



MANAGEMENT DISCUSSION & ANALYSIS

2Q2023



PTT PUBLIC COMPANY LIMITED

Management's Discussion and Analysis (MD&A) and operating result for the three-month and six-month periods ended 30 June 2023

Executive Summary

Unit: Million Baht	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Sales Revenue	926,954	756,690	778,065	(16.1%)	2.8%	1,685,419	1,534,755	(8.9%)
EBITDA	182,777	104,008	92,625	(49.3%)	(10.9%)	323,689	196,633	(39.3%)
Net Profit	38,843	27,855	20,107	(48.2%)	(27.8%)	63,635	47,962	(24.6%)
Earnings per share (Baht/share)	1.37	0.98	0.70	(48.9%)	(28.6%)	2.24	1.68	(25.0%)
Average Dubai Price (US\$/barrel)	108.1	80.3	77.8	(28.0%)	(3.1%)	101.8	79.0	(22.4%)

In the second quarter of 2023 (2Q2023), PTT and its subsidiaries reported Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) in an amount of Baht 92,625 million decreased by Baht 90,152 million or 49.3% from the second quarter of 2022 (2Q2022) of Baht 182,777 million mainly from Petrochemical and Refining business. Refining business's performance decreased primarily due to stock loss in this period. PTT Group's stock loss in 2Q2023 was approximately Baht 4,000 million, while in 2Q2022 there was a stock gain approximately Baht 19,000 million. Additionally, market GRM decreased from US\$ 21.3 per bbl in 2Q2022 to US\$ 4.1 per bbl in 2Q2023 due to lower spread of jet, gasoil, and gasoline over crude oil, despite the increase in sales volume. Moreover, Petrochemical business's performance decreased mainly from Olefins business due to the decrease in products spreads. Exploration and Production business's performance decreased following the lower sales revenue. Others business's performance decreased from completed disposal of coal business. Oil and Retail business and International Trading business's performance decreased mainly from the decrease in average gross margin per unit, despite an increase in sales volume. In addition, Gas business's performance decreased mainly from Gas Separation Plant (GSP) business due to a lower average selling price in all products following the decline in petrochemical referenced price, in spite of a higher sales volume. Moreover, gross profit of Transmission pipelines (TM) business decreased due to the revised gas pipeline tariff. In 2Q2023, net income of PTT and its subsidiaries was Baht 20,107 million decreased by Baht 18,736 million or 48.2% from 2Q2022 at Baht 38,843 million following the lower EBITDA. However, there was a higher gain on derivative and lower loss on foreign exchange rate, together with lower corporate income taxes. Moreover, there were gain recognition of non-recurring items (PTT's portion after tax) in 2Q2023 approximately Baht 20 million mainly from the discount from production shortfall of PTT. While, in 2Q2022, there was a loss recognition approximately Baht 1,500 million mainly from Thaioil Public Company Limited (TOP)'s tax on investment for sales of Global Power Synergy Public Company Limited (GPSC) offset with the discount from production shortfall of PTT.

In 2Q2023, PTT and its subsidiaries reported EBITDA in an amount of Baht 92,625 decreased by Baht 11,383 million or 10.9% from the first quarter of 2023 (1Q2023) at Baht 104,008 million mainly from Petrochemical and Refining business. Refining business's performance decreased as market GRM decreased from US\$ 8.4 per bbl in 1Q2023 to US\$ 4.1 per bbl in 2Q2023 due to lower spread of jet and gasoil over crude oil, despite higher sales volume. PTT Group

also had lower stock loss. In 2Q2023 there was stock loss approximately Baht 4,000 million, while in 1Q2023 stock loss was Baht 6,000 million. Petrochemical business's performance also decreased both in Olefins and Aromatics businesses due to lower product to feed. **Exploration and Production business's** performance decreased due to lower average selling price and sales volume. Moreover, **International Trading business's** performance decreased mainly from lower margin per unit of crude trading following the decreased in product spreads, despite higher sales volume. However, **Gas business's** performance rose from Supply and Marketing (S&M) and NGV businesses due to lower gas cost, in line with pool gas price. In addition, GSP business also had lower gas cost following gulf gas price and higher sales volume, even though average selling prices were lower in all products following the decline in petrochemical referenced prices. **In 2Q2023, PTT and its subsidiaries' net profit amounting to Baht 20,107 million decreased by Baht 7,748 million or 27.8% from 1Q2023 at Baht 27,855 million** mainly from the decrease of EBITDA and higher loss on foreign exchange rate. However, there was gain on derivatives, and the corporate income taxes decrease from soften performances of PTT and its subsidiaries. In addition, there was a gain recognition of non-recurring items (PTT's portion after tax) approximately Baht 20 million mainly from the discount from production shortfall of PTT. While, in 1Q2023, there was a loss recognition approximately Baht 100 million mainly from non-cash accounting transactions at the end of concession of Bongkot Project of PTT Exploration and Production Public Company Limited (PTTEP).

In the first half of 2023 (1H2023), PTT and its subsidiaries reported EBITDA in an amount of Baht 196,633 million decreased by Baht 127,056 million or 39.3% compared with the first half of 2022 (1H2022) of Baht 323,689 million mainly from **Petrochemical and Refining business's** performance. Refining business had lower performance from higher stock loss in 1H2023. In 1H2023 there was a stock loss approximately Baht 10,000 million, while in 1H2022 there was a stock gain approximately Baht 47,000 million. Moreover, market GRM decreased from US\$ 13.7 per bbl in 1H2022 to US\$ 6.3 per bbl in 1H2023 due to lower spread of gasoil, gasoline and jet over crude oil, despite the increase in sales volume. Also, Petrochemical business's performance decreased from Olefins business due to lower product to feed and sales volume. While Aromatics business's performance increased from higher spread of Paraxylene (PX), in spite of a lower sales volume. **Gas business's** performance decreased from GSP business which had higher gulf gas price and lower average selling prices of all products, as well as lower sales volume. In addition, gross profit of TM business decreased due to revised gas pipeline tariff. S&M business had higher performance mainly from industrial customers which the average selling price increased from higher referenced prices. **Others business's** performance decreased from disposal of coal business in 1Q2023. However, **New Business and Infrastructure business's** performance increased mainly from revenue recognition of pharmaceutical business, as aforementioned and GPSC's Small Power Producer (SPP) higher performance following higher Ft in line with energy cost. **In 1H2023, Net Income of PTT and its subsidiaries was Baht 47,962 million decreased by Baht 15,673 million or 24.6% from the net profit amounting to Baht 63,635 million in 1H2022** following the lower EBITDA. Eventhough there were lower loss on derivatives and higher gain on foreign exchange rate. In addition, there were loss recognition of non-recurring items (PTT's portion after tax) approximately Baht 70 million mainly from non-cash accounting transactions at the end of concession of Bongkot Project of PTTEP offset with the discount from production shortfall of PTT. While, in 1H2022, the loss recognition was approximately Baht 600 million mainly from TOP's tax on investment for sales of GPSC offset with the discount from production shortfall of PTT.

As of 30 June 2023, PTT and its subsidiaries had the total assets amounting to Baht 3,421,537 million increased by Baht 5,905 million or 0.2% from 31 December 2022 which had total asset amounting to Baht 3,415,632 million mainly from the increase in cash and cash equivalents and short-term investments primarily driven from PTT Group's operating activities, as well as the increase in property, plant, and equipment (PPE) contributed largely from PTTEP's exploration and evaluation assets of G1/61 Project and G2/61 Project, including TOP's construction in progress of Clean Fuel Project (CFP). Whereas, the total liabilities were reported at Baht 1,829,145 million decreased by Baht 52,794 million or 2.8% from 31 December 2022 at Baht 1,881,939 million mainly from the decrease in other liabilities from derivatives liabilities and income tax payable. In addition, the decrease in trade account payables due to lower cost and lower purchase volume. Moreover, the total shareholders' equity was Baht 1,592,392 million, increased by Baht 58,699 million or 3.8% from 31 December 2022 at 1,533,693 as a result of the PTT and its subsidiaries' net income for 1H2023 offset with dividend payment from the operating results of the second half of 2022 amounting to 0.70 Baht per share.

Economic Overview in the Second Quarter of 2023

The world economy in 2Q2023 accelerated from 1Q2023, following an expansion in major economies, namely the US and China. US economy expanded at a faster rate, mainly driven by continuous growth in private consumption amid a robust labor market, despite the rise in interest rates by the Federal Reserve (the Fed) in its July 2023 meeting to the highest level in 22 years, together with a surge in business investments stimulated by the government's industrial investment initiatives (CHIPS and Science Act and Inflation Reduction Act) and the unraveling of supply-chain snarls particularly in aircraft and motor vehicles. Chinese economy expanded at a faster rate, partly due to a low-base effect caused by strict lockdowns under a zero-tolerance COVID-19 policy last year. While Euro Area economy expanded at a slower rate, as a result of the continuing monetary policy tightening in a bit to tame the remaining higher-than-target-threshold inflation. In the June 2023 meeting, the European Central Bank raised its key rates to the highest level in 22 years. The International Monetary Fund (IMF) in July 2023 revised up its global growth forecast for 2023 to 3.0% from its April 2023 forecast of 2.8%.

According to S&P Global's report in August 2023, the world's demand for oil in 2Q2023 averaged at 101.7 million barrels per day (MMBD), which increased from 2Q2022 and 1Q2023's average of 99.7 and 100.6 MMBD respectively due to Chinese economic recovery after country reopening and improving demand from developing countries (Non-OECD).

Unit: US\$/barrel	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Average Dubai Crude Oil Price	108.1	80.3	77.8	(28.0%)	(3.1%)	101.8	79.0	(22.4%)
Gasoline Crack Spread	35.0	18.7	16.6	(52.6%)	(11.2%)	26.4	17.6	(33.2%)
Diesel Crack Spread	43.1	25.2	14.6	(66.1%)	(42.1%)	31.3	19.9	(36.4%)
FO Crack Spread (180 – 3.5%S)	(3.2)	(16.3)	(8.7)	<(100.0%)	46.6%	(5.8)	(12.5)	<(100.0%)
GRM-Singapore Crack	21.4	8.2	4.0	(81.3%)	(51.2%)	14.7	6.1	(58.5%)

Dubai crude oil price in 2Q2023 averaged at US\$77.8 per barrel, decreased from 1Q2023 at US\$80.3 per barrel and 2Q2022 at US\$108.1 per barrel due to the concerns over macroeconomic indicators, the concerns over Chinese economic recovery amid inflation rate hikes in various countries, the remains sluggish of the industrial sector while OPEC and its allies (OPEC+) continued to cut production to support crude oil prices.

Petroleum product prices at Singapore spot market

- **Gasoline crack spread** averaged at US\$16.6 per barrel in 2Q2023, down from US\$18.7 per barrel in 1Q2023 and US\$35.0 per barrel in 2Q2022 due to demand slowdown in monsoon season. However, the market was supported by the decrease in Chinese export quota resulted in lower export volume.

- **Diesel crack spread** averaged at US\$14.6 per barrel in 2Q2023, down from US\$25.2 per barrel in 1Q2023 and US\$43.1 per barrel in 2Q2022 due to industrial demand slowdown and continuous inflow supply from Russia to Asia along with new capacity additions in the region, pressured product margins.
- **High-Sulfur Fuel Oil 3.5% crack spread (HSFO)** averaged at US\$ -8.7 per barrel in 2Q2023, up from US\$ -16.3 per barrel in 1Q2023 due to an increase in summer demand for electricity production amid higher temperature in various countries. However, compared to 2Q2022 at US\$ -3.2 per barrel, the high-sulfur fuel oil 3.5% crack spread was lower due to pressured supply as higher export volume from Russia to Asia.

Singapore Gross Refining margin (GRM) in 2Q2023 averaged at US\$4.0 per barrel, decreased from US\$ 8.2 per barrel in 1Q2023 and US\$21.4 per barrel in 2Q2022 due to concern over economic, and oversupply in Asian markets.

