



## PTT Global Chemical Public Company Limited

### Management Discussion and Analysis FY2023

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## 1. Executive Summary

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In Q4/2023, PTT Global Chemical Public Company Limited (“the Company”) had total sales revenue of Baht 162,264 million, increased by 1% from Q3/2023 and increased by 30% when compared to the same period last year. The overall sales volume increased, aligned with the refinery plant operating at full capacity, while there was a scheduled maintenance shutdown of the refinery plant during Q4/2022. The demand for petrochemical products remained soft due to the slow economic recovery and the pressure from new supplies during 2023.

In Q4/2023, the Company had Adjusted EBITDA of Baht 11,335 million, decreased by 8% from Q3/2023, as the GRM declined to 9.0 USD/barrel. The Aromatics business rebounded in performance with an increase in sales volume after the scheduled maintenance shutdown of Aromatics plant 2 in Q3/2023. In addition, the spread of the benzene product and by-product increased. Due to the scheduled maintenance of the Olefins plant 1 and Polymer plants, the sales volume of Polymers & Chemicals products declined by 7%. Polyethylene prices declined slightly compared to the previous quarter as the demand remains under pressure amid an uncertain economic recovery. Moreover, the Performance Chemicals business experienced a downturn as demand decreased due to seasonality, notably during the December holidays, especially in Europe and the USA. The overall petrochemical market remained soft, with demand across most value chains capped by recession worries, which affected the demand for downstream petrochemical products, and the addition of recent petrochemical capacity from China.

The Company had a Net Operating Loss Recurring<sup>1</sup> at Baht 1,949 million in Q4/2023. The Company recorded extraordinary items from stock loss net NRV of Baht 2,413 million, gain from commodity hedging of Baht 831 million, net gain from foreign exchange and financial derivatives of Baht 2,288 million. The Company established a business partnership and enhance competitiveness in GC Logistics Solutions Company Limited (GCL), through the divestment of GCL shares in the proportion of 50% to a subsidiary of WHA Corporation Public Company Limited (WHA). The transaction has a value of approximately Baht 2,640 million. As a result, the Company recorded gain on the transaction (including a gain from change in ownership interest in subsidiary to joint venture at fair value) at Baht 4,017 million. Additionally, the Company reduced overall debt through repurchase of USD bonds and record a gain of Baht 1,346 million through the repurchase during this quarter. The Company had a share of profit from investments of Baht 11 million, which increased from the previous quarter, primarily due to GCL's insurance claim related to a technical incident in warehouse construction occurred in 2022. However, performance of the petrochemical joint venture companies remained weak. In addition, the Company recorded extraordinary items of Baht 547 million in Q4/2023, mainly due to Baht 518 million from the revaluation of the investment in Thai Tank Terminal Company Limited (TTT) after the fair value assessment of the remaining shares was completed. The Company recorded net profit in Q4/2023 at Baht 5,081 million (Baht 1.13/share).

<sup>1</sup> Net Operating Profit/Loss excludes stock gain/loss net NRV, gain/loss from foreign exchange and financial derivative, gain/loss from commodity hedging, and extraordinary items

Table 1 : Performance Summary

(Unit: Million Baht)	Q4/2022 <sup>1</sup>	Q3/2023	Q4/2023	YoY % +/-	QoQ % +/-	2022 <sup>1</sup>	2023	YoY % +/-
Sales Revenue	124,780	160,392	162,264	30%	1%	678,267	616,635	-9%
EBITDA	2,072	13,753	12,585	>200%	-8%	22,420	40,449	80%
EBITDA Margin (%)	2%	9%	8%	6%	-1%	3%	7%	4%
Share of profit /(loss) of investments in JV and Associates	(381)	(179)	11	103%	106%	2,908	(725)	-125%
Net Profit/(Loss)	678	1,427	5,081	>200%	>200%	-8,752	999	111%
EPS (Baht/Share)	0.15	0.32	1.13	>200%	>200%	(1.94)	0.22	111%
Adjusted EBITDA <sup>2</sup>	5,234	12,307	11,335	117%	-8%	49,134	40,007	-19%
Adjusted EBITDA Margin (%)	4%	8%	7%	3%	-1%	7%	6%	-1%

Note:

1) There was a restatement of financial statement for the period of three months ended December 31, 2022 since the measurements of net assets acquired from acquisition of Allnex Holding GmbH were completed by an independent appraiser in the fourth quarter of the year 2022. The Company has adjusted the fair values of assets and liabilities acquired to reflect the final fair value determination in accordance with the accounting adjustment condition for business acquisition. The adjustment has no effect to the financial statement for the period of twelve months of fiscal year 2022 as previously reported.

2) Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss),NRV, Gain/(loss) from commodity hedging, and Extra item.

In 2023, the Company had total sales revenue of Baht 616,635 million, decreased by 9% due to price decreases across the petroleum and petrochemical products due to the ongoing economic recession that has not yet recovered. However, after the 2022 scheduled maintenance shutdown, the Refinery business sales volume increased with no shutdowns occurring in 2023. In 2022, the Russia-Ukraine conflict has triggered a global energy crisis, resulting in a sharp increase in energy prices. This resulted in an unusual surge in petroleum product prices in 2022. The Company had Adjusted EBITDA of Baht 40,007 million, decreased by 19% from the previous year. The petrochemical products spread declined during the year, especially the products in the Intermediates business and Polymers & Chemicals business which was affected by the new capacities during the year and the global economic slowdown.

In 2023, the Company incurred a Company had a Net Operating Loss Recurring<sup>1</sup> of Baht 3,587 million, due to the prevailing economic slowdown and the surplus supply of Petrochemical business persisting throughout the year. The Company recorded extraordinary items from stock loss net NRV of Baht 2,756 million, net gain from foreign exchange and financial derivatives of Baht 790 million. Additionally, as previously mentioned, through the sales of GCL shares of approximately Baht 2,640 million. The Company recorded gain on the transaction (including a gain from change in ownership interest in subsidiary to joint venture at fair value) at Baht 4,017 million. Moreover, as the Company reduced overall debt through repurchase of USD bonds, the Company recorded a gain of Baht 1,890 million. As a result, the Company improved performance beyond its regular business operations. The Company had share of loss from investments at Baht 725 million, which declined in comparison to the previous year as the petrochemical business encountered a downturn in overall performance throughout the current year. The Company recorded net profit in 2023 at Baht 999 million (Baht 0.22/share).

<sup>1</sup> Net Operating Profit/Loss excludes stock gain/loss net NRV, gain/loss from foreign exchange and financial derivative, gain/loss from commodity hedging, and extraordinary items

In 2023, Upstream business performance improved compared to the previous year, primarily attributed to enhanced Aromatics performance, supported by higher product spread of paraxylene and benzene and the rebound in downstream demand. While Refinery performance is impacted by the decline in the GRM, while the sales volume increased compared to the prior year, after the 2022 scheduled maintenance shutdowns. Olefins performance slightly decreased, aligned with the decreasing trend in product spread and was influenced by the addition of new capacities and a slowdown in downstream demand. Moreover, the Olefins 2 Modification Project commenced commercial operations, enabling the company to enhance feedstock flexibility as well as enhancing long-term competitive capabilities by utilizing propane as feedstock. Throughout the year, there were scheduled maintenance shutdowns for the Aromatics 2 plant, Olefins 1 plant, and Olefins 2/2 plant.

Intermediates business performance significantly declined, aligning with market trends, primarily due to downstream demand stagnated amid the economic slowdown. Additionally, new production capacities for phenol, bisphenol A (BPA), and purified terephthalic acid (PTA) from Chinese producers emerged in 2023. Throughout the year, there were scheduled maintenance shutdowns for Phenol plant 2, BPA plant, and Monoethylene Glycol (MEG) plant.

Polymers & Chemicals business declined from the previous year due to the decrease in spread of plastic resins products, especially polyethylene (PE), which declined by 19% compared to the prior year, driven by ongoing economic slowdown, high inflation, economic regression, and oversupply, resulting from the continuous introduction of new production capacities from China.

Bio & Circularity business performance decreased compared to the previous year, primarily due to softened demand, especially in the fatty alcohol downstream industries.

Performance Chemicals business performance decreased compared to the previous year, impacted by a decline in allnex sales volume, particularly in America and Europe, while remaining stable in Asia. Furthermore, Vencorex, a HDI derivatives producer, faced persistent challenges from soft demand and intense price competition.

