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ขับเคลื่อนทุกชีวิตด้วยพลังแห่งอนาคต

MANAGEMENT DISCUSSION & ANALYSIS 2Q2022



Management's Discussion and Analysis (MD&A) and operating result for the three-month and six-month periods ended 30 June 2022

Executive Summary

Unit : Million Baht	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	% Inc. (Dec.)
				YoY	QoQ			
Sales Revenue	533,256	758,465	926,954	73.8%	22.2%	1,011,093	1,685,419	66.7%
EBITDA	113,166	142,701	182,768	61.5%	28.1%	216,163	325,469	50.6%
Net Profit	24,578	25,571	38,848	58.1%	51.9%	57,166	64,419	12.7%
Earnings per share (Baht/share)	0.86	0.89	1.37	59.3%	53.9%	2.00	2.26	13.0%
Average Dubai Price (US\$/barrel)	66.9	95.6	108.1	61.6%	13.1%	63.5	101.8	60.3%

In the second quarter of 2022 (2Q2022), PTT and its subsidiaries reported Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) in an amount of Baht 182,768 million increased by Baht 69,602 million or 61.5% from the second quarter of 2021 (2Q2021) of Baht 113,166 million mainly from Petrochemical and Refining businesses which performance increased from the improved Refining business that had market GRM rose from the sharp increase of most product spreads as well as higher sales volume and stock gain. Moreover, PTT Group's stock gain increased approximately Baht 7,000 million as crude oil price increased in higher extent compared to the same period of last year. Meanwhile, Petrochemical business's performance decreased owing to the lower in most petrochemical product spreads of both Olefins and Aromatics and lower sales volume from planned maintenance shutdown in 2Q2022. In addition, Petroleum Exploration and Production business's performance improved from the increase in both of average selling prices and average sales volume. However, the performance of New Business and Infrastructure declined mainly from Power business since the feed cost of natural gas and coal significantly increased, resulting in lower profit margin of Small Power Producer (SPP). Net income of PTT and its subsidiaries in 2Q2022 was Baht 38,848 million which increased by Baht 14,270 million or 58.1% from 2Q2021 at Baht 24,578 million following higher EBITDA. In addition, there was gain from the recognition of non-recurring items (PTT's portion) after tax in 2Q2022 mainly from PTT's discounted benefit from production shortfall approximately Baht 1,000 million. While, in 2Q2021, there was loss from the recognition of non-recurring items (PTT's portion) after tax mainly from PTT Global Chemical Public Company Limited (GC)'s loss on impairment of investment in JV approximately Baht 1,500 million. However, in 2Q2022, there were higher loss on derivatives, corporate income taxes, and foreign exchange rate.

In 2Q2022, PTT and its subsidiaries EBITDA in an amount of Baht 182,768 million increased by Baht 40,067 million or 28.1% from the first quarter of 2022 (1Q2022) at Baht 142,701 million mainly from the increase in the performance of Petrochemical and Refining businesses. The performance of Refining business improved since Market GRM increased from the increase in most of all petroleum product spreads despite the reduced stock gain. PTT Group's stock gain decreased

approximately Baht 8,000 million as crude oil price increased in lower extent compared to the previous quarter. Moreover, **Petroleum Exploration and Production Business** and **Coal Business**'s performances rose from the increase in average selling prices and sales volume. In addition, **Oil and retail business**'s performance increased from higher sales volume and gross margin per liter mainly from diesel and aviation. Furthermore, **Gas business**'s performance improved mainly from lower gas cost following the drop in global LNG price. **Net income of PTT and its subsidiaries in 2Q2022 was Baht 38,848 million increased by Baht 13,277 million or 51.9% from 1Q2022 at Baht 25,571 million** mainly from the improve of EBITDA. Moreover, there was lower loss on derivatives in 2Q2022 while the corporate income taxes increased from higher performances of PTT and its subsidiaries as well as Thai Oil Public Company Limited (TOP)'s tax expense from gain on sale of the investment in Global Power Synergy Public Company Limited (GPSC) approximately Baht 2,100 million, and higher loss on foreign exchange rate. In addition, in 2Q2022, there was gain from the recognition of non-recurring items (PTT's portion) after tax which is closed to the previous quarter.