Unit: US\$/Ton	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
HDPE: CFR SEA	1,341	1,085	1,036	(22.7%)	(4.5%)	1,336	1,060	(20.7%)
PP: CFR SEA - Film	1,356	1,096	996	(26.5%)	(9.1%)	1,371	1,046	(23.7%)
BZ: FOB Korea	1,238	930	873	(29.5%)	(6.1%)	1,156	902	(22.0%)
BZ - Naphtha	363	241	272	(25.1%)	12.9%	280	257	(8.2%)
PX: CFR Taiwan	1,259	1,034	1,030	(18.2%)	(0.4%)	1,173	1,032	(12.0%)
PX - Naphtha	384	345	429	11.7%	24.3%	297	387	30.3%
Naphtha (MOPJ)	875	689	601	(31.3%)	(12.8%)	876	645	(26.4%)
Propane (C3): ARAMCO CP	847	700	520	(38.6%)	(25.7%)	825	610	(26.1%)

Petrochemical prices, both Olefins and Aromatics, in 2Q2023 decreased when compared to 1Q2023, due to pressure from continuous sluggish demand for end-user products, amid concerns over the slower-than-expected economic recovery in China, coupled with new supplies, especially in the Asian market, and decline in crude oil as well as naphtha prices.

- **Olefins:** High-Density Polyethylene (HDPE) and Polypropylene (PP) experienced a decrease in prices when compared to previous quarter, due to sluggish demand for end-user products. This was coupled with excess supply from the Middle East, India, and Europe that continue to pressure on market prices in Asia, the increased production capacity from Propane Dehydrogenation (PDH) plants due to improved margins, and new supplies, especially from China. However, the market still benefitted from factors such as accelerated infrastructure development in China which led to higher demand for HDPE, and petrochemical plant maintenance closures during the seasonal turnaround in the Northeast Asia.
- **Aromatics:** Benzene (BZ) and Paraxylene (PX) prices decreased from 1Q2023. However, a larger decline in crude oil and naphtha prices more than BZ price resulted in an increased BZ spread over naphtha and PX spread over naphtha as downstream demand decreased following a reduction in operating rate due to

low profitability. The demand also declined amid concerns over the economic slowdown. Moreover, high inventory levels in China and new capacities in China put pressure on an increase in price.

Compared to 2Q2022, petrochemical prices of Olefins and Aromatics decreased, in line with the significant decrease in crude and naphtha prices, amid market concerns over the uncertain recovery of Chinese economy, as well as the global economic downturn and increasing new capacities.

The price of propane in 2Q2023 decreased when compared to 1Q2023 due to a slow demand in Summer from major importers in Asia, amid high inventory levels resulting from a warmer-than-usual winter at the beginning of the year, and the maintenance shutdown of several petrochemical plants in Northeast Asia, which led to reduced demand for propane as a feedstock. Additionally, the ample supplies of propane from the United States and Middle East further contributed to exerting downward pressure on propane price. However, the increased demand for propane from certain petrochemical plants, which feedstock switched from naphtha to propane, as well as lower propane supply following the OPEC+ production cutbacks since May, helped support propane price.

Compared to 2Q2022, the price of propane decreased because of the global economy slowdown, declined crude oil prices, and a significant increase in propane inventories in the United States.

The Thai economy in 2Q2023 continued to expand from 1Q2023, supported mainly by a strong recovery in foreign tourist arrivals across nearly all nationalities, especially Chinese tourists who have increased their visit to Thailand as travel constraints on increasing flight frequencies gradually eased. Likewise, the private consumption continued to expand due to the recovery of tourism-based household incomes and additional economic stimulus derived from general elections spending. Meanwhile private investment decelerated in tandem with a contraction in merchandise exports, particularly in the electronic sector, amid global demand slowdown and partly due to high-base effect. Furthermore, the government spending contracted due to the acceleration of budget disbursement prior to the dissolution of the parliament in late March 2023. The Bank of Thailand in May 2023 projected its Thai economic forecast for 2023 to be 3.6%, unchanged from March 2023 forecast.

Non-recurring Items in the First Half of 2023 until Present

Summary of non-recurring items in the first half of 2023 are as follows:

January 2023

- **PTT:** On 1 January, to support public sector on energy prices, PTT has extended the cap of NGV retail price previously from 16 December 2022 to 15 March 2023 until 15 June 2023. For the taxi in Bangkok Metropolitan Area the retail price has been capped at 13.62 Baht/kg. and the NGV retail price for general cars has capped at 17.59 Baht/kg. Subsequently, on 16 June 2023, PTT extended the cap of NGV retail price further by capping the retail price at 14.62 Baht/kg. for taxi in Bangkok Metropolitan Area until 31 December 2023, 18.59 Baht/kg. for public cars until 31 December 2023, and 18.59 Baht/kg. for general cars until 15 September 2023. Nevertheless, PTT has ended the LPG's discount for low-income household who sell food or operate food stalls through the State Welfare Card by Baht 100 per person per month since 31 March 2023.
- **PTTEP:** On 10 January, PTTEP has established Bedrock Analytics Company Limited (Bedrock) with registered capital of Baht 5,000,000 through 100% shareholding owned by AI and Robotics Ventures Company Limited, a subsidiary of PTTEP to operate Artificial Intelligence and technology businesses. Bedrock will use the Geospatial Location Intelligence Platform and AI Technology to provide advanced location insights. Moreover, Bind Systems Company Limited has been established with registered capital of Baht 5,000,000, with 100% shareholding by AI and Robotics Ventures Company Limited, a subsidiary of PTTEP. The company will use Web 3.0 technology to provide security, privacy, and seamless access to Digital Identity and Personal / Enterprise data. The establishment of this company is to enhance competitiveness and identify new technology development opportunities, which aligns with PTTEP's strategy.
- **PTTEP:** On 17 January, PTTEP has established a subsidiary to develop and commercialize Artificial Intelligence technology which is S2 Robotics Company Limited with registered capital of Baht 1,000,000, with 100% shareholding by Rovula (Thailand) Company Limited, a subsidiary of PTTEP. S2 Robotics will use AI and Robotics (Nautilus) to provide the subsea horizontal repair service while reducing risks and repair time. The establishment of this company is to enhance competitiveness and identify new technology development opportunities, which aligns with PTTEP's strategy.
- **GPSC:** On 30 January, GPSC and Copenhagen Infrastructure Partners Group (CIP) via CI NMF I Cooperatief U.A. (CI NMF I) have established WindPower Development Company Limited (WPD) with registered capital of Baht 1,000,000. GPSC and CI NMF I hold 51% and 49% of the shares in WPD, respectively. The objectives of this company are to jointly explore opportunities in wind energy and develop wind projects with a focus in Thailand.

February 2023	<ul style="list-style-type: none"> ● PTT: On 15 February, PTT International Holdings Limited (PTTIH) (a wholly owned subsidiary of PTT) divested its entire investment, being 100% of the total issued shares, in PTT Mining Limited (PTTML) to an affiliate of PT Astrindo Nusantara Infrastruktur Tbk (Astrindo) and completed the settlement with the total value of USD 486 million (including interest). As a result, PTTML cease to be the subsidiary of PTTIH. In addition, this transaction divested all of PTT's investment in the coal business which is aligned with PTT's strategy towards sustainability and clean energy.
March 2023	<ul style="list-style-type: none"> ● PTT & GPSC: On 10 March, Global Renewable Power Co., Ltd. (GRP) (a subsidiary which PTT indirectly holds 50% and GPSC holds 50%) has completed the establishment of Global Renewable Power China (Shanghai) Co., Ltd. (GRP China) with the registered capital of Yuan 5,340,000 (or approximately Baht 27,768,000), in which GRP holds 100%. The objective of the company's establishment is to support the investment and development of renewable business in China, in accordance with PTT group's investment strategy of Future Energy business.
April 2023	<ul style="list-style-type: none"> ● PTT: On 21 April, the Board of Directors of Energy Complex Company Limited (EnCo) (a subsidiary which PTT holds 50%) on 10 April 2023, has approved EnCo to joint venture with One Origin Public Company Limited (ONEO) through the purchase of 50% shares of One District Rayong 2 Co., Ltd. (a subsidiary of ONEO which ONEO holds 99.9997% of shares) from ONEO at the amount of Baht 46 million. On 11 April 2023, EnCo has signed a share purchase and sale agreement, and the payment has been completed on 21 April 2023. The objective of this joint venture is to jointly develop a hotel business in the Origin Smart City Rayong project, in order to support the expansion of business sector in the Eastern Economic Corridor (EEC) and the tourism sector after economic recovery from the COVID-19.
May 2023	<ul style="list-style-type: none"> ● PTT & PTTEP: On 10 May, PTT has issued unsubordinated and unsecured debenture No. 1/2023 for the total amount of Baht 1,000 million with 2 years tenor at coupon rate of 2.31% per annum and PTTEP Treasury Center Company Limited (a subsidiary of PTTEP Group) has issued senior guaranteed debentures with a bondholders' representative for Baht 1,500 million with 3 years tenor at coupon rate of 2.51% per annum to the institutional investors. This is the first time of Thai capital market to issue the digital debenture through the DIF: Web Portal under the Sandbox project which is a part of the Digital Infrastructure development of the Securities and Exchange Commission, Thailand, to support digital bond transaction. ● PTTEP: On 30 May, PTTEP Energy Development Company Limited (PTTEP ED) (a subsidiary of PTTEP) has signed the Production Sharing Contract (PSC) for G1/65 and G3/65 with 100% interest and PTTEP ED is the sole operator of both blocks. The PSC was effective from 1 June 2023 onwards.
June 2023	<ul style="list-style-type: none"> ● PTT: On 9 June, Arun Plus Company Limited (Arun Plus) (PTT's 100% subsidiary) has reached an agreement to establish the cell-to-pack (CTP) lithium-ion battery assembly plant located in

the Eastern Economic Corridor, Chonburi province, Thailand with total investment value of Baht 3,600 million. This is the advanced battery manufacturing technology that directly assembles the battery cells into pack without assembling a module, resulting in higher energy efficiency, lightweight and safety. PTT is ready to produce battery for all types of electric vehicles with advanced technology to enhance Thailand's EV production capability. The plant is expected to start assembling cell-to-pack batteries in 2024 with the total capacity of 6 GWh per year.

- **PTT:** On 21 June, PTT's Board of Directors has reviewed and approved the revision of PTT and its wholly owned subsidiaries' investment plan for year 2023 from Baht 33,344 million to Baht 93,598 million. The revision of the above 2023 investment plan is mainly from the adjustment of investment in wholly owned subsidiaries e.g. the capital investment to support the joint venture of PTT LNG Company Limited in LNG receiving terminal 2 project and the investment expansion in electric vehicle value chain business mainly from the electric vehicle manufacturing plant of Horizon Plus Company Limited and the battery manufacturing plant of Arun Plus Company Limited. Meanwhile, the investment in other core businesses to ensure national energy security still proceed as planned e.g. Gas Separation Plant (GSP) unit 7 to replace GSP unit 1, Bang Pakong–South Bangkok Power Plant Transmission Pipeline project, 5th Onshore Pipeline.
- **PTTEP:** On 22 June, FutureTech Energy Ventures Company Limited (FTEV) (a subsidiary of PTTEP Group) and consortium partners, consisting of POSCO Holdings, Samsung Engineering Co., Ltd., Korea East-West Power Co., Ltd., Korea Southern Power Co., Ltd., and MESCAT Middle East DMCC, have been awarded the Green Hydrogen Concession Block in the Sultanate of Oman and entered into the Project Development Agreement and Sub-Usufruct Agreement with Hydrogen Oman SPC (Hydrom) for the exclusive business development and production rights of green hydrogen project in Block Z1-02 for 47 years. The consortium will carry out the feasibility and technical studies, in order to finalize the total capital expenditure requirement for the project. The project is expected to commence production in 2030 with a capacity of approximately 220,000 tons of green hydrogen per year, generated from 5 gigawatts of installed renewable energy, such as solar and wind.
- **GPSC:** On 27 June, GPSC's Board of Directors Meeting approved an inclusion of Battery Energy Storage System (BESS) to a business operation scope and a capital increase in Avaada Energy Private Limited (AEPL) amounted to 42.93% stake in accordance with GPSC's shareholding. The investment in AEPL will be made through Global Renewable Synergy Company Limited (GRSC) (a wholly owned subsidiary of GPSC). Total investment value is approximately INR 19,167 million or equivalent to about THB 8,625 million. The capital injection schedule is subject to potential development, with the first batch amounting to INR 8,649 million or approximately THB 3,892 million was injected on 25 July 2023.

July 2023

- GPSC: On 25 July, GPSC's Board of Directors Meeting approved the dissolution of Helios 5 Company Limited (Helios 5), in which GPSC holds 50%. The dissolution of Helios 5 aims to minimize administrative costs since the project of the subsidiary was not selected under the Energy Regulatory Commission (ERC)'s regulations and announcements according to the ERC's notification on 30 September 2022 regarding the purchase of electricity generated from renewable energy sources under the Feed-in Tariff (FiT) scheme 2022 - 2030 for the power plants with no fuel costs B.E. 2565 (2022). The dissolution the subsidiary has no impact to GPSC's strategic plan.

