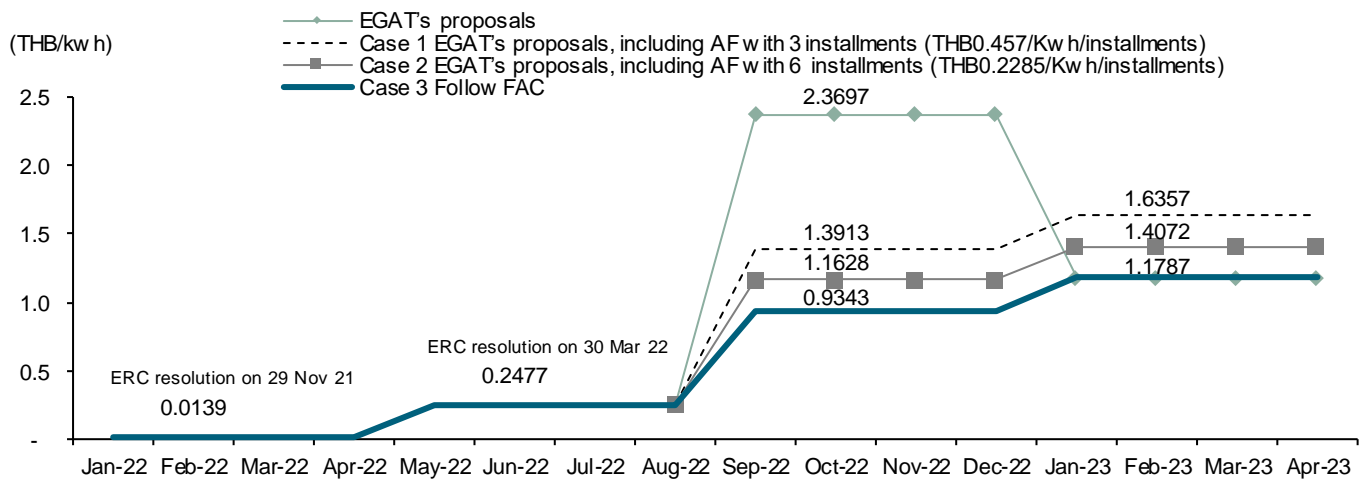
Case 4 (Ft +THB2.122/kWh): Cost for energy (Sep to Dec-22) and EGAT's fast 4-month breakeven. The Ft hike would cover 1) the cost for energy (A); 2) accelerated reimbursement for EGAT's subsidies to reach only a 4-month breakeven by Dec-22 (D), adding a THB1.4354/kWh Ft.

Case 5 (Ft +0.4000/kWh): Only partial cost for energy (Sep to Dec-22) to be covered by hiking only THB0.4000/kWh Ft. This is FSSIA's base case according to the ERC's previous comments.

Exhibit 37: Change in electricity tariff for Sep-Dec 2022

	Electricity tariff		----- Change -----	
	(THB/kWh)	(THB/kWh)	(THB/kWh)	(%)
Electricity tariff (current)	4.0310			
Case 4: EGAT's proposals (energy cost A + 4-month breakeven D)	6.1530	2.1220	52.6	
Case 1 (energy cost A + EGAT's 1-yr breakeven B)	5.1746	1.1436	28.4	
Case 2 (energy cost A + EGAT's 2-year breakeven C)	4.9461	0.9151	22.7	
Case 3 (energy cost A only)	4.7176	0.6866	17.0	
Case 5 (partial energy cost A) (FSSIA's base case)	4.4310	0.4000	9.92	

Source: ERC

Exhibit 38: EGAT's proposals for the ERC to hike the fuel tariff for Sep-Dec 2022

Source: ERC

In addition to the ERC's three cases, we have included two additional cases – case 4 as the best case (EGAT's proposal for a fast 4-month breakeven) and case 5 as the worst case (only partially covering cost of energy in Sep to Dec-22).

In our view, we think case 1 is likely to be the most probable for the ERC to proceed with, based on 1) the additional burden of the higher electricity cost should be manageable for the ERC and acceptable for consumers, and the ERC could continue to subsidise low-income persons with low electricity consumption below 300kWh (units) per month; and 2) EGAT should be able to handle its financial liquidity for 2022 before the accumulated loss from Ft subsidies would be fully reimbursed within 12 months.

We believe that under case 1 the ERC would hike the Ft by THB1.1436/kWh for Sep to Dec-22, the increase in the weighted average electricity tariff would be THB28.37% to THB5.1746/kWh, with a 31.2% increase for low-income citizens, 43.5% for middle-income citizens, and 53.7% for high-income citizens, based on the ERC's estimates.

Exhibit 39: Summary of five cases of possible FT hikes for Sep-Dec 2022

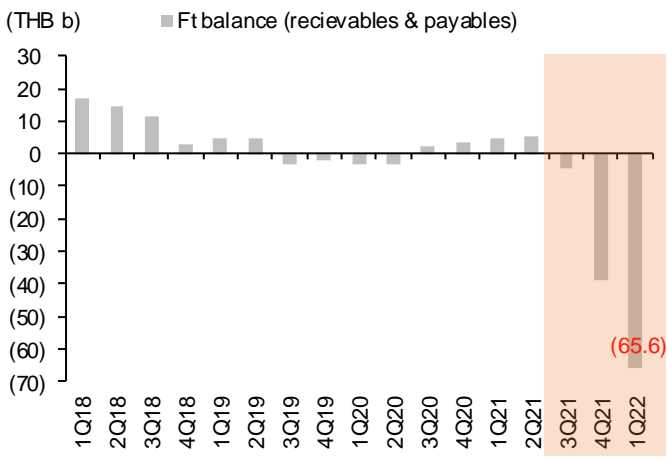
Case	Partial cost (FSSIA)	Cost	Cost + 2yr payback	Cost + 1yr payback	EGAT
	Case 5 (worst)	Case 3	Case 2	Case 1	Case 4 (best)
	(THB/kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)
Ft (May to Aug-22E)	0.2477	0.2477	0.2477	0.2477	0.2477
Tariff (May to Aug-22E)	4.0310	4.0310	4.0310	4.0310	4.0310
Ft increase for Sep to Dec-22E	0.4000	0.6866	0.9151	1.1436	2.1220
Ft after increase (Sep to Dec-22E)	0.6477	0.9343	1.1628	1.3913	2.3697
Tariff after increase (Sep to Dec-22E)	4.4310	4.7176	4.9461	5.1746	6.1530
% tariff increase	9.92	17.03	22.70	28.37	52.64
Impact to consumers under different unit consumptions					
	Current tariff	Cost	Cost + 2yr payback	Cost + 1yr payback	EGAT
(kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)
100	3.66	4.35	4.58	4.80	5.78
300	4.11	4.80	5.03	5.25	6.23
1,000	4.48	5.17	5.40	5.62	6.60
% tariff increase under electricity consumptions					
	Current tariff	Cost	Cost + 2yr payback	Cost + 1yr payback	EGAT
(kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)	(THB/kWh)
100	0.0	18.8	25.0	31.2	58.0
300	0.0	31.1	37.3	43.5	70.3
1,000	0.0	41.2	47.4	53.7	80.4

Sources: ERC; FSSIA estimates

EGAT's alarming financial distress is key to mandate the ERC to hike the Ft at a faster and higher pace than expected in Sep to Dec-22. The inevitable move by the ERC to hike the Ft and the overall electricity tariff by a significant scale starting in the Sep-Dec 2022 period is a result of the near-bankrupted EGAT. This was caused by the fast-growing losses from the subsidies for the Ft that has been relatively capped by the ERC via the smaller and lower-than-cost Ft hike. The government would like to alleviate the electricity costs to the public at the expense of EGAT's ballooning energy cost for the electricity produced by EGAT per se and purchased on behalf of the government from IPPs, SPPs, and renewable producers.