In the first half of 2022 (1H2022), PTT and its subsidiaries reported EBITDA of Baht 325,469 million, increased by Baht 109,306 million or 50.6% compared to the first half of 2021 (1H2021) of Baht 216,163 million mainly from the increase in **Petrochemical and Refining businesses**' performance specifically from Refining business which had Market GRM increased supported by Russia-Ukrain tension as well as the increase in sales volume and stock gain. In addition, PTT Group's stock gain increased approximately Baht 19,000 million following the crude oil price increased in higher extent compared to the same period last year. Whereas, Petrochemical business's performance decreased from both of Olefins and Aromatics that had selling prices increase in lower extent than the feed stock price and lower sales volume from planned maintenance shutdown in 1H2022. However, **Petroleum Exploration and Production business** as well as **Coal business**'s performances enhanced from the increase in both of average selling prices and sales volume. In addition, the performances of **Oil and retail business** and **International Trading business** increased following the recovered demand from easing of lockdown. However, the performance of **New Business and Infrastructure** dropped mainly from Power business which had significantly higher feed cost of natural gas and coal. Also, **Gas business**'s performance decreased as the gross profit of Supply and Marketing business (S&M) pressured from higher gas cost following the surge of global LNG price. However, Gas Separation Plant business (GSP)'s gross profit rose from the higher average selling prices of all products in accordance with the higher petrochemical referenced prices. **In 1H2022, net income of PTT and its subsidiaries was Baht 64,419 million which increased by Baht 7,253 million or 12.7% from 1H2021 at Baht 57,166 million** following the improved EBITDA. Meanwhile, there were higher loss on foreign exchange rate and loss on derivatives, and higher corporate income taxes. In addition, there was lower gain from recognition of non-recurring items (PTT's portion) after tax. In 1H2022, there was PTT's discounted benefit from production shortfall approximately by Baht 1,600 million. While, in 1H2021, there was gain from a bargain purchase in Oman Block 61 Project of approximately Baht 7,000 million offset with the partial write-off of the assets in the exploration project in Brazil of approximately Baht

2,900 million of PTT Exploration and Production Public Company Limited (PTTEP) and GC's impairment loss from JV approximately Baht 1,500 million.

As of 30 June 2022, PTT and its subsidiaries had the total assets amounting to Baht 3,534,887 million increased by Baht 456,868 million or 14.8% from 31 December 2021 which had total asset amounting to Baht 3,078,019 million mainly from the increase in inventories and trade accounts receivable following the higher product prices and volumes. Whereas, the total liabilities were reported at Baht 1,972,112 million increased by Baht 367,033 million or 22.9% mainly from the increase in long-term loan and bond issuances during the period together with trade accounts payable due to the increase in overall purchased volumes and prices as well as the increase in derivatives liabilities. In addition, the total shareholders' equity was Baht 1,562,775 million, increased by Baht 89,835 million or 6.1% mainly from the increase in PTT and its subsidiaries' net income of 1H2022.

Economic Overview in the Second Quarter of 2022

The world economy in 2Q2022 continued to recover from 1Q2022, following the relaxation of COVID-19 containment measures in overall, but at a slower rate, due to higher-than-expected inflation. Especially in the US, The Federal Reserves (The Fed) raised its federal funds rate by 0.75% to 1.50% - 1.75% at its June 2022 meeting, its most aggressive hike since 1994, resulted in tighter global financial conditions. Together with a slowdown in Chinese economy caused by COVID-19 outbreaks and lockdown measures under a tightening of zero-COVID policy. In addition, world economy is also impacted by the prolonged Russia-Ukraine conflict. The International Monetary Fund (IMF) in July 2022 revised down its global growth forecast for 2022 to 3.20% from its previous forecast of 3.60% in April 2022.

According to S&P Global (Previously IHS Markit, or IHS) report of July 2022, global oil demand in 2Q2022 was averaged at 97.5 million barrels per day (MMBD), decreasing from 1Q2022 at 98.2 MMBD amid Russia and Ukraine tension, concern over economic growth, and surging crude and refined product price. However, compared with 2Q2021 at 95.7 MMBD the demand increased following the demand recovery after many countries relax COVID-19 measures.