Financial Results of PTT Group by Business

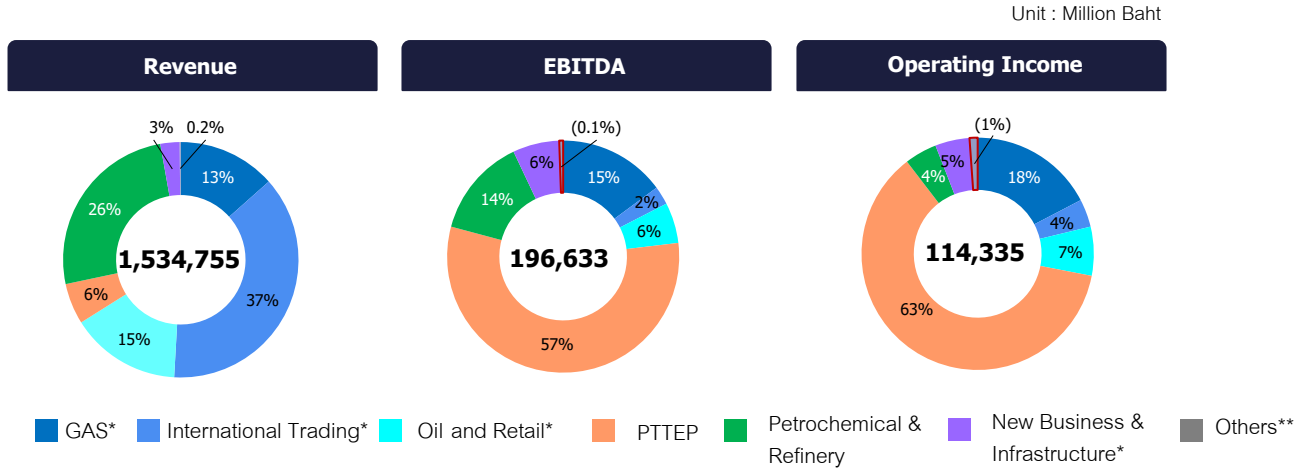
Financial performance of 2Q2023 compared with 2Q2022 and 1Q2023 as well as 1H2023 compared with 1H2022 are summarized as follows:

Unit : Million Baht	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Sales revenue	926,954	756,690	778,065	(16.1%)	2.8%	1,685,419	1,534,755	(8.9%)
: Exploration & Production	83,088	75,493	67,479	(18.8%)	(10.6%)	151,237	142,972	(5.5%)
: Gas	174,573	164,112	177,812	1.9%	8.3%	343,789	341,924	(0.5%)
: Oil & Retail	212,025	197,891	187,994	(11.3%)	(5.0%)	389,934	385,885	(1.0%)
: International trading	624,296	463,037	490,357	(21.5%)	5.9%	1,107,281	953,394	(13.9%)
: Petrochemical & Refining	429,350	331,046	318,466	(25.8%)	(3.8%)	790,598	649,512	(17.8%)
: New Business & Infrastructure	33,580	35,905	31,239	(7.0%)	(13.0%)	62,534	67,144	7.4%
: Others	12,674	2,950	1,041	(91.8%)	(64.7%)	18,300	3,991	(78.2%)
EBITDA	182,777	104,008	92,625	(49.3%)	(10.9%)	323,689	196,633	(39.3%)
: Exploration & Production	63,656	58,371	53,271	(16.3%)	(8.7%)	117,121	111,642	(4.7%)
: Gas	22,892	11,077	18,574	(18.9%)	67.7%	42,412	29,651	(30.1%)
: Oil & Retail	10,152	6,028	5,240	(48.4%)	(13.1%)	16,838	11,268	(33.1%)
: International trading								
- Excluding effect of FX and derivatives	6,389	3,193	1,939	(69.7%)	(39.3%)	22,014	5,132	(76.7%)
- Including effect of FX and derivatives	3,785	4,826	2,787	(26.4%)	(42.3%)	5,004	7,613	52.1%
: Petrochemical & Refining	69,722	19,040	8,465	(87.9%)	(55.5%)	113,095	27,505	(75.7%)
: New Business & Infrastructure	4,409	6,754	6,163	39.8%	(8.8%)	7,336	12,917	76.1%
: Others	6,599	(86)	(1,004)	<(100.0%)	<(100.0%)	7,964	(1,090)	<(100.0%)
Depreciation and amortization expenses	40,263	41,258	41,040	1.9%	(0.5%)	77,380	82,298	6.4%
Operating income (loss)	142,514	62,750	51,585	(63.8%)	(17.8%)	246,309	114,335	(53.6%)
: Exploration & Production	44,267	38,213	34,017	(23.2%)	(11.0%)	80,698	72,230	(10.5%)
: Gas	18,371	6,398	13,977	(23.9%)	>100.0%	33,460	20,375	(39.1%)
: Oil & Retail	8,591	4,401	3,588	(58.2%)	(18.5%)	13,768	7,989	(42.0%)
: International trading								
- Excluding effect of FX and derivatives	6,256	2,906	1,649	(73.6%)	(43.3%)	21,758	4,555	(79.1%)
- Including effect of FX and derivatives	3,652	4,539	2,497	(31.6%)	(45.0%)	4,748	7,036	48.2%
: Petrochemical & Refining	58,924	8,007	(2,728)	<(100.0%)	<(100.0%)	91,620	5,279	(94.2%)
: New Business & Infrastructure	1,302	3,398	2,226	71.0%	(34.5%)	1,445	5,624	>100.0%
: Others	5,845	(204)	(1,121)	<(100.0%)	<(100.0%)	6,651	(1,325)	<(100.0%)
Share of net income from investments in joint ventures and associates	2,498	528	317	(87.3%)	(40.0%)	4,447	845	(81.0%)
Loss (Reversal) on impairment of assets	493	140	(1)	<(100.0%)	<(100.0%)	488	139	(71.5%)
Gain (loss) on derivatives	(34,505)	(1,868)	1,640	>100.0%	>100.0%	(83,484)	(228)	99.7%
Gain (loss) on foreign exchange	(13,021)	10,112	(7,905)	39.3%	<(100.0%)	(7,309)	2,207	>100.0%
EBIT	97,738	73,965	49,313	(49.5%)	(33.3%)	162,000	123,278	(23.9%)
Finance costs	9,150	10,843	11,437	25.0%	5.5%	16,595	22,280	34.3%
Income taxes	34,920	23,366	14,111	(59.6%)	(39.6%)	56,648	37,477	(33.8%)
Net income	38,843	27,855	20,107	(48.2%)	(27.8%)	63,635	47,962	(24.6%)
Earnings per share (Baht/share)	1.37	0.98	0.70	(48.9%)	(28.6%)	2.24	1.68	(25.0%)

Note: Others Business includes coal business that was divested in 1Q2023

Segmentation Performance of PTT Group

The details of revenue, Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) and operating income by segmentation of 1H2023 are as follows:



* Including PTT own operation and PTT's affiliates **Including coal that was divested in 1Q2023 and others.

1. Upstream Petroleum and Gas Business Group

Petroleum Exploration and Production Business: PTT Exploration and Production Public Co., Ltd. (PTTEP)

	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Average selling price (US\$/BOE)	55.6	50.0	45.7	(17.8%)	(8.6%)	53.6	47.9	(10.6%)
Average sales volume (BOED)	465,459	460,817	444,868	(4.4%)	(3.5%)	446,519	452,799	1.4%

Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, sales revenue of PTTEP was Baht 67,479 million, decreased by Baht 15,609 million or 18.8% from 2Q2022 as the average selling price decreased by 17.8% from US\$ 55.6 per BOE in 2Q2022 to US\$ 45.7 per BOE in 2Q2023 following the drop in global crude and condensate prices, and the average sales volume decreased by 4.4% from 465,459 BOED in 2Q2022 to 444,868 BOED in 2Q2023 primarily from Bongkot Project end of concession in March 2023 and lower entitlement of Oman Block 61 Project, offset with higher gas nomination from buyer of G2/61 Project.

EBITDA in 2Q2023 was Baht 53,271 million, decreased by Baht 10,835 million or 16.3% from 2Q2022 mainly due to a decrease in sales revenue as aforementioned. However, royalties decreased primarily from higher portion of sales revenue from projects under profit sharing contracts in Thailand and lower sales revenue from projects in Malaysia. Meanwhile, operating expenses decreased primarily from suspension of Malaysia Block K Project. As a result, the operating income in 2Q2023 amounting to Baht 34,017 million, decreased by Baht 10,250 million or 23.2% from 2Q2022.

Despite the decrease in operating income, the overall performance of Exploration and Production business increased primarily from the decrease in income taxes mainly from projects in Thailand, Oman, and Malaysia as a result of lower profits.

Second quarter of 2023 compared with First quarter of 2023

In 2Q2023, sales revenue of PTTEP was Baht 67,479 million, decreased by Baht 8,014 million or 10.6% from 1Q2023 as the overall average selling price decreased by 8.6% from US\$ 50.0 per BOE in 1Q2023 to US\$ 45.7 per BOE in 2Q2023, and the overall average sales volume decreased by 3.5% from 460,817 BOED in 1Q2023 to 444,868 BOED in 2Q2023 primarily from the end of concession of Bongkot Project in March 2023, offset with higher gas nomination from buyer of G2/61 Project and Arthit Project.

EBITDA in 2Q2023 was Baht 53,271 million, decreased by Baht 5,100 million or 8.7% from 1Q2023 mainly due to a decrease in sales revenue as aforementioned. However, royalties primarily from higher portion of sales revenue from projects under profit sharing contracts in Thailand. As a result, the operating income in 2Q2023 was Baht 34,017 million, decreasing by Baht 4,196 million or 11.0% from 1Q2023.

Despite the decrease in operating income, the overall performance of Exploration and Production business increased primarily due to income taxes decreased mainly from projects in Thailand, Oman, and Malaysia as a result of lower profits. However, there were gain recognition from non-cash accounting transactions at the end of concession of Bongkot Project in 1Q2023, while there is no such transaction in 2Q2023.

First half of 2023 compared with First half of 2022

In 1H2023, sales revenue of PTTEP was Baht 142,972 million, decreased by Baht 8,265 million or 5.5% from 1H2022 as the average selling price decreased by 10.6% from US\$ 53.6 per BOE in 1H2022 to US\$ 47.9 per BOE in 1H2023. However, the average sales volume increased by 1.4% from 446,519 BOED in 1H2022 to 452,799 BOED in 1H2023 primarily from full period recognition of sales volume from G1/61 and G2/61 Projects.

EBITDA in 1H2023 was Baht 111,642 million, decreasing by Baht 5,479 million or 4.7% from 1H2022 mainly due to a decrease in sales revenue despite a higher sale volume from G1/61 and G2/61 Projects. Moreover, there was a lower royalties driven from higher portion of sales revenue from projects under profit sharing contracts in Thailand and lower sales revenue from projects in Malaysia. As a result, the operating income in 1H2023 was Baht 72,230 million, decreased by Baht 8,468 million or 10.5% from 1H2022.

Despite the decrease in operating income, the overall performance of Exploration and Production business increased primarily due to gain on oil price hedging instruments, while there was a loss recognition in 1H2022. In addition,

income taxes decreased mainly from projects in Thailand, Oman, and Malaysia as a result of lower profits. In addition, there was a gain recognition from non-cash accounting transactions at the end of concession of Bongkot Project in 1H2023.

