

# Energy & Petrochemicals

SET ENER index Close: 19/4/2024 19,461.97 -401.50 / -2.02% Bt12,987mn  
Bloomberg ticker: SETENERG

## Be selective amidst rising geopolitical risks

Performance of SETENERG (-5.8% YTD) has been in line with the overall market but slightly weaker than SETPETRO's -4.4% despite the recent 16-18% YoY rise in oil price. We believe this reflects investor concern about the Thai stock market as a whole and the uncertainty about the government's energy policy, which could affect domestic energy prices and earnings at PTT (6% and 21% of SET and SETENERG market caps, respectively). Hence, we are selective on our stock picks, choosing those that still have share price catalysts in the near term. BCP still tops the list given solid GRM, earnings growth from the acquisition of BSRC and business diversification away from Thailand. Others on the list: TOP (proxy for oil refineries), PTTEP (upside from oil price rise) and PTTGC (past the worst).

**Upward momentum for oil.** Global oil prices are on the rise to >US\$90/bbl on lower supply and demand recovery. The trigger point for the recent price rise is the OPEC+ decision to extend the product curb until end-Jun 2024 and rising geopolitical tension. On the demand side, the three oil-related organizations expect oil demand to increase 0.9-2.3mb/d in 2024, a slowdown from 2023. We revise up our Brent oil price assumption for 2024F to US\$85/bbl from US\$80 to reflect the supply risk from geopolitical tension (Bloomberg consensus is US\$83.5/bbl). Higher oil price could delay the interest rate cut due to inflation concerns and hurt demand, in our view, which could lead oil price to fall back to US\$80± later on more production and slower demand growth. We raise our DCF-based TP for PTTEP from Bt194 to Bt204 to reflect our higher oil price.

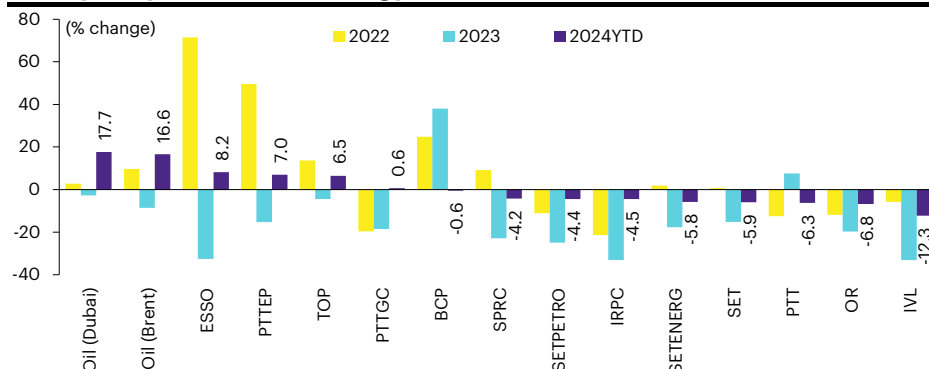
**GRM to recover on summer demand.** Average Singapore GRM rose 33% QoQ in 1Q24 but has fallen 43% QTD to US\$4.13/bbl, reflecting a 25-27% QoQ drop in crack spread for diesel and jet fuel in 2Q24TD. Higher demand for gasoline in 2Q24 will give some support to GRM as seasonal demand is strengthening. Crack spread has edged down 2% QoQ but remains above US\$17/bbl. Higher oil price raises the risk of stock gain/loss for oil refining stocks in the near term, but the current wave of oil refining capacity could be the last one for the next decade. Demand for refined oil products is likely to continue to rise despite higher adoption of EV. We still like BCP as the top pick for the sector on its portfolio diversification to withstand oil price volatility. We also pick TOP on a recovering GRM and its increasing competitive edge as CFP's startup approaches.

**Demand for petrochemical products remains subdued.** We stay cautious on the petrochemical sector although it has surmounted its worst year, as we expect only gradual recovery until a more balanced demand-supply is reached. Higher oil price will delay the upturn due to more costly feedstock and possible damage from high oil price and persistently tight monetary policy hurting demand. At this point we prefer PTTGC on its improving margin from higher ethane feedstock, implying better competitiveness over naphtha-based producers.

**1Q24F earnings outlook.** Oil and gas companies are expected to report stronger profit QoQ in 1Q24, especially oil refiners, from healthy GRM and inventory gains. This will also back better profit for integrated oil companies.

**Risk factors.** An economic slowdown would erode demand for energy and petrochemical products while oil price volatility may cause stock losses. Other risks are asset impairment and regulatory changes on GHG emissions and government intervention in the energy business. Key ESG risk factors are the environmental impact and how it adapts to the transition to clean energy.

### Share price performance – Energy & Petrochemicals



Source: Bloomberg Finance L.P. and InnovestX Research

### Valuation summary – Energy

	Rating	Price (Bt)	TP (Bt)	ETR (%)	P/E (x) 24F 25F	P/BV (x) 24F 25F
BCP	Outperform	43.3	51.0	23.7	4.2 4.0	0.7 0.6
BSRC	Underperform	9.2	10.5	17.4	8.5 6.3	1.0 0.9
IRPC	Neutral	1.9	2.6	36.3	30.7 15.2	0.5 0.5
OR	Outperform	17.8	27.0	54.6	16.1 14.2	1.8 1.7
PTT	Outperform	33.5	45.0	40.3	8.8 8.1	0.8 0.8
PTTEP	Outperform	160.0	204.0	33.4	7.7 7.1	1.2 1.1
SPRC	Neutral	7.9	11.0	43.0	8.8 7.5	0.9 0.8
TOP	Outperform	57.3	77.0	40.3	6.2 5.5	0.7 0.7
<b>Average</b>					<b>11.4 8.5</b>	<b>1.0 0.9</b>

Source: InnovestX Research

### Valuation summary – Petrochem

	Rating	Price (Bt)	TP (Bt)	ETR (%)	P/E (x) 24F 25F	P/BV (x) 24F 25F
GGC	Underperform	7.6	10.0	34.8	16.2 13.1	0.8 0.7
IVL	Neutral	23.9	32.0	38.1	7.9 5.5	0.8 0.7
PTTGC	Neutral	38.8	50.0	32.6	14.3 11.7	0.6 0.6
<b>Average</b>					<b>12.8 10.1</b>	<b>0.7 0.7</b>

Source: InnovestX Research

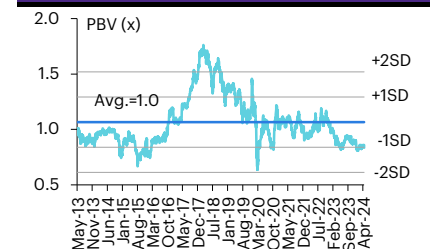
### Price performance

Rating	Absolute			Relative to SET		
	1M (%)	3M (%)	12M (%)	1M (%)	3M (%)	12M (%)
BCP	(3.4)	6.8	43.0	(0.4)	10.8	68.0
BSRC	(9.8)	0.5	7.6	(7.0)	4.4	26.4
IRPC	1.0	0.0	(18.2)	4.2	3.8	(3.9)
OR	(0.6)	(2.7)	(19.1)	2.5	1.0	(4.9)
PTT	(1.5)	(2.2)	9.8	1.6	1.5	29.0
PTTEP	4.6	7.0	4.2	7.8	11.1	22.5
SPRC	(8.7)	0.0	(22.5)	(5.9)	3.8	(9.0)
TOP	(3.8)	8.0	17.4	(0.8)	12.1	38.0

Rating	Absolute			Relative to SET		
	1M (%)	3M (%)	12M (%)	1M (%)	3M (%)	12M (%)
GGC	(3.2)	(14.6)	(42.0)	0.5	(11.4)	(31.8)
IVL	(2.0)	1.3	(26.5)	1.7	5.1	(13.6)
PTTGC	(0.6)	12.3	(5.5)	3.1	16.6	11.0

Source: SET and InnovestX Research

### PBV band – SETENERG



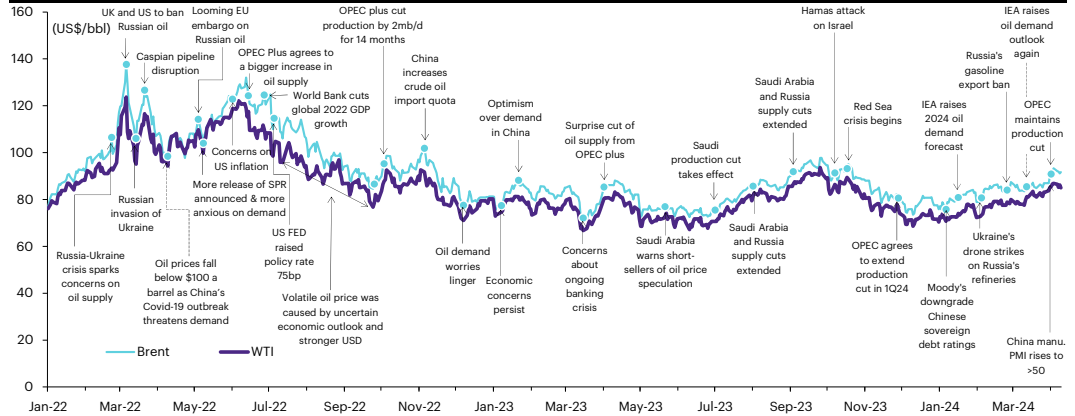
Source: SET, InnovestX Research

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## I. Oil price overview and outlook

**Figure 1: Events affecting oil price**



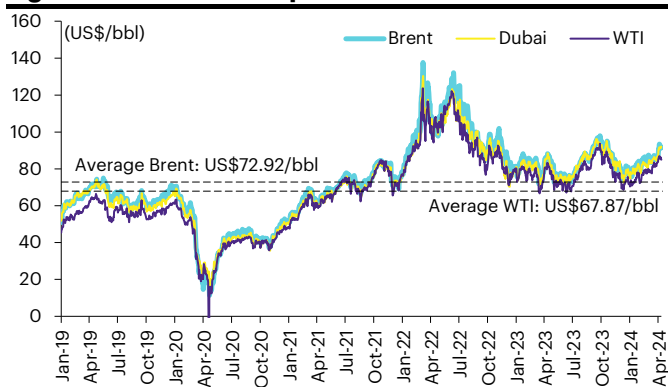
Source: InnovestX Research

**Oil price movement shifts gear in early 2Q24.** Although crude oil prices have been rising since late-Dec 2023, average Brent oil price in 1Q24 edged down 1% QoQ to US\$83/bbl due to the warmer winter than expected in early 2024 and higher supply from non-OPEC producers. We believe these factors led OPEC and its alliance (OPEC+) to maintain the production cut until end-Jun 2024. OPEC+ voluntary cut of 1.16mn bbl/day (mb/d) has been in effect since May 2023 and this increased the total cut to 3.66mb/d. Including additional cuts by Saudi Arabia (1mb/d) and Russia (0.5mb/d), the total supply cut by OPEC+ increased to 5.16mb/d from Aug 2023. As it stands now, this cut will last until end-Jun 2024.

The global oil price increase accelerated in early Apr and is now up 18-20% YTD to a six-month high of >US\$90/bbl because of concerns of tight supply and stronger than expected demand growth amid escalating tensions in the Middle East (military tension between Israel and Iran and Houthi rebel attacks on tankers in the Red Sea), attacks on Russian refineries and an extension of OPEC+ output cuts through June (IEA). Global supply shocks are also intensifying fears of a commodity-driven inflation resurgence.

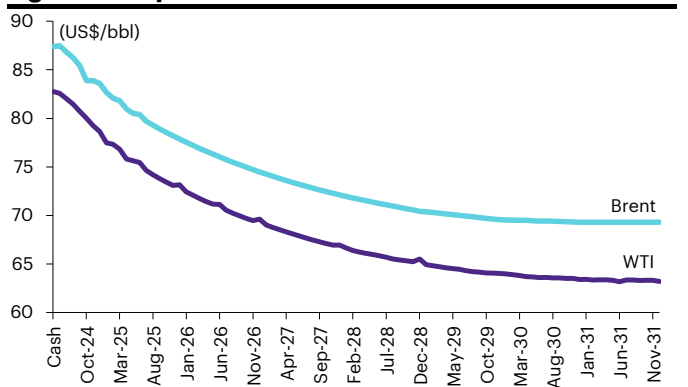
The oil price forward curve suggests that oil price will decline gradually back to long-term average of US\$70/bbl for Brent and US\$65/bbl for WTI. We expect this to be brought by higher oil supply attracted by the current high oil price, especially from non-OPEC producers.

**Figure 2: Benchmark oil prices**



Source: Bloomberg Finance L.P. and InnovestX Research

**Figure 3: Oil price forward curve**

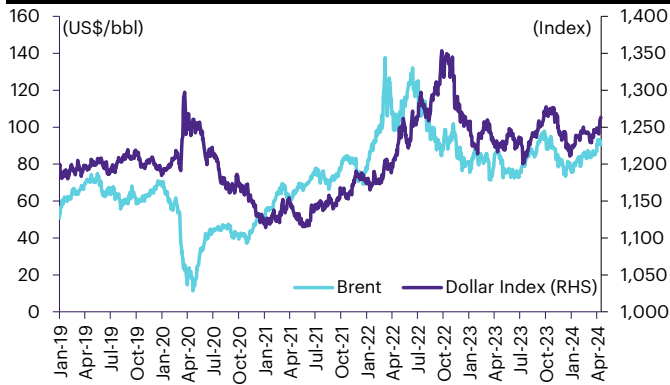


Source: barchart.com and InnovestX Research

IEA expects robust production from non-OPEC+ coupled with a projected slowdown in demand growth to lower the call on OPEC+ crude by roughly 300 kb/d in 2025 to an average 41.5mb/d. If the bloc were to produce in line with that call, effective spare capacity could increase to the largest ever supply buffer of 6mb/d (excluding the COVID-19 period). We believe this record spare capacity will be able to soften the adverse impact on global oil supply from amplifying geopolitical risks in the Middle East and Europe, especially from 3.4mb/d of Iran supply if the production facilities of other

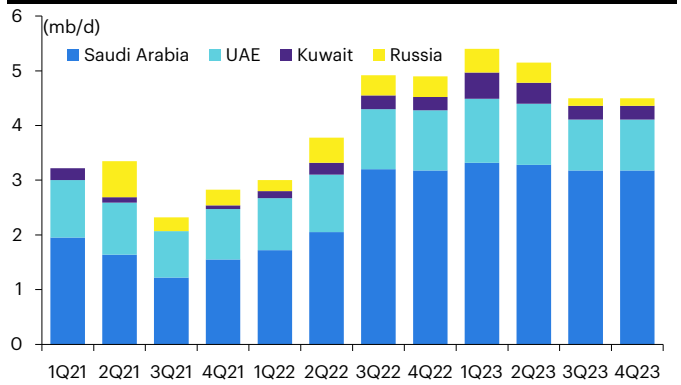
OPEC members are not affected. Meanwhile, Asian refiners are beginning to look to alternative crude oil sources in both the Americas and Africa to reduce the risk of oil supply from the Middle East although this means transportation costs would increase.

**Figure 4: Brent oil price vs. Dollar Index**



Source: Bloomberg Finance L.P. and InnovestX Research

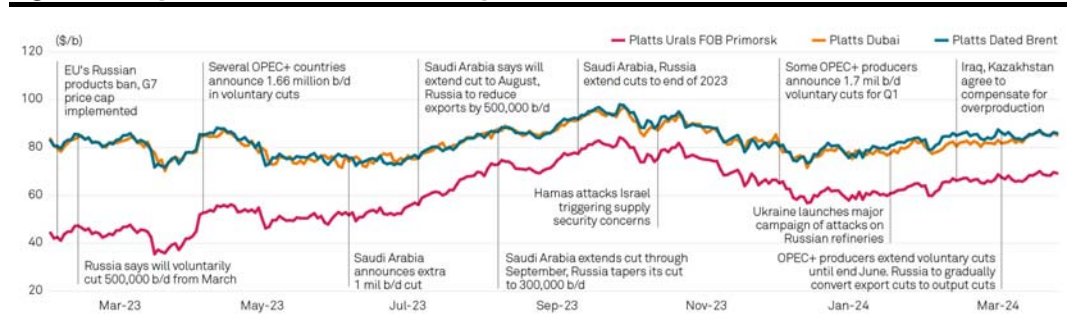
**Figure 5: OPEC+ spare capacity**



Source: S&P Global Commodity Insight and InnovestX Research

**OPEC+ supply cut to continue to balance global oil supply.** OPEC+ producers continue to pursue a policy of major supply cuts into 2Q24 while facing challenges of growing production outside the bloc and rising geopolitical risks. (*S&P Global Commodity Insight*) We believe the bloc’s output cuts and the escalating conflict in the Middle East will keep excess oil supply in check. We view that if oil price surges, driven by market anxiety on a possible supply shortage caused by geopolitics in the Middle East, production discipline could be compromised, with members exceeding quotas.