As of 1Q22, EGAT's accumulated loss from the Ft has swollen to THB65.6b, but we estimate that YTD EGAT's Ft loss should have already exceeded THB100b as the costs of energy, mostly gas and coal, have surged by over 2x y-y while the Ft hike is still less than 50% y-y. While EGAT still had cash on hand of THB51.8b and retained earnings of THB468.9b at the end of 1Q22, we think the fast-rising loss from Ft subsidies could soon put EGAT into financial distress thanks to EGAT's large aggregated debt of THB154b in interest-bearing debts and THB240b financial lease.

Exhibit 40: EGAT's accumulated loss from Ft subsidies as of 1Q22 is THB65.6b



Source: EGAT

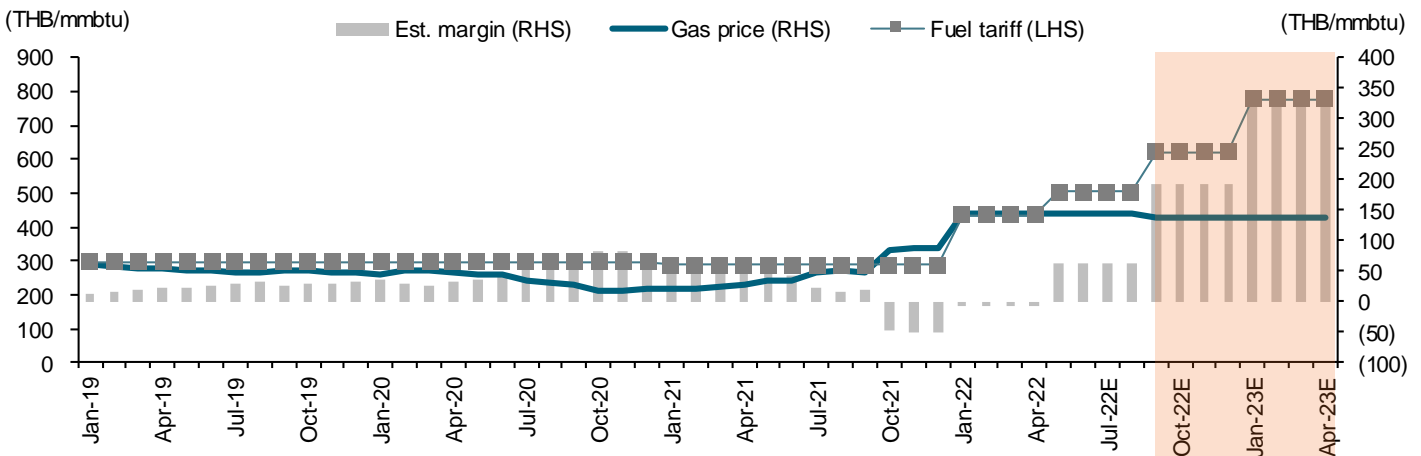
Exhibit 41: EGAT's 1Q22 balance sheet

Assets & equity	(THB m)	Liabilities	(THB m)
Cash on hand	51.8	Short-term debt - loan	4.9
Ft receivable	65.6	Account payable to MoF	11.0
Current assets	206.6	Loan due within one year	9.4
Total assets	1,113.9	Current liabilities	143.2
Retained earnings	468.9	Long-term debt - loan	137.8
Total equity	479.6	Long-term debt - IF	16.1
Minority interest	47.9	Financial lease	239.9
Total shareholder equity	527.5	Total liabilities	586.4

Source: EGAT

Out of the five cases mentioned above, we think the ERC is likely to pursue "case 1" of a THB1.1436 Ft increase for Sep to Dec-22. It will likely do this to not only cover the rising energy costs via an Ft hike of THB0.9343/kWh but also an additional FT hike of THB0.4570/kWh to gradually reimburse EGAT's FT loss and allow EGAT to achieve breakeven within 12 months, according to the ERC's hearing document.

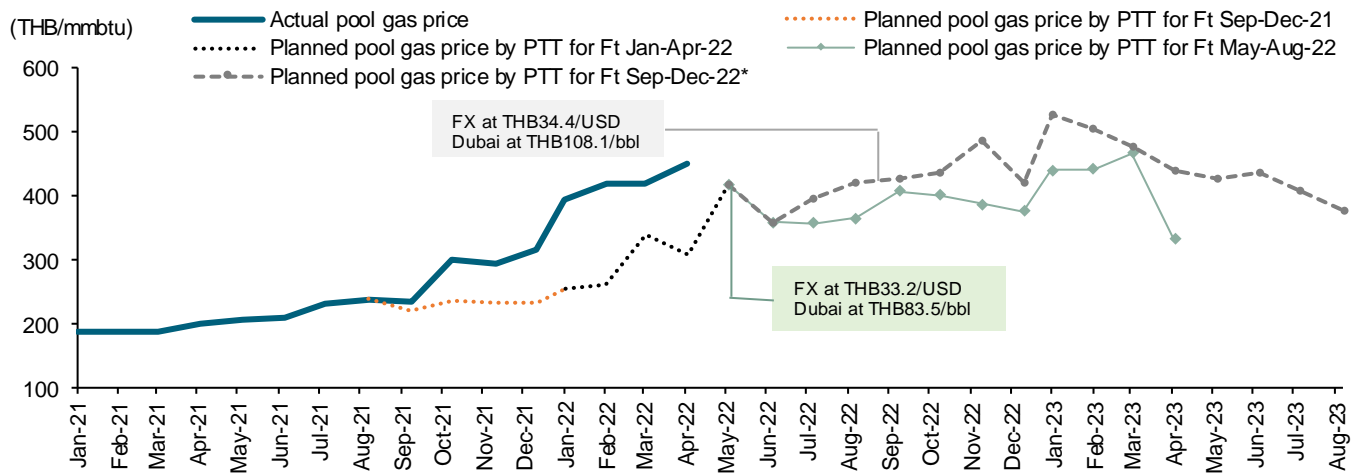
Exhibit 42: Margins for SPPs are expected to meaningfully improve starting in Sep-22 onward on the Ft hike



Sources: ERC; BGRIM; FSSIA estimates

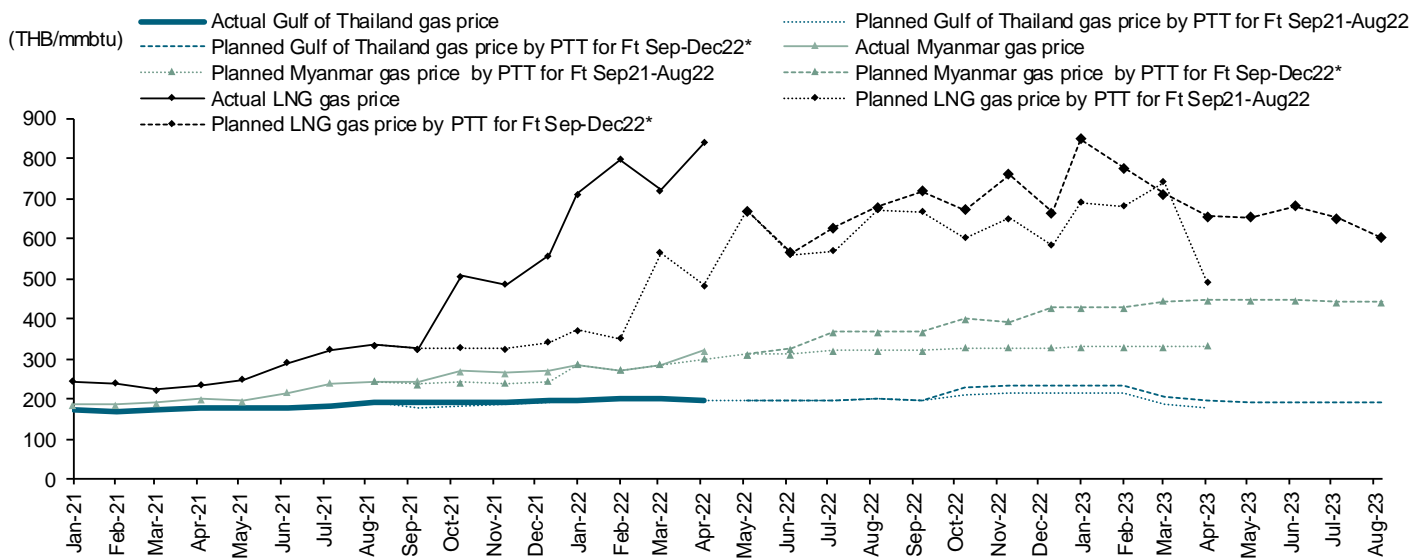
We estimate that starting in 2Q22, SPPs' margins for electricity sold to IUs will gradually widen as the rising selling price, driven by the Ft hike, should far outpace the higher energy cost in Sep to Dec-22 and likely continue into 2023 as the ERC has clearly indicated that the Ft hike is now unavoidable to ensure that EGAT's financial position will not further deteriorate.