Gas Business Group

The details of all product sales volume from GSPs are as follows:

Unit: Ton	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
LPG	824,942	853,208	836,065	1.3%	(2.0%)	1,632,867	1,689,273	3.5%
Ethane	387,054	404,601	446,717	15.4%	10.4%	873,625	851,318	(2.6%)
Propane	338,995	165,542	289,881	(14.5%)	75.1%	601,162	455,423	(24.2%)
NGL	136,621	119,710	117,964	(13.7%)	(1.5%)	269,658	237,674	(11.9%)
Pentane	12,732	13,062	14,466	13.6%	10.7%	26,115	27,528	5.4%
Total	1,700,344	1,556,123	1,705,093	0.3%	9.6%	3,403,427	3,261,216	(4.2%)
Utilization rate (%)	78.7%	70.1%	73.6%	(6.5%)	5.0%	80.3%	71.8%	(10.6%)

The details of reference product prices of GSPs are as follows:

Unit: US\$ per Ton	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
LPG ^{1/}	852	706	517	(39.3%)	(26.8%)	827	611	(26.1%)
LDPE ^{2/}	1,658	1,130	1,036	(37.5%)	(8.3%)	1,649	1,083	(34.3%)
LLDPE ^{2/}	1,383	1,074	1,014	(26.7%)	(5.6%)	1,364	1,044	(23.5%)
HDPE ^{2/}	1,341	1,085	1,036	(22.7%)	(4.5%)	1,336	1,060	(20.7%)
Propane ^{1/}	847	700	520	(38.6%)	(25.7%)	825	610	(26.1%)

Note: ^{1/} Global Gas Price (Contract Price Saudi Aramco) as a reference for selling prices of petrochemical customers, LPG calculated from the proportion of Propane and Butane by 50:50

^{2/} South East Asia - Spot Price

Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, Gas business reported sales revenue of Baht 177,812 million, increased by Baht 3,239 million or 1.9% from 2Q2022. This resulted mainly from the increase of sales revenue of S&M business following sales volume (calculated at heating value of 1,000 BTU per cubic feet) increased by 521 MMSCFD or 12.0% from 4,329 MMSCFD in 2Q2022 to 4,850 MMSCFD in 2Q2023 mainly from Independent Power Producer (IPP) power plants and Electricity Generating Authority of Thailand (EGAT) following higher electricity demand due to higher temperature in 2023. In addition, in 2Q2023 there was lower electricity generation from hydropower plants following the lower water level in 2023, despite the decrease in the average selling prices according to lower pool gas price.

Revenue of GSP business decreased from the decrease in average selling prices of all products following the petrochemical referenced prices. While, the increase in sales volume (including NGL derived from Dew Point Control units) which increased from 1,700,344 tons in 2Q2022 to 1,705,093 tons in 2Q2023 or 0.3% mainly from Ethane following the higher demand of petrochemical customers due to maintenance shutdown of some customers in 2Q2022.

In 2Q2023, EBITDA of gas business was reported at Baht 18,574 million, decreasing by Baht 4,318 million or 18.9%. The operating income was reported at Baht 13,977 million, decreasing by Baht 4,394 million or 23.9%. This was mainly from lower gross profit of GSP business due to lower average selling price. Also, gross profit of TM business decreased due to revised gas pipeline tariff. While, gross profit of S&M Business increased mainly from industrial customers as the gas cost decreased following the pool gas price and the overall sales volume increased. However, there was a decrease in discount and compensation for shortfall in 2Q2023 compared to 2Q2022 due to the contracts with natural gas producers of Erawan gas field expired in April 2022.

Besides, NGV's performance has improved due to the increase in average selling prices. NGV retail price has been capped for the taxi in Bangkok Metropolitan Area (NGV for the same breath project) at 13.62 Baht/kg. from 1 November 2021 to 15 June 2023 and the price increased to 14.62 Baht/kg. until 31 December 2023 and the NGV retail price for other vehicles has been capped at 15.59 Baht/kg. from 16 November 2021 to 15 September 2022 and the price increased to 16.59 Baht/kg. from 16 September to 15 December 2022 and 17.59 Bath/kg from 16 December 2022 to 15 June 2023 and increased to 18.59 Baht/kg. since 16 June 2023. Moreover, gas cost decreased owing to lower pool gas price, together with the decline in sales volume.

Second quarter of 2023 compared with first quarter of 2023

In 2Q2023, Gas business reported sales revenue of Baht 177,812 million, increased by Baht 13,700 million or 8.3%. This resulted mainly from sales revenue of GSP business increased due to the higher sales volume (including NGL derived from Dew Point Control units), which increased from 1,556,123 tons in 1Q2023 to 1,705,093 tons in 2Q2023 or 9.6% according to the higher demand of customers as a result of planned maintenance shutdown of some customers in 1Q2023. In addition, during January - April 2023, there was the adjustment of gas management plan by allocating more gulf gas to power plant customers instead of using other fuel, which had higher price, resulted in higher gas feed to GSP in 2Q2023. Whereas, the average selling prices of overall products decreased according to petrochemical referenced prices.

Sales revenue of S&M business increased due to the increase in average sales volume (calculated at heating value of 1,000 BTU per cubic feet) by 772 MMSCFD or 18.9% from 4,078 MMSCFD in 1Q2023 to 4,850 MMSCFD in 2Q2023 mainly from higher seasonal demand of power plant customers during hot weather as well as the recovery of economic and tourism activities, and the increase in natural gas used according to the adjustment of fuel management

plan of IPP and EGAT following the downward trends of imported LNG price, despite the decrease in average selling price following the pool gas price.

In 2Q2023, EBITDA of Gas business was reported at Baht 18,574 million, increased by Baht 7,497 million or 67.7%. The operating income was reported at Baht 13,977 million, increased by Baht 7,579 million or more than 100.0%. This was mainly from the higher gross profit of S&M business driven by lower gas cost following lower pool gas price, and higher sales volume as aforementioned.

Performance of NGV business also increased from lower gas cost following lower pool gas price together with the increase in average selling prices as aforementioned as well as overall sales volume decreased.

In addition, gross profit of GSP business improved from lower feed cost following lower gulf gas price, despite the decrease in average selling prices in accordance with the petrochemical referenced prices.

First half of 2023 compared with First half of 2022

In 1H2023, gas business reported sales revenue of Baht 341,924 million, decreasing by Baht 1,865 million or 0.5% from 1H2022. This resulted mainly from lower revenue of TM business due to revised gas pipeline tariff. In addition, the sales revenue of GSP business decreased from lower sales volume (including NGL derived from Dew Point Control units) in all products which decreased from 3,403,427 tons in 1H2022 to 3,261,216 tons in 1H2023 or 4.2% from lower gulf gas supply and lower demand of petrochemical customer driven by the declining trend in plastic pellet prices as well as the decrease in average selling prices in overall products following the petrochemical referenced prices.

Sale revenue of S&M business rose due to average sales volume (calculated at heating value of 1,000 BTU per cubic feet) increased by 92 MMSCFD or 2.1% from 4,374 MMSCFD in 1H2022 to 4,466 MMSCFD in 1H2023 mainly due to IPP and EGAT from the increase in electricity consumption following higher temperature together with lower trend of imported LNG price. In addition, there was a lower electricity generation from hydropower plants following the lower water level in 2023.

In 1H2023, EBITDA of gas business was reported at Baht 29,651 million, decreasing by Baht 12,761 million or 30.1%. The operating income was reported at Baht 20,375 million, decreasing by Baht 13,085 million or 39.1%. This was mainly from the decrease in GSP's gross profit from higher gas cost following gulf gas price, and the lower average selling prices of all products as well as lower sales volume. In addition, gross profit of TM business decreased due to revised gas pipeline tariff as aforementioned.

S&M's gross margin rose mainly from industrial customers which the average selling prices increased from higher referenced prices as well as the implementation of new procedure which used stopping price mechanism; the higher between the selling price to Small Power Producer (SPP) in the previous month and the fuel oil price as referenced price

since August 2022 together with the increase in sales volume. Nevertheless, the discount and compensation for shortfall in 1H2023 decreased when compared to 1H2022 due to the contracts with natural gas producers of Erawan gas field expired in April 2022.

Besides, NGV's performance increased due to the increase in average selling prices as aforementioned despite the higher feed gas cost and the increase in overall sales volume.



2. Downstream Petroleum Business Group

Oil and Retail Business Group

	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Average Sales Volume* (Unit: Million Liter)	6,859	7,002	6,905	0.7%	(1.4%)	13,583	13,907	2.4%
Average selling prices (Unit: US\$ per barrel)								
Gasoline	143.0	99.0	94.4	(34.0%)	(4.6%)	128.2	96.7	(24.6%)
Jet	147.2	106.8	91.7	(37.7%)	(14.1%)	129.5	99.3	(23.3%)
Diesel	151.2	105.5	92.3	(39.0%)	(12.5%)	133.1	98.9	(25.7%)

*The average sales volume of domestic oil segment only

Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, sales revenue of Oil and Retail business group was Baht 187,994 million, decreased by Baht 24,031 million or 11.3% from 2Q2022 mainly from the decline in global oil price. While, sales volume increased by 46 million liters or 0.7% from 6,859 million liters or equivalent to 474,096 barrels per day in 2Q2022 to 6,905 million liters or equivalent to 477,275 barrels per day in 2Q2023, mainly from the increase in sales volume of aviation fuel following more travel as well as sales volume of diesel and gasoline increased from economic recovery. In addition, non-oil business group revenue increased from the recovery of economic activities.

In 2Q2023, EBITDA was Baht 5,240 million, decreased from 2Q2022 by Baht 4,912 million or 48.4% due to lower overall average gross margin per liter, largely from diesel and gasoline. While EBITDA of non-oil business increased from the increase in food and beverage businesses' gross margin. As a result, the operating profit in 2Q2023 was Baht 3,588 million, decreased by Baht 5,003 million or 58.2% from 2Q2022. The overall performance of Oil and Retail business declined following the decrease in EBITDA when compared to 2Q2022

Second quarter of 2023 compared with First quarter of 2023

In 2Q2023, sales revenue of Oil and Retail business was Baht 187,994 million, decreased by Baht 9,897 million or 5.0% from 1Q2023 due to the decline in global oil price. Additionally, overall sales volume slightly decreased by 97 million liters or 1.4% from 7,002 million liters or equivalent to 489,357 barrels per day in 1Q2023 to 6,905 million liters or equivalent to 477,275 barrels per day in 2Q2023, mainly due to fuel oil as power plant customer shifted back to use natural gas which had lower price despite higher sales volume of gasoline due to more travel during holiday period. Non-oil business's revenue increased from both food and beverage business and convenient stores which sales volume increased due to seasonal factor.

In 2Q2023, EBITDA was Baht 5,240 million, decreased by Baht 788 million or 13.1% from 1Q2023 due to lower overall average gross margin per liter, largely from aviation which using the selling price to customer in the previous month as referenced price. EBITDA of non-oil business increased following higher gross margin which is in line with higher sales revenue. As a result, the operating profit in 2Q2023 was Baht 3,588 million, decreased by Baht 813 million or 18.5% from 1Q2023. The overall performance of Oil and Retail business declined following the decrease in EBITDA when compared to 1Q2023.

First half of 2023 compared with First half of 2022

In 1H2023, sales revenue of Oil and Retail business group was Baht 385,885 million, decreased by Baht 4,049 million or 1.0% from 1H2022 due to lower average global oil price. While, overall sales volume increased by 324 million liters or 2.4% from 13,583 million liters or equivalent to 472,024 barrels per day in 1H2022 to 13,907 million liters or equivalent to 483,283 barrels per day in 1H2023 mainly due to the increase in sales volume of aviation from the recovery of the tourism sector. While sales volume of diesel decreased because in 2Q2022, there was a postponement of the retail price increased of diesel at petro stations which led to an unusually higher sales volume than usual. Non-oil business's revenue increased from an increase in sales volume which resulted from the expansion of the food and beverage stores.

EBITDA in 1H2023 was Baht 11,268 million, decreased from 1H2022 by Baht 5,570 million or 33.1% mostly from a decrease in overall average gross margin per liter of both diesel and gasoline. Non-oil business's EBITDA decreased despite the rise in gross margin from increasing sales revenue as there were higher net operating expenses, mainly from variable expenses. As a result, the operating profit in 1H2023 was Baht 7,989 million, decreased by Baht 5,779 million or 42.0% from 1H2022. The overall performance of Oil and Retail business declined following the decrease in EBITDA when compared to 1H2022.

International Trading Business Group

Unit: Million Liter	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Average sales volume	28,526	40,889	51,481	80.5%	25.9%	64,761	92,370	42.6%

Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, sales revenue of International Trading business was Baht 490,357 million, decreased by Baht 133,939 million or 21.5% from 2Q2022 due to the decrease in product selling prices following the fall in global petroleum and petrochemical prices while sales volume increased by 22,955 million liters or 80.5% from 28,526 million liters or equivalent to 1,971,724 barrels per day in 2Q2022 to 51,481 million liters or equivalent to 3,558,379 barrels per day in 2Q2023. This was mainly from higher volume of crude and refined product international trading (out-out trading) and higher imported LNG for electricity production as domestic demand increased due to higher temperature in 2023.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives in 2Q2023 was Baht 2,787 million, decreased by Baht 998 million or 26.4% mainly from lower margin per unit of refined product and crude trading following the decrease in spreads, especially in gasoil. Moreover, spread of domestic crude and condensate also decreased in accordance to the drop in oil-priced linked formula. Although, sales volume increased as aforementioned. The operating profit, adjusted by the impact from foreign exchange rate and derivatives in 2Q2023 was Baht 2,497 million, decreased by Baht 1,155 million or 31.6%.