**Figure 6: Oil price movement vs. OPEC+ policies**



Source: S&P Global Commodity Insight

**Oil demand growth to slow to normal.** Oil demand forecasts by three international organizations, i.e. OPEC, IEA and EIA, suggest that global oil demand growth will decelerate in 2024-25, though remaining largely in line with the pre-COVID trend, even amid muted expectations for global economic growth and increased deployment of clean energy technologies. OPEC’s forecast remains the most optimistic on global oil demand growth in 2024-25, with growth of 2.2mb/d in 2024 and 1.8mb/d in 2025. Higher demand in India will offset lower demand in the industrial sectors of Japan and South Korea.

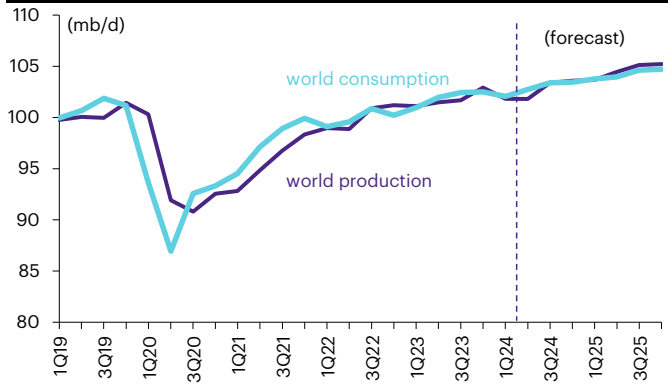
IEA views that global oil demand growth is currently in the midst of a slowdown and is expected to ease to 1.2mb/d this year, revised down from 1.3mb/d previously expected due to lower growth than expected in 1Q24, and 1.1 mb/d in 2025 – with consumption peaking this decade. This is mainly the result of a normalization of growth following the disruptions of 2020-2023, when oil markets were shaken by the COVID-19 pandemic and then the global energy crisis sparked by Russia’s invasion of Ukraine. The post-COVID rebound is now largely complete and vehicle efficiencies and an expanding EV fleet are acting as further drags on oil demand in 2024-25.

The pace of expansion will decelerate further in 2025 as the post-COVID 19 rebound has run its course China continues to lead the growth even as its share of the global increase slumps from 79% in 2023 to 45% in 2024 and 27% next year, based on IEA

estimates. Although momentum is slowing in the United States, it still ranks as the world’s largest source of supply growth in 2024 and 2025, adding 650 kb/d and 540 kb/d, respectively.

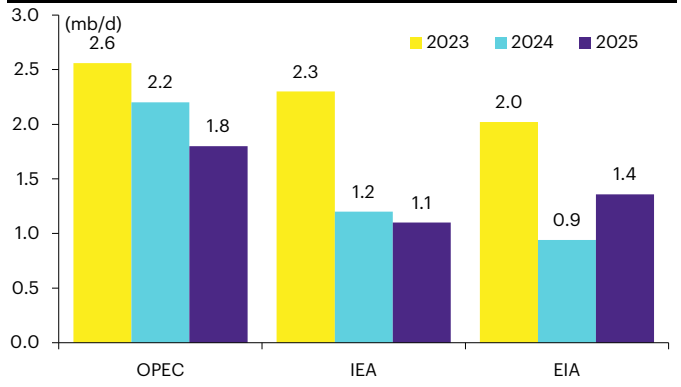
The EIA’s forecast of global oil demand growth in 2024 of 0.9mb/d reflects a more cautious view on demand recovery in other non-OECD markets while demand in China and India remain the growth drivers. Lower growth in 2024 also leads to higher demand growth in 2025 than forecasts by other agencies.

**Figure 7: Global oil demand-supply outlook**



Source: US EIA and InnovestX Research

**Figure 8: Oil demand forecast comparison**



Source: OPEC, IEA, US EIA and InnovestX Research

**Geopolitical risk determines near-term oil price.** The latest key risk on the supply side is the tension between Iran and Israel which remains difficult to predict and the impact on further escalation of tension on oil price. The latest analysis by the INXV economist suggests four possible scenarios for this conflict:

**Scenario 1: Blue sky scenario** – The war would be contained to Israel/Hamas and resolved soon after they negotiate a ceasefire. This would give an average oil price for 2024 of US\$80/bbl (currently at US\$83.9/bbl), with the economic forecast as of March unchanged (probability is ~20%).

**Scenario 2: Shadow war** – The war expands to a fight by Israel against Lebanon's Hezbollah group and Houthi rebels in Yemen and Syria. This could keep oil price steady at US\$90/bbl, slowing growth in the US and Thai economies to +1.0% in the US and +2.5% in Thailand. Inflation in the US is expected to increase by ~0.5%, causing the Fed to cut interest rates twice, while the BoT would not reduce interest rates at all in 2024 in this scenario (probability 40%).

**Scenario 3: Proxy war** – The war spreads to Lebanon and Syria, including air strikes in Iran and Israel, leading the United States to sanction Iran. The average oil price in this scenario increases to US\$100/bbl, which may cause the US economy to expand by 0.7% and slow Thai economic growth to 2.3%. Inflation would rise to 3.8% in the US and 2.8% in Thailand, keeping both central banks from reducing interest rates this year (probability 30%).

**Scenario 4: All-out war between Israel and Iran** – This war could lead Iran to close the Straits of Hormuz, the only sea passage from the Persian Gulf to the open ocean, which would push the price of crude oil towards US\$150/bbl. This would lead to a zero-growth in the US economy and slow Thai economic growth to 2%; inflation would shoot up to 8% in the US and 2% in Thailand, leading the Fed and the BoT to bump up interest rates two more times (probability 10%).

**Figure 9: Expected impact of potential war (Iran-Israel)**

	2023	2024 Blue sky (as of Mar'24)	2024 Shadow War (Base)	2024 Proxy War	2024 Full-Blown War
Probability	100%	20%	40%	30%	10%
Brent base case (\$/bl.)	82	80	90	100	150
US GDP (%)	2.5	1.5	1.0	0.7	0.0
US Inflation (%)	4.4	3.0	3.5	3.8	8.0
US Fed Funds Rate (%)	5.38	4.63	4.88	5.38	7.13
Thai GDP (%)	1.9	2.7	2.5	2.3	2.0
Thai Inflation (%)	1.26	0.8	1.1	2.8	4.4
BOT RP (%)	2.50	2.00	2.50	2.50	3.00

Source: OPEC, IEA, US EIA and InnovestX Research

INVX views that the situation currently is midway between base scenario and the shadow war scenario. If the situation intensifies, it could cause stagflation in the global economy (high or increasing inflation rate and slow economic growth). Ultimately, central banks may decide not to cut interest rates but instead raise rates to tame inflation despite difficulties facing the economy. (More details are in *Macro Making Sense* issued April 17, 2024.)

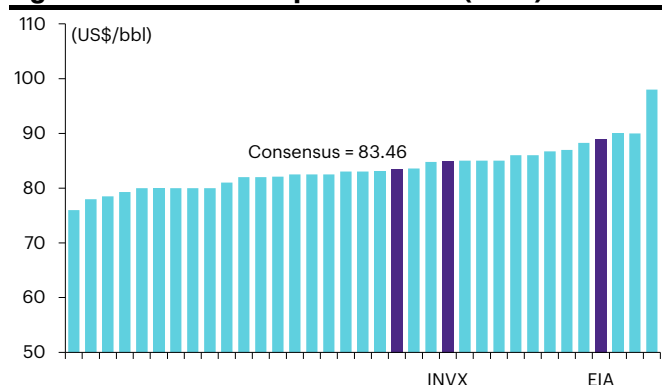
**INVX oil price forecast.** While we maintain our conservative stance on oil price for 2024-26, recent geopolitical tension urges us to revise up our assumptions for 2024 and 2025 as shown in Figure 10:. These remain more conservative than the EIA forecasts but are higher than market consensus, which we expect to see revised upward in coming weeks/months given the intensifying geopolitical risks that could disrupt oil supply, particularly in the Middle East. Brent in 2024 is now expected at US\$85/bbl, lower than the US EIA’s forecast of US\$89, amidst more balanced demand-supply. We maintain our view that oil price will gradually decline back to long-term average and thus expect Brent to soften to US\$80/bbl in 2025 and to long-term average of US\$70/bbl from 2026. This is based on the 5-year average and OPEC’s precautionary measures to curb production to stabilize oil price. A US\$2/bbl discount is applied to derive Dubai crude price, US\$83/bbl for 2024, US\$78/bbl in 2025 and L/T at US\$68/bbl. Key risks for these assumptions are stronger demand than expected and more production cuts/disruption.

**Figure 10: INVX oil price assumptions**

(US\$/bbl)		2024 (YTD)	2024	2025	2026	Long-term
Brent (yearly average)	Previous		80	75	70	70
	New	84.10	85	80	70	70
	Change		+5	+5	0	0
Dubai (yearly average)	Previous		78	73	68	68
	New	82.71	83	78	68	68
	Change		+5	+5	0	0

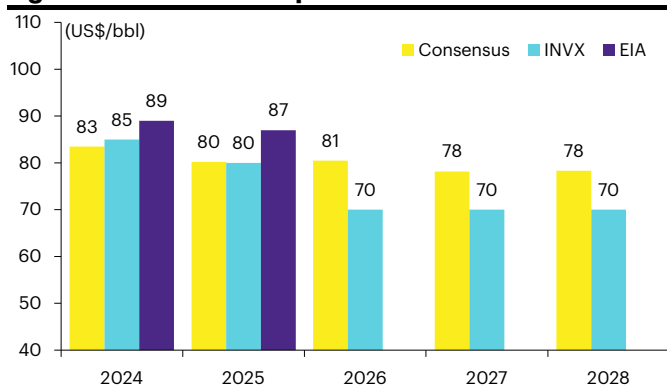
Source: OPEC, IEA, US EIA and InnovestX Research

**Figure 11: Consensus oil price forecast (2024) – Brent**



Source: EIA, Bloomberg Finance L.P. and InnovestX Research

**Figure 12: Consensus oil price forecast – Brent**



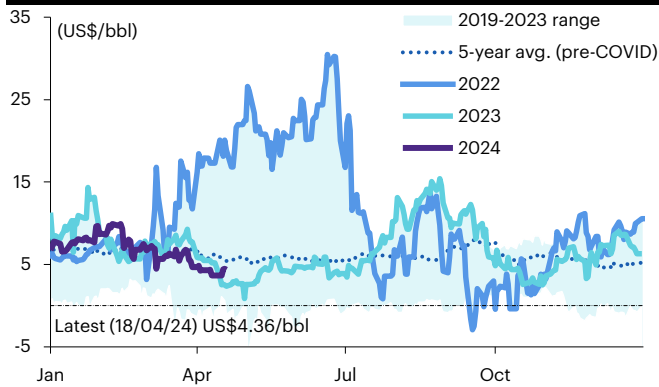
Source: EIA, Bloomberg Finance L.P. and InnovestX Research

## II. Oil refinery

Demand for refined oil products has continued to recover from its low during the pandemic, with jet fuel demand remaining below pre-COVID level. Demand for gasoline and diesel is normalizing after strong recovery in 2022-23 due to more land transportation and stronger diesel demand for power generation when gas prices are high. Singapore GRM rose 33% QoQ in 1Q24 to US\$7.3/bbl, led by higher crack spread for gasoline at US\$17.9/bbl (+43% QoQ), partly offset by lower crack spread for jet fuel (-11% QoQ) and high-sulfur fuel oil (-13% QoQ) due to lower demand for heating and slower air traffic odd a seasonal high in 4Q23. Crack spread for gasoil (diesel) edged up only 3% QoQ to US\$21.7/bbl. Singapore GRM improved continuously from Jan to mid-Feb 2024 before easing back to below 5-year average in Mar, after regional refineries came back on line from maintenance shutdowns and crude oil price shot up.

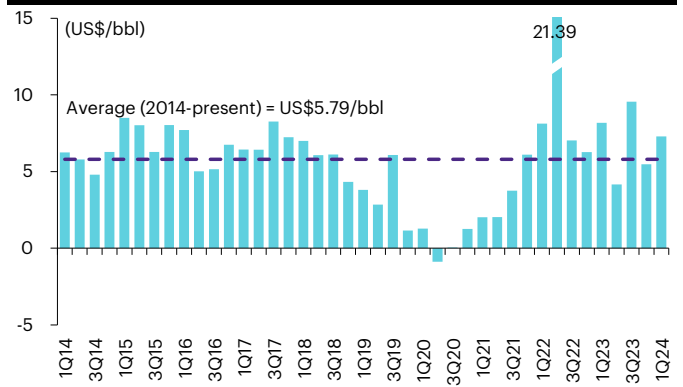
Singapore GRM has weakened in 2Q24TD to an average of US\$4.1/bbl (-43% QoQ), nearly the same pattern as 2Q23 (-49% QoQ). We believe margin could start to recover in May when summer demand improves. Further, a reduction in crude oil premium from 1Q24's US\$1.71/bbl to US\$1.57/bbl in 2Q24 would support Thai oil refineries.

**Figure 13: Singapore GRM – hydrocracking**



Source: Reuters and InnovestX Research

**Figure 14: Quarterly Singapore GRM**

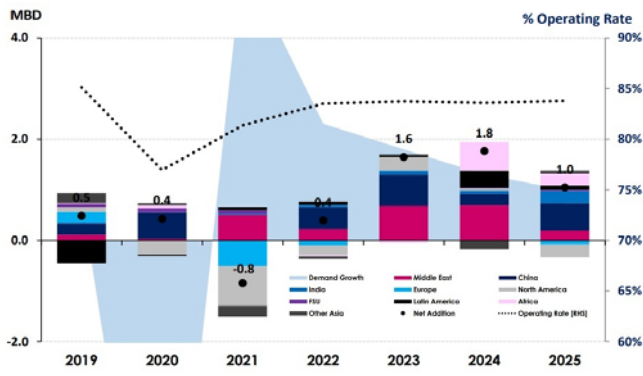


Source: Reuters and InnovestX Research

Global CDU (crude distillate unit) effective additions and growth in demand for refined oil products as shown below suggests that new supply of oil products continues to outpace demand growth this year, finally becoming more balanced in 2025. We believe there is upside surprise on GRM given that ramping new capacity up is likely to take longer than expected, particularly at the world's largest single-train CDU located in Nigeria (Dangote refinery).

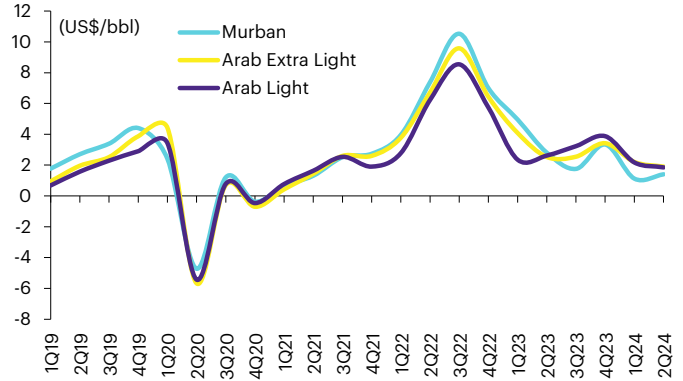
IEA expects the current wave of global refinery capacity expansion of ~6mb/d to be the final wave. It expects global capacity to rise from 102.7mb/d in 2022 to 105.2mb/d by 2030, implying 0.3% CAGR. It also forecasts post-2030 capacity growth to recede in all its scenarios due to falling transport fuel demand and surging electric vehicle uptake as a key driver for declining investment in refining capacity. While demand for gasoline and diesel will decline gradually, global demand for naphtha, one of the most important petrochemical feedstocks, is expected to remain steady and demand for kerosene and jet fuel will be at 4.3% CAGR in the period despite increasing use of sustainable aviation fuels.