Unit : US\$/barrel	2Q2021	1Q2022	2Q2022	% Inc. (Dec.)		1H2021	1H2022	% Inc. (Dec.)
				YoY	QoQ			
Average Dubai crude oil price	66.9	95.6	108.1	61.6%	13.1%	63.5	101.8	60.3%
Gasoline Crack Spread	9.9	17.8	35.0	>100.0%	96.6%	8.5	26.4	>100.0%
Diesel Crack Spread	5.3	19.6	43.1	>100.0%	>100.0%	5.0	31.3	>100.0%
FO Crack Spread (180 – 3.5%S)	(5.8)	(8.3)	(3.2)	44.8%	61.4%	(4.6)	(5.8)	(26.1%)
GRM-Singapore Crack	2.0	8.0	21.4	>100.0%	>100.0%	1.9	14.7	>100.0%

Dubai crude oil price in 2Q2022 was averaged at US\$108.1 per barrel, increasing from 1Q2022 at US\$95.6 per barrel, and from 2Q2021 at US\$66.9 per barrel from prolonged tension between Russia and Ukraine which resulted in Russia crude embargo, to be effective in December 2022, from the European Union. However, crude export from Russia still resilient as it has Asian country – buyers e.g. China, and India due to the cheaper price. In addition, delay of Iranian nuclear deal limited additional global oil supply to the market. Nonetheless, supply from OPEC and its allies (OPEC+) continuously increased due to higher production quota by 0.43 MMBD each month, though OPEC+ still underproduced because various constraints from many members. Also, additional supply from the Strategic Petroleum Reserves (SPR) release has been added into the market.

Petroleum product prices at Singapore spot market

- Gasoline crack spread in 2Q2022 was averaged at US\$35.0 per barrel, increasing from 1Q2022 at US\$17.8 per barrel and from 2Q2021 at US\$9.9 per barrel amid increasing demand during driving season in the US, lower supply during refinery turnarounds, and decreasing gasoline inventory. However, resurgence of

COVID-19 in China, which lead to lockdown in many areas, and high gasoline price will put pressure on consumption and the crack spread.

- **Diesel crack spread** in 2Q2022 was averaged at US\$43.1 per barrel, increasing from 1Q2022 at US\$19.6 per barrel and from 2Q2021 at US\$5.3 per barrel amid prolonged tension between Russia and Ukraine which resulted in Russia petroleum products embargo from the European Union, where Russia is the major suppliers of diesel. In addition, it is also supported by lower supply from refinery during turnaround period led to lower diesel inventory. However, high diesel price and higher inflation rate will put pressure on diesel demand, especially in the industrial sector, and put a pressure on crack spread.
- **Higher Sulfur fuel oil 3.5% crack spread (HSFO)** in 2Q2022 was averaged at US\$ -3.2 per barrel, increasing from 1Q2022 at US\$ -8.3 per barrel and from 2Q2021 at US\$ -5.8 per barrel amid higher import demand from Middle East and South Asia during summer season for power generation as well as increasing import demand from the U.S. to compensate Russian volume, and also decreasing in supply due to non-standard fuel oil products issue at Singapore.

Singapore Gross Refining margin (GRM) in 2Q2022 was averaged at US\$21.4 per barrel, increasing from 1Q2022 at US\$8.0 per barrel, and from 2Q2021 at US\$2.0 per barrel amid increasing product demand from easing lockdown especially gasoline, diesel and aviation fuel due to more travel during the summer of the western countries. It is also supported by the tightening supply due to the concern over Russia and Ukraine tension, and the season of refinery turnaround. However, higher crude oil price will put pressure on overall GRM.