Table 2 : Adjusted EBITDA by Business Unit

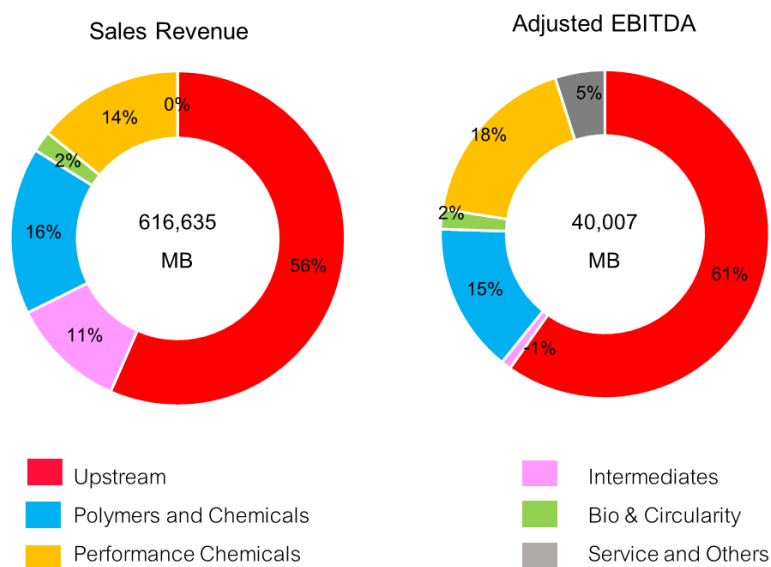
Adjusted EBITDA <sup>1</sup> Margin by Business Unit	Q4/2022 <sup>2</sup>	Q3/2023	Q4/2023	YoY		2022	2023	YoY
				% +/-	% +/-			
<b>Adjusted EBITDA (Million Baht)</b>								
Upstream	1,658	7,349	6,547	>200%	-11%	21,616	24,364	13%
Intermediates	96	237	192	101%	-19%	5,049	(359)	-107%
Polymers & Chemicals	53	2,513	1,181	>200%	-53%	7,580	6,178	-18%
Bio & Circularity	4	100	185	>200%	86%	1,579	673	-57%
Performance Chemicals	2,240	1,964	1,783	-20%	-9%	10,667	7,006	-34%
Service and Others	1,183	143	1,447	22%	>200%	2,643	2,145	-19%
<b>Total</b>	<b>5,234</b>	<b>12,307</b>	<b>11,335</b>	<b>117%</b>	<b>-8%</b>	<b>49,134</b>	<b>40,007</b>	<b>-19%</b>
<b>Adjusted EBITDA margin (%)</b>								
Upstream	3	8	7	4	(1)	6	7	1
Intermediates	1	1	1	1	(0)	6	(1)	(7)
Polymers & Chemicals	0	10	5	5	(5)	7	6	(1)
Bio & Circularity	0	3	5	5	2	7	4	(3)
Performance Chemicals	9	8	8	(1)	(0)	9	7	(2)
<b>Average</b>	<b>4</b>	<b>8</b>	<b>7</b>	<b>3</b>	<b>(1)</b>	<b>7</b>	<b>6</b>	<b>(1)</b>

Note

1) Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss),NRV, Gain/(loss) from commodity hedging, and Extra item.

2) There was a restatement of financial statement for the period of three months ended December 31, 2022 since the measurements of net assets acquired from acquisition of Allnex Holding GmbH were completed by an independent appraiser in the fourth quarter of the year 2022. The Company has adjusted the fair values of assets and liabilities acquired to reflect the final fair value determination in accordance with the accounting adjustment condition for business acquisition. The adjustment has no effect to the financial statement for the period of twelve months of fiscal year 2022 as previously reported.

**FY2023**



## 2. Performance Analysis by Business Unit

### 2.1 Upstream

Table 3: Price, Product Spreads and performance of Upstream

	Q4/2022	Q3/2023	Q4/2023	YoY % +/-	QoQ % +/-	2022	2023	YoY % +/-
Dubai Crude Oil (\$/bbl)	84.8	86.7	83.6	-2%	-4%	96.3	82.1	-15%
Diesel-Dubai (\$/bbl) <sup>1</sup>	39.3	26.9	21.1	-46%	-21%	34.3	21.9	-36%
LSFO-Dubai (\$/bbl)	14.4	8.9	14.1	-3%	59%	22.5	11.5	-49%
Gasoline-Dubai (\$/bbl)	9.4	18.9	12.5	34%	-34%	18.8	16.7	-12%
Jet-Dubai (\$/bbl)	33.5	26.1	23.6	-29%	-9%	30.3	22.5	-26%
<b>Market GRM (\$/bbl)</b>	<b>9.7</b>	<b>12.6</b>	<b>9.0</b>	<b>-8%</b>	<b>-29%</b>	<b>12.1</b>	<b>9.4</b>	<b>-22%</b>
Condensate (\$/ton)	732	716	687	-6%	-4%	830	679	-18%
Paraxylene (FECP)-Condensate (\$/ton)	249	357	330	33%	-8%	275	359	31%
Benzene-Condensate (\$/ton)	92	183	201	118%	10%	198	218	10%
<b>BTX P2F (\$/ton)</b>	<b>96</b>	<b>164</b>	<b>180</b>	<b>88%</b>	<b>10%</b>	<b>85</b>	<b>189</b>	<b>123%</b>
Naphtha (MOPJ) (\$/ton)	673	648	659	-2%	2%	785	649	-17%
Ethylene (SEA) (\$/ton)	905	822	937	3%	14%	1,054	889	-16%
Propylene (SEA) (\$/ton)	880	822	807	-8%	-2%	1,008	858	-15%
Hedging Gain/(Loss) (MB)	356	(2,729)	831	134%	130%	(23,057)	(626)	97%
Stock Gain/(Loss) and NRV (MB)	(3,455)	3,793	(2,592)	25%	-168%	(3,197)	(2,584)	19%
<b>Adjusted EBITDA<sup>2</sup> (MB)</b>	<b>1,658</b>	<b>7,349</b>	<b>6,547</b>	<b>&gt;200%</b>	<b>-11%</b>	<b>21,616</b>	<b>24,364</b>	<b>13%</b>
<b>Adjusted EBITDA (%)</b>	<b>3%</b>	<b>8%</b>	<b>7%</b>	<b>4%</b>	<b>-1%</b>	<b>6%</b>	<b>7%</b>	<b>1%</b>
Petroleum Product Sales Volume (million bbl)	7.7	16.2	18.1	135%	12%	50.8	64.8	27%
Petrochemical Product Sales Volume (million ton)	1.2	1.3	1.3	5%	-4%	5.1	5.1	0%

Note: 1 Diesel 50 ppm

2 Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss), NRV, Gain/(loss) from commodity hedging, and Extra item

In Q4/2023, Upstream business had Adjusted EBITDA of Baht 6,547 million, decreased by 11% from the previous quarter, and Adjusted EBITDA Margin of 7%. Petroleum product sales volume was 18.1 million barrels, and the Petrochemical product sales volume was 1.3 million tons. The factors supported decrease in the performance are as follows:

1. Refinery performance decreased from the previous quarter resulting from crude oil price decreased due to the economic recession in China, America, and Europe. The production level of the Middle East and Russia was stable, even with production cuts in Saudi Arabia. Petroleum product spreads were pressured by the economic recession which remained a key pressure factor to the demand side. Diesel spreads decreased due to more supply in the region after the completion of the maintenance shutdowns by refineries in Q4/2023, and lower export from Asia to Europe. Low Sulfur Fuel Oil spread increased as demand recovered from the winter season in North Asia and the emergency shutdown of a refinery in

Kuwait resulted to lower supply in the market. Gasoline spreads decreased due to the end of the driving season in America. The Company's Market GRM decreased to 9.0 USD/barrel. The increase in crude oil price resulted to the Company recording stock loss in this period.

2. Aromatics performance increased from the previous quarter. Paraxylene over condensate spread slightly decreased caused by a weak downstream market, especially lower demand of the polyester and textile market and easing of alternative feedstock reformat to gasoline blending. Benzene over condensate spread increased due to control supply by several producers. By-products spread increased in Q4/2023, especially the increase of LPG and naphtha prices. These factors resulted to an increase in Market P2F of this quarter to 180 USD per ton.
3. Olefins performance slightly increased from the previous quarter. Olefins product spread increased due to ethylene price has increased more than the naphtha feedstock price as here was control of production by several producers and the scheduled maintenance shutdown in Asia. However, the performance has a negative effect by higher Propane and LPG prices due to the winter season. In this quarter, there was the planned maintenance shutdown of Olefins plant 1.