**Figure 15: Global CDU addition vs additional demand**



Source: TOP, FACTs, Energy Aspect, EIA and IEA

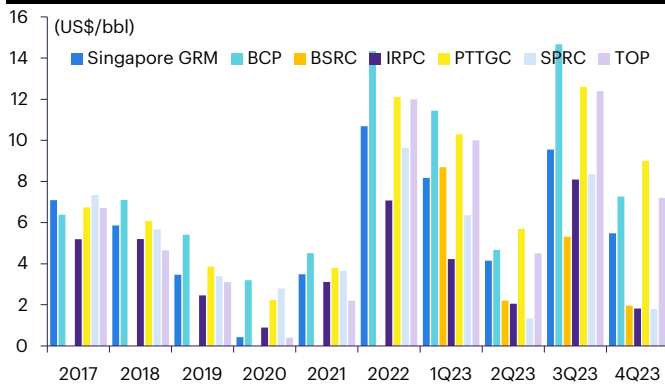
**Figure 16: Crude premium**



Source: Reuters and InnovestX Research

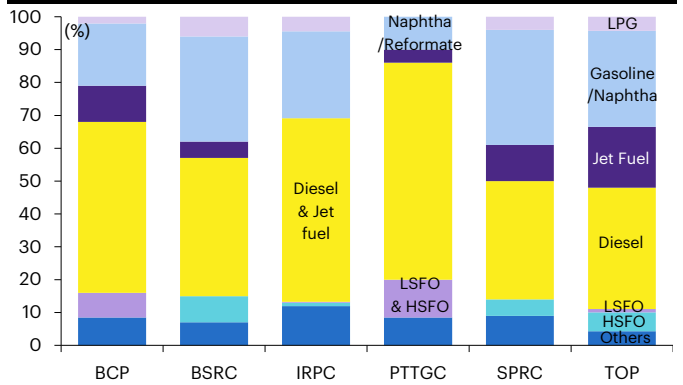
Among Thai oil refineries, market GRM for BCP and TOP outperformed peers for the past five years, reflecting their efficient oil refineries. BCP is able to maximize its crude intake to 120kbd (100% utilization) without adding loss-making products like high-sulfur fuel oil to its product slate, thanks to its market for high-margin unconverted oil in North Asia, which feeds the base oil unit to produce API Group II and III lubricant oil base stocks to produce synthetic lubricant products, with the balance used as feed for the FCC unit. Low-sulfur fuel oil is also marketable for power generation in North Asia. High utilization rate, refinery efficiency and downstream integration to aromatics and lube bas oil are pivotal to TOP’s strong GRM. Its GRM is expected to improve further from 2025 upon commercial startup of the Clean Fuel Project (CFP), which will increase capacity to 400kbd from 275kbd. This will increase flexibility in crude oil selection and allow it to process heavier and sourer crude oil and minimize low-value products to optimize GRM.

**Figure 17: Refining margin of Thai oil refiners**



Source: Company data and InnovestX Research

**Figure 18: Product yield of Thai oil refineries (2023)**

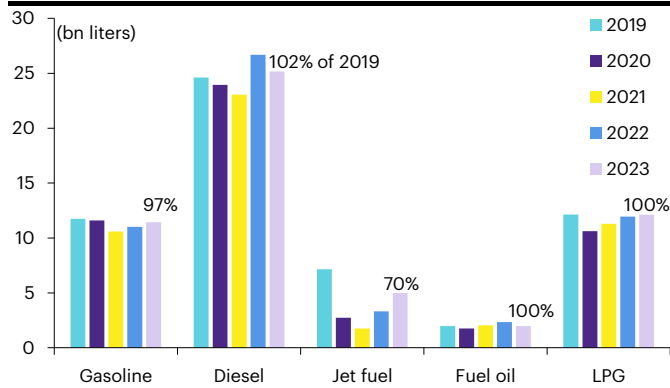


Source: Company data and InnovestX Research

**III. Oil marketing business**

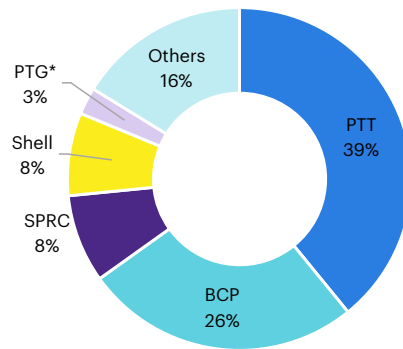
**Sales volume of most products returned to pre-COVID level.** Domestic oil sales volume for 2M24 (the latest available data) declined 4.5% YoY but improved 4.6% QoQ to 124mn liters/day, especially for jet fuel (+18% YoY and +16% QoQ). Demand for diesel fell a sharp 9.3% YoY on lower use for power generation, though edging up 0.6% QoQ. Demand for gasoline was more stable, up 1.6% YoY and 1.4% QoQ to 31.7mn liters/day. Only jet fuel consumption remained at just 70% of pre-COVID level but continues to improve while others have returned to normal. We believe this in part reflects recovery of air traffic and in part shows the greater efficiency of new aircraft. Note that as shown in Figure 24, total aircraft movement in 1Q24 was at 81% of pre-COVID. INVX tourism analyst expects the number of international tourist arrivals to return to pre-COVID level of 40mn in 2025. In our view, jet fuel demand will return to pre-COVID level slightly later than that.

**Figure 19: Thailand's oil sales volume**



Source: Ministry of Energy and InnovestX Research

**Figure 20: Market share of oil sales volume<sup>1/</sup> (2M24)**

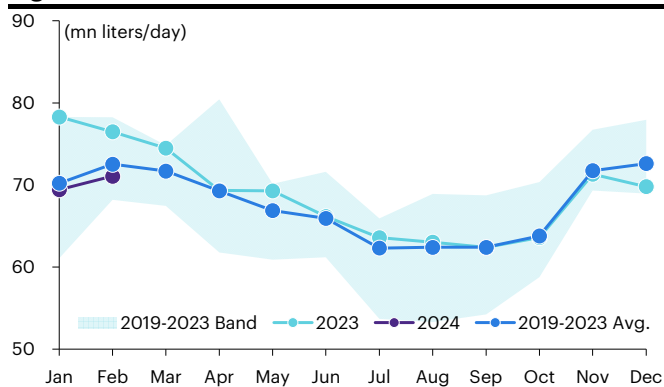


\* excluding sales of associated companies

Source: Ministry of Energy and InnovestX Research

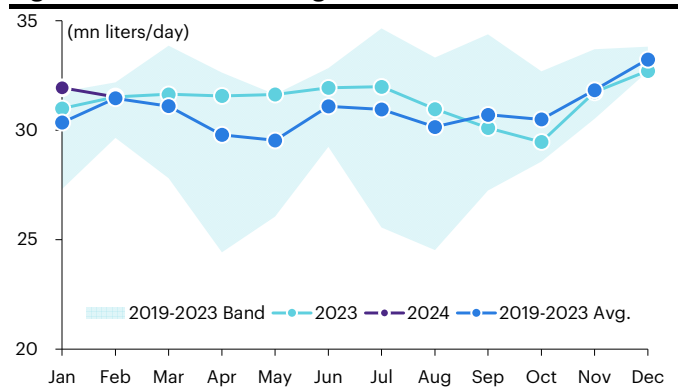
Note: 1/ Including diesel, gasoline and jet fuel

**Figure 21: Sales volume - diesel**



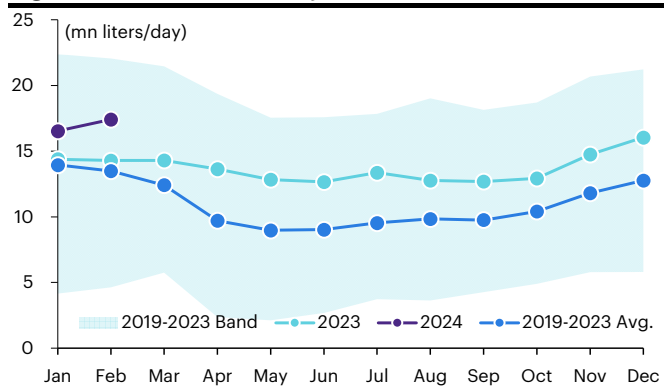
Source: Ministry of Energy and InnovestX Research

**Figure 22: Sales volume - gasoline**



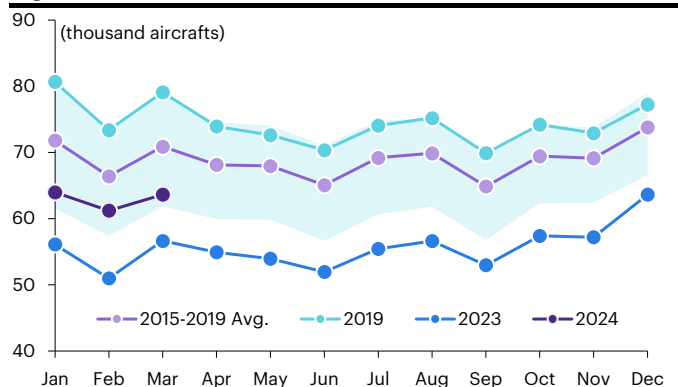
Source: Ministry of Energy and InnovestX Research

**Figure 23: Sales volume - jet fuel**



Source: Ministry of Energy and InnovestX Research

**Figure 24: AOT - total aircraft movement**

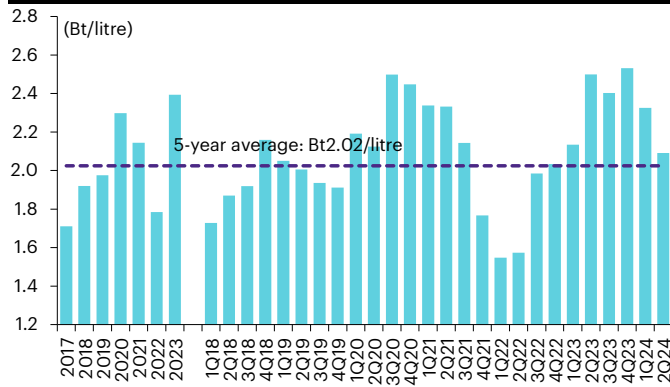


Source: AOT and InnovestX Research

**Marketing margin is declining.** Oil marketing margin for the retail segment narrowed 8.2% QoQ in 1Q24 and is down another 10.1% in 2Q24TD to Bt2.1/liter; this is still healthy at above 5-year average of Bt2.02/liter, based on Ministry of Energy statistics. The lower marketing margin was due to the lag before retail oil prices are adjusted to accommodate the steady increase in crude oil prices. The recent decline in marketing margin is expected to continue in the near term in view of higher global oil prices and government intervention to cap domestic oil price, especially diesel, which accounts for nearly 60% of domestic sales volume for the past three years. Retail oil price for diesel is currently capped at Bt30/liter, and is shouldered by a negative contribution to the Oil Fuel Fund at Bt4.77/liter. The government closely monitors marketing margin for diesel, averaging Bt1.79/liter in Apr, an 18% discount to overall marketing margin.

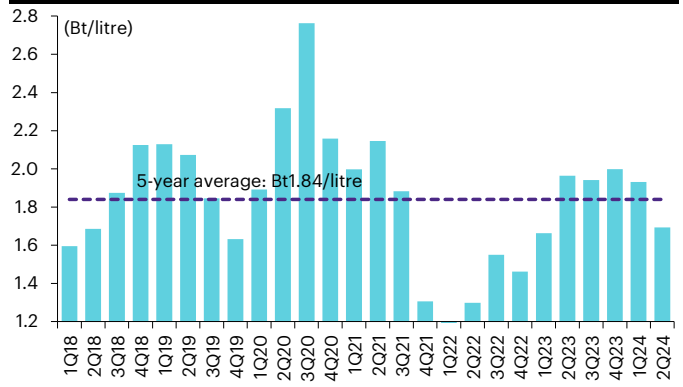


**Figure 25: Oil marketing margin (overall)**



Source: Ministry of Energy and InnovestX Research

**Figure 26: Marketing margin – diesel**

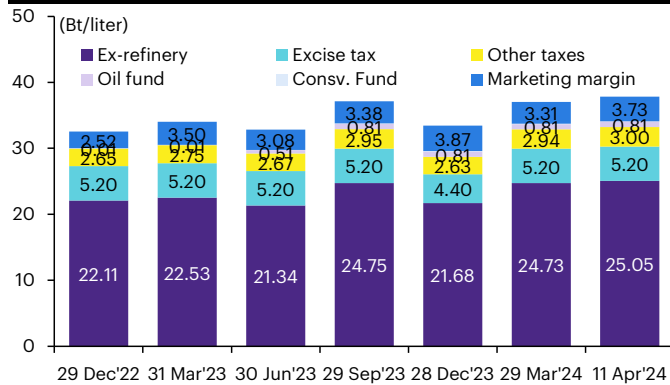


Source: Ministry of Energy and InnovestX Research

Higher oil price has continued to increase the burden on the Oil Fuel Fund in 4M24 with a deficit of Bt101.6bn, up Bt23bn from end-2023, though below peak of Bt130.7bn in Nov 2022. Of this, Bt47bn is for LPG and Bt54bn for oil. This also implies higher financing cost for the retail oil marketing business on higher accounts receivable from the Oil Fuel Fund. The government plans to lift the price cap on diesel from Bt30/liter to reduce the burden on the Fund, though selling price of LPG will be maintained until Jun at Bt423 for a 15kg-cylinder.

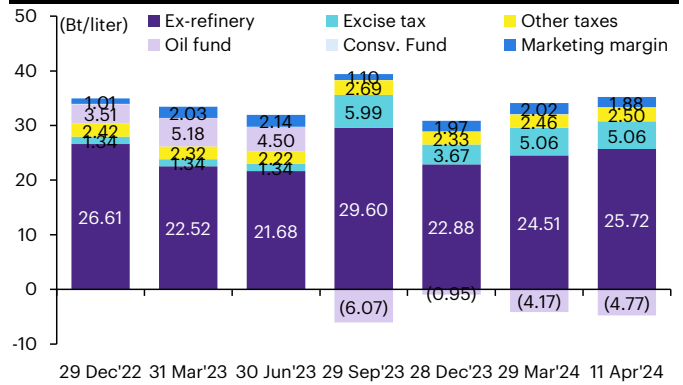
In the previous round of high oil prices following Russia's invasion of Ukraine, it took more than a year before the Oil Fuel Fund could pay off its liabilities to oil companies after the government decided to gradually lift the price cap from Bt30 to Bt32-35/liter and global oil price fell to below US\$80/bbl.