Exhibit 43: Thailand's pool gas price (actual vs planned)



*As of 6 Jun-22
Source: ERC

Exhibit 44: Thailand's pool gas price from Gulf of Thailand, Myanmar, and imported LNG (actual vs planned)

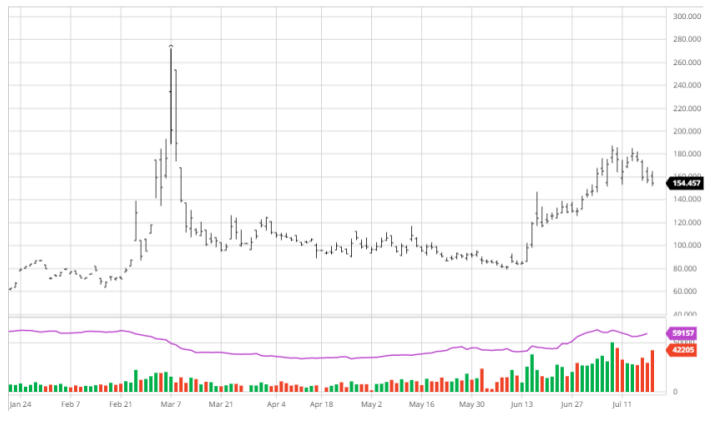


*As of 6 Jun-22
Source: ERC

Assessing downside risk from potential spikes in global gas prices

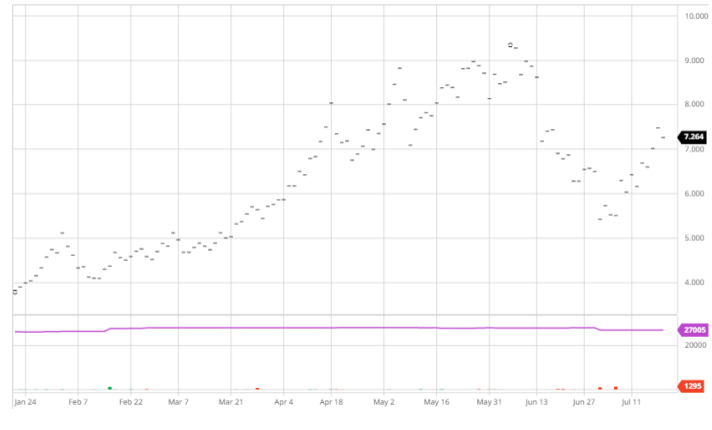
Global gas prices, including the Title Transfer Facility (TTF) benchmark gas price in the EU, Henry Hub (HH) benchmark gas price in the US, and the futures of LNG, both for contract JCC and spot LNG JKM futures, have all been softening from their peak levels, seen in Mar-22 for LNG (JCC and JKM) and in May-22 for HH.

Exhibit 45: TTF gas futures Aug-22 (TGQ22)



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

Exhibit 46: Henry Hub gas futures Aug-22 (JNNQ22)

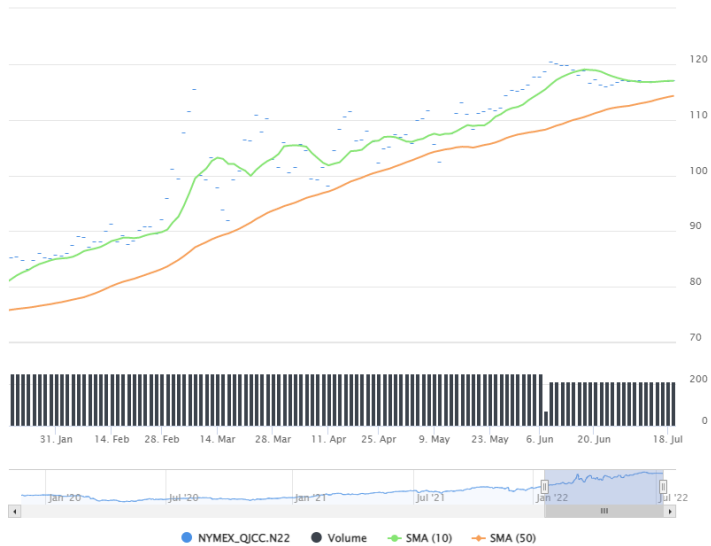


Source: [Barchart.com](https://www.barchart.com)

The JCC gas futures trend has similarly followed the spot market gas futures (JKM and HH), with a downward trend from USD115/bbl (USD19.2/mmbtu) in Jul-22 then declining to USD105/bbl (USD17.5/mmbtu) in Sep-22, to USD91/bbl (USD15.2/mmbtu) in Apr-23, and to USD86/bbl (USD14.3/mmbtu) in Jan-24.

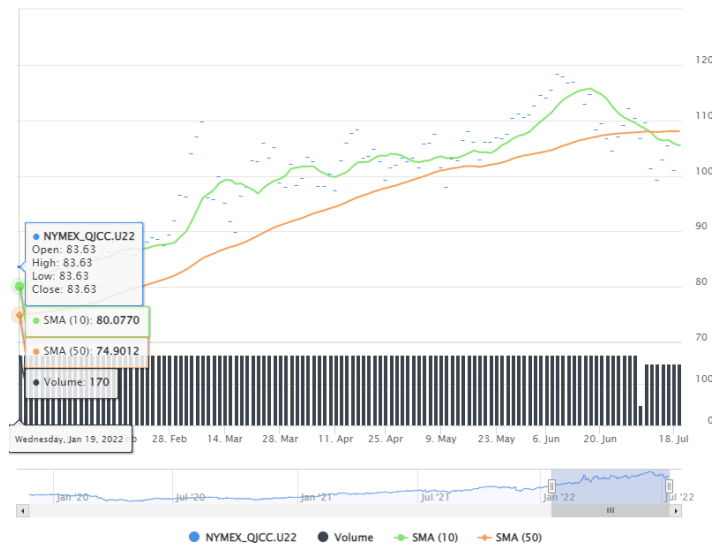
The downward trend of JCC futures, dropping from USD19.2/mmbtu in Jul-22 down to USD14.3/mmbtu in Apr-24, clearly reflects that investors believe that the gas price has already passed the peak in Mar-22 and is on a downward trend, even in the coming winter.