For Upstream Business in 2023, the Adjusted EBITDA was Baht 24,364 million, which increased from the previous year by 13%, and the Adjusted EBITDA Margin was at 7%. The overall product sales volume increased from 2022. The Company's petroleum product sales volume at 64.8 million barrels. The Company's petrochemical product sales volume of 5.1 million tons. The Company had the planned maintenance shutdown of Olefins plant 2/2 in Q1/2023, the planned maintenance shutdown of Aromatics plant 2 in Q3/2023 and the planned maintenance shutdown of Olefins plant 1 in Q4/2023. The commercial operation of Olefins 2 Modification Project started in 2023, resulting in the Company increased propane usage as feedstock, which align with the Company's strategy to enhance feedstock flexibility and long-term competitiveness. The performance decreased as a result of the following:

1. For the Refinery business in 2023, the performance decreased from 2022 resulting from economic recession. Despite the China's re-opening in January 2023, the economic indicators presented the slowdown of economic activities and reflected that demand recovery was weaker than expected, which impacted the demand of Petroleum products. Also, geopolitical tensions remain a significant risk factor, including the ongoing conflicts in Russia and Ukraine which led to a decline of market supply. However, the production of the Middle East and Russia was stable, even with production cuts in Saudi Arabia. Petroleum product spreads decreased from 2022 which included Diesel, Jet, Gasoline, and Low Sulfur Fuel Oil spreads mainly due to higher export from China and freight rate. The Company's Market GRM in 2023 decreased to 9.4 USD per barrel.
2. For the Aromatics business in 2023, the performance increased from the previous year resulting from an increase in Paraxylene and Benzene over Condensate spread as a recovery of downstream market, especially the Polyester and textile market mainly due to China's re-opening in January 2023 and the shift in the feedstock to gasoline blending. Also, Benzene spread was supported by China's re-opening and the Chinese New Year holiday in January 2023 supported demand recovery of downstream market with control supply by several producers. The Market P2F in 2023 increased to 189 USD per ton.



3. For the Olefins business in 2023, the performance decreased from 2022 resulting from the Olefins products spread was decreased from the higher production capacities in Asia and a weak demand of downstream market from economic recession, despite control of production by Asian ethylene producers. The Company's sale volume was increased in 2023 mainly due to a start of the commercial operation of Olefins 2 Modification Project in July 2023.

## 2.2 Intermediates

Table 4: Price, Product Spreads and and performance of Intermediates

(Unit : USD per ton)	Q4/2022	Q3/2023	Q4/2023	YoY % +/-	QoQ % +/-	2022	2023	YoY % +/-
Mono-ethylene glycol (MEG -ACP)	837	845	840	0%	-1%	903	855	-5%
MEG - 0.65 Ethylene	249	310	231	-7%	-26%	218	278	28%
Phenol	1,094	988	952	-13%	-4%	1,309	977	-25%
Phenol spread*	355	295	293	-17%	-1%	357	252	-30%
Bisphenol A (BPA)	1,462	1,258	1,279	-13%	2%	1,860	1,272	-32%
BPA spread*	351	200	243	-31%	22%	553	230	-58%
Propylene Oxide (PO)	1,054	984	946	-10%	-4%	1,230	1,053	-14%
Purified Terephthalic Acid (PTA)	758	791	753	-1%	-5%	845	779	-8%
PTA - 0.67PX	101	72	72	-29%	-1%	105	83	-21%
Acrylonitrile (AN)	1,561	1,170	1,235	-21%	6%	1,706	1,310	-23%
AN - Propylene	681	348	428	-37%	23%	697	452	-35%
Methyl Methacrylate (MMA)	1,593	1,576	1,561	-2%	-1%	1,874	1,562	-17%
MMA - Naphtha	920	928	902	-2%	-3%	1,089	912	-16%
<b>Adjusted EBITDA (MB)</b>	<b>96</b>	<b>237</b>	<b>192</b>	<b>101%</b>	<b>-19%</b>	<b>5,049</b>	<b>(359)</b>	<b>-107%</b>
<b>Adjusted EBITDA (%)</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>0%</b>	<b>6%</b>	<b>-1%</b>	<b>-6%</b>
Sales Volume (Kton )	672	699	676	1%	-3%	2,874	2,602	-9%
Share of gain/(loss) from investment (MB)	(337)	(182)	(272)	19%	-49%	(592)	(1,014)	-71%

Note : Phenol spread derives from Phenol-0.878 BZ-0.474Propylene+0.616 Acetone and BPA spread derives from BPA-0.853 Phenol-0.273 Acetone

In Q4/2023, Intermediates business had Adjusted EBITDA of Baht 192 million, decreased by 19% from the previous quarter, and Adjusted EBITDA Margin of 1%. Overall sales volume was approximately 676,000 tons, decreased by 3% compared with the previous quarter mainly due to the planned maintenance shutdown of Phenol 2 in 27 days and BPA in 22 days.

In this quarter, the performance decreased from the previous quarter resulting from a decline in MEG product spread as a higher feedstock price due to the turnaround season. For Phenol business, the performance recovered due to an increase in BPA spread in Q4/2023, despite downstream demand stagnated amid the economic slowdown. Additionally, new production capacities for Phenol, BPA, and Purified Terephthalic Acid (PTA) from Chinese producers emerged. Textile industry (Filament and Staple Fiber), construction industry, and Electrical and Electronics (E&E) industry has weaker than expected recovery in the key markets such as China.

For Intermediates Business in 2023, the Adjusted EBITDA was Baht -359 million, which decreased from the previous year by 107%, and the Adjusted EBITDA Margin was at -1%. The overall product sales volume was approximately 2,602,000 ton which decreased from 2022 by 9% due to the planned maintenance shutdown of Phenol plant 2, BPA plant and MEG plant.

The overall market of Intermediates product in 2023 was weak compared to the market in 2022 due to the dampening demand impacted by the global economic slowdown, and new production capacities for Phenol, BPA, and Purified Terephthalic Acid (PTA) from Chinese producers.

## 2.3 Polymers & Chemicals

Table 5: Price, Product Spreads and and performance of Polymers & Chemicals

(Unit : USD per ton)	Q4/2022	Q3/2023	Q4/2023	YoY % +/-	QoQ % +/-	2022	2023	YoY % +/-
Average Polyethylene(PE)	1,047	1,005	1,001	-4%	0%	1,280	1,033	-19%
High-Density Polyethylene (HDPE)	1,033	1,032	1,023	-1%	-1%	1,203	1,044	-13%
HDPE-Ethylene	128	210	86	-33%	-59%	148	155	4%
Linear Low-Density Polyethylene (LLDPE)	999	990	975	-2%	-2%	1,208	1,013	-16%
LLDPE-Ethylene	94	168	38	-59%	-77%	154	124	-19%
Low-Density Polyethylen (LDPE)	1,110	993	1,005	-9%	1%	1,428	1,041	-27%
LDPE-Ethylene	205	171	69	-66%	-60%	373	152	-59%
Polyethylene Terephthalate (PET)	913	893	880	-4%	-1%	1,097	925	-16%
Polypropylene (PP)	995	969	968	-3%	0%	1,206	1,008	-16%
PP- Naphtha	323	321	309	-4%	-4%	421	358	-15%
Polyvinyl chloride (PVC)	773	823	760	-2%	-8%	1,103	814	-26%
PVC-0.5Ethylene	320	412	291	-9%	-29%	576	370	-36%
Polyols	1,404	1,323	1,258	-10%	-5%	1,656	1,366	-18%
Polyols-0.92PO	434	418	388	-11%	-7%	525	397	-24%
<b>Adjusted EBITDA (MB)</b>	<b>53</b>	<b>2,513</b>	<b>1,181</b>	<b>&gt;200%</b>	<b>-53%</b>	<b>7,580</b>	<b>6,178</b>	<b>-18%</b>
<b>Adjusted EBITDA (%)</b>	<b>0%</b>	<b>10%</b>	<b>5%</b>	<b>5%</b>	<b>-5%</b>	<b>7%</b>	<b>6%</b>	<b>1%</b>
<b>Sales Volume ( Kton )</b>	<b>541</b>	<b>632</b>	<b>590</b>	<b>9%</b>	<b>-7%</b>	<b>2,199</b>	<b>2,331</b>	<b>6%</b>
<b>Share of gain/(loss) from investment (MB)</b>	<b>(154)</b>	<b>(27)</b>	<b>(202)</b>	<b>-31%</b>	<b>&lt;-200%</b>	<b>1,598</b>	<b>(553)</b>	<b>-135%</b>

In Q4/2023, Polymers and Chemicals Business had Adjusted EBITDA of Baht 1,181 million, which decreased by 53 % from the previous quarter, resulting in Adjusted EBITDA Margin of 5%. Overall, the total sales volume of Polymers and Chemicals Products was approximately 590,000 tons, which decreased by 7% compared to the previous quarter, mainly due to scheduled maintenance shutdown at the Polymer plants during the fourth quarter.

In Q4/2023, the Polyethylene price remained relatively stable, with a slight drop compared to the previous quarter. While the demand of end-market continued to be sluggish, the ethylene raw material price went up and fluctuated in this quarter. In addition, during the holiday season in this quarter led to the less buying activities compared to the previous quarter. Overall, the market still faces pressure from the new supply entering in Vietnam in early 2024.