Unit : US\$/Ton	2Q2021	1Q2022	2Q2022	% Inc. (Dec.)		1H2021	1H2022	% Inc. (Dec.)
				YoY	QoQ			
HDPE: CFR SEA	1,191	1,330	1,341	12.6%	0.8%	1,168	1,336	14.4%
PP: CFR SEA - Film	1,336	1,387	1,351	1.1%	(2.6%)	1,351	1,369	1.3%
BZ: FOB Korea	966	1,073	1,238	28.2%	15.4%	859	1,156	34.6%
BZ - Naphtha	360	196	363	0.8%	85.2%	278	280	0.7%
PX: CFR Taiwan	859	1,087	1,259	46.6%	15.8%	812	1,173	44.5%
PX - Naphtha	253	210	384	51.8%	82.9%	231	297	28.6%
Naphtha (MOPJ)	606	877	875	44.4%	(0.2%)	581	876	50.8%

Petrochemical prices of Olefins and Aromatics in 2Q2022 mostly increased from 1Q2022, as crude oil price was further increased, while naphtha price remained at a high level. In addition, higher feedstock cost caused multiple producers to cut refineries run amid poor margins.

- **Olefins: High Density Polyethylene (HDPE)** price slightly increased from 1Q2022, amid tighter supply from refineries as producers cut run from poor margin and lower China demand amid country lockdown. Meanwhile, **Polypropylene (PP)** price slightly dropped from 1Q2022 from sluggish durable demand from

home appliances and automobile sectors, as concerns over high inflation and interest rate. In addition, excess supplies were allocated to Asia to ease inventory pressure as suppliers faced weak sales in some overseas markets, including Europe.

- **Aromatics:** **Benzene (BZ)** price and BZ spread over naphtha increased from 1Q2022, following a surge in demand from US as the countries' logistic limitation with rising freight cost. In addition, higher BZ demand from using BZ as a feedstock for Mix-Xylene (MX) and Toluene (TL) production for gasoline blending, tight BZ supply from seasonal maintenance, high crude oil and naphtha price, and opened East-West arbitrage opportunities. However, a decreasing demand from Styrene Monomer (SM) producers following their seasonal maintenance and operating rate run cuts in Asia refineries amid squeezed margins, put pressure on an increase of BZ price. **Paraxylene (PX)** price and PX spread over naphtha increased from 1Q2022, following a tighter supply from widespread operating rates cuts in Asia on lower margin, and increasing gasoline blending demand as higher margin alternative while crude oil and naphtha price remain high. However, a slowdown in downstream market for both Purified terephthalic acid (PTA) and Polyester in China put pressure on PX price.

Comparing to 2Q2021, petrochemical Olefins and Aromatics prices in 2Q2022 was increased following a surge in crude and naphtha prices, concerns over the escalation and extension of the Russia's invasion of Ukraine.

Thai economy in 2Q2022 continued to recover from 1Q2021, as tourism sector, private consumption and private investment continued to recover due to further easing lockdown restrictions, particularly the cancellation of the Test & GO entry requirements from 1 May 2022, amid a decline in COVID-19 cases from the high level at the end of March 2022. Merchandise exports continued to expand, but at a slower rate due to global economic slowdown, particularly zero-COVID policy that hampered China's economy. In addition, government spending continued to supported growth, albeit on a reduced budget. However, higher cost-push inflation on the back of sanctions on Russia, alongside with a long last of COVID-19 outbreak, exacerbated financial conditions to Thai household's purchasing power and businesses' profit margins, especially at the end of the second quarter. The Bank of Thailand (BOT) in June 2022 revised up its Thai economic forecast for 2022 to 3.3%, from its previous estimate of 3.2% in March 2022.

Non-recurring Items in the First Half of 2022 until Present

Summary of non-recurring items in the first half of 2022 until present are as follows:

January 2022

- PTT: On 1 January, to support Thai people on energy prices, PTT has extended the cap of NGV retail price from 1 January to 15 March 2022. For the taxi in Bangkok Metropolitan Area the retail price has capped at 13.62 Baht/kg and the NGV retail price for general cars has capped at 15.59 Baht/kg. Subsequently, the cap of NGV retail prices were extended from 16 March 2022 until 15 June 2022 and from 16 June 2022 until 15 September 2022. Also, PTT has extended the period of LPG's discount for low-income household who sell food or operate food stalls thru the State Welfare Card by Baht 100 per person per month until 30 September 2022.
- PTT & GPSC: On 11 January, Board of Directors of Arun Plus Company Limited (Arun Plus), the wholly owned subsidiary of PTT, approved the establishment of Nuovo Plus Company Limited (Nuovo Plus), a joint venture company with GPSC with the registered capital of Baht 4,200 million and an initial paid-up capital of Baht 1,050 million. Arun Plus and GPSC hold 51% and 49% of the shares in Nuovo Plus, respectively. The objectives of the company establishment are to study the possibility of the investments in the battery value chain in order to support the electric vehicle industry in accordance with Thailand's automotive industry policy to promote electric vehicles, energy storage system (for the storage of electricity from renewable sources), as well as the investment in the related businesses. On 28 February 2022, Board of Directors of Nuovo Plus approved the acquisitions of battery related assets from PTT Group companies with the total amount of not exceed Baht 2,900 million. The battery related assets consist of:
 1. The assets, expenses, contracts, and other agreements related to the battery plant with the initial capacity of 30 MWh per year in Map Ta Phut Industrial Estate, Rayong province from GPSC
 2. 100% of the ordinary shares of GPSC-SG Holding Company, Singapore (the subsidiary of GPSC) that holds 11.1 percent in Anhui Axxiva New Energy Technology Co., Ltd, China, which operates a battery plant with the capacity of 1 GWh per year, and also any relevant contracts and other agreements from GPSC
 3. The battery development under VISESS project of PTT and Alpha Com Company Limited (Alpha Com) (PTT's wholly owned subsidiary)

February 2022

- PTT: On 3 February, Arun Plus completed the establishment of Horizon Plus Company Limited (Horizon Plus) according to the Arun Plus's Board of Directors that approved the establishment of a joint venture company with Lin Yin International Investments Company Limited (Lin Yin) (the wholly owned affiliate of Hon Hai Precision Industry Company Limited (Foxconn)) to operate the electric vehicle manufacturing business. Horizon Plus had the registered capital not in excess of Baht 3,220 million, which Arun Plus and Lin Yin hold 60% and 40% stakes

respectively. Horizon Plus expects to start its commercial operation within the first quarter of 2024.

- **GPSC:** On 7 February, GPSC has entered into the Sales Agreement for the divestment of all shares in Ichinoseki Solar Power 1 GK or ISP1, which GPSC holds 100 % stake in ISP1, to CES Iwate Taiyoko Hatsudensho GK for the total value of approximately JPY 3,860 million, or approximately Baht 1,119 million. Such transaction is part of asset management in alignment with GPSC's strategy to expand its total capacity from green portfolio in target countries.
- **PTT & TOP:** On 17 February, PTT's and TOP's Board of Directors approved the shareholding restructure of PTT Group's power business by the sale the ordinary shares of GPSC from TOP with a par value of Baht 10 per share to PTT and/or Siam Management Holding Co., Ltd. (SMH), the wholly owned subsidiary of PTT, in the aggregate amount of 304,098,630 shares, representing approximately 10.78% of the total issued and paid-up shares of GPSC, totaling approximately Baht 22,351 million, which is the price before deduction of GPSC's dividends after December 31, 2021 and before the share transfer date (if any). TOP will derive the proceeds to repay the loan to PTT and commercial banks for financial assistance in the form of bridging loan to finance the TOP's investment in PT Chandra Asri Petrochemical Tbk. Consequently, after the Restructuring Transaction, PTT and SMH will own 55.23% and TOP will own 10.00% of GPSC's total paid-up capital. SMH and PTT have completed the purchase of GPSC's ordinary shares from TOP 7 June 2022.
- **TOP:** On 17 February, the Board of Directors has approved an increase in TOP's registered capital in the amount of Baht 2,751,200,000 from Baht 20,400,278,730 to Baht 23,151,478,730 through the issuance of up to 275,120,000 newly issued ordinary shares with a par value of Baht 10 per share. Such increase in the TOP's registered capital is for the fund raising as part of TOP's long-term financial restructuring, the offering structure of TOP shall be as follows:
 - (1) TOP will issue up to 239,235,000 new ordinary shares for public offering, including issuance and offering to existing shareholders in proportion to their shareholding.
 - (2) Over-Allotment, where the underwriter of TOP may consider to allocate the shares of TOP in the amount up to 35,885,000 shares, with the par value of Baht 10 in case there are subscribers subscribing for the newly issued shares of TOP in excess of the amount to be offered in (1). PTT will be the shares lender to deliver to the subscribers.Consequently, 19 August 2022 is the record date for the shareholders who are entitled to allocation rights of newly issued ordinary shares.