Exhibit 47: JCC contract futures Jul-22 (NYMEX:QJCC.N22)



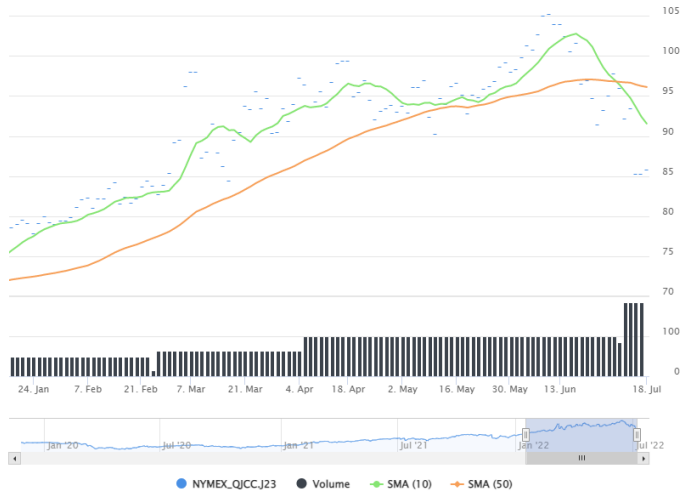
Source: [ino.com](https://www.ino.com)

Exhibit 48: JCC contract futures Sep-22 (NYMEX:QJCC.U22)



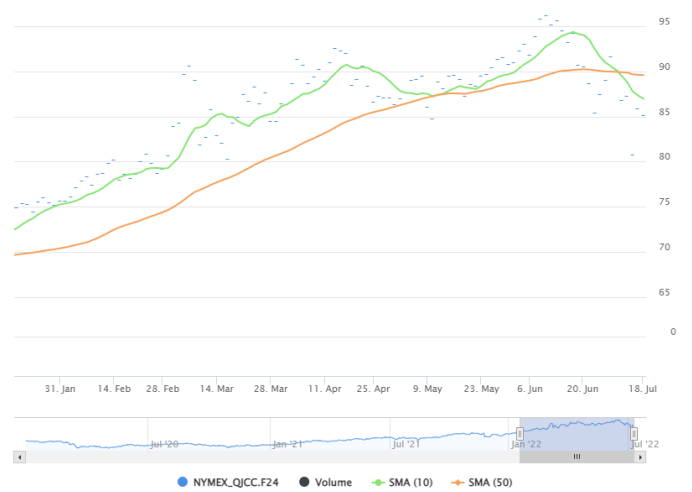
Source: [ino.com](https://www.ino.com)

Exhibit 49: JCC contract futures Apr-23 (NYMEX:QJCC.J23)



Source: ino.com

Exhibit 50: JCC contract futures Jan-24 (NYMEX:QJCC.F24)



Source: ino.com

From Russia with loath? Russia’s upcoming gas move on 22 Jul-22, whether it will resume selling its gas via Nord Stream 1 (NS1) that connects Russia with Germany through the Baltic Sea and is then transmitted further to other EU countries in the South, is a true judgement day for the EU energy market, let alone the economy.

NS1, along with the already complete Nord Stream 2 (NS2), are the two major gas pipelines from Russia to Europe, each with its own twin gas pipelines stretching from southern Russia to connect with northern Germany with a 1,224 km offshore pipeline network.

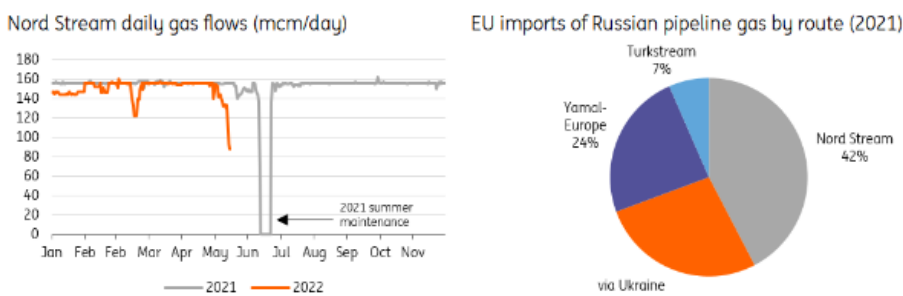
NS1 is the most direct connection between the vast gas reserves in Russia and energy markets in the EU. The combined capacity of NS1 is 55bcm of gas annually, delivering gas at least for the next 50 years as a secured and cost-effective energy supply to produce heating for households in the winter and to manufacture fertilizers using methane (C1) as a key feedstock and for industrial sectors.

NS1 started to deliver gas to the EU since mid-Nov-11 after construction that began in Apr-10 was completed. Construction of NS2 began in May-11 and was completed in Apr-21.

Bovanenkovo oil and gas condensate deposit is the main natural gas base for the NS pipeline, lying in Western Siberia, on the Yamal Peninsula, with searched and estimated gas reserves of 4.9t cm that would be sufficient as a reliable gas supply for the EU for at least 50 years.

LNG price spike is likely if Russia cuts gas supply to the EU. Gas flows via NS1, now the most critical gas pipeline for the EU in this coming winter, has already reduced its gas sales to only 40% of its 67m cubic metre (mcm) capacity until 11 Jul-22 when Russia completely halted its gas flow via NS1 for a 10-day planned maintenance shutdown during 11-21 Jul-22.

Exhibit 51: Nord Stream 1 is crucial for Russian gas flows to Europe



Source: Hellenic Shipping News

Europe’s gas storage is mostly in Spain and the UK. Within Europe, according to the International Group of LNG Importers’ (GIIGNL) annual report 2021, most of the EU’s gas storage is located in Spain, the UK, and France, and the overall gas storage level was at 52% before Russia’s shutdown on 11 Jul-22 until 21 Jul-22 for maintenance.

Germany is the most vulnerable country for Russia’s gas supply cut. We believe Germany will face the highest risk of a gas supply shortage in the coming winter, considering that Germany has no gas storage facility and LNG regasification to receive LNG imports, and hence needs to rely on other EU countries, particularly Germany’s neighbouring France, along with the UK and Spain to secure the gas supply from LNG imports.

Exhibit 52: European gas storage breakdown by country

Europe	Storage (m ³)	Regasification (mtpa)
Belgium	0.6	6.6
Croatia	0.1	1.9
Finland	0.1	0.5
France	1.4	25.6
Gibraltar	0.0	0.1
Greece	0.2	5.1
Italy	0.5	11.8
Lithuania	0.2	2.9
Malta	0.1	0.5
Netherlands	0.5	8.8
Norway	0.1	0.5
Poland	0.3	3.7
Portugal	0.4	5.6
Spain	3.6	49.5
Sweden	0.1	0.6
Turkey	0.9	25.1
UK	2.1	35.3
Total Europe	11.2	184.1
Total Europe ex-Turkey	10.33	159.00

Source: GIIGNL

Exhibit 53: Americas and global gas storage breakdown by country and region

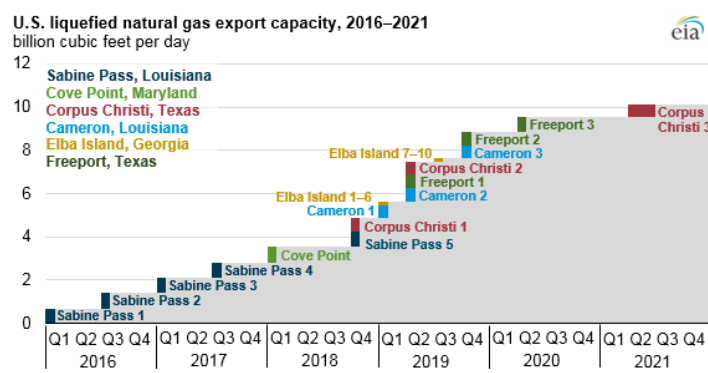
Americas	Storage (m ³)	Regasification (mtpa)
Argentina	0.2	6.1
Brazil	0.8	26.6
Canada	0.5	7.4
Chile	0.5	5.3
Colombia	0.2	3.7
Dominican	0.2	1.7
Jamaica	0.1	4.1
Mexico	0.9	17.9
Panama	0.2	1.5
Puerto Rico	0.2	3.1
USA	4.8	132.0
Total Americas	8.5	209.4

Global	Storage (m ³)	Regasification (mtpa)
Europe	11.2085	184.1
Asia	55.13	558.21
Americas	8.522	209.4
Middle East	1.839	39.9
Total global	76.7	991.6