For the year 2023, Polymers and Chemicals business had an Adjusted EBITDA of Baht 6,178 million, which decreased by 18 percent from the previous year, resulting in an Adjusted EBITDA Margin of 6%. This reduction was attributed to a decrease in product spread. Overall sales volume was approximately 2,331,000 tons, which increased by 6% compared to the previous year.

In the overview of the market situation for Polymers and Chemicals business in the year 2023, there was a decline compared to last year, primarily due to the significant reduction in the product spread. The average price of PE decreased by 19 % from the previous year. The economic conditions, which had not fully recovered, continued to exert pressure on the market situation due to high inflation rates and an economic downturn. Additionally, there was excess supply resulting from ongoing large-scale new production capacity in China.

## 2.4 Bio & Circularity

Table 6: Price, Product Spreads and and performance of Bio & Circularity

(Unit : USD per ton)	Q4/2022	Q3/2023	Q4/2023	YoY % +/-	QoQ % +/-	2022	2023	YoY % +/-
Methyl Ester (ME) P2F (THB per Kilogram)	4.2	4.3	4.3	0%	0%	3.4	4.3	26%
Fatty Alcohol (FA) P2F	595	358	394	-34%	10%	514	434	-16%
<b>Adjusted EBITDA (MB)</b>	<b>4</b>	<b>100</b>	<b>185</b>	<b>&gt;200%</b>	<b>86%</b>	<b>1,579</b>	<b>673</b>	<b>-57%</b>
<b>Adjusted EBITDA (%)</b>	<b>0%</b>	<b>3%</b>	<b>5%</b>	<b>5%</b>	<b>2%</b>	<b>7%</b>	<b>4%</b>	<b>-3%</b>
ME Sales Volume ( Kton )	76	69	73	-4%	5%	293	320	9%
FA Sales Volume ( Kton )	21	24	29	37%	20%	97	97	0%
Share of gain/(loss) from investment (MB)	39	(170)	(71)	<-200%	58%	1,326	(204)	-115%

In Q4/2023, Bio and Circularity business had Adjusted EBITDA of Baht 185 million, increased by 86% from the previous quarter, and Adjusted EBITDA Margin of 5% resulting from Fatty Alcohol (FA) P2F increased, while sales volume increased due to increase in the stockpiling and high season for cosmetics and health product manufacturers boosted demand. Increased demand for Methyl Ester (ME) is driven by more traveling activities during the long holidays. The Thai government announced the biodiesel mandate remains at B7. ME prices increased with the rising crude palm oil (CPO) prices as lower output in Q4/2023.

For Bio and Circularity Business in FY2023, the Adjusted EBITDA was Baht 673 million, which decreased from the previous year by 57%, and the Adjusted EBITDA Margin was at 4%. This was impacted by the decrease in Fatty Alcohol P2F in 2023 due to economic activity in China being weaker than expected and slowdown purchase from Indian buyers. FA sales volume was stable, and FA price was decreased following a decline in feedstock price under pressure from high production in Malaysia of Crude Palm Kernel Oil (CPKO). Methyl Ester (ME) sales volume increased from the previous year as the Thai government announced to maintain B7 biodiesel mandate throughout the year. ME price decreased in 2023, but ME P2F increased due to decline in CPO price as feedstock.

## 2.5 Performance Chemicals

Table 7: Performance of Performance Chemicals

	Q4/2022 <sup>1</sup>	Q3/2023	Q4/2023	YoY % +/-	QoQ % +/-	2022	2023	YoY % +/-
Adjusted EBITDA (MB)	2,240	1,964	1,783	-20%	-9%	10,667	7,006	-34%
Adjusted EBITDA (%)	9%	8%	8%	-1%	0%	9%	7%	-2%
Sales Volume ( Kton )	183	201	188	3%	-6%	837	788	-6%
Share of gain/(loss) from investment (MB)	(16)	(38)	(75)	<-200%	-96%	(20)	(205)	<-200%

1) ) There was a restatement of financial statement for the period of three months ended December 31, 2022 since the measurements of net assets acquired from acquisition of Allnex Holding GmbH were completed by an independent appraiser in the fourth quarter of the year 2022. The Company has adjusted the fair values of assets and liabilities acquired to reflect the final fair value determination in accordance with the accounting adjustment condition for business acquisition. The adjustment has no effect to the financial statement for the period of twelve months of fiscal year 2022 as previously reported.

For Performance Chemicals Business in Q4/2023, the Adjusted EBITDA was Baht 1,783 million, which decreased from the previous quarter by 9%, and the Adjusted EBITDA Margin was at 8% due to the lower demand resulting in the drop in sales volume of allnex from the previous quarter. This was attributable to the lower demand during holiday season in December 2023. However, allnex continues to maintain its expense control and profit margin per unit, resulting in a slight decrease in overall Adjusted EBITDA. Meanwhile, the performance of Vencorex, a manufacturer of HDI derivatives products, continues to be impacted by tepid demand during the economic downturn.

For Performance Chemicals Business in 2023, the Adjusted EBITDA was Baht 7,006 million, which decreased from the previous year by over 34%, and the Adjusted EBITDA Margin was at 7% due to the drop in allnex's sales volume mainly in Europe and America region, following the destocking effect during economic downturn. In the other hand, there was a strong volume performance in China and India in second half of 2023. Vencorex was still impacted by sluggish demand during an economic downturn and intense price competition among manufacturers in the market.

### 3. Operating Performance

Unit : MB		Q4/2022 <sup>1</sup>	Q3/2023	Q4/2023	YoY % + /(-)	QoQ % + /(-)	2022	2023	YoY % + /(-)
1	Sales Revenue	124,780	160,392	162,264	30%	1%	678,267	616,635	-9%
2	Feedstock cost	(92,801)	(123,230)	(128,533)	-39%	-4%	(521,512)	(478,301)	8%
3	Product to Feed Margin	31,979	37,162	33,731	5%	-9%	156,755	138,334	-12%
4	Variable Cost	(13,053)	(12,008)	(10,517)	19%	12%	(51,148)	(47,944)	6%
5	Fixed OH	(8,173)	(8,408)	(9,654)	-18%	-15%	(32,542)	(33,666)	-3%
6	Stock Gain/(Loss) and NRV	(3,518)	3,674	(2,413)	31%	-166%	(3,657)	(2,756)	25%
7	Gain/(Loss) on Commodity Hedging	356	(2,729)	831	133%	130%	(23,057)	(627)	97%
8	Other Revenue	2,535	2,434	7,841	>200%	>200%	7,527	13,931	85%
9	SG&A Expenses	(8,053)	(6,372)	(7,234)	10%	-14%	(31,458)	(26,823)	15%
10	EBITDA	2,072	13,753	12,585	>200%	-8%	22,420	40,449	80%
11	Depreciation & Amortization	(6,361)	(7,225)	(6,533)	-3%	10%	(26,646)	(27,504)	-3%
12	Extra items	1,744	(625)	547	-69%	188%	893	(86)	-110%
13	EBIT	(2,545)	5,903	6,599	>200%	12%	(3,333)	12,859	>200%
14	Net financial expense	(2,405)	(2,714)	(2,683)	-12%	1%	(9,171)	(10,707)	-17%
15	FX Gain(Loss)	3,990	(1,146)	2,288	-43%	>200%	(313)	790	>200%
16	Share of gain/(loss) from investment	(381)	(179)	11	103%	106%	2,908	(725)	-125%
17	Corporate Income Tax	2,028	(467)	(1,199)	-159%	-157%	2,273	(1,352)	-159%
18	Net Profit/(Loss) after Tax	687	1,397	5,016	>200%	>200%	(7,636)	865	111%
Profit/(loss) attributable to:									
19	Non-controlling interests	9	(30)	(65)	<-200%	-117%	1,116	-134	-112%
20	Owners of the Company	678	1,427	5,081	>200%	>200%	(8,752)	999	111%
21	Adjusted EBITDA <sup>2</sup>	5,234	12,307	11,335	117%	-8%	49,134	40,007	-19%

Note:

- There was a restatement of financial statement for the period of three months ended December 31, 2022 since the measurements of net assets acquired from acquisition of Allnex Holding GmbH were completed by an independent appraiser in the fourth quarter of the year 2022. The Company has adjusted the fair values of assets and liabilities acquired to reflect the final fair value determination in accordance with the accounting adjustment condition for business acquisition. The adjustment has no effect to the financial statement for the period of twelve months of fiscal year 2022 as previously reported.
- Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss), NRV, Gain/(loss) from commodity hedging, and Extra item.