**Figure 27: Retail oil price structure – Gasohol (E20)**



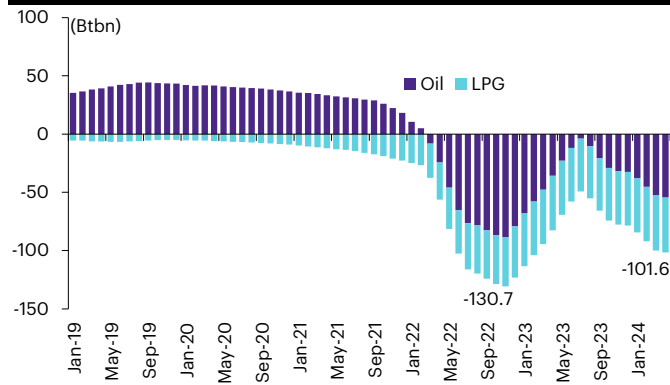
Source: Ministry of Energy and InnovestX Research

**Figure 28: Retail oil price structure – HSD (B7)**



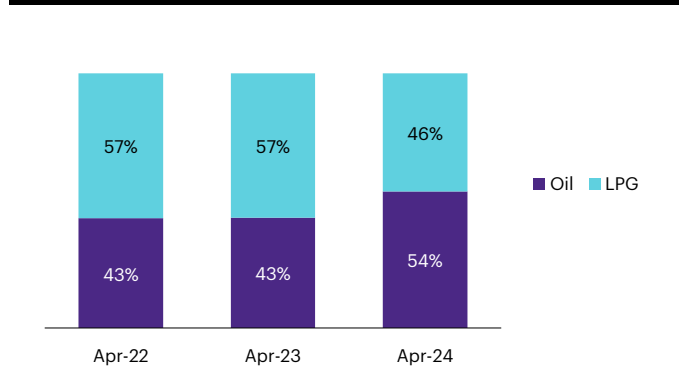
Source: Ministry of Energy and InnovestX Research

**Figure 29: Thailand's oil fuel fund outstanding**



Source: Ministry of Energy and InnovestX Research

**Figure 30: Breakdown of Oil Fuel Fund deficit**



Source: Ministry of Energy and InnovestX Research

### IV. Petrochemicals

The heat map for petrochemical product spread shown below suggests that most of the industry remained at the cyclic trough in 1Q24, especially olefins and derivatives. While key products in aromatics chain, PX and benzene, continued to outperform, some improvements were seen in PE/PP and PVC due to seasonally low demand in 4Q23.

**Figure 31: Product spread – heat map**

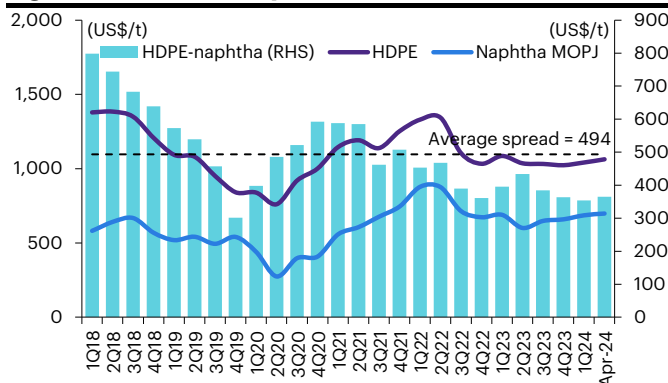
Product	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	Product
HDPE	583	576	462	505	421	445	368	336	373	436	361	344	338	342	HDPE
LDPE	968	917	740	880	741	782	600	472	446	437	343	363	415	442	LDPE
LLDPE	581	583	510	557	445	477	389	344	369	408	337	319	322	312	LLDPE
PP	754	695	547	550	428	432	352	291	359	393	295	290	297	302	PP
PX	226	312	274	179	286	635	501	468	401	484	490	426	411	427	PX
BZ	188	352	324	198	200	357	272	157	238	270	256	238	322	382	BZ
PS	511	498	450	472	395	305	392	365	285	306	239	281	192	207	PS
ABS	1,925	1,976	1,760	1,785	1,366	1,231	1,024	945	863	863	816	804	749	797	ABS
PET	145	149	118	217	203	201	200	69	109	117	66	69	63	54	PET
Int PET	241	224	209	321	269	172	257	113	166	190	106	112	105	96	Int PET
PVC	619	710	548	629	472	579	446	412	453	354	453	315	286	302	PVC

Source: Bloomberg Finance L.P. and InnovestX Research

We remain cautious on the sector outlook, though some improvements were seen in 1Q24. Apart from the demand-supply imbalance, which could take years to resolve, challenges delaying recovery of spread include higher oil price, persistently tight monetary policy by central banks globally to tame inflation and potential downside risk on GDP growth caused by geopolitics.

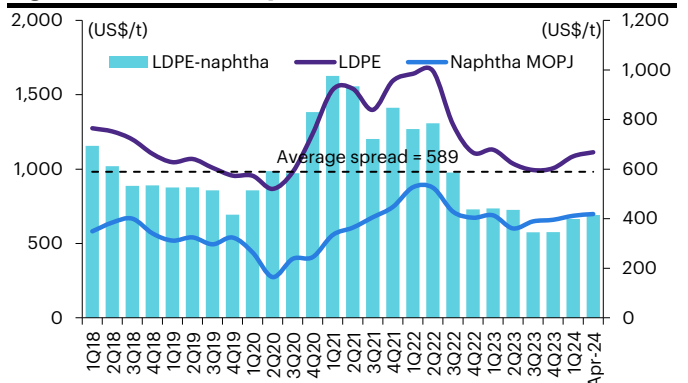
**Olefins: Average PE/PP spread stable QoQ.** A more balanced PE demand-supply in the region helped stabilize product price and spread in 1Q24. The average PE/PP product spread improved 9% QoQ to US\$364/t, slightly above cash cost of US\$350/t but below 12MMA of US\$366/t. Market sentiment was weakened by slow demand in China and India. Trading activities in spot markets were comparatively limited as converters continued to maintain comfortable feedstock inventories and showed little enthusiasm for securing further cargoes. Average PE/PP price in 1Q24 was US\$1,050/t, up 6% QoQ on slightly higher demand compared to low season in 4Q23. This is far below US\$1,300-1,400/t in 1Q22 when oil price was at the same level as now. Higher naphtha cost caused by rising oil price will continue to hurt product spread in 2Q24 amidst the uncertain global economic outlook.

**Figure 32: HDPE vs. naphtha**



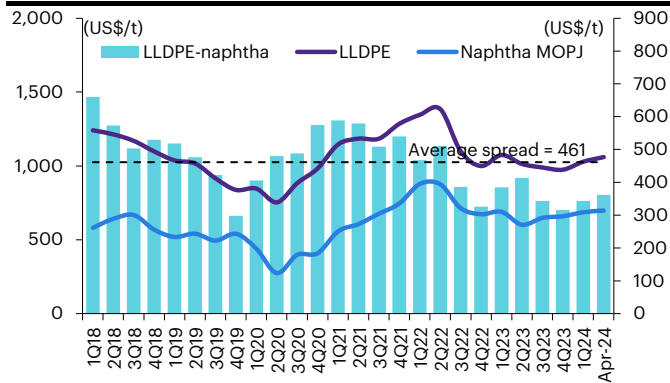
Source: Industry data, Bloomberg Finance L.P. and InnovestX Research

**Figure 33: LDPE vs. naphtha**



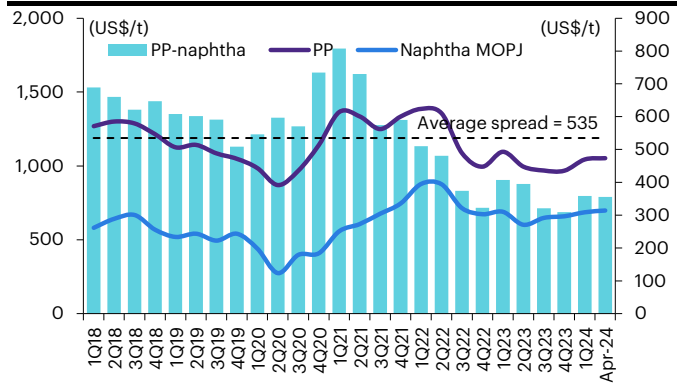
Source: Industry data, Bloomberg Finance L.P. and InnovestX Research

**Figure 34: LLDPE vs. naphtha**



Source: Industry data, Bloomberg Finance L.P. and InnovestX Research

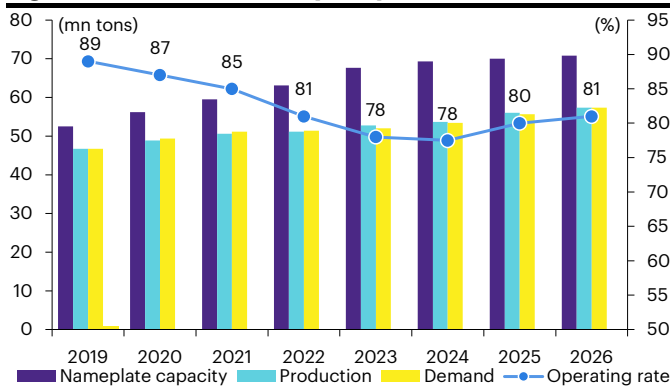
**Figure 35: PP vs. naphtha**



Source: Industry data, Bloomberg Finance L.P. and InnovestX Research

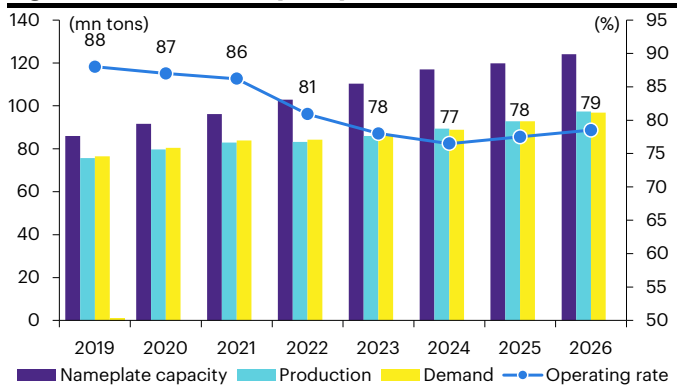
Global HDPE and PP capacity suggests that recovery of HDPE product spread will be apparent in 2025 at the earliest when operating rate will reach 80%. It is unlikely a strong recovery to the same level as 2021 will take place in the next 3-5 years. The demand-supply outlook for PP remains dim in 2024 before a slight recovery in 2025-26 when operating rate picks up. PP recovery will take longer to materialize given a wider demand-supply gap due to large capacity additions in China.

**Figure 36: Global HDPE capacity and demand**



Source: Industry data and InnovestX Research

**Figure 37: Global PP capacity and demand**

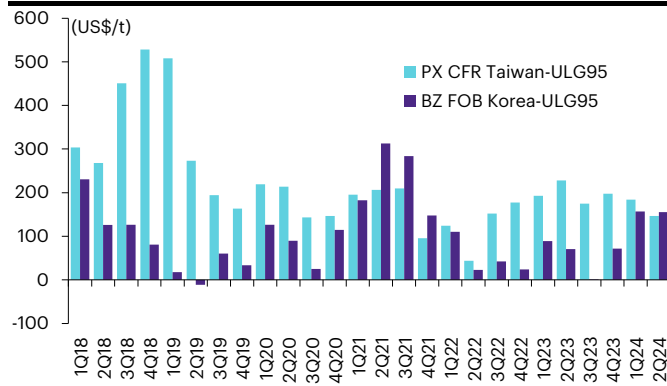


Source: Industry data and InnovestX Research

**Aromatics: strong product spread on tighter feedstock.** PX spread over condensate and ULG95 remained healthy in 1Q24 on tighter supply, especially for PX-condensate at US\$358/t (+8.5% QoQ). The large wave of PX supply additions in 2023 is behind us while feedstock for PX from oil refinery remains limited given rising demand for gasoline blending. Benzene spread also increased markedly in 1Q24 by 60% QoQ (vs. condensate) and by 120% QoQ (vs. ULG95). This was driven by tighter benzene supply in the global market due to production disruption in the US caused by a cold snap in March and the turnaround of aromatics plants in North Asia. A positive reading for China's manufacturing index boosted market sentiment on industrial demand as a healthier China manufacturing PMI in March is expected to boost demand for benzene in the automotive and electrical appliance industries.

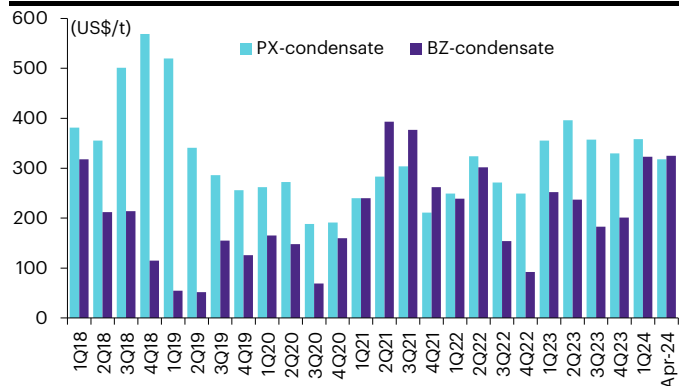
We expect higher demand for gasoline blending to continue to restrain feedstock for aromatics, particularly PX, in 2Q24. This will contain PX supply during summer when seasonal demand increases, driven by downstream polyester and PET bottle chips.

**Figure 38: PX & benzene vs. ULG 95**



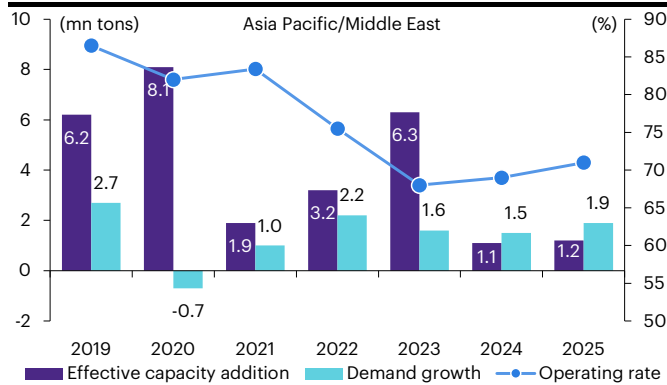
Source: Industry data, Bloomberg Finance L.P. and InnovestX Research

**Figure 39: PX & benzene vs. condensate**



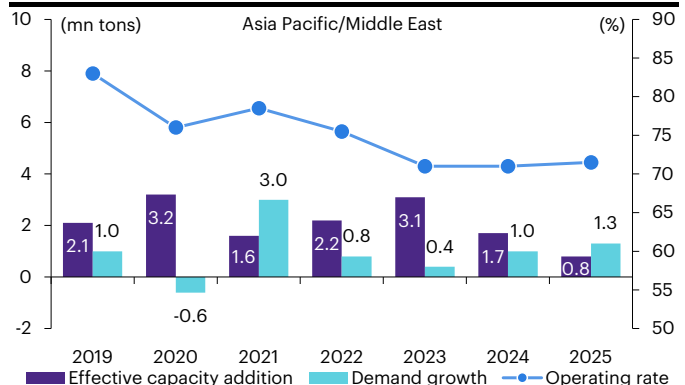
Source: Industry data, Bloomberg Finance L.P. and InnovestX Research

**Figure 40: PX capacity addition vs. demand growth**



Source: Industry data and InnovestX Research

**Figure 41: Benzene capacity addition vs. demand growth**

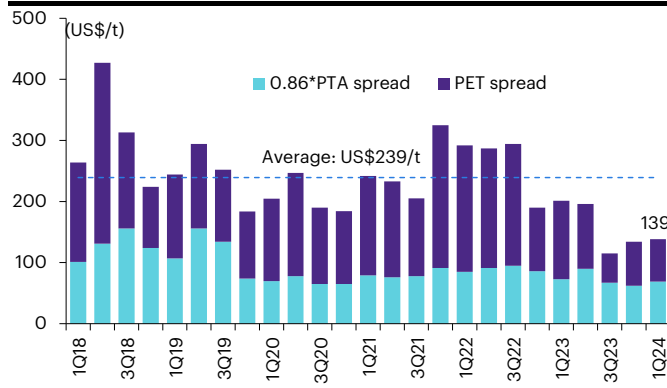


Source: Industry data and InnovestX Research

**PET: Integrated PET spread in Asia under pressure.** Integrated PET spread in Asia in 1Q24 was one of the worst for five years despite the near fading of industry destocking. Spread was only US\$139/t against the 5-year average of US\$239/t, reflecting large excess supply in the region, notably China, as several countries have imposed anti-dumping duties on PET imports from China. Integrated PET spread in Europe improved 49% QoQ to a 6-quarter high of US\$483/t, slightly below the 5-year average of US\$483/t. The gap in integrated PET spread between European and Asian markets widened to US\$339/t (+82% QoQ) vs. the 5-year average of US\$244/t due to supply disruption in Europe caused by the Red Sea crisis. At the same time, the PET industry landscape in the region has changed due to declining cost competitiveness, which led several local producers to permanently shutter their plants. PET producers must apply the concept of “Make-or-Buy Decision” to optimize business plans given higher energy cost and lack of feedstock from oil refineries, many of which modified their conventional oil refineries to produce bio-based products or into oil terminals.