Source: GIIGNL

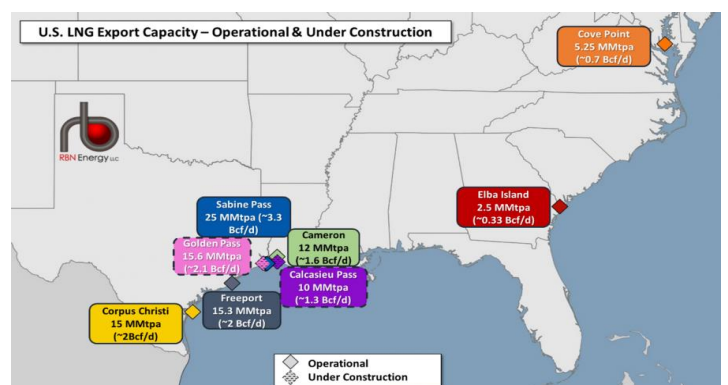
Tighter LNG market due to Freeport fire incident. The disruptions of NS1 gas flows could further exacerbate the already tight global LNG market after a fire at the 15mtpa (20bcm) Freeport LNG export terminal in the US on 14 Jun-22, which has caused a complete shutdown for over one month already. Located in Texas in the Gulf of Mexico in the US, Freeport’s LNG terminal capacity accounts for 20% of the US’ capacity and 4% of the global LNG export market, and around 10% for the EU before the fire incident.

Exhibit 54: US LNG liquefaction capacity expansion



Source: EIA

Exhibit 55: Locations of US major LNG export terminals



Source: RBN Energy

US is now the world's largest LNG exporter as of 1H22, with an estimated total LNG export capacity of 91.3mtpa. The global LNG market was 372mtpa in 2021, up 4.5% y-y despite the impact of the Covid-19 pandemic, with a total of 19 exporting countries and 44 importing countries.

Exhibit 56: US LNG liquefaction capacity by project (2021)

USA	Storage		Send-out (mtpa)
	(m ³)		
Calcasieu Pass	0.4		10.0
Cameron LNG T1	0.5		4.5
Cameron LNG T2			4.5
Cameron LNG T3			4.5
Corpus Christi T1	0.5		5.0
Corpus Christi T2			5.0
Corpus Christi T3			5.0
Cove Point	0.7		5.3
Elba island	0.6		2.5
Freeport LNG T1	0.5		5.0
Freeport LNG T2			5.0
Freeport LNG T3			5.0
Sabine Pass T1	0.8		5.0
Sabine Pass T2			5.0
Sabine Pass T3			5.0
Sabine Pass T4			5.0
Sabine Pass T5			5.0
Sabine Pass T6			5.0
Total	3.9		91.3

Source: [GIIGNL](#)

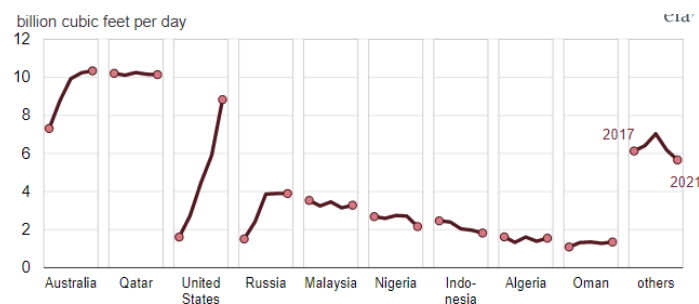
Exhibit 57: Global liquefaction capacity breakdown by major country (2021)

Global	Storage		Send-out (mtpa)
	(m ³)		
USA	3.9		91.3
Australia	2.8		87.2
Qatar	2.3		77.0
Malaysia	0.7		32.0
Nigeria	0.3		22.2
Indonesia	1.1		21.1
Russia	0.7		18.1
Trinidad	0.5		15.3
Oman	0.2		10.4
Papua New Guinea	0.3		8.3
Brunei	0.2		7.2
UAE	0.2		5.8
Norway	0.3		4.5
Other	3.15		71.25
Total global	16.9		471.6

Source: [GIIGNL](#)

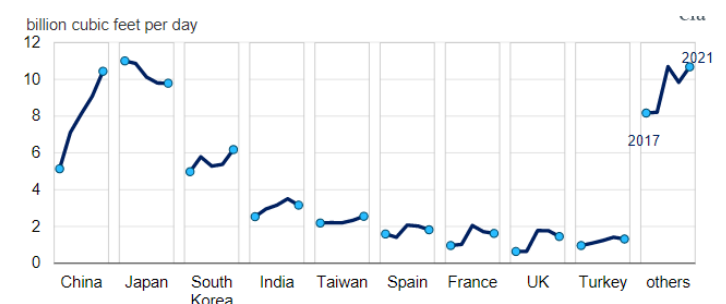
Only 7 new regasification terminals were added in 2021 vs 29 projects added in 2022. While the global regasification capacity was 993mtpa (demand), the global capacity of liquefaction was only 462mtpa (supply) in 2021. Asia accounted for 73% of global LNG demand in 2021 and around 36.6% of the total LNG trade is on a spot or short-term LNG basis.

Exhibit 58: Major global LNG exporters (2017-21)



Source: [EIA](#)

Exhibit 59: Major global LNG importers (2017-21)



Source: [EIA](#)

US LNG exports are unlikely to return to normality until 2Q23. As one of the world's top three largest LNG exporters as of 2021, with an LNG regasification terminal capacity of 77mtpa at the end of 1H22, the LNG export capacity disruption due to the fire incident at Freeport LNG terminal will have a significant impact on the global LNG market in 2022-23, in our view.

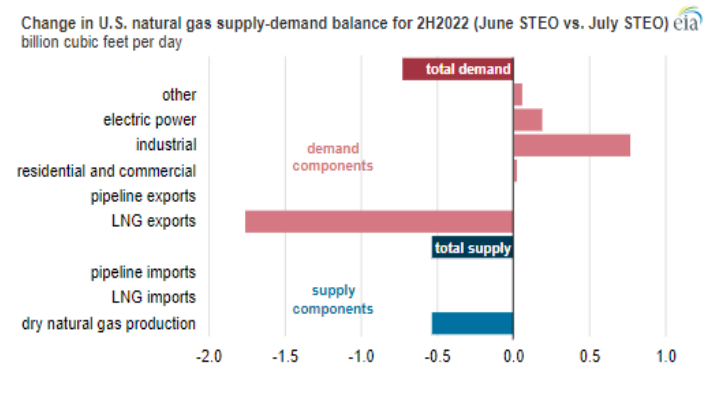
According to ENR Texas & Louisiana News, the USD13.5b LNG terminal operation of Freeport is now scheduled to resume in early September, but the operator of Freeport indicated that it could take until the end of 2022 for the repairs and regulatory clearances to enable full operation of the facility.

Exhibit 60: Freeport LNG terminal in Texas



Source: [Engineering News-Road](#)

Exhibit 61: Change in US natural gas supply-demand balance for 2H22



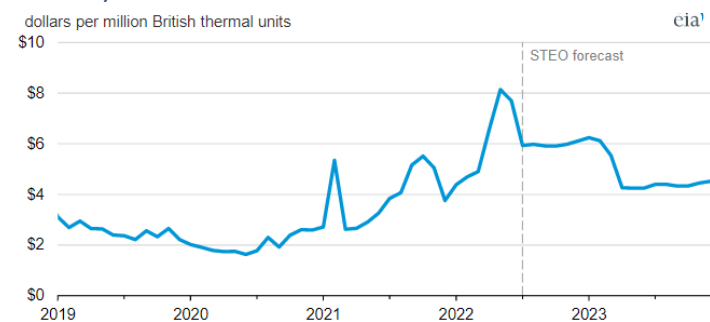
Source: EIA

According to the US Energy Information Administration (EIA) on 11 Jul-22, the outlook for US LNG exports dropped by 6% or 2bcf/d (14.7mtpa of LNG), immediately after the fire hit the Freeport terminal in Jun-22, leading to a decline in the US benchmark HH by USD1.27/mmbtu to USD8.16/mmbtu. The EIA projects an average of 10.9bcf/d (80.2mtpa) in LNG exports, down by 1bcf/d from 11.0bcf/d (81mtpa) prior to the Freeport accident. The EIA believes the LNG output could rise to 12.7bcf/d (93.5mtpa) once Freeport returns to full service in 2023.