- In Q4/2023, the Company reported sales revenue of Baht 162,264 million, which increased by 1% from the previous quarter and 30% from the previous year respectively. This increase was primarily attributed to overall sales volumes improved higher compared to the same period of the previous year, mainly due to the refinery maintenance undertaken in Q4/2022. However, the average crude oil price and petrochemical prices declined across all products, reflecting the slow economic recovery.

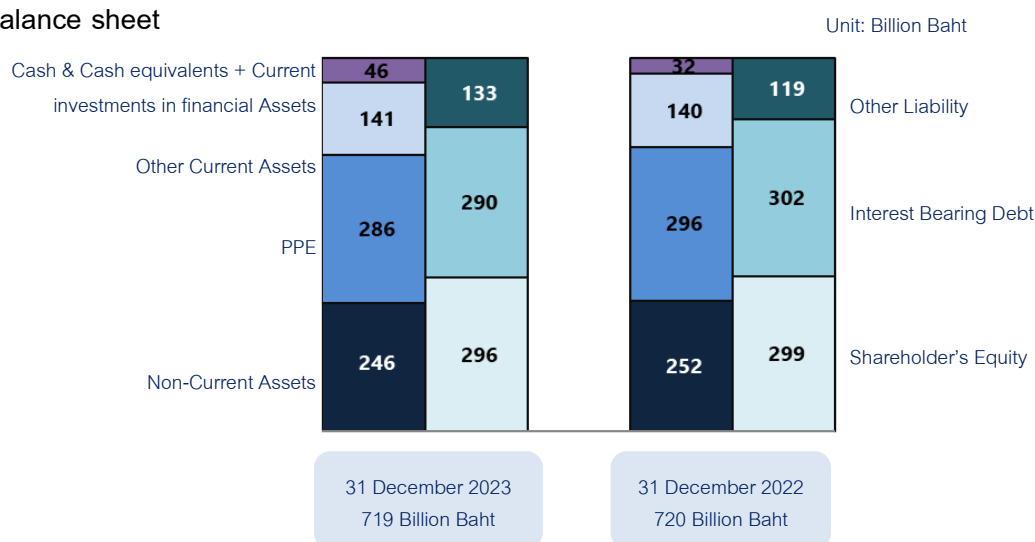
- Variable Costs in Q4/2023 decreased by 12% from the previous quarter due to the scheduled shutdown period of Olefins plant 1, Phenol plant 2, BPA plant, and Polymers plants.
- Fixed overhead and SG&A expenses in Q4/2023 increased by 14% from last quarter. The primary reason for this increase was restructuring expenses incurred during the period.
- In Q4/2023, the Company's other income increased from the gain on sales of GCL's shares (including a gain from change in ownership interest in subsidiary to joint venture at fair value) at Baht 4,017 million. Additionally, there was a gain from the repurchase of USD bonds amounting to Baht 1,346 million.
- Depreciation and Amortization in Q4/2023 decreased from the previous quarter by 10%, mainly from sales and lease-back of some plant assets.
- Financial expenses decreased from the previous quarter as the Company repurchased additional USD bonds amounting to approximately USD 214 million in the Q4/2023, totaling USD 355 million in 2023.
- The Company had foreign exchange gain in Q4/2023 of Baht 2,288 million due to the appreciation in Baht currency against the US dollar compared with Q3/2023.
- The Company recorded share of profit from investments amounting to Baht 11 million, marking an improvement on the previous quarter. This improvement was due to GCL's income from insurance claims related to the warehouse incident. However, the operational performance of the joint venture companies remained subdued during the economic downturn, which impacted the decline in the product spread.
- Additionally, the Company recorded extra items in the Q4/2023 amounting to Baht 547 million. This primarily attributed from the fair value assessment of the remaining investment in Thai Tank Terminal Company Limited, which was completed in Q4/2023 following the change in the ownership percentage to 36.43% in December 2022.

In 2023, the Company had sales revenue of Baht 616,635 million, decreased from last year by 9%. This decrease was primarily due to decreased prices of petroleum and petrochemical products across all categories, reflecting an ongoing economic downturn globally. In terms of sales volume, the refinery business increased from last year, as there was maintenance shutdown in Q4/2022, while there was no refinery turnaround in 2023. However, in 2022, there was a Russian-Ukrainian conflict, significantly impacted to energy prices, resulting in higher-than-normal petroleum product prices. In addition, variable expenses decreased compared to the previous year, mainly driven by lower utility expenses. Fixed overhead and SG&A expenses decreased, mainly attributed to lower sales volume. Additionally, the Company incurred losses from stock loss net NRV totaling Baht of 2,756 million, and hedging loss amounting to Baht 627 million. Other income increased by Baht 6,404 million, consisting of gain from sales of shares in GCL (including gains from fair value adjustments of the remaining investment in GCL) of Baht 4,017 million, gain from repurchase of USD bonds of Baht 1,890 million, and insurance claim income related to warehouse incident of Baht 500 million. In addition, the Company recorded extra items in 2023 amounting to losses of Baht 86 million, mainly from asset disposals totaling Baht 557 million Baht due to disruptions in preparing for a warehouse project, as well as

gain of Baht 518 million from the fair value assessment of the remaining investment in Thai Tank Terminal Company Limited, which was completed in Q4/2023 following the change in the ownership percentage to 36.43% in December 2022.

## 4. Statements of Financial Position

### 4.1 Balance sheet



#### Assets

As of December 31, 2023, the Company had total assets of Baht 719,005 million, decreased by Baht 960 million or 0.1% from December 31, 2022 and variance of the assets are described as follows:

- Total current assets increased by Baht 14,865 million mainly due to increase in cash and cash equivalents, and current financial assets by Baht 14,287 million (refer to cash flows analysis). There was an increase in account receivables by Baht 12,507 million due to the petroleum sales volume increased after completed the planned maintenance shutdown of Refinery in Q4/2022. Inventories decreased by Baht 8,102 million as Aromatics inventory was lower.
- Property, plant and equipment decreased by Baht 10,462 million mainly due to the completion of projects by Baht 7,777 million and depreciation by Baht 16,025 million.
- Non-current assets decreased by Baht 5,364 million from the fair value measurements on the investment in Global Power Synergy Public Company Limited (GPSC).

#### Liabilities

As of December 31, 2023, the Company had total liabilities of Baht 422,824 million, increased by Baht 1,686 million from December 31, 2022 and movements of liabilities were as follows:

- Interest-bearing debt (including Lease liabilities) decreased by Baht 11,751 million due to 1) the drawdown of short-term borrowings by Baht 11,400 million and long-term borrowings by Euro 64 million 2) Short-term loans were repaid by Baht 2,000 million, and Baht 7,157 million along with USD 100 million were used to repay long-term loans. Additionally, USD bonds total of USD 355 million were repurchased.
- Trade accounts payable increased by Baht 13,550 million mainly due to higher crude purchased after the completion of planned maintenance shutdown of Refinery and higher propane purchased.

- Other liabilities increased by Baht 613 million due to other payable increased by Baht 2,107 million, and a decline in payables to contractors by Baht 1,223 million. However, derivatives liabilities decreased by Baht 1,548 million related to commodity hedging.

### Shareholder's Equity

As of December 31, 2023, the Company had total shareholder's equity of Baht 296,181 million, which decreased by Baht 2,647 million from December 31, 2022 as a result from change in Other components of equity, which included the loss from fair value measurements in financial assets and the fair value measurements of GPSC.

## 4.2 Cashflow statement

Cashflow (Unit: Million Baht)	For the year Ended 31 December 2023
Net cash flows provided by operating activities	48,234
Net cash flows used in investing activities	(12,148)
Net cash flows provided by financing activities	(25,123)
<b>Net increase (decrease) in cash and cash equivalents, before effect from foreign exchange rate</b>	<b>10,963</b>
Effects of exchange rates on cash and cash equivalents	416
<b>Net decrease in cash and cash equivalents during the period</b>	<b>11,379</b>
Cash and cash equivalents at the beginning of the period	25,940
<b>Cash and cash equivalents at the end of the period</b>	<b>37,319</b>
Current investments in financial assets at the end of the period	8,930
<b>Net cash and cash equivalent and investment at the end of the period</b>	<b>46,249</b>

For the period ended December 31, 2023, the Company had cash flow activities as follows:

- Cash flows received from operating activities of Baht 48,234 million due to operating activities and decrease in working capital.
- Cash flow used in investing activities of Baht 12,148 million. The Company had cash paid for property, plant, and equipment, and intangible assets amounting to Baht 19,586 million. The Company had cash received from disposal of property, plant and equipment of Baht 4,503 million, dividends received of Baht 2,566 million, and cash received from sales of GCL shares.
- Cash flow provided by financing activities of Baht 25,123 million mainly due to the repayment of short-term and long-term borrowings from financial institutions of Baht 15,102 million, cash paid for finance





costs of Baht 10,861 million, cash paid for bond repayment of Baht 10,333 million, and cash paid related to lease liabilities of Baht 3,186 million. Meanwhile, the Company had cash received from short-term and long-term borrowings from financial institutions of Baht 15,535 million.