Second quarter of 2023 compared with First quarter of 2023

Sales revenue of International Trading business in 2Q2023 was Baht 490,357 million, increased by Baht 27,320 million or 5.9% from 1Q2023 due to the increase in sales volume by 10,592 million liters or 25.9% from 40,889 million liters or equivalent to 2,857,660 barrels per day in 1Q2023 to 51,481 million liters or equivalent to 3,558,379 barrels per day in 2Q2023. This was mainly from higher volume of crude and refined product international trading (out-out trading), higher LNG imports for electricity production, as well as more crude imports for domestic refineries following the recovery of economic activities and tourism. However, product selling prices decreased following the fall in global petroleum and petrochemical prices.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 2Q2023 was Baht 2,787 million, decreased by Baht 2,039 million or 42.3% primarily from lower margin per unit of crude trading following the decrease in the global product spreads, as well as lower profit from hedging in accordance to market conditions despite, sales volume increased as aforementioned. The operating profit, adjusted by the impact from foreign exchange rate and derivatives, in 2Q2023 was Baht 2,497 million, decreased by Baht 2,042 million or 45.0%.

First half of 2023 compared with First half of 2022

Sales revenue of International Trading business in 1H2023 was Baht 953,394 million, decreased by Baht 153,887 million or 13.9% from 1H2022 due to lower product selling price following the fall in global petroleum and petrochemical prices. Although, sales volume increased by 27,609 million liters or 42.6% from 64,761 million liters or equivalent to 2,250,513 barrels per day in 1H2022 to 92,370 million liters or equivalent to 3,209,955 barrels per day in 1H2023 mainly from higher volume of crude and refined product international trading (out-out trading), more LNG imports for electricity production as aforementioned.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 1H2023 was Baht 7,613 million, increased by Baht 2,609 million or 52.1% mainly from higher sales volume of out-out trading and efficient hedging in accordance with market prevailing conditions. The operating income, adjusted by the impact from foreign exchange rate and derivatives in 1H2023 was Baht 7,036 million, increased by Baht 2,288 million or 48.2%.

Petrochemical and Refinery Business Group

Unit: US\$ per barrel	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Market GRM	21.3	8.4	4.1	(80.8%)	(51.2%)	13.8	6.3	(54.3%)
Inventory gain (loss) excl. NRV	5.3	(3.5)	(1.8)	<(100.0%)	48.6%	7.8	(2.7)	<(100.0%)
Hedging gain (loss)	(12.4)	0.5	0.5	>100.0%	0.0%	(10.1)	0.5	>100.0%
Accounting GRM	14.2	5.4	2.8	(80.3%)	(48.1%)	11.5	4.1	(64.3%)
Refinery Utilization rate* (%)	102.0%	102.8%	103.1%	1.1%	0.3%	101.3%	103.0%	1.7%

*From 3 Refineries: TOP, GC and IRPC

Unit: US\$ per Ton	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Olefins								
Naphtha (MOPJ)	875	689	601	(31.3%)	(12.8%)	876	645	(26.4%)
HDPE	1,341	1,085	1,036	(22.7%)	(4.5%)	1,336	1,060	(20.7%)
LDPE	1,660	1,130	1,036	(37.6%)	(8.3%)	1,650	1,083	(34.4%)
LLDPE	1,385	1,074	1,014	(26.8%)	(5.6%)	1,366	1,044	(23.6%)
PP	1,356	1,096	996	(26.5%)	(9.1%)	1,371	1,046	(23.7%)
Aromatics								
Condensate	933	678	636	(31.8%)	(6.2%)	884	657	(25.7%)
PX (TW)	1,259	1,034	1,030	(18.2%)	(0.4%)	1,173	1,032	(12.0%)
PX (TW) – Condensate	326	356	394	20.9%	10.7%	289	375	29.8%
BZ	1,238	930	873	(29.5%)	(6.1%)	1,156	902	(22.0%)
BZ – Condensate	305	252	237	(22.5%)	(6.0%)	272	245	(9.9%)

Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, sales revenue of Petrochemical and Refining business was Baht 318,466 million, decreased by Baht 110,884 million or 25.8% primarily due to Refinery business from the decrease in average selling price following the decrease in global petroleum product prices. However, sales volume increased primarily from an increase in PTT Group refineries' utilization rates from 102.0% in 2Q2022 to 103.1% in 2Q2023.

Moreover, sales revenue of Petrochemical business, both Olefins and Aromatics business, decreased due to the lower average selling price of products following concerns about the global economic slowdown as well as the decrease in sales volume of the aromatics group while the sales volume of olefins group is closed to 2Q2022.

EBITDA of Petrochemical and Refining business in 2Q2023 was Baht 8,465 million decreased by Baht 61,257 million or 87.9% from Baht 69,722 million in 2Q2022. There was operating loss of Baht 2,728 million in 2Q2023, loss

increased by Baht 61,652 million or more than 100.0% when compared with operating income of Baht 58,924 million in 2Q2022 details as follows:

- **Refinery performance** decreased as Market GRM decreased from US\$ 21.3 per bbl in 2Q2022 to US\$ 4.1 per bbl in 2Q2023 mainly from the decrease in product spreads of jet, gasoil, and gasoline over crude oil while crude premium decreased. Moreover, the drop in crude oil price led to the higher stock loss (there was the stock loss of US\$ 1.8 per bbl in 2Q2023 versus gain of US\$ 5.3 per bbl in 2Q2022). Conversely, there was an increase in sales volume as aforementioned.
- **Petrochemical performance** decreased mainly from Olefins business due to the decrease in product spreads while Aromatics business increased from PX spread.

The overall performance of Petrochemical and Refining business in 2Q2023 decreased when compared with 2Q2022 due to the increase in operating loss as aforementioned. Although there was gain from oil price hedging in 2Q2023 while the transaction was reported as a loss in 2Q2022.

Second quarter of 2023 compared with First quarter of 2023

In 2Q2023, sales revenue of Petrochemical and Refining business was Baht 318,466 million, decreased by Baht 12,580 million or 3.8% primarily due to Refinery business from the decrease in average selling price following the decrease in global petroleum product prices. However, sales volume increased primarily from the increase in PTT Group refineries' utilization rates from 102.8% in 1Q2023 to 103.1% in 2Q2023.

However, sales revenue of Petrochemical business increased mainly from sales volume of Olefins business due to higher utilization rate as there was planned turnaround of GC's Olefins Unit 2 plants and IRPC's plant in 1Q2023 despite the lower average selling price of products. Sales revenue of Aromatics business increased closely to the previous quarter from the increase in sales volume.

EBITDA of Petrochemical and Refining business in 2Q2023 was Baht 8,465 million, decreased by Baht 10,575 million or 55.5% from Baht 19,040 million in 1Q2023. There was operating loss of Baht 2,728 million in 2Q2023, loss increased by Baht 10,735 million or more than 100.0% when compared with operating income of Baht 8,007 million in 1Q2023 details as follows:

- **Refinery performance** decreased as Market GRM decreased from US\$ 8.4 per bbl in 1Q2023 to US\$ 4.1 per bbl in 2Q2023 mainly from the decrease in product spreads of jet, and gasoil over crude oil while crude premium decreased. Conversely, stock loss decreased (there was stock loss of US\$ 1.8 per bbl in 2Q2023 versus US\$ 3.5 per bbl in 1Q2023) and sales volume increased as aforementioned.

- **Petrochemical performance** also decreased mainly from Aromatics business primarily due to the decrease in BZ and by product (LPG) spread. Olefins business performance also decreased due to the decrease in PP spreads despite the increase in sales volume as aforementioned.

The overall performance of Petrochemical and Refining business in 2Q2023 decreased compared to 1Q2023 due to the increase in operating loss as aforementioned and the increase in loss on foreign exchange rate following the Thai Baht depreciation in this quarter compared with the previous quarter where the Thai Baht appreciated.

First half of 2023 compared with First half of 2022

In 1H2023, sales revenue of Petrochemical and Refining business was Baht 649,512 million, decreased by Baht 141,086 million or 17.8% primarily due to Refinery business from the decrease in average selling price following the decrease in global petroleum product prices. However, sales volume increased primarily from higher PTT Group refineries' utilization rates increased from 101.3% in 1H2022 to 103.0% in 1H2023.

Sales revenue of Petrochemical business, both Olefins and Aromatics businesses, also decreased due to the lower average selling price of products. In addition, sales volume decreased due to the lower utilization rate in line with market situation and planned turnaround of Olefins plants in 1H2023.

EBITDA of Petrochemical and Refining business in 1H2023 was Baht 27,505 million, decreased by Baht 85,590 million or 75.7% from Baht 113,095 million in 1H2022. There was operating income of Baht 5,279 million in 1H2023 decreased by Baht 86,341 million or 94.2% when compared to operating income of Baht 91,620 million in 1H2022 details as follows:

- **Refinery performance** decreased as Market GRM decreased from US\$ 13.8 per bbl in 1H2022 to US\$ 6.3 per bbl in 1H2023 mainly from the decrease in product spreads of gasoil, gasoline, and jet over crude oil while crude premium decreased. Moreover, stock loss increased (there was stock loss of US\$ 2.7 per bbl in 1H2023 versus gain of US\$ 7.8 per bbl in 1H2022). Conversely, there was the increase in sales volume as aforementioned.
- **Petrochemical performance** also decreased mainly from Olefins business due to the decrease in product spreads and decrease in sales volume as aforementioned. While Aromatics business increased from PX spread despite the decrease in sale volume as aforementioned.

The overall performance of Petrochemical and Refining business in 1H2023 decreased when compared with 1H2022 due to the decrease in operating income as aforementioned. Although there was gain from oil price hedging in 1H2023 while the transaction was reported as a significant loss in 1H2022.

3. New Business and Infrastructure Group

	2Q2022	1Q2023	2Q2023	% Inc. (Dec.)		1H2022	1H2023	% Inc. (Dec.)
				YoY	QoQ			
Power sales volume (GWh)	5,265	4,071	3,549	(32.6%)	(12.8%)	10,485	8,100	(22.7%)
Steam sales volume (Thousand tons)	3,747	3,053	3,366	(10.2%)	10.3%	7,457	6,419	(13.9%)

Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, sales revenue of New Business and Infrastructure group was Baht 31,239 million, decreased by Baht 2,341 million or 7.0%. This was owing primarily to GPSC's Independent Power Producer (IPP) power plants whose Energy Payment (EP) revenue decreased due to lower dispatch volume to EGAT despite an increase in pharmaceutical business's revenue of PTTGM after the launch of Lenalidomide in the US market since September 2022.

EBITDA, in 2Q2023, was Baht 6,163 million, increased by Baht 1,754 million or 39.8% mainly from higher gross profit of PTTGM which increased from higher revenue in pharmaceutical business as mentioned together with the gross profit of GPSC's Small Power Producer (SPP) power plants whose profit margin on electricity sales to industrial customers increased following a hike in Fuel Adjustment Cost (Ft). However, gross profit of IPP power plants decreased following lower sales revenue. As a result, the operating profit in 2Q2023 was Baht 2,226 million, increased by Baht 924 million or 71.0%. In this regard, the overall performance of New Business and Infrastructure group increased mainly from PTTGM and GPSC as a result of the increase in EBITDA.

Second quarter of 2023 compared with First quarter of 2023

In 2Q2023, sales revenue of New Business and Infrastructure group was Baht 31,239 million, decreased by Baht 4,666 million or 13.0% mainly from GPSC whose revenue from IPP power plants decreased due to lower EP revenue as mentioned, despite an increase in Availability Payment (AP) revenue due to no maintenance shutdown in 2Q2023. Moreover, revenue from SPP power plants declined according to the decrease in Ft since May 2023 in line with the lower the natural gas cost even, steam sales volume to industrial customers increased.

EBITDA in 2Q2023 was Baht 6,163 million, decreased by Baht 591 million or 8.8% mainly from lower gross profit of GPSC's SPP power plants primarily due to the planned maintenance shutdown of GLOW Phase 5 power plant as well as the lower of electricity selling price following the decrease in Ft, despite an increase in electricity and steam sales volume. As a result, the operating profit in 2Q2023 was Baht 2,226 million, decreased by Baht 1,172 million or 34.5% from 1Q2023. The overall performance of New Business and Infrastructure group decreased following the lower EBITDA of GPSC.