Based on the EIA's report, "Short-term Energy Outlook" (STEO) in Jul-22, it forecasts that US LNG exports will average 10.1bcf/d in June, up only 1.5bcf/d m-m, as a result of the Freeport LNG terminal outage. The EIA expects the US LNG exports to remain low at 10.5bcf/d (77.3mtpa) in 2H22, down 1.8bcf/d (13.2mtpa) from the EIA's forecast in its Jun-22 STEO report.

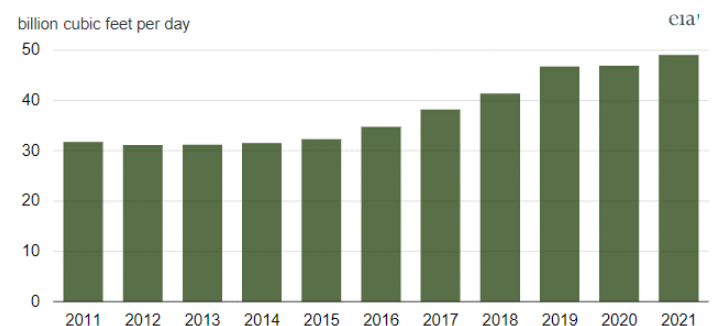
Lower forecast for HH price to USD6/mmbtu in 2H22 by EIA. As a result of the outage of Freeport LNG terminal in June, EIA forecasts the HH gas price average to 6/mmbtu in 2H22, down from USD7.7/mmbtu average in June mainly due to the lower LNG export capacity that is expected to continue into 1Q23.

Exhibit 62: Monthly Henry Hub gas price index (Jan-19 to Dec-23E)



Source: EIA

Exhibit 63: Global annual LNG trade (2011-21)



Source: EIA

Given the lower HH price forecast, the EIA expects the gas demand in the US for the industrial and electricity sectors to increase in 2022, offsetting the overall demand (domestic plus LNG export) to drop by 0.7bcfpd in 2H22.

Not until 2Q23 does the EIA expect the US gas production to grow and inventories to return to their 5-year average (2017-22) levels, further putting downward pressure on the HH price. The EIA forecasts the average HH price to be USD4.8/mmbtu in 2023 in its Jul-22 STEO report.

Exhibit 64: Nord Stream 1 – the most important gas pipeline in Europe



Source: [BBC.com](https://www.bbc.com)

Exhibit 65: Major gas pipelines from Russia to Europe

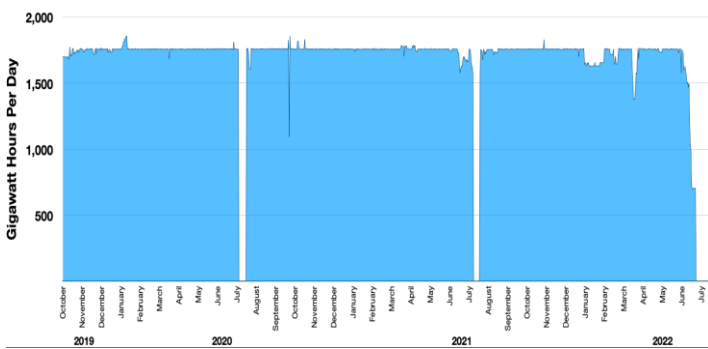


Source: [Wikipedia](https://en.wikipedia.org)

While Gazprom, the operator of NS1 and other major gas pipelines to the EU, could increase its gas flow via Ukraine to make up for the NS1 shortfall, Russia decided not to do so, while the gas flows via the Yamal-Europe pipeline have already reversed from west to the EU market to east to China.

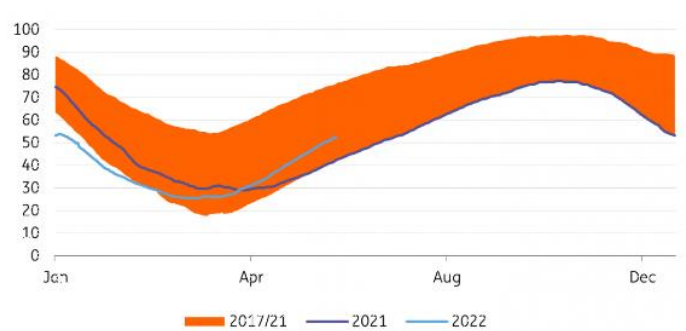
Gas storage in the EU. As of Jun-22, the gas storage level in Europe is 52% full, which is slightly below its 5-year historical average of 55% and well above the 43% seen in Jun-21. However, a prolonged outage will raise concerns over the ability of the EU to build sufficient storage ahead of the upcoming heating season in winter, and is still far below the 80% full storage target set by the EU by 1 Nov-22.

Exhibit 66: Gas flow via Nord Stream 1



Source: Nord-Stream.info

Exhibit 67: Gas storage level in the EU



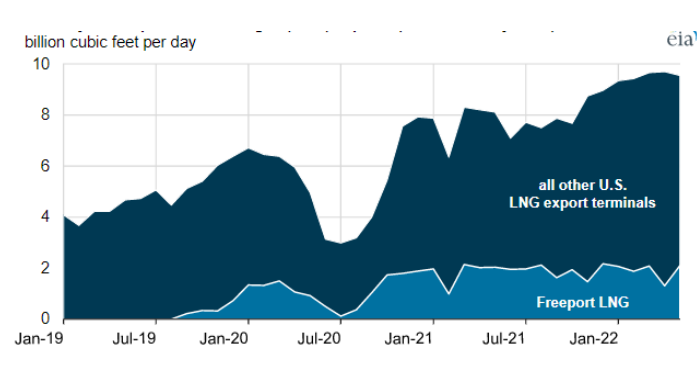
Source: Hellenic Shipping News

Can Europe replace Russian gas by winter? We believe there is no chance at all.

While the EU relied on Russian gas for around 40% of its gas supply before the war between Russia and Ukraine broke out on 24 Feb-22, the pace of storing gas or ramping up imports of LNG, particularly in Germany, make the replacement of Russian gas “mission impossible” in our view, at least in the short term.

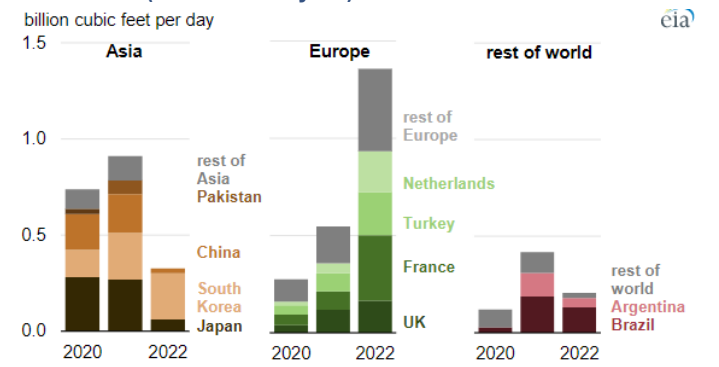
Hence, the political disagreement among EU members against the complete ban on Russian gas imports in 2022. Many EU countries are now racing to fill up their gas storage caverns as early as possible in 2022, but the gas storage level before Russia cut the gas supply via NS1 was only at 52%, and far below Germany’s target of 90% and the EU’s target of 80% by 1 Nov-22.