As a result, as of December 31, 2023, the Company had total cash and cash Equivalents of Baht 37,319 million, along with current investments in financial assets of Baht 8,930 million. Hence, the Company had total cash and cash equivalent and investment of Baht 46,249 million. The Company had Net interest-bearing debt to equity at 0.82 times and Net interest-bearing debt to EBITDA at 6.03 times.

### 4.3 Key Financial Ratios

Financial Ratios	Q4/2022 (Restatement)	Q3/2023	Q4/2023
Current Ratio (Times)	1.65	1.52	1.48
EBITDA to Sales Revenue (%)	3.31%	5.17%	6.56%
Net Profits to Sales Revenues (%)	-1.29%	-0.59%	0.16%
Return on Total Assets (%)	-0.01%	0.80%	1.94%
Return on Equity (%)	-2.87%	-1.18%	0.34%
Interest Bearing Debt to Equity (Times)	1.01	1.04	0.98
Net Interest Bearing Debt to Equity (Times)	0.90	0.88	0.82
Interest Bearing Debt to EBITDA (Times)	13.46	10.18	7.17
Net Interest Bearing Debt to EBITDA (Times)	12.04	8.59	6.03

Remarks:

Current Ratio	=	Current Assets divided by Current Liabilities
EBITDA to Sales Revenue	=	EBITDA divided by Sales Revenue
Net Profit to Sales Revenue	=	Profits attributable to Owners of the Company to Sales Revenue
Return on Total Assets	=	Earnings before Interest and Tax divided by Average Total Assets
Return on Equity	=	Profits attributable to Owners of the Company divided by Average Equity attributable to Owners of the Company
Interest Bearing Debt to Equity	=	Interest Bearing Debt divided by Shareholder's Equity
Net Interest Bearing Debt to Equity	=	Interest Bearing Debt net Cash and Cash Equivalent and Current Investments in financial assets divided by Shareholder's Equity
Interest Bearing Debt to EBITA	=	Interest Bearing Debt net Cash and Cash Equivalent and Current Investments in financial assets divided by EBITDA
Net Interest Bearing Debt to EBITDA	=	Interest Bearing Debt net Cash and Cash Equivalent and Current Investments in financial assets divided by EBITDA

## 5. Projects Progress

In 2023, the Olefins 2 Modification Project started commercial operation in July 2023 allowing the Company to increase propane usage as feedstock and align with the Company's strategy to enhance feedstock flexibility and long-term competitiveness. The project has increased the Company's ethylene and propylene capacity from 3,680,000 tons per year to 3,790,000 tons per year.

### Estimated Annual CAPEX of PTTGC Group for the next 5 years

CAPEX of PTTGC group	Total	Estimated Annual CAPEX (M.USD)				
	2024-2028	2024	2025	2026	2027	2028
1) PTTGC group excluding allnex	192	151	37	3	1	-
2) allnex expansion & growth Capex	474	111	114	95	91	63
<b>total</b>	<b>666</b>	<b>262</b>	<b>151</b>	<b>98</b>	<b>92</b>	<b>63</b>

Notes: 1. Group annual maintenance ~ 400 M.USD (including allnex Holding GmbH)

2. Other projects such as IT & digital, new office facility, operational excellence etc.

3. allnex expansion & growth Capex based on capex plan, including committed and uncommitted projects

4. FX assumption for USD/EURO is 1.01 for allnex CAPEX plan.

## 6. Market and Business Outlook in 2024

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Global economic growth in 2024 remains challenging, even though there have been efforts to recover from the COVID-19 crisis, conflicts in Ukraine, and energy crises. The global growth outlook continues to be weak both in the overall sentiment and on a country-by-country basis. This is attributable to the impact of interest rates hike that have persisted to the highest level in the past decade in key global economies, as well as economic challenges. Furthermore, geopolitical tensions remain a significant risk factor, including the ongoing conflicts in Russia and Ukraine, and the Israel-Hamas war. It is expected that global growth will slow down from 3.5% in 2023 to 3.0% in 2024 and 2.9% in 2025, according to the International Monetary Fund (IMF, October 2023). Nevertheless, the economic situation is expected to gradually improve in the latter half of the year after international economic stimulus measures, leading to a slowly improving overall economic outlook.

### Upstream business unit

The Company anticipates that the trend of Dubai crude oil prices in 2024 will average between 75-85 USD/barrel. However, there are several factors contributing to the challenge in crude oil market. These factors include ongoing inflationary pressures, persistently high-interest rates from previous years, and uncertainties related to the economic recovery in China, which can dampen oil demand. In terms of supply, OPEC and its allies (OPEC plus), expect a continuous control over production levels to maintain market stability. On the other hand, the supply shortage can be supported by increased production from non-OPEC countries, such as the United States, Brazil, or Iran.

For petroleum products, the Company anticipates that the price and products spread in 2024 will be softened compared to 2023. This is due to economic pressure factors, high-interest rate policy effects, and uncertainties in the global economy. Additionally, changes in consumer behavior and market uncertainties contribute to the expected weakening of demand. As a result, Diesel over Dubai spread is expected to be 15-19 USD/barrel, while Low Sulfur Fuel Oil (LSFO) over Dubai spread will be in the range of 9-12 USD/barrel. The expected Gasoline over Dubai spread is around 14-18 USD/barrel. The Company continues to manage its production and sales strategies to align with the evolving market conditions. This includes optimizing by closely monitoring the market situation for crude oil supply and product spread. The Company expects that the Refinery's utilization rate to be at 101% in 2024.

For Aromatics products, the Company anticipates that the product spread for paraxylene and naphtha in 2024 will decrease to a range of 370-390 USD/ton, down from 2023. Economic challenges in the global economy and changing consumer behavior contribute to the expected decrease. The spreads for benzene and naphtha are expected to be around 240-260 USD/ton, which is similar to 2023. The economic outlook is expected to gradually improve in the latter half of 2024, driven by continued economic stimulus package by the Chinese government, which can positively drive up the benzene market. The production capacity utilization rate for the aromatics is expected to be at 94% in 2024.

The outlook for Olefins products, the Company anticipates that Ethylene products price will be at 910-940 USD/ton and Propylene price is expected to be 900-930 USD/ton. Both will increase from 2023. Economic conditions are expected to slowly improve in the second half of 2024, which can support the overall market for ethylene and propylene. The Company expects Olefins utilization rate to be around 92% in 2024.

### Intermediates business unit

For Phenol market trend in 2024, the Company expects that Phenol P2F spread will be in the range of 210-230 USD/ton. This reflects a decrease from 2023 and is impacted by ongoing economic challenges in the first half of the year, with a gradual improvement expected in the latter half of 2024. The economic stimulus package in

China is anticipated to support this improvement. However, the continuous growth of new capacities entered in China will exert pressure on Phenol products.

Regarding MEG (Monoethylene Glycol) market trends, the company expects the price of MEG to be around 540-560 USD/ton with an upward trend. There is an expectation of a gradual recovery in the second half of 2024 as economic pressures will start to ease. This will support the demand for MEG products. For PTA (Purified Terephthalic Acid) products, the Company anticipates that the product spread for PTA will gradually improve in 2024 as various economic activities worldwide, including trading and tourism, return to more normal levels.

#### Polymers & Chemicals Business unit

The Company anticipates that the average Polyethylene price in 2024 is expected to be 1,050-1,080 USD/ton, with a slight increase from 2024. The demand for plastic resins is expected to be supported by economic stimulus package and recovery measures implemented by countries worldwide. However, there are factors that may exert pressure, such as economic setbacks and global central bank policies to manage inflation rates. Additionally, there is still some uncertainty related to geopolitical factors in the European and Middle East region. In terms of suppliers, the Company anticipates that there will be additional capacities coming from countries such as China, India, and the United States. The Company expects the Polyethylene plants utilization rate to be around 104% in 2024.

#### Performance Chemicals Business unit

The economic slowdown is expected to continue to have a prolonged impact on the demand for industrial Coating Resin products. However, it is anticipated that the growth in demand for products in this business unit will outpace the overall GDP growth. This is due to several factors that underscore the importance of quality control and surface protection in various industries that utilize coating resins, particularly in industries such as automotive.