First half of 2023 compared with First half of 2022

In 1H2023, sales revenue of New Business and Infrastructure group was Baht 67,144 million, increased by Baht 4,610 million or 7.4% mainly from revenue of PTTGM 's pharmaceutical business as Lenalidomide was being launched in US since September 2022, despite the decrease in revenue of GPSC's IPP power plants due to the lower electricity dispatch volume to EGAT. However, revenue of SPP power plants increased from electricity and steam selling prices following higher Ft in line with the higher natural gas price while electricity and steam sales volume to industrial customers decreased.

EBITDA in 1H2023 was Baht 12,917 million, increased by Baht 5,581 million or 76.1% mainly from higher PTTGM's gross profit following an increase in pharmaceutical business's revenue as mentioned together with gross profit of GPSC's SPP power plants which increased due to higher Ft. In this regard, in 1H2023, operating income was Baht 5,624 million, increased by Baht 4,179 million or over 100.0% in accordance with higher EBITDA. The overall performance of New Business and Infrastructure group increased mainly from performances of PTTGM and GPSC.

Overall Performance of PTT and its Subsidiaries

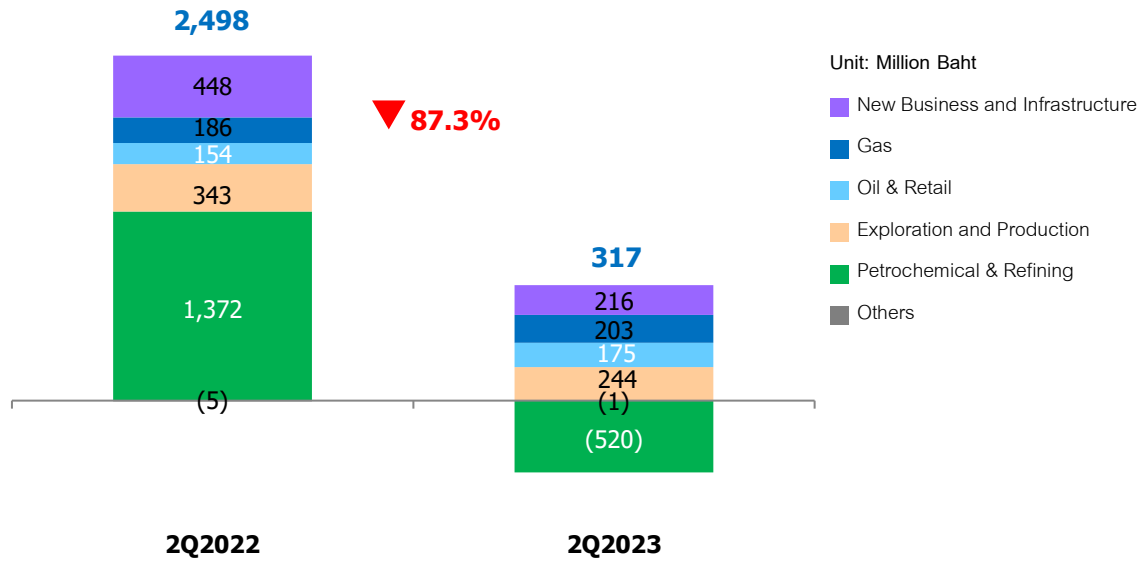
Second quarter of 2023 compared with Second quarter of 2022

In 2Q2023, sales revenue of PTT and its subsidiaries was reported at Baht 778,065 million decreased from 2Q2022 by Baht 148,889 million or 16.1% mainly from sales revenue of International Trading business, Petrochemical and Refining business, as well as Oil and Retail business due to lower products' selling price in line with global petroleum and petrochemical prices, even higher overall sales volume. Additionally, Exploration and Production business's sales revenue decreased mainly from the lower average selling price and sales volume. Others business's sales revenue decreased from disposal of coal business in 1Q2023. While Gas business's sales revenue increased from S&M business in line with higher sales volume, even lower selling price following pool gas price.

EBITDA in 2Q2023 was Baht 92,625 million, decreased by Baht 90,152 million or 49.3%. This was mainly from Petrochemical and Refining business. Refining business's performance decreased primarily due to stock loss in this period. PTT Group's stock loss in 2Q2023 had stock loss of approximately Baht 4,000 million, while in 2Q2022 it was a stock gain approximately Baht 19,000 million. Additionally, market GRM decreased from US\$ 21.3 per bbl in 2Q2022 to US\$ 4.1 per bbl in 2Q2023 as lower spread of jet, gasoil, and gasoline over crude oil, even the increase in sales volume. Moreover, Petrochemical business's performance decreased mainly from Olefins business's decreasing products spreads. Moreover, Exploration and Production business's performance decreased following the lower sales revenue. Others business's performance decreased from completed disposal of coal business in 1Q2023. Oil and Retail business and International Trading business's performance decreased mainly from the decrease in average gross margin per unit. In addition, Gas business's performance decreased mainly from GSP business due to lower average selling price in all products following the decline in petrochemical referenced price, in spite of higher sales volume. Moreover, gross profit of TM business decreased due to revised gas pipeline tariff.

The depreciation and amortization expenses of 2Q2023 were Baht 41,040 million, increased by Baht 777 million or 1.9% mainly from GC's plant and GPSC's right in electricity sales and purchase agreement.

Share of profit from investments in joint ventures and associates



In 2Q2023, the share of profit from investments in joint ventures and associates was Baht 317 million, decreased by Baht 2,181 million or 87.3% from 2Q2022. This was from lower performance of associates and joint ventures in Petrochemical and Refining business mainly from AGC Vinythai Public Company Limited (AVT) and HMC Polymers Company Limited (HMC) following lower product spread. Moreover, New Business and Infrastructure business's associates had lower performance, mainly from Xayaburi Power Company Limited (XPCL) according to lower water volume compared with 2Q2022.

In 2Q2023, gain on derivatives was Baht 1,640 million, increased by Baht 36,145 million or more than 100.0% mainly from commodity derivatives of TOP and GC.

In 2Q2023, loss on foreign exchange rate was Baht 7,905 million, decreased by Baht 5,116 million or 39.3% mostly from a decrease in unrealized loss on US currency loans as a result of less Thai Baht depreciation in 2Q2023 than 2Q2022. (Thai Baht depreciation in 2Q2023 was Baht 1.49 per US\$, Thai Baht depreciation in 2Q2022 was Baht 2.01 per US\$).

Finance costs was Baht 11,437 million in 2Q2023, increased by Baht 2,287 million or 25.0% mainly from the increase in bonds and loans of GC and PTT as well as higher interest rate in line with money market.

In 2Q2023, there was gain from non-recurring item (PTT's portion after tax) approximately Baht 20 million, while in 2Q2022, there were loss recognition of non-recurring items (PTT's portion after tax) mainly approximately Baht 1,500 million (see appendix).

The corporate income taxes in 2Q2023 was Baht 14,111 million, decreased by Baht 20,809 million or 59.6% mainly from lower performance of TOP and PTTEP.

As a result, PTT and its subsidiaries' net profit in this quarter amounting to Baht 20,107 million, decreased by Baht 18,736 million or 48.2% from net profit of Baht 38,843 million in 2Q2022.

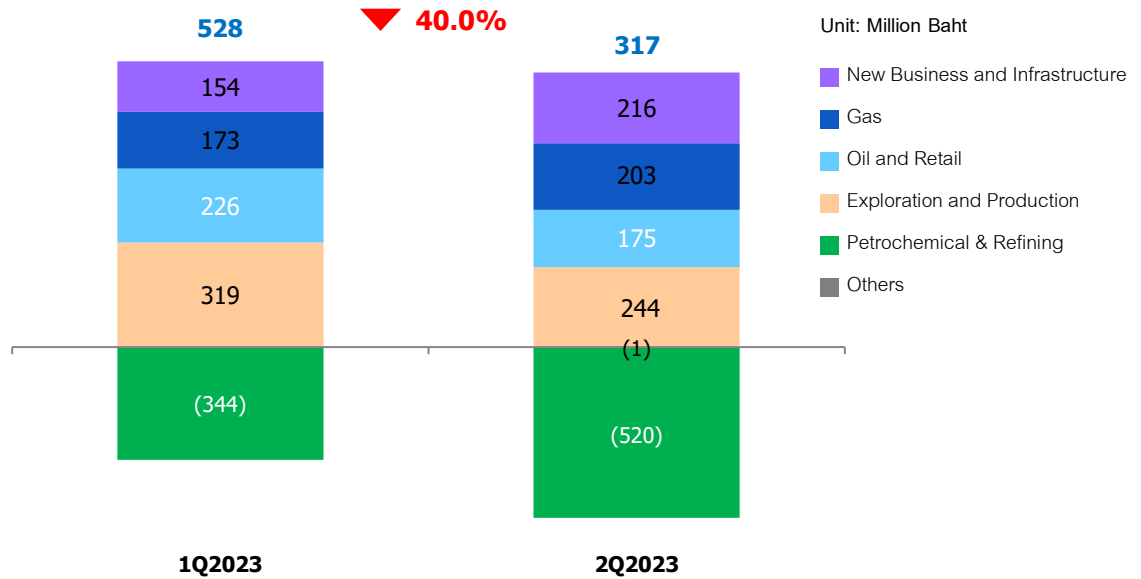
Second quarter of 2023 compared with First quarter of 2023

In 2Q2023, PTT and its subsidiaries' sales revenue was reported at Baht 778,065 million, increased from 1Q2023 by Baht 21,375 million or 2.8%. This was mainly from higher sales revenue of International Trading business following higher sales volume, in spite of lower average selling price in line with global petroleum and petrochemical prices. Moreover, sales revenue of Gas business also increased from GSP business's sales revenue following higher sales volume from increased demand from customer, as well as higher production volume due to the adjustment of gas management plan by allocating more gulf gas to power plant customers in 1Q2023. While average selling prices were lower in all products following the decline in petrochemical referenced prices. Furthermore, S&M business has higher average sales volume to power plant customers, in spite of lower average selling price in line with pool gas price. However, Petrochemical and Refining business's revenue declined from lower average selling price following declined global petroleum and petrochemical prices, even higher sales volume. Nevertheless, sales revenue of Oil and Retail business and Exploration and Production business decreased due to lower average selling price and sales volume.

EBITDA in 2Q2023 was Baht 92,625 million, decreased by Baht 11,383 million or 10.9%. This was mainly from Petrochemical and Refining business. Refining business's performance decreased as market GRM fell from US\$ 8.4 per bbl in 1Q2023 to US\$ 4.1 per bbl in 2Q2023 due to lower spread of jet and gasoil over crude oil, even higher sales volume. PTT Group also had lower stock loss, in 2Q2023 there was stock loss approximately Baht 4,000 million, while in 1Q2023 stock loss was Baht 6,000 million. Petrochemical business's performance also decreased both in olefins and aromatics as lower product to feed. Exploration and Production business's performance decreased due to lower average selling price and sales volume. Moreover, International Trading business's performance decreased mainly from lower margin per unit of crude trading following the decreased in the global product spreads despite higher sales volume. However, Gas business's performance rose from S&M and NGV businesses due to lower gas cost, in line with pool gas price. In addition, GSP business also had lower gas cost following gulf gas price and higher sales volume, even though average selling prices were lower in all products following the decline in petrochemical referenced prices.

The depreciation and amortization expenses in 2Q2023 were Baht 41,040 million, decreased by Baht 218 million or 0.5% mainly from the end of Bongkot Project's concession contract of PTTEP in 1Q2023 made lower assets.

Share of profit from investments in joint ventures and associates



In 2Q2023, the share of profit from investments in joint ventures and associates was Baht 317 million, decreased by Baht 211 million or 40.0% mainly from lower performance of joint ventures in Petrochemical and Refining business, mostly from AVT as lower product to feed in 2Q2023.

In 2Q2023, there was gain on derivatives amounting to Baht 1,640 million, increased by Baht 3,508 million or more than 100.0% mainly from higher gain on finance derivatives of PTTEP and GC.

In 2Q2023, loss on foreign exchange was Baht 7,905 million, loss increased by Baht 18,017 million or more than 100.0% mainly from higher unrealized loss on US currency loans as a result of Thai Baht depreciation in 2Q2023, while Thai Baht appreciation in 1Q2023. (Thai Baht depreciation in 2Q2023 was Baht 1.49 per US\$, Thai Baht appreciation in 1Q2023 was Baht 0.47 per US\$).

Finance costs was Baht 11,437 million in 2Q2023 which was close to 1Q2023.