March 2022

- **PTTEP:** On 1 March, PTTEP MENA Limited, a subsidiary of PTTEP, has completed the conditions precedent in Farm-in/Farm-out Agreement to acquire 25% stake in the Concession Area C onshore the Emirate of Sharjah from Eni Sharjah B.V., it is an onshore gas and condensate concession block, situated in the central part of Sharjah Emirate.

- **PTTEP:** On 14 March, PTTEP International Limited (PTTEPI), a wholly-owned subsidiary of PTTEP and a partner in the Yadana Project in Myanmar, will be the operator of Yadana Project after the withdrawal announcement of TotalEnergies EP Myanmar (TotalEnergies) as the operator and the partner from Yadana Project on 21 January 2022. The change was approved by the Project's partners and has been effective from 20 July 2022 onwards. Following the withdrawal of TotalEnergies, the consortium of Yadana project consists of Unocal Myanmar Offshore Company Limited (a wholly-owned subsidiary of Chevron) 41.1016% participating interest, PTTEPI (as the Operator) 37.0842% participating interest, and Myanmar Oil and Gas Enterprise (MOGE) 21.8142% participating interest. Yadana Project is a significant natural gas field with an average gas sales volume of 770 MMSCFD, which supply gas to generate electricity, accounting for 11% of Thailand's natural gas consumption and 50% of total gas supply to Myanmar people. Decision to becoming the operator of Yadana Project is to ascertain gas supply continuity to support energy consumption and long-term energy security.
- **PTTEP:** On 23 March, PTTEP HK Offshore Limited (PTTEP HKO), a wholly-owned subsidiary of PTTEP Group, and SapuraOMV Upstream (Sarawak) Inc. are awarded the exploration Block SB412, which is located offshore of Sabah, Malaysia. The consortium has signed a Production Sharing Contract (PSC) with Petroliaam Nasional Berhad (PETRONAS), with the participation interests for PTTEP HKO at 60% (the operator) and SapuraOMV at 40%.
- **PTTEP:** On 31 March, PTTEP has dissolved an inactive subsidiary, namely PTTEP Sadang Limited, effective on 31 March 2022 in order to minimize administrative costs. This has no impact to PTTEP's operations.

April 2022

- **PTT:** On 1 April, the Energy Regulatory Commission (ERC) announced criteria for calculating Energy Pool Price (EPP), which is the weighted average prices of energy used to generate power, including PTT's pool gas, New Shipper's liquefied natural gas (LNG), diesel, fuel oil, LPG and other fuels as specified by the ERC in order to average the cost of natural gas prices in the Pool Gas to calculate EPP price. EGAT which is the clearing house is responsible for gathering data from relevant sectors to calculate the EPP gas price and submit EPP to PTT for determining gas cost for PTT's all customer. The purposes of the change are to reduce power producer's burden of higher gas cost. EPP is effective from 1 April 2022 and implemented in 1 May 2022 onwards.
- **PTTEP:** On 1 April, PTTEP has dissolved an inactive subsidiary, namely Partex Services Portugal – Serviços para a Indústria Petrolífera, S.A. (PSP), effective on 1 April 2022 in order to improve operational efficiency and minimize administrative costs. This has no impact to PTTEP's operations.
- **PTT:** On 7 April, Innobic (Asia) Company Limited (Innobic) (a wholly owned subsidiary of PTT), has completed the cooperative investment with Aztiq HK Limited, the affiliate of Aztiq

Investment Group to acquire all stakes in Alvogen Emerging Markets Holdings Limited, a major shareholder of Lotus Pharmaceutical Company Limited (Lotus) and also holds 100% stake in Alvogen Malta (Out-Licensing) Holding Limited who owns 100% of the company so called Adalvo Limited (Adalvo), B2B pharmaceutical company with the massive global network. Consequently, Innobic will then has an indirect shareholding in Lotus of approximately 37% of the total issued capital and 60% of the total issued capital in Adalvo. The objective for the investment is to align with PTT's New S-curve strategy in expanding into new business especially in Life Science area. Lotus is a fully integrated pharmaceutical company that focuses on research and development, manufacturing, and distribution of Generic drugs that cover therapeutic areas especially oncology and central nervous system.