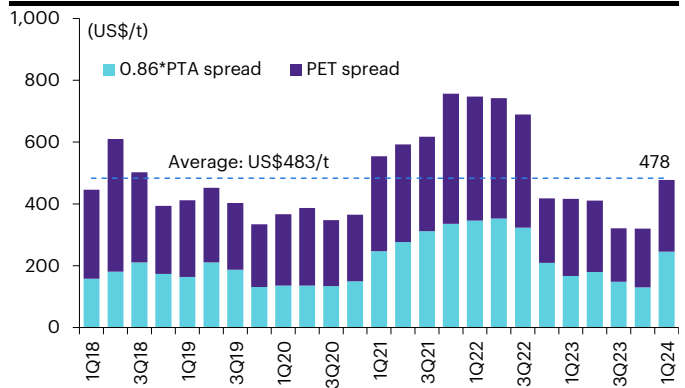
We expect integrated PET spread to gradually improve in 2Q24-3Q24 driven by higher demand for PET bottle chips ahead of summer in the US and Europe. Product spread will then likely fall back in 4Q24 on slower seasonal demand. We expect integrated PET spread in Asia to remain below the 5-year average as suggested by global PET capacity (Figure 44) showing operating rate will continue to decline in 2024-25 due to capacity additions in China, forcing producers to focus more on cost reduction and capacity rationalization.

**Figure 42: Integrated PET spread – Asia**



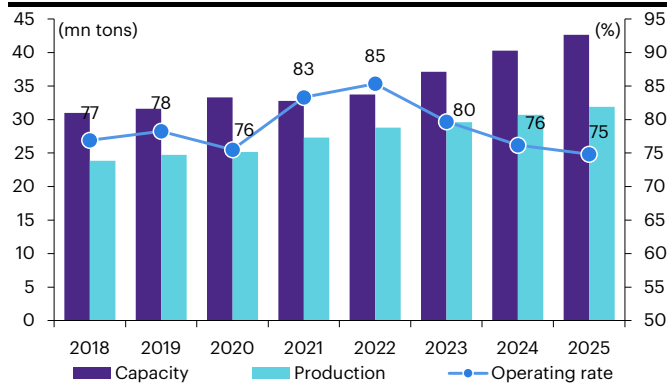
Source: Industry data and InnovestX Research

**Figure 43: Integrated PET spread – EMEA**



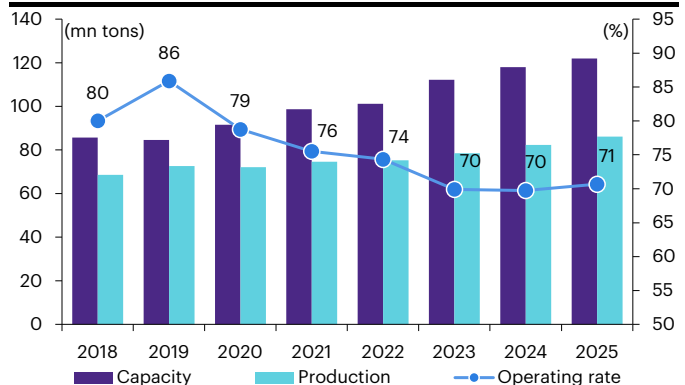
Source: Industry data and InnovestX Research

**Figure 44: Global PET capacity and operating rate**



Source: Industry data and InnovestX Research

**Figure 45: Global PTA capacity and operating rate**

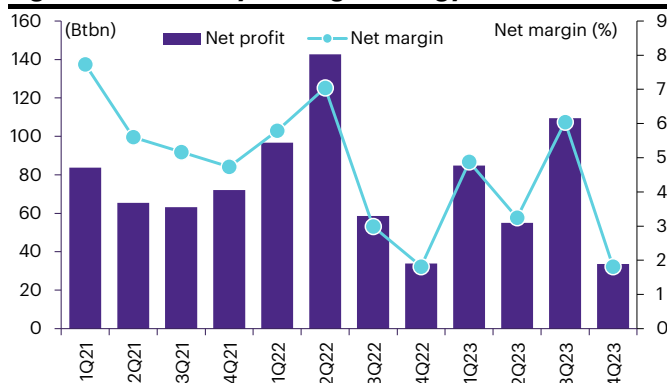


Source: Industry data and InnovestX Research

## V. 1Q24 earnings outlook

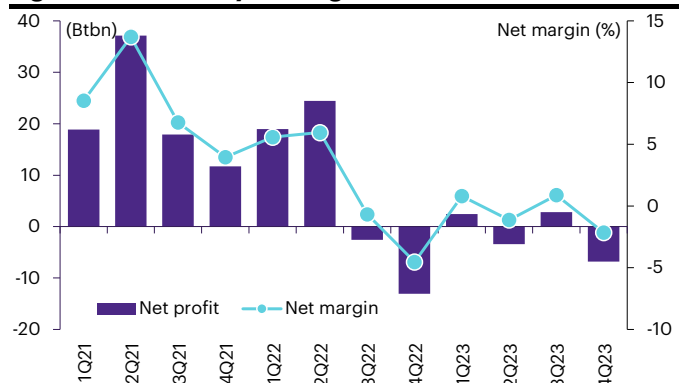
Volatile oil and petrochemical prices and product spread has damaged earnings for energy and petrochemical companies in the Thai market for the past three years. While the energy sector was able to continue to report a net profit in the period, led by upstream and integrated oil companies, petrochemical earnings were mostly in the red since 3Q22, on continuous destocking in the industry. High financing cost also discouraged rebuilding inventories amidst uncertain demand and a large demand-supply imbalance.

**Figure 46: Quarterly earnings – Energy**



Source: SET, Bloomberg Finance L.P. and InnovestX Research

**Figure 47: Quarterly earnings – Petrochemicals**



Source: SET, Bloomberg Finance L.P. and InnovestX Research

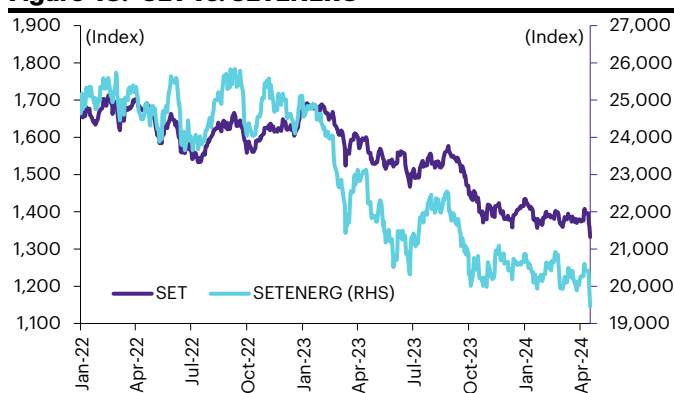
We expect earnings for most Thai energy and petrochemical companies to improve QoQ in 1Q24, especially oil refineries, driven by a healthier refining margin (+33% QoQ) and inventory gains of US\$1.3-1.4/bbl rather than the inventory losses seen in 4Q23. Optimism on 1Q24 earnings for petrochemical companies has risen as destocking has ended and demand is showing signs of gradual improvement. Order patterns are improving and demonstrating normal seasonality. (S&P Global) This is supported by positive readings for purchasing managers indices in the US and China.

### VI. Sector picks

SETENERG began to underperform the SET in early 2023 when concerns on government intervention in local energy prices hurt market sentiment, especially towards power companies. SETENERG was dragged down by the power plant sector, whose stock prices dropped an average >30% due to concerns about the cap on electricity tariff, especially for SPPs, while energy costs fell more slowly. Fluctuations in oil prices also caused inventory losses at oil refineries, which were also hit by much lower GRM in 2Q23 before turning around sharply in 3Q23. Share price volatility continued in 4Q23, followed by dull sentiment in 1Q24.

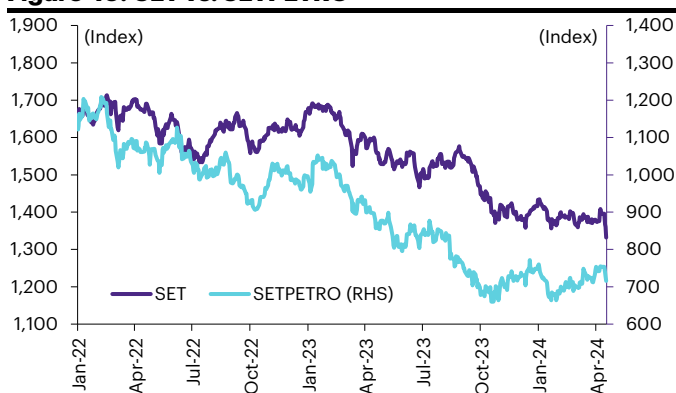
The SETPETRO index has underperformed the SET since early 2022 after a bull run in 2021 when petrochemical product spread skyrocketed. The sector index remained weak in 2023 and 2024 (YTD) amidst weak market sentiment on the earnings outlook for the industry, which has been flooded by new capacity in China and 18 straight months of industry destocking. Although we believe the worst is behind us, recovery of product spread is likely to take some time.

**Figure 48: SET vs. SETENERG**



Source: Bloomberg Finance L.P. and InnovestX Research

**Figure 49: SET vs. SETPETRO**



Source: Bloomberg Finance L.P. and InnovestX Research

Amidst the uncertain oil price outlook, buffeted by geopolitical risks that could disrupt supply and demand, as well as a possible spillover effect on global economic growth and inflation, we are selective on our stock picks. BCP still tops our list, given a solid GRM, earnings growth from the acquisition of BSRC and business diversification away from Thailand. Other stocks on the list are TOP (oil refinery proxy), PTTEP (upside from oil price rise) and PTTGC (past the worst).

#### BCP: Diversified portfolio reduces risk from volatile oil price

**Earnings to improve in 1Q24F.** We expect a stronger GRM and more stable oil price to fuel profit in 1Q24F. BCP should be able to maintain a high crude run in 1Q24 before a dip in 2Q24 on a major refinery turnaround in May for 27 days (its shortest ever refinery shutdown). After this shutdown, the maintenance cycle will be extended to four years vs. 2-3 years now. The dip from the shutdown will be offset by a higher crude run at BSRC to meet higher sales volume at BCP’s service stations and commercial sales. Profit contribution from the E&P segment will also improve from higher production thanks to a newly acquired asset (28% working interest in Statfjord area operated by Equinor).

**Expanding marketing.** BCP’s retail marketing business will be driven by more service stations from BSRC and its 2024 goal of 40 new service stations to 2,259 stations, bringing expected sales volume growth of 60% for marketing (BCP + BSRC). Higher sales volume in the retail business will also enable BBGI (a subsidiary in bio-based fuel) to operate bio-diesel and ethanol plants at full capacity despite the current demand-supply imbalance in Thailand.

**Compelling valuation.** BCP is still trading at EV/EBITDA of 4.8x (2024F) on a consolidated basis, compared with 8x for regional peers. We view the market as overly concerned about the company’s investments in BSRC and Okea given the EBITDA growth during 2022-23, especially since Okea has been proven. The current share price, implies trailing EV/EBITDA of merely 3.8x of its refinery and marketing businesses.

(Risk factors in Figure 54)

**Figure 50: Forecasts and valuation – BCP**

Year to 31 Dec	Unit	2022	2023	2024F	2025F	2026F
Revenue	(Btmn)	312,202	374,542	539,678	524,677	477,551
EBITDA	(Btmn)	47,735	39,107	41,588	43,143	43,249
Core profit	(Btmn)	18,513	12,655	14,252	14,958	15,697
Reported profit	(Btmn)	12,575	13,233	14,252	14,958	15,697
Core EPS	(Bt)	13.45	9.19	10.35	10.86	11.40
DPS	(Bt)	2.25	2.00	2.50	2.75	3.00
P/E, core	(x)	3.2	4.7	4.2	4.0	3.8
EPS growth, core	(%)	99.1	(31.6)	12.6	5.0	4.9
P/BV, core	(x)	0.9	0.8	0.7	0.6	0.6
ROE	(%)	24.2	13.8	13.6	13.0	12.6
Dividend yield	(%)	5.2	4.6	5.8	6.4	6.9
EV/EBITDA	(x)	2.2	4.1	4.8	4.7	3.8

Source: InnovestX Research

**PTTEP: Upside from oil price increase**

**Still lagging oil price rise.** PTTEP's share price has risen more slowly than oil price, despite the high 83% correlation between stock price and oil price. We believe high oil prices in the short term will remain an important stock price catalyst.

**Solid earnings and strong balance sheet.** Operating results and balance sheet remain excellent. We expect strong 2024 earnings, driven by higher sales volume and strong oil price. PTTEP's unit cost in 2024 will remain manageable at US\$28-29/BOE (-1.4% QoQ), in line with 2024 guidance. This will provide an EBITDA margin at >75% in 2024 vs 76% in 2023. We expect net D/E at <0.2x in 2024-26.

**Block G1/61 (Erawan) is up and running.** It will record a full quarter production of Block G1/61 in the Gulf of Thailand (Erawan) at 800mmcf/d as of end-March, when it reached full production, faster than planned. This will underwrite sales volume in 2Q24. Although gas selling prices may slip QoQ, we expect the current higher oil prices to be another positive to operating results.

We maintain our OUTPERFORM recommendation with a DCF target price revised up to Bt204 from Bt194 to reflect our higher oil price assumption for 2024-25. TP is based on a long-term Brent oil price of US\$70/bbl from 2026 onwards. An important factor to watch is the impact of geopolitical risks, which could erode oil supply and create upside to the 2024 earnings forecast, which is based on assumed Brent oil price of US\$85/bbl compared to the YTD average price of US\$84 and the current US\$88-90/bbl.

(Risk factors in Figure 54)

**Figure 51: Forecasts and valuation – PTTEP**

Year to 31 Dec	Unit	2022	2023	2024F	2025F	2026F
Revenue	(Btmn)	331,350	300,694	324,483	324,772	304,087
EBITDA	(Btmn)	253,734	232,446	240,137	237,746	216,111
Core profit	(Btmn)	90,721	78,656	82,684	88,942	76,747
Reported profit	(Btmn)	70,901	76,706	82,684	88,942	76,747
Core EPS	(Bt)	22.85	19.81	20.83	22.40	19.33
DPS	(Bt)	9.25	9.50	9.50	10.00	10.00
P/E, core	(x)	7.0	8.1	7.7	7.1	8.3
EPS growth, core	(%)	111.5	(13.3)	5.1	7.6	(13.7)
P/BV, core	(x)	1.4	1.3	1.2	1.1	1.0
ROE	(%)	20.6	16.3	15.8	15.6	12.5
Dividend yield	(%)	5.8	5.9	5.9	6.3	6.3
EV/EBITDA	(x)	2.4	2.5	2.7	3.0	3.5

Source: InnovestX Research

**PTTGC: Past the worst**

**More gas feedstock to improve margin.** We expect the EBITDA margin of PTTGC's olefins segment to improve on more ethane feedstock from PTT's gas separation plants following full production at Block G1/61 (Erawan) at 800mmcf/d from late Mar, up from 200-295mmcf/d in 2023. This will raise the proportion of ethane feedstock back to nearly 40% from 35% in 2023 and bring the adjusted EBITDA of the segment back to the positives vs. a negative of Bt880mn in 2023.