In 2Q2023, there was gain recognition of non-recurring items (PTT's portion after tax) of approximately by Baht 20 million. While in 1Q2023, there were loss recognition of non-recurring items (PTT's portion after tax) of approximately by Baht 100 million (see appendix).

The corporate income taxes in 2Q2023 was Baht 14,111 million, decreased by Baht 9,255 million or 39.6% resulted primarily from lower performance of PTTEP and TOP.

As a result, PTT and its subsidiaries' net profit in this quarter amounting to Baht 20,107 million, decreased by Baht 7,748 million or 27.8% from net profit of Baht 27,855 million in 1Q2023.

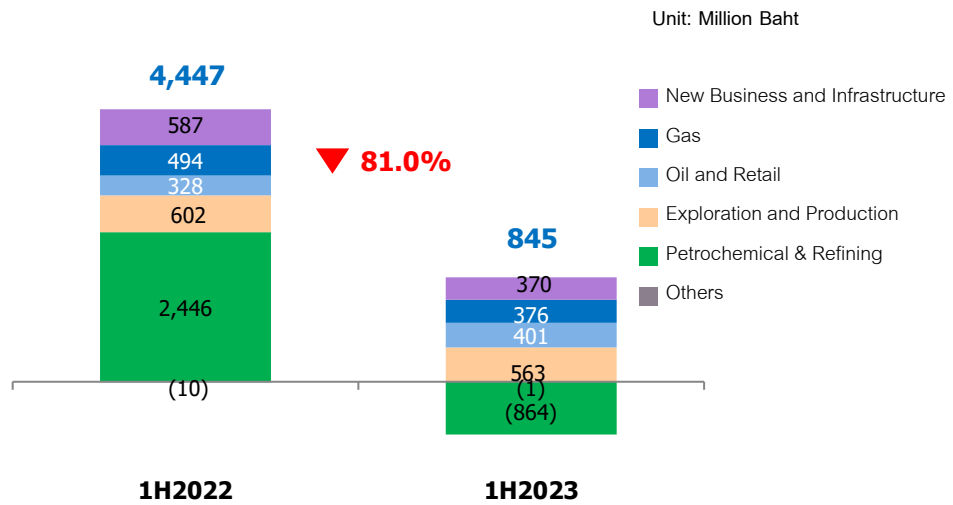
First half of 2023 compared with First half of 2022

In 1H2023, sales revenue of PTT and its subsidiaries' was reported at Baht 1,534,755 million, decreased from 1H2022 by Baht 150,664 million or 8.9%. Sales revenue of International Trading business, Exploration and Production business and Oil and Retail business decreased from lower average selling price in line with global petroleum and petrochemical prices, even though higher sales volume. Petrochemical and Refining business's revenue decreased mainly from Refining business which had lower average selling price despite higher sales volume. Additionally, Petrochemical business's revenue decreased from lower average selling price. Others business's sales revenue decreased from disposal of coal business in 1Q2023. In addition, sales revenue of Gas business decreased mainly from TM business due to revised gas pipeline tariff. However, New Business and Infrastructure business's revenue increased mainly from revenue recognition of pharmaceutical business from Lotus Pharmaceutical Company Limited (Lotus).

EBITDA in 1H2023 was Baht 196,633 million, decreased by Baht 127,056 million or 39.3%. This was mainly from Petrochemical and Refining business's performance. Refining business had lower performance from stock loss in 1H2023. PTT Group's stock loss increased, in 1H2023 there was stock loss approximately Baht 10,000 million, while in 1H2022, stock gain was approximately Baht 47,000 million, and market GRM decreased from US\$ 13.7 per bbl in 1H2022 to US\$ 6.3 per bbl in 1H2023 due to lower spread of gasoil, gasoline and jet over crude oil, even the increase in sales volume. Also, Petrochemical business's performance decreased from olefins' lower product to feed and sales volume. While aromatics' performance increased from higher spread of PX to feed, even lower sales volume. Gas business's performance decreased from GSP business which had higher gas cost following gulf gas price and lower average selling prices of all products as well as lower sales volume. In addition, gross profit of TM business decreased due to revised gas pipeline tariff. S&M business had higher performance mainly from industrial customers which the average selling price increased from higher referenced prices. Others business's performance decreased from disposal of coal business in 1Q2023. However, New Business and Infrastructure business's performance increased mainly from revenue recognition of pharmaceutical business, as aforementioned and GPSC's SPP higher performance following higher Ft in line with energy cost.

The depreciation and amortization expenses of 1H2023 were Baht 82,298 million, increased by Baht 4,918 million or 6.4% mainly from PTTEP's G1/61 Project.

Share of profit from investments in joint ventures and associates



In 1H2023, the share of profit from investments in joint ventures and associates was Baht 845 million, decreased by Baht 3,602 million or 81.0%. This was primarily from lower performance of joint venture in Petrochemical and Refining business mainly from HMC, PTT Asahi Chemical Company Limited (PTTAC) and AVT due to lower product to feed following global price.

Loss on derivatives decreased Baht 83,256 million, from loss on derivatives of Baht 83,484 million in 1H2022 to loss on derivatives of Baht 228 million in 1H2023 mainly due to an increase in gain on commodity derivatives of GC and TOP.

Gain on foreign exchange rate increased by Baht 9,516 million from loss Baht 7,309 million in 1H2022 to gain Baht 2,207 million in 1H2023 mainly due to lower unrealized loss on US currency loans as a result of Thai Baht depreciation in 1H2023 less than in 1H2022. (Thai Baht depreciation in 1H2023 was Baht 1.02 per US\$, Thai Baht depreciation in 1H2022 was Baht 1.87 per US\$)

In 1H2023, there were loss recognition of non-recurring items (PTT's portion) after tax approximately by Baht 70 million. Meanwhile, in 1H2022 there were loss recognition approximately of Baht 600 million (see appendix).

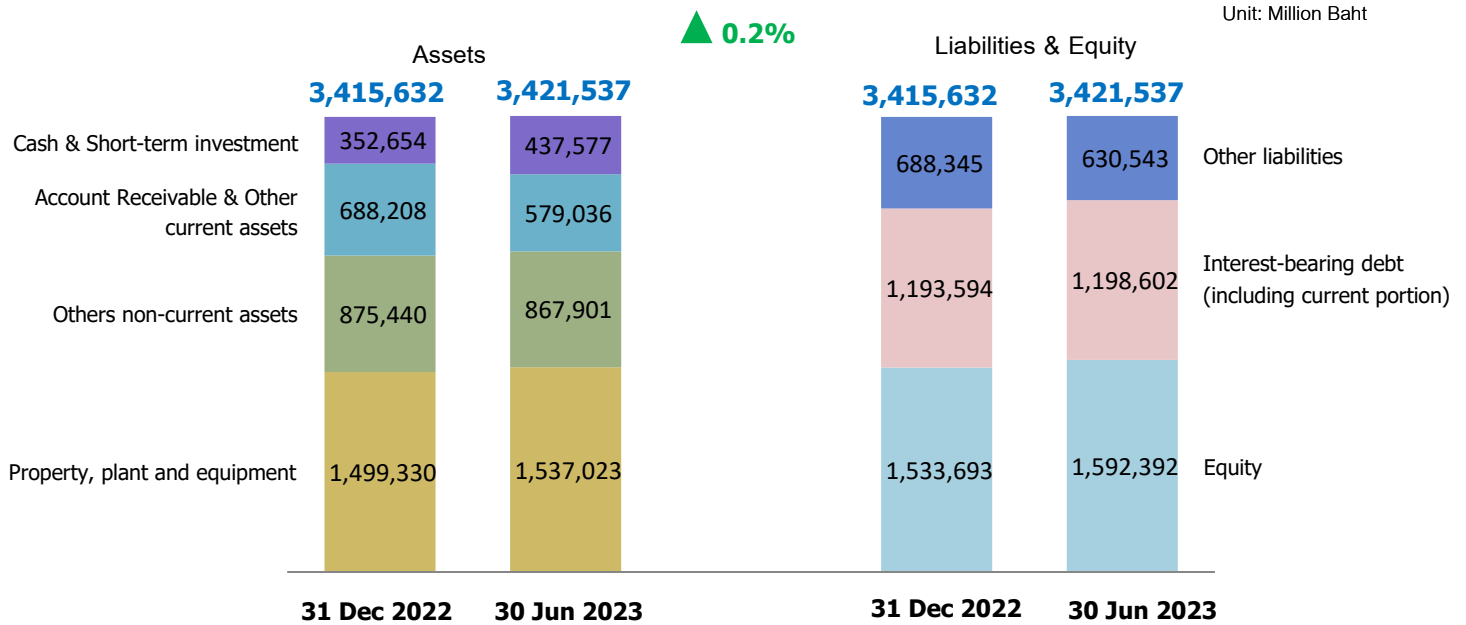
Finance costs was Baht 22,280 million in 1H2023, increased by Baht 5,685 million from 1H2022 mainly from loans and bonds issuance of GC, PTTEP, and PTT as well as higher market interest rates.

The corporate income taxes in 1H2023 was Baht 37,477 million, decreased by Baht 19,171 million or 33.8% mainly from the lower performance of PTT Group.

As aforementioned, this was resulted in PTT Group's net profit in 1H2023 amounting to Baht 47,962 million, which decreased by Baht 15,673 million or 24.6% from the net profit amounting to Baht 63,635 million in 1H2022.

The Analysis of PTT Group Consolidated Financial Position

As of 30 June 2023 compared with 31 December 2022



Assets

As of 30 June 2023, total assets of PTT Group was Baht 3,421,537 million, increased by Baht 5,905 million or 0.2% compared with 31 December 2022 from the followings;

- : Cash and cash equivalents and short-term investments increased by Baht 84,923 million primarily from PTT Group's operating activities.
- : Trade account receivables and other current assets decreased by Baht 109,172 million or 15.9% mainly from the followings;
 - Other account receivables decreased by Baht 74,638 million mainly due to a decrease in refund receivable from the Oil Fuel Fund and a decrease in prepayments for decommissioning costs in PTTEP's Bongkot project.
 - Assets held for sale decreased by Baht 22,215 million from the disposal of coal business of PTTGM.
 - Inventories decreased by Baht 7,041 million due to the decrease in inventory levels and lower selling prices, mainly from TOP, IRPC, and GC.
- : Other non-current assets decreased by Baht 7,539 million or 0.9% mainly from;
 - Deferred tax assets decreased by Baht 4,424 million primarily due to the end of concession of the Bongkot project of PTTEP.
 - Long-term investments decreased by Baht 3,378 million mainly from the partial reclassification of debt securities of PTT to short-term investments.

: Property, plant, and equipment (PPE) increased by Baht 37,693 million or 2.5% largely from PTTEP's exploration and evaluation assets of G1/61 and G2/61 Projects, including TOP's construction in progress of Clean Fuel Project (CFP).

Liabilities

As of 30 June 2023, PTT Group had total liabilities of Baht 1,829,145 million, decreased by Baht 52,794 million or 2.8% from 31 December 2022, mainly from the followings;

: Other liabilities decreased by Baht 57,802 million or 8.4% mainly from the decrease in derivatives liabilities of PTTT, the decrease in income tax payable of PTTEP, the decrease in trade account payables due to lower purchasing price and volume mainly from PTT and PTTEP, and the decrease in other payables of GC and PTTEP.

: Interest-bearing debt increased by Baht 5,008 million or 0.4% due to the increase in long-term loans and bond by Baht 4,195 million owing largely to IRPC, GPSC, and PTT. While short-term loan increased by Baht 2,475 million mainly from GC, PTTT and PTTTCC.

Equity

As of 30 June 2023, PTT Group had total shareholders' equity of Baht 1,592,392 million, increased by Baht 58,699 million or 3.8% from 31 December 2022 as a result of the 1H2023 net income of Baht 47,962 million offset with dividend payment from the operating results of the second half of 2022 amounting to 0.70 Baht per share which total amount is approximately Baht 19,994 million. Non-controlling interests increased by Baht 13,997 million mainly from higher net income of subsidiaries.