## 7. Sustainability Management (Environment Social Governance)

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GC strives to operate for the organization's growth as well as the balance of the three dimensions, namely environment, social, governance and economic (ESG). Our success has been reflected throughout the recognitions both national and international. The company has implemented sustainability strategies and achieved the objectives as our goals. We have also attained outstanding results under sustainability strategy (Step up):

### Sustainability Management in the Environmental Dimension

**Efficiency-driven:** GC is undertaking improvements in energy management by incorporating low-carbon technologies into the production processes and transitioning to renewable energy or low-carbon energy sources. This includes 74 energy conservation projects, efficiency enhancements in the refining process, the development of the Word Membrane Platform, and the implementation of renewable energy projects. The objective is to reduce greenhouse gas emissions from the production processes.

**Portfolio-driven:** GC is undertaking a business portfolio adjustment to become a low-carbon business. This involves a focus on investments in three business groups:

- High Value Business (HVB): Developing highly efficient products from the markets and technologies, such as coatings with low volatile organic compound (VOC) content.
- Bio-based Products Group: Producing bio-based products, including Fatty Acid Methyl Ester (FAME), Refined Glycerin, products from palm kernel oil, and the bio-plastic PLA (Polylactic Acid).
- Circularity & Recycling Group: Utilizing innovations and advanced manufacturing technologies to enhance the quality of recycled plastics, making them usable and sustainable and operating the ENVICCO plastic recycling plant, meeting global standards, and supporting end-to-end waste management through projects like the YOUturn platform and the Upcycling Upstyling initiative.

Additionally, the company has committed to the principles of Product Stewardship, applying an eco-design approach and Life Cycle Assessment (LCA) in research and development. This ensures that products are environmentally friendly, safe for consumption and use, and optimize resource use throughout the entire production and disposal processes.

**Compensation-driven:** GC is managing greenhouse gas emissions through various approaches, including Nature-based solutions and technological interventions. This involves compensating for remaining emissions through natural carbon absorption, utilizing technologies such as Carbon Capture and Storage (CCS), and exploring new alternative emerging carbon capture technologies. In 2022, the company is studying new alternative technologies for capturing and storing carbon dioxide (Alternative Emerging Carbon Capture Technology) in collaboration with companies in the PTT Group. The focus is on conserving natural resources, including ongoing efforts to restore and enhance the balance of forest ecosystems. This includes continuous reforestation efforts to register carbon credits, both within the company's areas and in collaboration with government agencies, private sectors, and various communities in various projects. Since 2013, the company has been consistently involved in projects, spanning over 6,000 rai, such as the Forest Conservation and Carbon Credit Registration Project, Huai Mahat Forest Restoration

Project, Eco-Forest Rayong Wanarom plantation project, Mangrove Reforestation Project, and the tree planting project namely "The More You Plant, the Better" in collaboration with the Bangkok Metropolitan Administration. Furthermore, the company has entered into agreements for community forest projects with the Mae Fah Luang Foundation, focusing on the maintenance, restoration, and tree planting in the community forest. As part of these initiatives, the company has received carbon credits for a duration of 3 years from the project.

### **Sustainability Management in the Social Dimension**

GC is determined to be a leading organization in operational efficiency in the chemical products industry and aims to be a Top Quartile Employer in the Asia-Pacific (APAC) region. It has developed an Organization Transformation Strategy for the years 2022-2026, emphasizing management in four main areas: Skills & Competencies, Resource Planning, Great Well-being, and Policy & System Transformation. This strategic focus supports the company's overall strategy, enabling it to adapt to long-term business fluctuations and competition.

GC has developed a group-wide strategy for social responsibility, focusing on creating shared value (CSV) and conducting business as a social enterprise (SE). The goal is to become a sustainable partner for the community by 2024. The company has prioritized three key components:

- Better Living: Emphasizes improving the quality of life in communities through initiatives promoting self-sufficiency and sustainability. A notable project is the Community Waste Model, a collaboration with six communities in Rayong and Nakhon Pathom provinces. This project establishes waste management centers, collecting and recycling plastic bottles to create employment and generate income for the communities. In 2022, it contributed over 3.7 million Baht to the communities.
- Sharing: Promotes organizational strength by sharing ideas and innovations to create value for communities and society. An outstanding project is the Smile-Creation Innovation Project, namely Smart Farming by GC. This project incorporates innovations such as plastic coverings for greenhouses and stretchable bags for vegetables. It integrates alternative energy and IoT technologies to elevate agricultural practices, providing sustainable income to communities. In 2022, it generated over 860,000 Baht, with an average monthly income increase of approximately 31,800 Baht compared to 2021.
- Ecology: Prioritizes business practices that align with sustainable ecology throughout the value chain. The Water Conservation project, a collaboration between the company, the government, educational institutions, and communities in Rayong, focuses on addressing flood-drought issues. Activities include creating water catchment barriers with winged plastic bags and implementing a closed underground water bank. This project alleviates saltwater intrusion, drought, and flood issues in communities. In 2022, it contributed an estimated value of 126,200 Baht per year.

### **Sustainability Management in the Governance & Economic Dimension**

GC continuously updates its innovation strategy by planning and allocating resources to support research and the creation of new innovations. This strengthens the company's competitiveness and promotes the achievement of its net greenhouse gas emission targets. The innovation management strategy and operational framework include:

- Competitiveness & Decarbonization: Focuses on enhancing competitiveness and reducing greenhouse gas emissions. Ongoing projects include low-carbon energy production, chemical recycling, syngas, textile recycling, and carbon capture.
- Market-Focused Innovation: Involves working on innovative product development aligned with market demands.
- Innovation Growth Platform: Establishes platforms to foster innovation growth.
- Enabler: Strengthens support units to facilitate innovation.

Additionally, the company supports long-term collaboration with external networks, organizations, or experts and enhances the potential and capabilities of its employees. In 2022, various innovation projects were undertaken, including the establishment of the InnoPlus Solution Center, serving as a hub connecting business networks throughout the value chain. Collaboration initiatives involved a Memorandum of Understanding (MOU) with the School of Molecular Science and Engineering, the Vidyasirimedhi Institute of Science and Technology (BSE, VISTEC). This collaboration focused on synthetic biology research, biomolecular engineering, and green business, aiming to elevate the company's position in high-value businesses. The company is actively seeking technologies and investment opportunities, emphasizing technology groups such as decarbonization, advanced materials, biotech and life science, clean technology, and digital platforms within the Green Century Ventures project.

GC's firm commitment to sustainability is in line with the national approach and in accordance with international standards. The company has achieved notable success, reflected through leadership in four leading sustainability indices:

1. Dow Jones Sustainability Indices (DJSI): Ranked first in the Dow Jones Sustainability Indices for the Chemicals sector for five consecutive years, making it the first organization globally in this category.
2. Morgan Stanley Capital International (MSCI): Received an MSCI ESG Rating of A in the Chemicals industry group.
3. EcoVadis: Awarded the highest Platinum rating by EcoVadis, placing the company in the top 1% of the basic chemicals manufacturing industry.
4. Stock Exchange of Thailand (SET): Evaluated with a sustainable rating of AAA in the SET ESG Ratings. Listed as a sustainable stock for the 9th consecutive year and received the SET Awards 2023 in the Sustainability Excellence category, specifically the Sustainability Awards of Honor, for the 6th consecutive year.

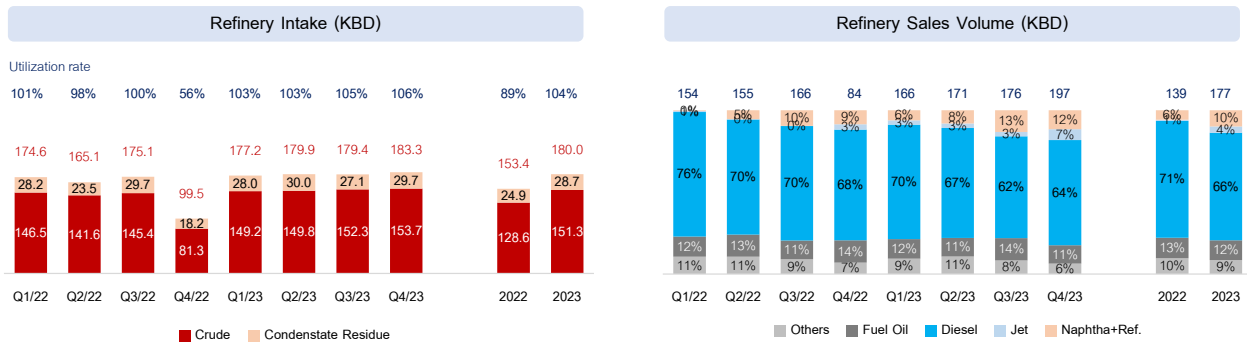
These examples of success in sustainability leadership undoubtedly reflect GC's commitment to grow with ESG as our foundation.