**Earnings recovery in 2024F.** We expect demand in the petrochemical business to improve gradually in 2024, backed by strong global GDP growth (+3% YoY, IMF forecast). PTTGC also has fewer planned maintenance shutdowns in 2024, including an

olefins cracker in 3Q24. The key factor is the availability of ethane supply from PTT, which will return to normal in 2Q24. PTTGC also has alternative feedstock, propane, from the olefins 2 modification project (OMP) which started up in 2Q23. Demand for allnex's products (coating resins and additives) with an EBITDA margin premium to PTTGC's, is expected to gradually recover YoY, pegged to improving markets in Europe, the US and Asia. We expect an earnings turnaround in 2024F, though still far below the pre-COVID 5-year average of Bt27bn.

**Undemanding valuation.** PTTGC is trading at PBV of only 0.6x (2024F) while we expect ROE to turn around from -1.1% in 2023 to +4.1% in 2024F.

(Risk factors in Figure 54)

**Figure 52: Forecasts and valuation – PTTGC**

Year to 31 Dec	Unit	2022	2023	2024F	2025F	2026F
Revenue	(Btmn)	683,954	621,631	596,322	578,337	558,475
EBITDA	(Btmn)	46,537	38,627	53,173	56,682	61,524
Core profit	(Btmn)	13,792	(3,183)	12,224	14,912	18,860
Reported profit	(Btmn)	(8,752)	999	12,224	14,912	18,860
Core EPS	(Bt)	3.06	(0.71)	2.71	3.31	4.18
DPS	(Bt)	1.00	1.00	1.40	1.70	2.00
P/E, core	(x)	12.7	n.a.	14.3	11.7	9.3
EPS growth, core	(%)	(57.3)	n.a.	n.a.	22.0	26.5
P/BV, core	(x)	0.6	0.6	0.6	0.6	0.6
ROE	(%)	4.4	(1.1)	4.1	4.9	6.0
Dividend yield	(%)	2.6	2.6	3.6	4.4	5.2
EV/EBITDA	(x)	9.0	9.9	7.6	6.8	6.0

Source: InnovestX Research

### TOP: Proxy play on recovering GRM

**1Q24 earnings.** We expect core profit to improve QoQ in 1Q24 on the recovery of GRM driven by higher crack spread for gasoline and fuel oil despite a hiccup in its refinery from an unplanned outage that will cut refinery utilization to 95-98% vs. 111% in 4Q23. We expect aromatics performance to improve due to tighter supply in Asia and rising demand for gasoline blending that limits PX feedstock. Near-term outlook for benzene is also positive driven by supply disruption in the US and a logistics shortage caused by the Red Sea crisis.

**GRM to increase further after CFP startup.** We expect TOP's GRM to improve further in 2025F when CFP starts commercial operations. Its CDU capacity will increase to 400kbd from 275kbd without adding gasoline and fuel oil output to drag overall GRM. The new unit is expected to increase flexibility in crude oil selection and allow it to process heavier and sourer crude oil while minimizing low-value products to optimize GRM.

**Undemanding valuation.** The current share price implies 0.7x PBV (-1.4SD), marginally above 0.5x during the pandemic years while oil demand is largely back to pre-COVID level. We rate the stock as OUTPERFORM on improving outlook for GRM and aromatics with TP of Bt77 (1x PBV 2024F), implying 8.7x EV/EBITDA (2024F).

(Risk factors in Figure 54)

**Figure 53: Forecasts and valuation – TOP**

Year to 31 Dec	Unit	2022	2023	2024F	2025F	2026F
Revenue	(Btmn)	529,589	469,244	393,704	440,895	509,421
EBITDA	(Btmn)	52,014	37,359	34,122	41,287	42,212
Core profit	(Btmn)	31,404	22,080	20,664	23,329	24,193
Reported profit	(Btmn)	32,668	19,443	20,664	23,329	24,183
Core EPS	(Bt)	15.03	9.88	9.25	10.44	10.83
DPS	(Bt)	3.70	3.40	3.30	3.70	3.80
P/E, core	(x)	3.8	5.8	6.2	5.5	5.3
EPS growth, core	(%)	61.0	(34.2)	(6.4)	12.9	3.7
P/BV, core	(x)	0.8	0.8	0.7	0.7	0.6
ROE	(%)	22.3	13.5	12.0	12.8	12.2
Dividend yield	(%)	6.5	5.9	5.8	6.5	6.6
EV/EBITDA	(x)	5.0	6.9	7.4	5.0	4.8

Source: InnovestX Research



**Figure 54: Stock picks**

Company	TP (Bt)	Valuation method	Bullish views	Bearish views	Risks
BCP	51.00	Sum-of-the-parts (0.6xPBV for oil-related businesses and DCF for power and E&P)	<ul style="list-style-type: none"> <li>BCP’s oil refinery has become more cost efficient after the efficiency improvement project in 2022. This allows the company to operate the oil refinery at 120kbd as it increases the capacity of upgrading units, reducing processing cost/bbl and improving GRM.</li> <li>Strong and stable earnings cash flow from the power business will stabilize performance in the longer term. Contribution from the E&amp;P business in Norway is solid.</li> <li>The newly acquired oil refiner, BSRC will accelerate growth in market share with the synergy benefit of at least Bt2.5bn in 2024 and &gt;Bt3bn p.a. from 2025 onwards.</li> </ul>	<ul style="list-style-type: none"> <li>Asset impairment for the E&amp;P business may continue to reduce investor appetite for the stock.</li> <li>Competition in the oil retail business may intensify, requiring more promotional expenses, thus reducing marketing margin.</li> <li>The government’s measures to control the cost of living by capping retail oil price would hurt marketing margin from time to time.</li> </ul>	<ul style="list-style-type: none"> <li>Economic slowdown would hurt demand for refined oil products and GRM while oil price volatility may cause more stock loss.</li> <li>Other risks are regulatory changes on GHG emissions, asset impairments for the E&amp;P business and government intervention in domestic retail oil price.</li> <li>Key ESG risk factors include the environmental impact of its business and how it adapts during the transition to clean energy.</li> </ul>
PTTEP	204.00	DCF (based on LT Brent oil price at US\$70/bbl)	<ul style="list-style-type: none"> <li>Sales volume is expected to gradually increase in the medium term upon continuing development of new projects both domestically and internationally.</li> <li>ASP is more stable than crude oil price due to the lag before prices of its gas output are adjusted (&gt;70% of total sales volume).</li> <li>More petroleum recovery, mainly in Malaysia, will drive sales volume growth. Leading position in power generation in Thailand, especially in new IPP projects.</li> </ul>	<ul style="list-style-type: none"> <li>PTTEP is a proxy play on oil price, which will hover in a narrow range over the next six months on weaker-than-expected demand and higher global supply.</li> <li>Average gas price will be eroded by more volume contribution from Sabah-H in Malaysia and Oman Block 61, whose gas prices are lower than those in the Gulf of Thailand and Myanmar.</li> <li>Net profit in 2024F is expected to soften YoY on lower oil price despite higher sales volume. Stretched valuation and high gearing.</li> </ul>	<ul style="list-style-type: none"> <li>Volatile crude oil price and higher unit cost</li> <li>More asset impairment for projects under development</li> <li>Regulatory change on GHG emissions.</li> <li>Key ESG risk factors include the environmental impact of its core operations and the pace of the energy transition away from carbon-based fuels.</li> </ul>
PTTGC	50.00	0.8x PBV	<ul style="list-style-type: none"> <li>PTTGC’s competitive feedstock cost, mainly ethane from PTT’s gas separation plant, will support profitability in the medium term.</li> <li>Feedstock flexibility will increase after the olefins retrofit project (ORP) started up in 2Q21 and the olefins 2 modification project (OMP) commenced operations in 2Q23.</li> <li>The planned expansion in downstream specialty and recycled products will stabilize profitability in the long term.</li> </ul>	<ul style="list-style-type: none"> <li>Lower ethane supply from PTT on lower gas production in the Gulf of Thailand at Block G1/61 (Erawan) was the key drag on olefins EBITDA margin in 2023.</li> <li>More risk has emerged from the new government’s intention to alter the gas supply allocation to the petrochemical industry.</li> <li>Investors are concerned about depleting gas reserves in the Gulf of Thailand which will reduce its competitiveness in the longer term.</li> <li>The company’s plan to invest in an olefins cracker in the US continues to undermine investor appetite for the stock. The downcycle of the petrochemical industry has led it to defer this investment for now.</li> </ul>	<ul style="list-style-type: none"> <li>Volatile crude oil price and product spread for oil refining and petrochemical business</li> <li>Higher feedstock cost due to lower gas feedstock</li> <li>Asset impairment</li> <li>Regulatory change on GHG emissions and single-use plastics (&lt;3% of capacity)</li> <li>Change in allocation of domestic gas supply to petrochemicals</li> <li>Key ESG risk factors include the environmental impact of its business and how it adapts during the transition to clean energy and a circular economy.</li> </ul>

Company	TP (Bt)	Valuation method	Bullish views	Bearish views	Risks
TOP	77.00	1x PBV	<ul style="list-style-type: none"> <li>Low unit cost will remain TOP's main competitive advantage over local peers.</li> <li>Crude selection flexibility will increase when the Clean Fuel Project (CFP) starts up in 2024 to reach full operation in 2025.</li> <li>TOP has expanded to the olefins chain by leveraging more naphtha feedstock from CFP. This will ease the impact of lower demand for gasoline in the future as the move to EV builds strength.</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged suspension of SBM-2 due to an oil spill hurts its earnings in the near term although the related expenses from the incident are expected to be minimal.</li> <li>Planned investment in an olefins chain petrochemical business has increased market anxiety on earnings contribution from this new business in the near term.</li> </ul>	<ul style="list-style-type: none"> <li>Volatile oil price and GRM, weaker oil price causing inventory loss and lower demand for aromatics.</li> <li>Other risks are GHG emission regulatory changes.</li> <li>Key ESG risk factors include the environmental impact of its business and how it adapts during the transition to clean energy.</li> </ul>

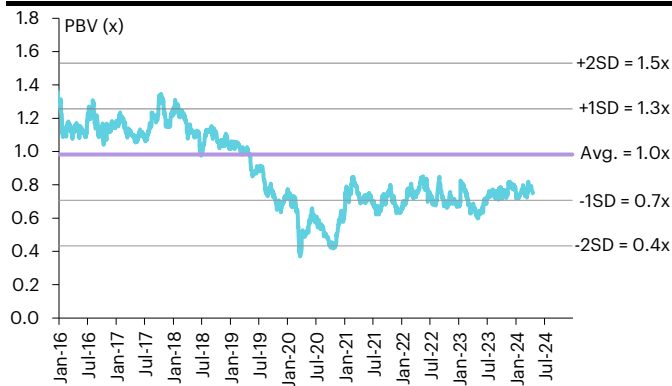
Source: Company data, SET, Thai Institute of Directors, Bloomberg Finance L.P. and InnovestX Research

**Figure 55: ESG summary**

Company	BCP	PTTEP	PTTGC	TOP
<b>Bloomberg ESG Score (2022)</b>	69.77	79.99	77.38	68.98
<b>Rank in Sector</b>	6/67	1/67	2/15	8/67
<b>SET ESG rating</b>	AAA	AAA	AAA	AAA
<b>CG rating</b>	5	5	5	5
<b>Environmental Issue</b>	BCP has committed to conducting a low-carbon business and leading energy transition with increases in the proportion of green companies to lower carbon emissions. BCP pledges its commitment on carbon neutrality by 2030 and net zero by 2050.	PTTEP aims at reducing GHG intensity by 30% by 2030 from the base year in 2020. This will be reduced further to 50% by 2040 and to net zero by 2050. PTTEP was able to reduce GHG by 358.187k tons of CO2 equivalent.	PTTGC targets to reduce greenhouse gas (scope 1 and 2) by 20% within 2030 from peak year in 2025 and to achieve net zero emissions and cooperate with suppliers and customers to halve scope 3 emissions within 2050.	TOP continued the environmental management in 2022 to align with global pathways towards net zero GHG emissions, targeting carbon neutrality by 2050 and net zero GHG emissions by 2060.
<b>Social Issue</b>	BCP has gained trust from the local community with community satisfaction of 94.4%. The community engagement score is 89.2% from the refinery community, the highest score since 2014.	PTTEP is committed to minimize impact of its operation to the communities. These include its commitment of zero waste to landfill and circular model of E&P operation by reusing at least 50% of main structures.	PTTGC set up social enterprises with the goal of generating sustainable income for local communities, leveraging strategy via a Circular Economy, mainly the management of waste for delivery as feedstock to its recycled plastic resin factory under the Community Waste Model project in order to promote end-to-end waste management.	TOP's community engagement rate in 2023 was 95.1%, still higher than target of ≥85% reflecting continuous CSR programs to improve local community well-being while accommodating the company's journey to net zero emissions in the long term.
<b>Governance Issue</b>	BCP's board of directors consists of 15 directors, 14 non-executive directors (93.33% of the entire Board), 11 independent directors, which exceeds half of the Board (73.33% of the entire Board), and an executive director. These include three female members (20% of the entire Board).	PTTEP's board of directors consists of 15 directors, 14 non-executive directors (93.33% of the entire board), 9 independent directors, which exceeds half of the board (60% of the entire Board), and an executive director. These include two female members (13.33% of the entire board).	PTTGC's board of directors consists of 15 directors, 14 non-executive directors (93.3% of the entire board), 9 independent directors, which exceeds half of the board (60% of the entire board), and an executive director. There is no female member in the board.	TOP's board of directors consists of 13 directors, 12 non-executive directors (92.3% of the entire board), 7 independent directors, which exceeds half of the Board (53.8% of the entire Board), and an executive director. This includes one female member (7.7% of the entire Board).

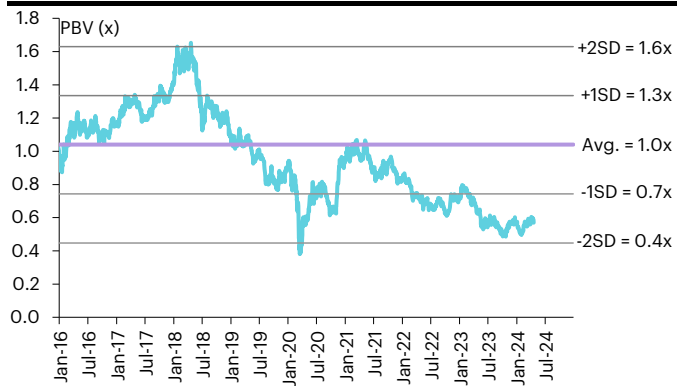
Source: Company data, SET, Thai Institute of Directors, Bloomberg Finance L.P. and InnovestX Research