Exhibit 68: Monthly US LNG exports (Jan-20 to May-22)



Source: EIA

Exhibit 69: US LNG exports from Freeport LNG terminal by destination (Jan-20 to May-22)

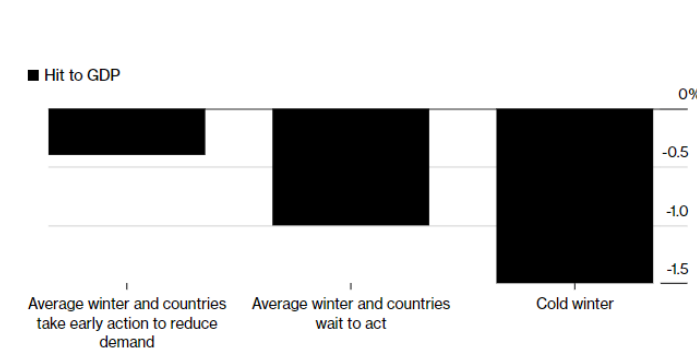


Source: EIA

In addition, before the fire incident at the Freeport LNG terminal, the EU had little hope to fill up its gas storage as much as possible. Even though EU members are willing to pay hefty prices for LNG imports, we think it seems an undisputed “mission impossible”.

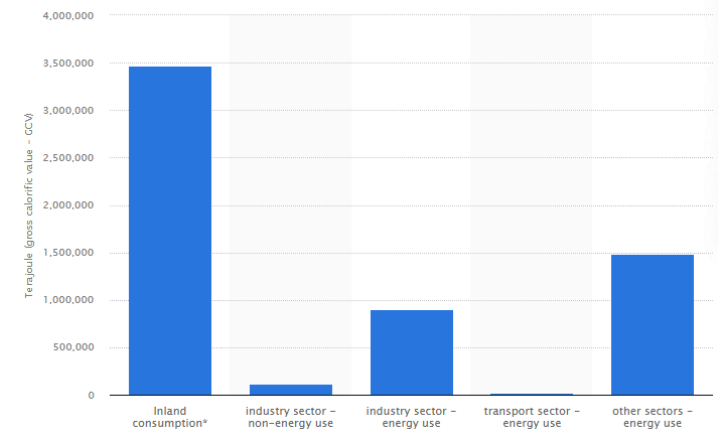
Aside from the US, the EU could turn to Norway and Azerbaijan, but still the EU is far from reality to achieve its goal of 80-90% storage levels by 1 Nov-22 without the Russian gas supply.

Exhibit 70: Estimated impact of cuts in Russian gas supplies to the EU in 2022



Source: European Commission

Exhibit 71: Consumption of gas in Germany, breakdown by purpose (2021)



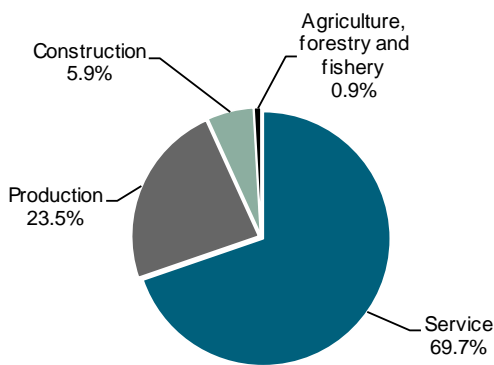
Source: Statista

What are likely implications for the EU without Russian gas by Aug-22? Simply put, economic disaster. The most likely event will be that businesses in the EU will have no choice but to scale back their energy consumption.

Germany’s reliance on Russian gas: Industrial giant Germany still relies on Russia for up to 35% of its gas imports as of Jun-22. Energy-intensive industries such as steel making will likely face the grave consequences of a squeeze and limits on industrial production.

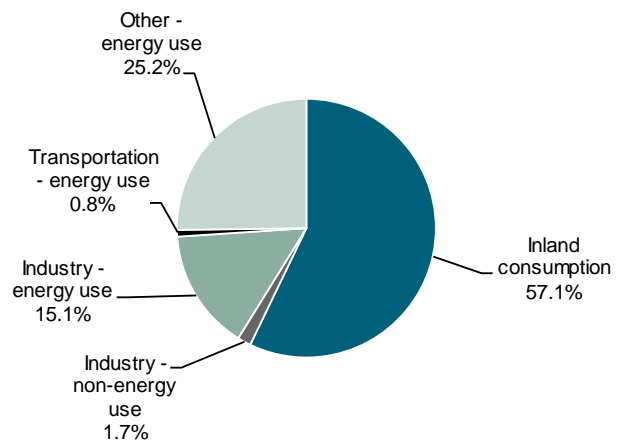
According to the estimate by the European Commission, the sudden halt of the gas supply from Russia to the EU could potentially reduce the EU’s GDP by as much as 1.5% if the next winter is cold and the region fails to take preventive measures to save energy. Even in the average winter, a cut-off of gas shipments from Russia would still reduce the EU’s GDP by 0.6-1.0%, based on the EU’s forecast.

Exhibit 72: German GDP breakdown by industry (2021)



Source: Wikipedia

Exhibit 73: Germany gas consumption by purpose (2021)

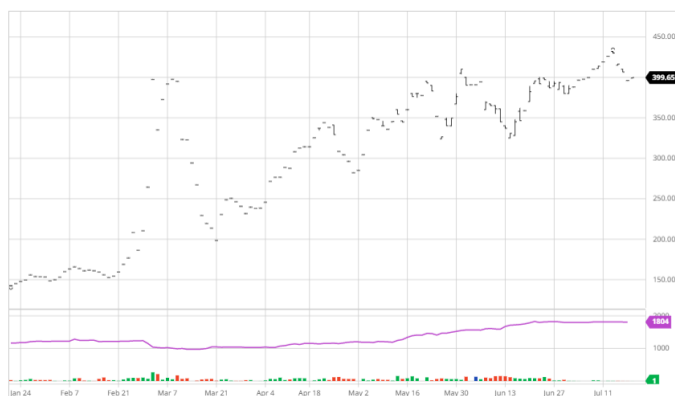


Source: Statista

UK could emerge unscathed by Russian energy divorce. Unlike Germany, the UK imported just 4% of its gas needs from Russia in 2021 and is clearly well insulated from the Russian supply risk, thanks to its domestic gas supplies, piped gas supplies from Norway and LNG imports, although it will continue to be exposed to the skyrocketing gas prices, similar to all other EU countries.

What about consumers? We believe consumers in the UK and EU are less likely to feel the pinch from Russian gas supply cuts as industrial use would be limited first. However, the soaring prices of gas, oil, and coal would surely impact all EU participants via rising inflation, a higher cost of living, soaring production costs for industrial producers both for feedstocks (fertilisers for example) and energy and utilities, strains on healthcare and potential casualties resulting from energy shortfalls during the winter, and collapses in the industrial sectors across the European countries.

Exhibit 74: ICE Newcastle coal price index Jul-22 (LQN22)



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

Exhibit 75: LNG gas swap futures contract on South East Asian market Sep-22 (JKMU22)