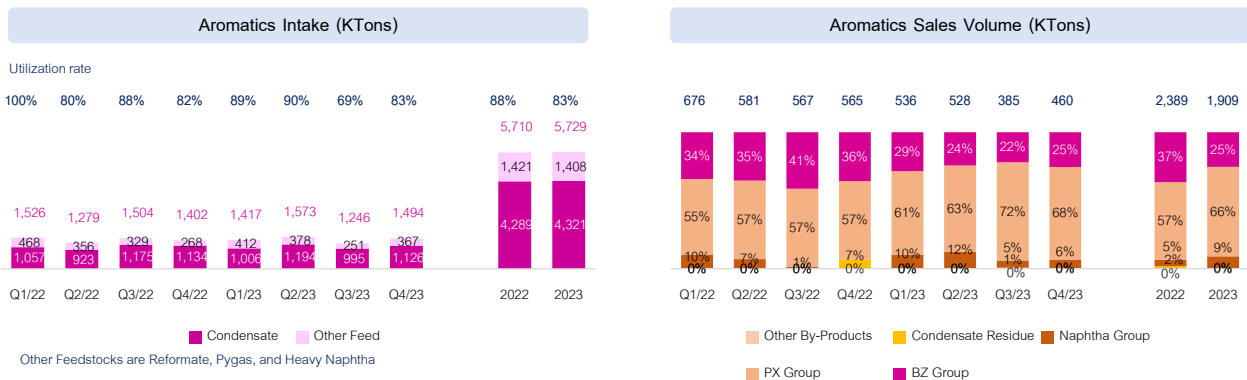
## 8. Appendix

### 8.1 Production and Sales

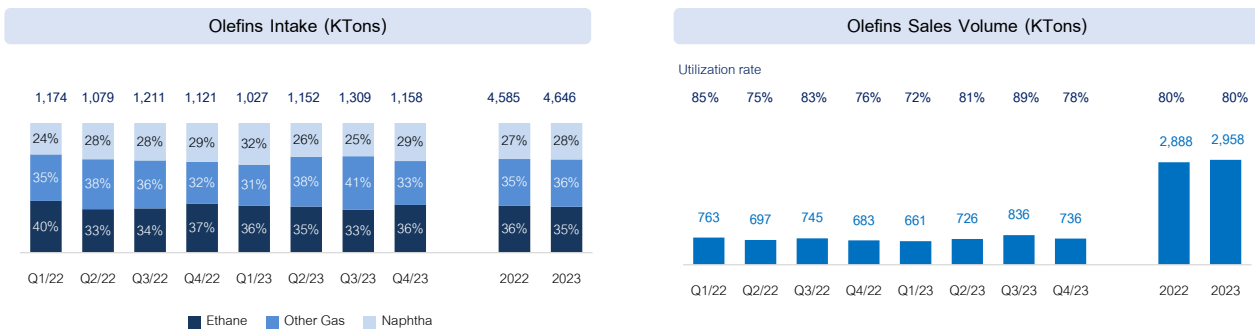
Graph 1: Refinery Intake and Sales Volume



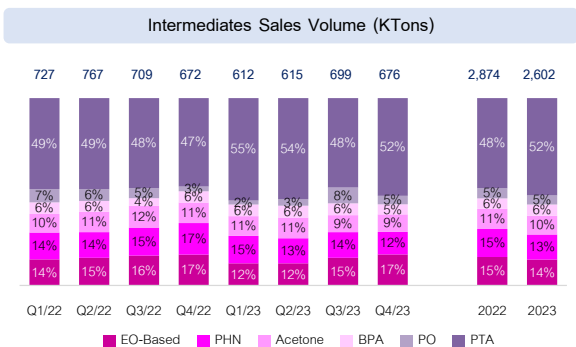
Graph 2: Aromatics Intake and Sales Volume (BTX)



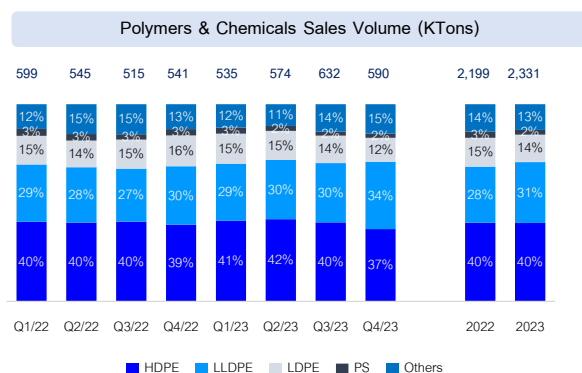
Graph 3: Olefins Intake and Olefins and Derivatives Sales Volume



Graph 4: Intermediates products sales Volume



Graph 5: Polymers & Chemicals products sales Volume



Graph 6: Utilization rate

Utilization rate	Q1/22	Q2/22	Q3/22	Q4/22	Q1/23	Q2/23	Q3/23	Q4/23	2022	2023
<b>Upstream</b>										
- Refinery	101%	98%	100%	56%	103%	103%	105%	106%	89%	104%
- Aromatics	100%	80%	88%	82%	89%	90%	69%	83%	88%	83%
- Olefins	85%	75%	83%	76%	72%	81%	89%	78%	80%	80%
<b>Intermediates</b>										
- MEG	66%	88%	84%	79%	13%	4%	90%	78%	79%	47%
- Phenol	119%	118%	116%	107%	104%	98%	102%	91%	115%	99%
- BPA	119%	112%	71%	107%	98%	103%	103%	95%	102%	100%
- PO	104%	81%	69%	22%	26%	46%	106%	61%	69%	60%
<b>Polymers &amp; Chemicals</b>										
HDPE	111%	102%	95%	92%	106%	110%	110%	97%	100%	106%
LLDPE	92%	80%	97%	88%	93%	93%	105%	98%	89%	97%
LDPE	128%	85%	128%	121%	96%	119%	115%	93%	115%	106%
Total PE	106%	90%	101%	95%	99%	104%	109%	97%	98%	102%

## 8.2 Detail of Adjusted EBITDA by Business Unit

Adjusted EBITDA <sup>1</sup> Margin by Business Unit	Q4/2022 <sup>2</sup>	Q3/2023	Q4/2023	YoY		2022	2023	YoY	
				% +/-	% +/-			% +/-	% +/-
<b>Adjusted EBITDA (Million Baht)</b>									
Upstream	1,658	7,349	6,547	>200%	-11%	21,616	24,364	13%	
Refinery	2,449	6,463	4,759	94%	-26%	21,046	18,702	-11%	
Aromatics	(409)	1,113	1,697	>200%	52%	(850)	6,541	>200%	
Olefins	(382)	(227)	92	124%	140%	1,421	(880)	-162%	
Intermediates	96	237	192	101%	-19%	5,049	(359)	-107%	
Polymers & Chemicals	53	2,513	1,181	>200%	-53%	7,580	6,178	-18%	
Bio & Circularity	4	100	185	>200%	86%	1,579	673	-57%	
Performance Chemicals	2,240	1,964	1,783	-20%	-9%	10,667	7,006	-34%	
Service and Others	1,183	143	1,447	22%	>200%	2,643	2,145	-19%	
<b>Total</b>	<b>5,234</b>	<b>12,307</b>	<b>11,335</b>	<b>117%</b>	<b>-8%</b>	<b>49,134</b>	<b>40,007</b>	<b>-19%</b>	
<b>Adjusted EBITDA margin (%)</b>									
Upstream	3	8	7	4	(1)	6	7	1	
Intermediates	1	1	1	1	(0)	6	(1)	(7)	
Polymers & Chemicals	0	10	5	5	(5)	7	6	(1)	
Bio & Circularity	0	3	5	5	2	7	4	(3)	
Performance Chemicals	9	8	8	(1)	(0)	9	7	(2)	
<b>Average</b>	<b>4</b>	<b>8</b>	<b>7</b>	<b>3</b>	<b>(1)</b>	<b>7</b>	<b>6</b>	<b>(1)</b>	

Note:

1 Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss), NRV, Gain/(loss) from commodity hedging, and Extra item

2 There was a restatement of financial statement for the period of three months ended December 31, 2022 since the measurements of net assets acquired from acquisition of Allnex Holding GmbH were completed by an independent appraiser in the fourth quarter of the year 2022. The Company has adjusted the fair values of assets and liabilities acquired to reflect the final fair value determination in accordance with the accounting adjustment condition for business acquisition. The adjustment has no effect to the financial statement for the period of twelve months of fiscal year 2022 as previously reported.

### 8.3 Planned Maintenance Shutdown Schedule 2024

Plant		2024											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
OLE	Cracker		60		OLE2/2								
	Oieflex												
POL	HDPE								15	HDPE2			
	LDPE						24						
	LLDPE I				34								
	LLDPE II												
	PS										33		
EOB	TOCGC		49										
	EA		55										
PHN	Phenol I												
	Phenol II												
	BPA				30								
REF	Refinery												
ARO1	Aromatics I												
	Aromatics II												
GCO	PO												