**Figure 56: PBV band – BCP**



Source: InnovestX Research

**Figure 57: PBV band – PTTGC**



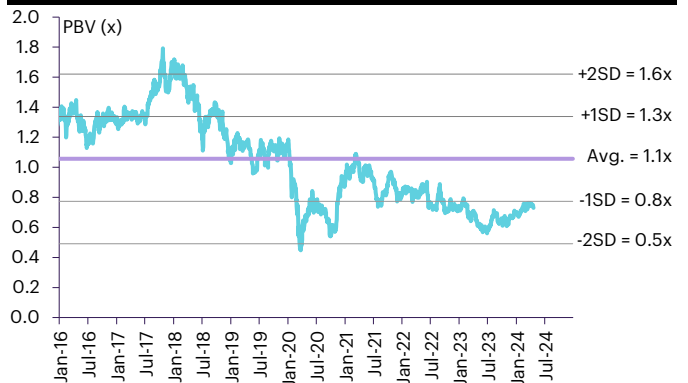
Source: InnovestX Research

**Figure 58: PBV band – PTTEP**



Source: InnovestX Research

**Figure 59: PBV band – TOP**



Source: InnovestX Research

**Figure 60: Valuation summary – Energy** (price as of Apr 19, 2024)

	Rating	Price (Bt/Sh)	Target (Bt/Sh)	ETR (%)	P/E (x)			EPS growth (%)			P/BV (x)			ROE (%)			Div. Yield (%)			EV/EBITDA (x)		
					23A	24F	25F	23A	24F	25F	23A	24F	25F	23A	24F	25F	23A	24F	25F	23A	24F	25F
BCP	Outperform	43.25	51.0	23.7	4.7	4.2	4.0	(32)	13	5	0.8	0.7	0.6	14	14	13	4.6	5.8	6.4	4.1	4.8	4.7
BSRC	Underperform	9.20	10.5	17.4	14.9	8.5	6.3	(77)	76	33	1.1	1.0	0.9	8	13	16	2.7	3.3	6.5	10.3	7.7	5.7
IRPC	Neutral	1.93	2.6	36.3	n.m.	30.7	15.2	n.m.	n.m.	101	0.5	0.5	0.5	(5)	2	3	1.6	1.6	3.1	17.2	6.8	6.3
OR	Outperform	17.80	27.0	54.6	18.7	16.1	14.2	7	16	14	2.0	1.8	1.7	10	12	12	2.9	2.9	3.4	9.5	9.0	7.9
PTT	Outperform	33.50	45.0	40.3	9.3	8.8	8.1	(36)	6	9	0.9	0.8	0.8	7	7	7	6.0	6.0	6.0	3.5	3.5	3.1
PTTEP	Outperform	160.00	204.0	33.4	8.1	7.7	7.1	(13)	5	8	1.3	1.2	1.1	16	16	16	5.9	5.9	6.3	2.5	2.7	3.0
SPRC	Neutral	7.90	11.0	43.0	n.m.	8.8	7.5	n.m.	n.m.	17	0.9	0.9	0.8	(3)	10	11	0.0	3.8	5.1	27.9	5.8	4.5
TOP	Outperform	57.25	77.0	40.3	5.8	6.2	5.5	(34)	(6)	13	0.8	0.7	0.7	14	12	13	5.9	5.8	6.5	6.9	7.4	5.0
<b>Average</b>					<b>10.2</b>	<b>11.4</b>	<b>8.5</b>	<b>(31)</b>	<b>18</b>	<b>25</b>	<b>1.0</b>	<b>1.0</b>	<b>0.9</b>	<b>8</b>	<b>11</b>	<b>11</b>	<b>3.7</b>	<b>4.4</b>	<b>5.4</b>	<b>10.2</b>	<b>6.0</b>	<b>5.0</b>

Source: InnovestX Research

**Figure 61: Valuation summary – Petrochemicals** (price as of Apr 19, 2024)

	Rating	Price (Bt/Sh)	Target (Bt/Sh)	ETR (%)	P/E (x)			EPS growth (%)			P/BV (x)			ROE (%)			Div. Yield (%)			EV/EBITDA (x)		
					23A	24F	25F	23A	24F	25F	23A	24F	25F	23A	24F	25F	23A	24F	25F	23A	24F	25F
GGC	Underperform	7.60	10.0	34.8	n.m.	16.2	13.1	n.m.	n.m.	24	0.8	0.8	0.7	(2)	5	6	1.3	3.2	3.8	12.3	5.1	4.2
IVL	Neutral	23.90	32.0	38.1	344.6	7.9	5.5	(99)	4,260	43	0.8	0.8	0.7	0	10	13	3.9	4.2	5.4	8.8	5.1	3.9
PTTGC	Neutral	38.75	50.0	32.6	n.m.	14.3	11.7	n.m.	n.m.	22	0.6	0.6	0.6	(1)	4	5	2.6	3.6	4.4	9.9	7.6	6.8
<b>Average</b>					<b>344.6</b>	<b>12.8</b>	<b>10.1</b>	<b>(99)</b>	<b>4,260</b>	<b>30</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>(1)</b>	<b>6</b>	<b>8</b>	<b>2.6</b>	<b>3.7</b>	<b>4.5</b>	<b>10.3</b>	<b>5.9</b>	<b>5.0</b>

Source: InnovestX Research

**Figure 62: Regional peer comparison – oil and gas**

Company	PE (x)			EPS Growth (%)			PBV (x)			ROE (%)			Div. Yield (%)			EV/EBITDA (x)		
	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F
Sinopec Shanghai Petrochemical	8.0	6.3	6.1	193.1	26.4	4.6	0.4	0.3	0.4	3.0	4.4	4.5	1.6	3.1	3.4	8.7	7.5	6.7
China Petroleum & Chemical	7.8	7.2	5.9	13.6	8.5	21.7	0.6	0.6	0.6	8.2	8.2	8.1	8.0	8.2	8.3	5.6	5.4	5.4
PetroChina	7.4	7.4	7.6	6.3	0.6	(3.6)	0.8	0.8	0.7	11.2	10.6	9.8	5.8	5.6	5.5	4.6	4.6	4.6
Indian Oil Corp	7.3	8.3	7.2	(11.6)	(11.8)	14.9	1.3	1.2	1.1	18.7	14.3	12.5	5.5	4.8	4.7	6.1	6.5	5.3
Petronas Dagangan	20.9	20.5	20.7	9.4	1.6	(0.8)	3.5	3.4	3.5	17.2	17.3	17.0	4.4	4.5	5.0	11.4	11.0	11.1
PTT	10.2	9.2	10.3	(16.2)	11.2	(10.5)	0.8	0.8	0.8	8.4	8.5	8.2	5.3	5.8	6.2	5.3	5.1	5.0
PTT Exploration & Production	8.5	9.1	9.9	(2.8)	(6.5)	(7.6)	1.2	1.1	1.1	14.0	12.4	11.2	5.6	5.2	4.8	2.8	2.9	2.9
<b>Average</b>	<b>10.0</b>	<b>9.7</b>	<b>9.7</b>	<b>27.4</b>	<b>4.3</b>	<b>2.7</b>	<b>1.2</b>	<b>1.2</b>	<b>1.1</b>	<b>11.5</b>	<b>10.8</b>	<b>10.2</b>	<b>5.2</b>	<b>5.3</b>	<b>5.4</b>	<b>6.4</b>	<b>6.1</b>	<b>5.9</b>

Source: Bloomberg Finance L.P

**Figure 63: Regional peer comparison – oil refinery**

Company	PE (x)			EPS Growth (%)			PBV (x)			ROE (%)			Div. Yield (%)			EV/EBITDA (x)		
	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F
Bharat Petroleum	7.3	9.0	10.4	(18.5)	(18.4)	(13.7)	1.6	1.4	1.3	24.5	16.7	12.8	5.3	4.1	3.3	5.8	6.2	6.9
Hindustan Petroleum	6.3	7.1	7.2	8.7	(12.1)	(0.4)	1.4	1.2	1.0	27.1	20.5	18.1	5.1	4.7	4.4	6.8	7.0	7.0
Indian Oil	7.3	8.3	7.2	(11.6)	(11.8)	14.9	1.3	1.2	1.1	18.7	14.3	12.5	5.5	4.8	4.7	6.1	6.5	5.3
Reliance Industries	24.7	21.9	18.3	14.8	12.7	19.5	2.2	2.0	1.8	9.4	9.7	10.7	0.3	0.4	0.4	12.7	11.4	10.2
S-Oil	6.5	6.5	6.4	44.4	0.5	2.3	0.9	0.8	0.7	14.5	13.2	16.4	3.3	3.5	3.8	4.6	4.5	4.2
SKC	n.m	45.5	46.6	82.8	246.0	(2.4)	2.5	2.4	2.3	(5.0)	4.4	2.8	1.0	0.9	0.6	25.1	14.4	20.7
Bangchak Corp	6.1	5.8	5.3	(23.0)	4.1	8.9	0.7	0.7	0.6	13.3	13.2	13.9	5.4	5.7	6.1	3.8	3.7	3.5
IRPC	19.5	11.2	7.4	170.7	74.7	50.3	0.5	0.5	0.5	2.4	4.6	5.5	2.0	3.3	3.6	8.9	7.4	7.3
Esso Thailand	6.3	5.2	4.4	134.7	20.6	19.1	1.0	0.9	0.8	16.2	17.3	16.3	5.4	6.6	6.8	6.5	5.9	5.8
Thai Oil	8.3	5.6	3.5	(20.6)	47.1	59.1	0.7	0.7	0.6	9.1	12.2	13.9	4.9	6.8	8.3	8.8	6.5	5.7
Star Petroleum Refining	7.2	8.6	10.4	489.3	(16.1)	(16.8)	0.9	0.8	0.7	12.6	12.2	12.6	6.7	6.9	6.9	5.0	5.0	5.0
<b>Average</b>	<b>10.0</b>	<b>12.3</b>	<b>11.6</b>	<b>79.2</b>	<b>31.6</b>	<b>12.8</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>13.0</b>	<b>12.6</b>	<b>12.3</b>	<b>4.1</b>	<b>4.3</b>	<b>4.4</b>	<b>8.6</b>	<b>7.1</b>	<b>7.4</b>

Source: Bloomberg Finance L.P

**Figure 64: Regional peer comparison - petrochemicals**

Company	PE (x)			EPS Growth (%)			PBV (x)			ROE (%)			Div. Yield (%)			EV/EBITDA (x)		
	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F	24F	25F	26F
China Petroleum & Chemical	11.4	10.7	10.7	20.5	5.8	0.8	1.0	0.9	0.9	8.4	8.7	8.6	5.7	5.8	6.2	5.1	4.3	3.6
Sinopec Shanghai Petrochemical	32.8	22.6	22.2	167.7	45.5	1.6	1.0	0.9	1.1	3.2	4.5	5.1	1.3	2.1	2.7	8.2	7.4	6.3
PetroChina	7.4	7.4	7.6	6.3	0.6	(3.6)	0.8	0.8	0.7	11.2	10.6	9.8	5.8	5.6	5.5	4.6	4.6	4.6
Asahi Kasei	14.7	12.5	11.0	171.3	17.7	13.1	0.9	0.8	0.8	6.1	6.9	7.5	3.3	3.4	3.7	7.1	6.5	5.7
Sumitomo Chemical	n.m	11.7	7.7	79.8	229.7	51.3	0.6	0.6	0.6	(2.2)	5.8	7.7	2.7	3.4	4.7	n.a.	8.8	6.8
Mitsui Chemicals	11.4	8.9	8.5	26.1	28.1	4.1	1.0	0.9	0.9	9.5	11.1	10.1	3.3	3.5	3.7	7.4	6.3	6.1
Reliance Industries	24.7	21.9	18.3	14.8	12.7	19.5	2.2	2.0	1.8	9.4	9.7	10.7	0.3	0.4	0.4	12.7	11.4	10.2
Petronas Chemicals Group	18.9	17.6	17.2	70.3	7.2	2.6	1.3	1.3	1.3	6.1	7.6	7.3	2.7	3.2	3.4	10.4	9.0	8.7
Lotte Chemical	40.0	7.4	13.8	303.1	437.7	(46.2)	0.3	0.3	0.3	0.6	3.1	2.3	3.1	3.8	3.9	9.6	6.7	6.3
LG Chem	15.0	7.7	5.1	45.0	95.4	49.2	0.8	0.7	0.6	5.7	11.0	14.7	1.6	2.3	4.0	6.0	4.0	3.2
Formosa Plastics	26.5	18.6	n.m.	120.2	42.6	n.m.	1.2	1.1	n.a.	4.3	6.1	6.9	2.8	4.1	4.8	28.1	20.5	22.4
Formosa Chemicals & Fibre	23.8	19.4	11.7	50.5	22.6	66.6	0.9	0.9	0.8	2.8	4.6	7.3	3.0	4.1	7.0	14.4	12.2	9.6
Nan Ya Plastics	20.7	13.6	n.m.	232.5	52.1	n.m.	1.1	1.0	n.a.	5.2	7.6	7.2	3.5	5.2	5.1	13.5	10.5	11.1
Formosa Petrochemical	27.5	20.2	13.4	9.7	35.7	50.7	1.9	1.8	1.6	7.6	9.5	11.7	3.1	3.7	5.5	14.3	10.9	8.9
Far Eastern New Century	18.7	15.7	n.m.	1.5	18.9	n.m.	0.7	0.7	n.a.	3.8	4.5	n.m.	4.0	4.4	n.a.	11.2	10.7	n.a.
Indorama Ventures	15.7	10.2	9.1	173.7	53.7	12.9	0.8	0.8	0.7	4.7	7.0	8.5	2.4	3.4	4.0	7.7	6.8	6.6
IRPC	19.5	11.2	7.4	170.7	74.7	50.3	0.5	0.5	0.5	2.4	4.6	5.5	2.0	3.3	3.6	8.9	7.4	7.3
PTT Global Chemical	20.6	12.5	10.5	754.5	65.2	19.0	0.7	0.6	0.6	5.9	5.1	6.0	6.1	3.9	4.1	9.6	8.1	7.8
Global Green Chemicals	15.7	12.4	10.9	342.5	26.8	13.8	0.8	0.7	0.7	5.0	6.0	6.6	2.7	4.1	3.7	7.0	6.4	6.0
Eastman Chemical	13.0	11.3	10.5	(1.4)	15.1	7.6	1.9	1.8	1.6	15.6	16.6	17.0	3.4	3.6	3.8	8.7	8.0	7.5
Alpek SAB de CV	12.6	9.6	6.9	118.3	30.4	39.4	0.7	0.7	0.7	6.8	9.3	11.1	3.5	7.3	7.0	5.5	4.9	4.2
<b>Average</b>	<b>19.5</b>	<b>13.5</b>	<b>11.3</b>	<b>137.0</b>	<b>62.8</b>	<b>19.6</b>	<b>1.0</b>	<b>0.9</b>	<b>0.9</b>	<b>5.8</b>	<b>7.6</b>	<b>8.6</b>	<b>3.2</b>	<b>3.8</b>	<b>4.3</b>	<b>10.0</b>	<b>8.4</b>	<b>7.6</b>

Source: Bloomberg Finance L.P., InnovestX Research

**VII. Appendix****Figure 65: Planned turnaround 2024**

Company	Plant	Shutdown plan
BCP	Oil refinery major turnaround	27-day shutdown (May)
IRPC	RDCC	46-day shutdown (Oct-Nov)
	Lube	15-day shutdown (Jan-Feb)
		10-day shutdown (Dec)
	HDPE	24-day shutdown (Mar)
		6-day shutdown (Sep)
	PP	14-day commercial shutdown (1Q)
		4-day shutdown (May)
PTT	GSP#1	12-day shutdown (3Q)
	GSP#5	31-day 50% turndown (Mar)
	GSP#6	15-day 50% turndown (Apr)
PTTGC	GSP#6	36-day 50% turndown (Jun-Jul)
	Olefins cracker (OLE2/2)	60-day shutdown (Feb-Mar)
	HDPE	15-day shutdown (Sep)
	LDPE	24-day shutdown (Jun-Jul)
	LLDPE#1	34-day shutdown (Apr-May)
	PS	33-day shutdown (Oct)
	TOCGC	49-day shutdown (Feb-Apr)
	EA	55-day shutdown (Feb-Apr)
	BPA	30-day shutdown (Apr-May)

Source: Company data

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**Companies with Excellent CG Scoring**