Liquidity

For the 6-month ended 30 June 2023, PTT Group had net increase in cash and cash equivalents amounting to Baht 58,492 million. There was cash and cash equivalents at the beginning of the period of Baht 340,054 million. As a result, cash and cash equivalents as of 30 June 2023 was Baht 398,546 million. Details of cash flow by activities are as follows:

	Unit: Million Baht
	Consolidated FS
Net cash provided by operating activities	208,381
Net cash used in investing activities	(94,982)
Net cash used in financing activities	(63,234)
Effects of exchange rates on cash and cash equivalents	3,306
Exchange differences on translation	5,021
Net increase in cash and cash equivalents during the period	<u>58,492</u>
Cash and cash equivalents at the beginning of the period	340,054
Cash and cash equivalents at the end of the period	<u>398,546</u>

Net cash provided by operating activities of Baht 208,381 million was derived from Baht 100,998 million of profit before income taxes, adjusted to net cash provided by (used in) operating activities. The increase in cash flow from operating activities resulted mainly from Baht 82,298 million of depreciation and amortization expenses, and Baht 22,280 million of finance costs. The decrease in cash flow from operating activities mainly resulted from Baht 8,165 million of unrealized loss on fair value of commodity contracts, Baht 5,112 million of interest income, Baht 4,720 million of reversal of allowance for inventory value adjustment and the change in net operating assets resulted in the increase in cash flow of Baht 67,336 million while there were income taxes paid of Baht 47,274 million.

Net cash used in investing activities was Baht 94,982 million mainly resulted from the followings;

: The cash outflow of investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets amounting to Baht 86,852 million mainly due to investment in exploration and production assets in G1/61 Project, G2/61 Project, and Zawtika Project of PTTEP, additional investment of the Bang Pakong–South Bangkok power plant transmission pipeline project, the 5th transmission pipeline project, 7th Gas Separation Plant, and GSP Logistics Management of PTT, GC's Olefins 2 Modification project, CFP project of TOP, and IRPC's Ultra Clean Fuel Project (UCF).

: The cash outflow from short-term investment in financial assets amounting to Baht 21,908 million mainly from investing in fixed deposit of PTT and PTTEP.

Net cash used in financing activities was Baht 63,234 million mainly from the followings;

: Dividend payment amounting to Baht 30,649 million mainly from PTT and PTTEP.

: Finance costs paid amounting to Baht 20,850 million mainly from GC, TOP, and PTT.

: The net cash outflow of short-term and long-term loans amounting to Baht 12,003 million mainly from TOP, OR, PTTEP, and GC.

Financial ratios and earnings per share of PTT Group

Financial Ratio	Unit	1H2022	1H2023
<u>Profitability Ratios</u>			
Gross profit margin	%	18.31	11.27
Net profit margin	%	5.27	4.14
<u>Solvency Ratios</u>			
Interest coverage	Times	19.51	8.83
<u>Earnings per share</u>			
Earnings per share	Baht/share	2.24	1.68

Financial Ratio	Unit	Dec 31, 2022	Jun 30, 2023
<u>Liquidity Ratios</u>			
Current ratio	Times	1.76	1.92
Quick ratio	Times	0.96	1.23
<u>Solvency Ratios</u>			
Debt to equity	Times	0.78	0.75

Note:

Gross profit margin	=	Gross profit divided by Sales and service income
Net profit margin	=	Net profit divided by Sales and service income
Interest coverage	=	EBITDA divided by Finance costs
Earnings per share	=	Net income attributable to ordinary shareholders divided by the weighted average number of ordinary shares which are held by third parties during the periods
Current ratio	=	Current assets divided by Current liabilities
Quick ratio	=	(Cash and cash equivalent + Current investments + Accounts receivable) divided by Current Liabilities
Debt to equity	=	Interest bearing debt divided by Total shareholder's equity

Economic Outlook in the Third Quarter of 2023

The world economy in 3Q2023 is expected to slow down from 2Q2023, amid the steep challenges shaped by the tighter and longer monetary policy tightening in major economies, including the US and Euro Area, despite the Fed signaling a potential end of the rate hike cycle after inflation moved closer to the target threshold. In addition, the recovery of the Chinese economy subjects to uncertainty from various pressure, including an expected sluggish export due to weaker global demand, the risk of entering a deflationary zone, and limited fiscal space beneath the surface issues of high local government debt. Moreover, downside risks to the world economy include worsening food supply crisis from climate change and the return of El Niño, amid an expected prolonged conflict between Russia and Ukraine.

According to the S&P Global's report in August 2023, global oil demand in 2023 is expected to increase from 2.1 MMBD in 2022 to 102.7 MMBD due to the global economic expansion and the gradual return of demand in China after the lifting of the Zero-COVID policy and reopening of the country including China's economic stimulus measures are likely to increase. Moreover, Saudi Arabia, the OPEC+ group leader, announced an additional oil production cut plan. The previous plan was to reduce production by 3.66 MMBD. In addition, they will reduce production further by 1.0 MMBD from July to September 2023, in conjunction with Russia's announcement of a plan to reduce export volume by 0.5 MMBD in August and further cut of 0.3 MMBD in September. However, concerns over the economic recession still pressured prices. In 3Q2023, Dubai crude oil price is expected to average at US\$77 – 82 per barrel, and Singapore GRM is expected to average at US\$5.0 – 6.0 per barrel.

The price of petrochemical products in 3Q2023 is expected to decrease due to weakened consumer demand for end products, coupled with a continued decrease in naphtha price.

- **Olefins prices** in 3Q2023 is expected to decrease, with average price of US\$1,000–1,020 per ton for HDPE and US\$930–950 per ton for PP, due to the decreased demand as it enters the monsoon season, coupled with the continuous flow of excess supplies into the Asian market, the return from the maintenance shutdown period of petrochemical plants, and the introduction of additional new supplies into the market. However, the process of accumulating inventory before entering the year-end holiday season, following significant price reductions of HDPE and PP, along with some manufacturers reducing production capacity or extending maintenance shutdown periods as they are unable to withstand negative profit rates, will serve as factors to support the market prices from decreasing significantly.
- **Aromatics prices** in 3Q2023 is expected to fall. BZ is projected to be around US\$790-810 per ton and PX prices is projected to be around US\$1,010-1,030 per ton following the expected lower crude oil price and naphtha price, resumption of supply after maintenance, together with upcoming of new capacities in China,

will pressure the market. However, the expected increase in feedstock demand as a blending component in gasoline during driving season in the US will further support the market.

The price of propane in 3Q2023 is expected to trend downwards, with propane price expected to be around US\$440-460 per ton, due to the anticipation of high supplies of propane from the United States and the Middle East, which are expected to remain at significant levels, along with a relatively weak demand for propane in the petrochemical sector. However, there are factors that are expected to support propane demand, particularly from PDH plants, especially in China, which are gradually coming online, and a need for inventory replenishment after the decline in propane price.

The Thai economy in 3Q2023 is expected to keep expanding from 2Q2023, mainly contributed by the growth in the tourism sector and private consumption. Meanwhile, merchandise exports may continue to decline amid the risks of global economic slowdown. The political uncertainty, especially delays of the new government formation, could negatively impact business confidence and government spending in the future. Furthermore, Thai economy expansion would remain highly uncertain and could face downside risks, including the possibility of a global economic slowdown beyond expectations due to the lagging effects of major central banks' monetary policy actions as well as the weakening signs of economic recovery in China, the prolonged conflict between Russia and Ukraine and the elevated and uncertain drought conditions stemming from El Niño.

Major Project Plan

Gas Business Group: The progress of major projects

Pipelines Transmission Projects

- The 5th Transmission Pipeline (Rayong - Sai Noi – North/South Bangkok power plants)
 - Total Project Progress as of June 2023: 97.52% (Including 3 phases construction)
 - COD: within 2023

Gas Separation Plant Unit 7 (GSP#7)

PTT is constructing the Gas Separation Plant Unit 7 (GSP#7) in Map Ta Phut Industrial Estate, Rayong Province to replace Gas Separation Plant Unit 1 (GSP#1) and to increase the efficiency of the gas separation plant's production process. The GSP #7 is designed to have a maximum capacity of 460 MMSCFD. It is scheduled to COD in the first quarter of 2024.

Gas Separation Plant Unit 8 (GSP#8)

Project Progress as of June 2023: PTT is in the process of preparing Front End Engineering Design and hiring a contractor in 2023.

LNG Project:

Currently, PTT have long term LNG contracts with Qatargas, Shell, BP, and Petronas at 5.2 MTA and has a capability to procure LNG in order to fulfill the country demand growth.

In addition, PTT procures additional 1 MTA of long-term LNG contract from PTT Global LNG Co., Ltd. (PTTGL) to further enhance national energy security. The first gas delivery will start in 2026.

- Other LNG Receiving Terminal Project (LNG Receiving Terminal 3):
 - On 24 September 2019, the Cabinet approved the private entity selection, negotiations and the draft of the contract between Public Private Partnership (PPP) and the Industrial Estate Authority of Thailand (IEAT) on the development of Map Ta Phut seaport phase 3 (Section 1) as proposed by the Eastern Economic Corridor Office. Gulf MTP LNG Terminal Co., Ltd., a new joint venture company between PTT Tank Terminal Co., Ltd. (PTT Tank) and Gulf Energy Development Public Co., Ltd. (GULF) with shareholding of 30%, and 70%, respectively, is to proceed land reclamation with the investment cost of approximately Baht 12,900 million which is expected to be completed by 2024, as well as having the right to construct LNG terminal 3 phase 1 with the capacity not less than 5 MTA. The LNG terminal 3 phase 1 has an investment cost approximately Baht 28,000 million which is expected to be completed by the year 2027.

Summary Planned Shutdown for Gas Separation Plants in 2023

Plant	1Q2023	2Q2023	3Q2023	4Q2023
GSP #1			SD (20 – 30 Aug : 11 days)	
GSP #2			TD (1 – 30 Sep : 30 days)	TD (1 – 4 Oct : 4 days) Major SD (1 – 18 Nov : 18 days)
GSP #3		SD (11 Apr – 8 May: 28 days)	Major SD (1 – 18 Sep : 18 days)	TD (1 Nov – 4 Dec : 34 days)
ESP		TD (11 Apr – 8 May: 28 days)	TD 50% (1 – 30 Sep : 30 days)	TD 50% (1 – 4 Oct : 4 days) TD 50% (1 Nov – 4 Dec : 34 days)

*TD: Turndown

**SD: Shutdown

Appendix

Exploration and Production Business consists of PTT Exploration and Production Public Co., Ltd. (PTTEP)

Natural Gas Business consists of PTT natural gas business unit, PTT Natural Gas Distribution Co., Ltd. (PTTNGD), PTT LNG Co., Ltd (PTTLNG) and PTT Global Management Co., Ltd. (PTTGM)

Oil and Retail Business consists of PTT Oil and Retail Business Public Co., Ltd. (OR)

International Trading Business consists of PTT international business unit, PTT International Trading Pte. Ltd. (PTTT), PTT International Trading London Limited (PTTT LDN) and PTT International Trading USA Incorporated (PTTT USA)

Petrochemical and Refinery Business consists of PTT Global Chemical Public Co., Ltd. (GC), Thai Oil Public Co., Ltd. (TOP), IRPC Public Co., Ltd. (IRPC), and PTT Tank Terminal Co., Ltd. (PTT TANK)

New Business and Infrastructure Business consists of PTT New Business and Infrastructure business unit, Global Power Synergy Public Co., Ltd. (GPSC), PTT Energy Solution Co., Ltd. (PTTES), Energy Complex Co., Ltd. (EnCo), PTT Digital Solutions Co., Ltd. (PTT DIGITAL) and PTT Global Management Co., Ltd. (PTTGM)

Other Business consists of Business Services Alliance Co., Ltd. (BSA), PTT Green Energy Pte. Ltd. (PTTGE), PTT Treasury Center Co., Ltd. (PTT TCC), PTT Energy Resources Co., Ltd. (PTTER) and PTT Global Management Co., Ltd. (PTTGM)

*Note: *PTTGM owns shares in many companies which operate in various businesses such as Natural Gas Business, New Business and Infrastructure Business, Other Business (that included performance of Coal Business that was divested in 1Q2023)*

Appendix

The key of non-recurring items (PTT's portion after tax) in 2Q2023 compared with 2Q2022 and 1Q2023, together with 1H2023 compared with 1H2022 are summarized as follows:

Unit: Million Baht

Business	Item	2Q2022	1Q2023	2Q2023	1H2022	1H2023
Exploration and Production business	Write off asset from the end of concession of Bongkot Project		~(500)			~(500)
Gas business	Benefit from discount from production shortfall	~1,000	~50	~20	~1,600	~70
Petrochemical and Refinery Business Group	TOP's income tax from sale of the investment in GPSC	~(2,100)			~(2,100)	
New Business and Infrastructure	Gain on Ichinoseki Solar Power 1 GK divestment of GPSC				~350	
Others Business	Impairment of coal mining project in Madagascar of PTTGM	~(400)			~(400)	