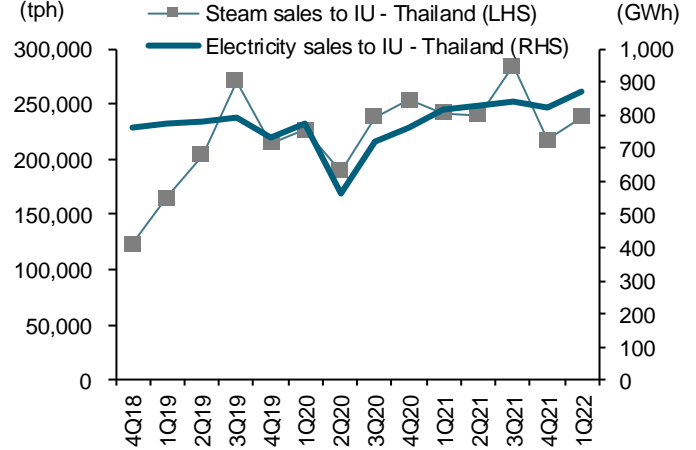
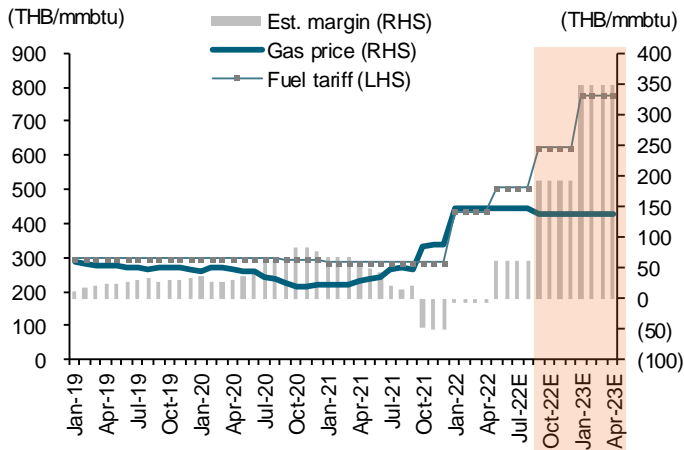
Source: [Barchart.com](https://www.barchart.com)

Thai power plays are well protected from potential spikes in global gas prices

In the next four quarters, we believe, despite the potential spike in the global gas and LNG prices as a result of Russia’s gas supply cuts to the EU, we think Thai power companies, specially SPPs, will likely see improving margins for the electricity sold to IUs, backed by the projected sharp rise in the Ft-driven electricity and steam selling prices that should greatly outweigh the negative impact of the high gas cost.

Exhibit 76: Estimated margin of Ft-based tariff vs gas cost

Exhibit 77: BGRIM’s sales volume breakdown by product



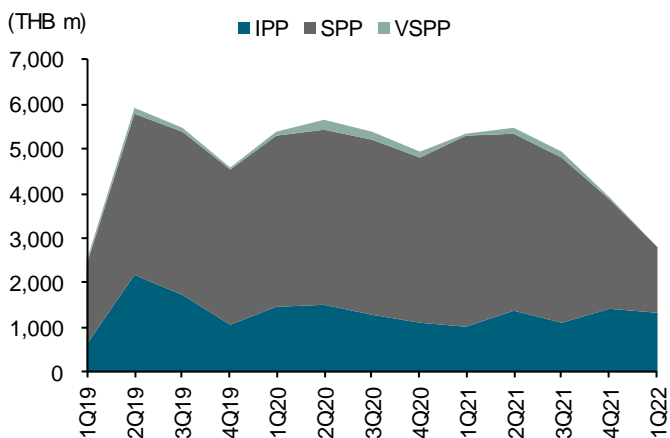
Sources: BGRIM; FSSIA estimates

Sources: BGRIM; FSSIA estimates

BGRIM: Up to THB2.2b higher annual net profit from the Ft hike. BGRIM stands out as our top pick in the Thai power sector thanks to 1) its earnings have the most leverage on changes in the Ft hike – every THB0.01 increase in Ft, all else being equal, would boost BGRIM’s net profit by THB20m-25m, based on our estimate. Using the THB1.1436 Ft hike under case 1, we estimate that BGRIM would earn an additional THB2.2b in net profit, or around THB0.6b higher net profit a quarter, starting in 3Q22 onward.

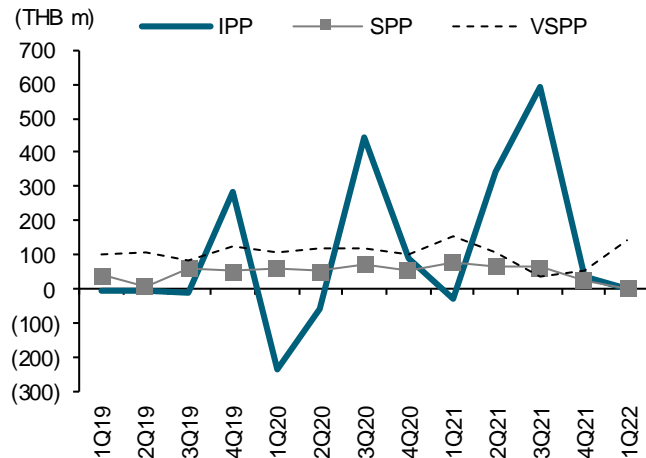
GPSC: Smaller but still ample upside. Under a THB1.1436 Ft hike, we expect GPSC's annual net profit to jump by THB1.6b thanks to its large exposure to the electricity and steam volumes sold to IUs. We project the gross profit from SPPs to substantially rise in 3Q22 onward thanks to the rising Ft-based selling price vs the relatively stable gas cost.

Exhibit 78: Gross profit breakdown by power plant type



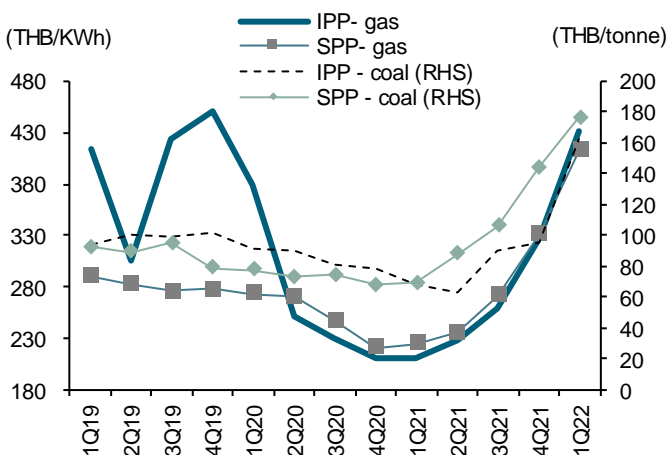
Sources: GPSC; FSSIA estimates

Exhibit 79: Share of profit breakdown by power plant type



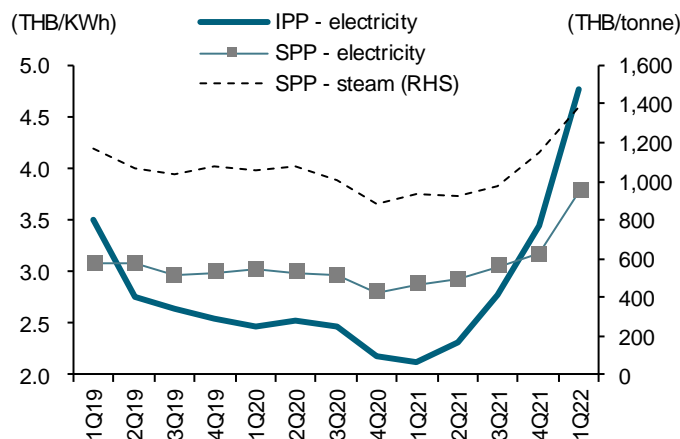
Sources: GPSC; FSSIA estimates

Exhibit 80: Average prices of gas and coal for IPPs and SPPs



Sources: GPSC; FSSIA estimates

Exhibit 81: Average selling prices of electricity and steam to EGAT and IUs



Sources: GPSC; 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	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	DRS	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	WIK
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

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Company	Ticker	Price	Rating	Valuation & Risks
B.Grimm Power	BGRIM TB	THB 37.00	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.
Global Power Synergy	GPSC TB	THB 65.75	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.
PTT PCL	PTT TB	THB 34.25	BUY	Risks to our SoTP-based valuation are the oil price and potential earnings downsides from government intervention.
Gulf Energy Development	GULF TB	THB 46.75	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.
Electricity Generating	EGCO TB	THB 188.00	BUY	Downside risks to our SoTP-based TP include 1) lower-than expected demand for electricity in Thailand; 2) delays in project commencement or commercial operation dates (COD); and 3) government intervention in electricity tariff subsidies.
PTT Explor & Prod	PTTEP TB	THB 160.50	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.

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

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All share prices are as at market close on 20-Jul-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.