7UP, AAV, ABM, ACE, ACG, ADB, ADD, ADVANC, AEONTS, AF, AGE, AH, AHC, AIRA, AIT, AJ, AKP, AKR, ALLA, ALT, AMA, AMARIN, AMATA, AMATAV, ANAN, AOT, AP, APCO, APCS, ARIP, ARROW, ASEFA, ASK, ASP, ASW, ATP30, AUCTION, AWC, AYUD, B, BA, BAFS, BAM, BANPU, BAY, BGGI, BBIK, BBL, BC, BCH, BCP, BCPG, BDMS, BEC, BEM, BEYOND, BGC, BGRIM, BH, BIZ, BJC, BJCHI, BKI, BLA, BOL, BPP, BRI, BROOK, BRR, BTS, BTW, BWG, BYD, CBG, CENTEL, CFRESH, CHASE, CHEWA, CHG, CHOW, CIMBT, CIVIL, CK, CKP, CM, CNT, COLOR, COM7, COTTO, CPALL, CPAXT, CPF, CPI, CPL, CPN, CPW, CRC, CRD, CSC, CSS, CV, DCC, DELTA, DEMCO, DMT, DOHOME, DRT, DUSIT, EA, EASTW, ECF, ECL, EE, EGCO, EPG, ERW, ETC, ETE, FE, FLOYD, FN, FPI, FPT, FSX, FVC, GBX, GC, GCAP, GENCO, GFPT, GGC, GLAND, GLOBAL, GPSC, GRAMMY, GULF, GUNKUL, HANA, HARN, HENG, HMPRO, HPT, HTC, ICC, ICHI, ICN, III, ILINK, ILM, IMH, IND, INET, INTUCH, IP, IRC, IRPC, ITC, ITCL, IVL, JAS, JTS, KBANK, KCC, KCE, KEX, KKP, KSL, KTB, KTC, KTMS, KUMWEL, KUN, LALIN, LANNA, LH, LHFG, LIT, LOXLEY, LPN, LRH, LST, M, MAJOR, MALEE, MATCH, MBK, MC, M-CHAI, MCOT, MEGA, MFC, MFEC, MILL, MINT, MONO, MOONG, MSC, MST, MTC, MTI, NC, NCH, NCL, NDR, NER, NKI, NOBLE, NRF, NTV, NVD, NWR, NYT, OCC, OISHI<sup>1</sup>, ONEE, OR, ORI, OSP, OTO, PAF, PATO, PB, PCSGH, PDG, PDJ, PG, PHOL, PIMO, PJW, PLANB, PLAT, PLUS, PM, POLY, PORT, PPP, PPS, PR9, PRG, PRINC, PRM, PRTR, PSH, PSL, PT, PTC, PTT, PTTEP, PTTGC, Q-CON, QH, QTC, RATCH, RBF, RPH, RS, RT, S, S&J, SA, SABINA, SAK, SAMART, SAMTEL, SAPPE, SAT, SBNEXT, SC, SCB, SCC, SCCC, SCG, SCGP, SCM, SDC, SEAFCO, SEAOL, SECURE, SELIC, SENA, SENX, SFP<sup>2</sup>, SFT, SGC, SGF, SGP, SHR, SICT, SIRI, SIS, SITHAI, SJWD, SKR, SM, SMPC, SMT, SNC, SNNP, SNP, SO, SPALI, SPC, SPCG, SPI, SPRC, SR, SSC, SSF, SSSC, STA, STC, STEC, STGT, STI, SUC, SUN, SUSCO, SUTHA, SVI, SVT, SYMC, SYNEX, SYNTEC, TACC, TAE, TCAP, TCMC, TEAMG, TEGH, TFG, TFMAMA, TGE, TGH, THANA, THANI, THCOM, THIP, THRE, THREL, TIDLOR, TIPH, TISCO, TK, TKN, TKS, TKT, TLI, TM, TMC, TMD, TMT, TNDT, TNITY, TNL, TNR, TOA, TOG, TOP, TPBI, TPCS, TPIPL, TPIPP, TPS, TQM, TQR, TRT, TRUE, TRV, TSC, TSTE, TSTH, TTA, TTB, TTCL, TTW, TURTLE, TVDH, TVH, TVO, TVT, TWPC, UAC, UBE, UBIS, UKEM, UP, UPF, UPOIC, UV, VCOM, VGI, VIBHA, VIH, VL, WACOAL, WGE, WHA, WHAUP, WICE, WINMED, WINNER, XPG, YUASA, ZEN

**Companies with Very Good CG Scoring**

2S, A5, AAI, AIE, ALUCON, AMR, APURE, ARIN, AS, ASIA, ASIAN, ASIMAR, ASN, AURA, BR, BSBM, BTG, CEN, CGH, CH, CHIC, CI, CIG, CMC, COMAN, CSP, DOD, DPAINT, DV8, EFORL, EKH, ESSO, ESTAR, EVER, FORTH, FSMART, FTI, GEL, GPI, HEALTH, HUMAN, IFS, INSET, IT, J, JCHK, JDF, JKN, JMART, JUBILE, K, KCAR, KGI, KIAT, KISS, KK, KTIS, KWC, KWM, LDC, LEO, LHK, MACO, METCO, MICRO, MK, MVP, NCAP, NOVA, NTSC, PACO, PIN, PQS, PREB, PRI, PRIME, PROEN, PROS, PROUD, PSTC, PTECH, PYLON, RCL, SALEE, SANKO, SCI, SCN, SE, SE-ED, SFLEX, SINGER, SKN, SONIC, SORKON, SPVI, SSP, SST, STANLY, STP, SUPER, SVOA, SWC, TCC, TEKA, TFM, TMILL, TNP, TPLAS, TPOLY, TRC, TRU, TRUBB, TSE, VRANDA, WAVE, WFX, WIJK, WIN, WP, XO

**Companies with Good CG Scoring**

24CS, AMANAH, AMARC, AMC, APP, ASAP, BCT, BE8, BIG, BIOTEC, BLESS, BSM, BVG, CAZ, CCET, CHARAN, CHAYO, CHOTI, CITY, CMAN, CMR, CRANE, CWT, DHOUSE, DTCENT, EASON, FNS, FTE, GIFT, GJS, GTB, GTV, GYT, HL, HTECH, HYDRO, IIG, INGRS, INSURE, IRCP, ITD, ITNS, JCK, JMT, JR, JSP, KBS, KGEN, KJL, L&E, LEE, MASTER, MBAX, MEB, MENA, META, MGT, MITSIB, MJD, MOSHI, MUD, NATION, NNCL, NPK, NSL, NV, OGC, PAF, PCC, PEACE, PICO, PK, PL, PLANET, PLE, PMTA, PPM, PRAKIT, PRAPAT, PRECHA, PRIN, PSG, RABBIT, READY, RJH, RSP, RWI, S11, SAAM, SAF, SAMCO, SAWAD, SCAP, SCP, SIAM, SKE, SKY, SMART, SMD, SMIT, SOLAR, SPA, STECH, STPI, SVR, ST, TCCC<sup>3</sup>, TEAM, TFI, TIGER, TITLE, TKC, TMI, TNH, TPA, TPAC, TRITN, UBA, UMI, UMS, UTP, VARO, VPO, W, WARRIX, WORK, WPH, YONG, ZIGA

**Corporate Governance Report**

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The survey result is as of the date appearing in the Corporate Governance Report of Thai Listed Companies. As a result, the survey result may be changed after that date. InnovestX Securities Company Limited does not conform nor certify the accuracy of such survey result.

To recognize well performers, the list of companies attaining "Good", "Very Good" and "Excellent" levels of recognition (Not including listed companies qualified in the "no announcement of the results" clause from 1 January 2022 to 31 October 2023) is publicized.

<sup>1</sup>OISHI was voluntarily delisted from the Stock Exchange of Thailand, effectively on September 6, 2023

<sup>2</sup>SFP was voluntarily delisted from the Stock Exchange of Thailand, effectively on July 19, 2023

<sup>3</sup>TCCC was voluntarily delisted from the Stock Exchange of Thailand effectively on August 25, 2023

**Anti-corruption Progress Indicator**

**Certified (ได้คุ้มครอง)**

2S, 7UP, AAI, ADVANC, AF, AH, AI, AIE, AIRA, AJ, AKP, AMA, AMANAH, AMATA, AMATAV, AP, APCS, AS, ASIAN, ASK, ASP, AWC, AYUD, B, BAFS, BAM, BANPU, BAY, BGGI, BBL, BCH, BCP, BCPG, BE8, BEC, BEYOND, BGC, BGRIM, BKI, BLA, BPP, BROOK, BRR, BSBM, BTS, BWG, CEN, CENTEL, CFRESH, CGH, CHEWA, CHOTI, CHOW, CIG, CIMBT, CM, CMC, COM7, CPALL, CPAXT, CPF, CPI, CPL, CPN, CPW, CRC, CSC, DCC, DELTA, DEMCO, DIMET, DOHOME, DRT, DUSIT, EA, EASTW, ECF, EGCO, EP, EPG, ERW, ESTAR, ETC, ETE, FNS, FPI, FPT, FSMART, FTE, GBX, GC, GCAP, GEL, GFPT, GGC, GJS, GPI, GPSC, GSTEEL, GULF, GUNKUL, HANA, HARN, HENG, HMPRO, HTC, ICC, ICHI, IFS, III, ILINK, ILM, INET, INOX, INSURE, INTUCH, IRPC, ITCL, IVL, JAS, JKN, JR, JTS, KASET, KBANK, KBS, KCAR, KCCAMC, KCE, KGEN, KGI, KKP, KSL, KTB, KTC, L&E, LANNA, LHFG, LHK, LPN, LRH, M, MAJOR, MALEE, MATCH, MBAX, MBK, MC, MCOT, META, MFC, MFEC, MILL, MINT, MONO, MOONG, MSC, MST, MTC, MTI, NATION, NCAP, NEP, NKI, NOBLE, NRF, NWR, OCC, OGC, OR, ORI, PAF, PATO, PB, PCSGH, PDG, PDJ, PG, PHOL, PIMO, PK, PL, PLANB, PLANET, PLAT, PM, PPP, PPPM, PPS, PR9, PREB, PRG, PRINC, PRM, PROS, PSH, PSL, PSTC, PT, PTECH, PTG, PTT, PTTEP, PTTGC, PYLON, Q-CON, QH, QLT, QTC, RABBIT, RATCH, RML, RS, RWI, S&J, SAAM, SABINA, SAK, SAPPE, SAT, SC, SCC, SCCC, SCG, SCGP, SCM, SCN, SEAOL, SE-ED, SELIC, SENA, SGC, SGP, SIRI, SITHAI, SKR, SMIT, SMK, SMPC, SNC, SNP, SORKON, SPACK, SPALI, SPC, SPI, SPRC, SRICHA, SSF, SSP, SSSC, SST, STA, STGT, STOWER, SUSCO, SVI, SYMC, SYNTEC, TAE, TAKUNI, TASCO, TCAP, TCMC, TFG, TFI, TFMAMA, TGE, TGH, THANI, THCOM, THIP, THRE, THREL, TIDLOR, TIPCO, TISCO, TKS, TKT, TMD, TMILL, TMT, TNITY, TNL, TNP, TNR, TOG, TOP, TOPP, TPA, TPCS, TRT, TRU, TSC, TSI, TSTE, TSTH, TTA, TTB, TTCL, TU, TVDH, TVO, TWPC, UBE, UBIS, UEC, UKEM, UOBKH, UV, VCOM, VGI, VIH, WACOAL, WHA, WHAUP, WICE, WIJK, XO, YUASA, ZEN, ZIGA

**Declared (ประกาศเจตนา)**

ACE, ADB, ALT, AMC, ASW, BLAND, BTG, BYD, CAZ, CBG, CV, DEXON, DMT, EKH, FSX, GLOBAL, GREEN, ICN, IHL, ITC, J, JMART, JMT, LEO, LH, MENA, MITSIB, MODERN, NER, NEX, OSP, PEER, PLUS, POLY, PQS, PRIME, PROEN, PRTR, RBF, RT, SA, SANKO, SCB, SENX, SFLEX, SIS, SKE, SM, SVOA, TBN, TEGH, TIPH, TKN, TPAC, TPLAS, TQM, TRUE, W, WPH, XPG

**N/A**

24CS, 3K-BAT, A, A5, AAV, ABM, ACAP, ACC, ACG, ADD, ADVICE, AEONTS, AFC, AGE, AHC, AIT, AJA, AKR, AKS, ALL, ALLA, ALPHAX, ALUCON, AMARC, AMARIN, AMR, ANAN, ANI, AOT, APCO, APEX, APO, APP, APURE, AQUA, ARIN, ARIP, ARROW, ASAP, ASEFA, ASIA, ASIMAR, ASN, ATP30, AU, AUCTION, AURA, B52, BA, BBIK, BC, BCT, BDMS, BEAUTY, BEM, BGT, BH, BIG, BIOTEC, BIS, BIZ, BJC, BJCHI, BKD, BKGI, BLC, BLESS, BLISS, BM, BOL, BPS, BR, BRI, BROCK, BSM, BSRC, BTNC, BTW, BUI, BVG, CCET, CCP, CEYE, CGD, CH, CHARAN, CHASE, CHAYO, CHG, CHIC, CHO, CI, CITY, CIVIL, CK, CKP, CMAN, CMO, CMR, CNT, COCOCO, COLOR, COMAN, CPANEL, CPH, CPR, CPT, CRANE, CRD, CREDIT, CSP, CSR, CSS, CTW, CWT, D, DCON, DDD, DHOUSE, DITTO, DOD, DPAINT, DTCENT, DTICI, DV8, EASON, ECL, EE, EFORL, EMC, ETL, EURO, EVER, F&D, FANCY, FE, FLOYD, FMT, FN, FORTH, FTI, FVC, GABLE, GENCO, GFC, GIFT, GL, GLAND, GLOCON, GLORY, GRAMMY, GRAND, GSC, GTB, GTV, GYT, HEALTH, HFT, HL, HPT, HTECH, HUMAN, HYDRO, I2, IFEC, IIG, IMH, IND, INGRS, INSET, IP, IRC, IRCP, IT, ITD, ITNS, ITTHI, JAK, JCK, JCHK, JCT, JDF, JPARK, JSP, JUBILE, K, KAMART, KC, KCG, KCM, KDH, KEX, KIAT, KISS, KJL, KK, KKC, KLINIQU, KOOL, KTIS, KTMS, KUMWEL, KUN, KWC, KWI, KWM, KYE, LALIN, LDC, LEE, LIT, LOXLEY, LPH, LST, MANRIN, MASTER, MATI, MCA, M-CHAI, MCS, MDX, MEB, MEGA, METCO, MGC, MGI, MGT, MICRO, MIDA, MJD, MK, ML, MORE, MOSHI, MTW, MUD, MVP, NAM, NAT, NC, NCH, NCL, NDR, NEO, NETBAY, NEW, NEWS, NFC, NL, NNCL, NOK, NOVA, NPK, NSL, NTSC, NTV, NUSA, NV, NVD, NYT, OHTL, ONEE, ORN, PACE, PACO, PAF, PANEL, PCC, PEACE, PERM, PF, PHG, PICO, PIN, PJW, PLE, PLT, PMTA, POLAR, PORT, POST, PPM, PRAKIT, PRAPAT, PRECHA, PRI, PRIN, PRO, PROUD, PSG, PSP, PTC, PTL, QTCG, RAM, RCL, READY, RICHY, RJH, ROCK, ROCTEC, ROH, ROJNA, RP, RPC, RPH, RSP, S, S11, SABUY, SAF, SAFARI, SAFE, SALEE, SAM, SAMART, SAMCO, SAMTEL, SAUCE, SAV, SAWAD, SAWANG, SBNEXT, SCAP, SCGD, SCI, SCL, SCP, SDC, SE, SEAFCO, SECURE, SFT, SGF, SHANG, SHR, SIAM, SICT, SIMAT, SINGER, SINO, SISB, SJWD, SK, SKN, SKY, SLM, SLP, SMART, SMD, SMT, SNNP, SO, SOLAR, SONIC, SPA, SPCG, SPG, SPVI, SQ, SR, SRS, SSC, STANLY, STARK, STC, STEC, STECH, STHAI, STI, STP, STPI, SUC, SUN, SUPER, SUTHA, SVR, SVT, SWC, SYNEX, TACC, TAN, TAPAC, TC, TCC, TCJ, TCOAT, TEAM, TEAMG, TEKA, TFM, TGPRO, TH, THAI, THANA, THE, THG, THMUI, TIGER, TITLE, TK, TKC, TLI, TM, TMC, TMI, TMW, TNDT, TNH, TNPC, TOA, TPBI, TPCH, TPIPL, TPIPP, TPL, TPOLY, TPP, TPS, TQR, TR, TRC, TRITN, TRP, TRUBB, TRV, TSE, TTI, TTT, TTW, TURTLE, TVH, TVT, TWP, TYP, TYCN, UAC, UBA, UMI, UMS, UNIQ, UP, UPF, UPOIC, UREKA, UTP, UVAN, VARO, VIBHA, VL, VNG, VPO, VRANDA, WARRIX, WAVE, WELL, WFX, WGE, WIN, WINDOW, WINMED, WINNER, WORK, WORLD, WP, YGS, YONG, ZAA

**Explanations**

Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of November 1, 2023) are categorised into: companies that have declared their intention to join CAC, and companies certified by CAC.