- **PTT:** On 8 April, the annual general meeting of shareholders approved the dividend payment from 2021 performance which will be paid at Baht 2.00 per share to the shareholders of totaling 28,562,996,250 shares in an approximated amount of Baht 28,563 million. The dividend payments are divided into the interim dividend payment from the first half of 2021 performance which PTT had already paid to shareholders at Baht 1.20 per share on 15 October 2021. PTT also paid the dividend from the second half of 2021 performance at Baht 0.80 per share on 29 April 2022.
- **PTT:** On 8 April, PTT has issued unsubordinated and unsecured debentures No. 1/2022 for the total amount of Baht 20,000 million with the tenor of 3-12 years and the interest rate of 1.79% - 3.47% per annum to the institutional investors and/or high net worth investors (excluding individuals). The debentures are issued under Baht 130,000 million Medium - Term Note Program (MTN Program) which was approved by the Securities and Exchange Commission of Thailand.
- **PTT & PTTEP:** On 20 April, PTT, as buyer, and PTTEP Energy Development Company Limited (PTTEP ED) (a wholly owned subsidiary of PTTEP), operator of G1/61 and G2/61 Project, together with Department of Mineral Fuels as sellers, have completely entered into Gas Sale Agreement, Condensate Sale Agreement, and Crude Sale Agreement. PTTEP ED will become an operator under a Production Sharing Contract of both projects from 24 April 2022 onwards. PTTEP ED has also reached an agreement with MP G2 (Thailand) Limited, a subsidiary of Mubadala Petroleum (Thailand) Holdings Limited (Mubadala), for PTTEP ED to be a sole investment operator of G1/61 and shall recognize all revenues and costs from the petroleum produced with effective date from 1 December 2021.
- **OR:** On 27 April, OR's Board of Directors has resolved to approve PTT (Cambodia) Limited (PTTCL) (OR's wholly-owned subsidiary) to establish 2 subsidiaries registered in Cambodia, with an investment value not exceeding US\$ 1 million. The objective of this investment is to enhance capability to compete and provide stability for OR's long-term business operations in

Cambodia, where PTCL hold 49% stake of the registered capital. The company registration is expected to be completed within the third quarter of 2022.

- **PTTEP:** On 29 April, PTTEP International Limited (PTTEPI) and PTTEP Offshore Investment Company Limited (PTTEPO), subsidiaries of PTTEP, have notified their decisions to withdraw from Yetagun Project and gas transportation company, Taninthayi Pipeline Company LLC (TPC), which have been effective on 31 May 2022 after receiving the official regulatory approval from Myanmar government.

May 2022

- **GPSC:** On 5 May, Nava Nakorn Electricity Generating Company Limited (GPSC holds 30% stake together with the joint investors comprised of Ratchaburi Electricity Generating Company Limited and Nava Nakorn Public Company Limited, which holds share proportion of 40% and 30% respectively) will invest in an expansion for an addition of 30 megawatts of electricity generation capacity and 5.3 tons per hour of steam generation capacity, with the project cost of approximately Baht 1,724 million. The construction of expansion project will be in December 2022 and the commercial operation will commence in June 2024. After the operation, Nava Nakorn Electricity Generating Company Limited will have the total electricity generation capacity of approximately 215 megawatts and the net steam generation capacity of approximately 45.3 tons per hour.
- **PTT & PTTEP:** On 17 May, PTT's Board of Directors Meeting approved the shareholding restructure of PTT Global LNG Company Limited (PTTGL) by assigning SMH to purchase all shares of PTTGL from PTT and PTTEP Business Center Company Limited (PTTEP BC), which equally hold 50% stake in PTTGL, at the amount approximately US\$ 255 million. The transaction was completed in June 2022, after the restructuring transaction, SMH will hold 100% of PTTGL's shares. The shareholding restructure will enable PTTGL to flexibly accelerating growth in the LNG value chain business and becoming a global LNG player in accordance with PTT group's strategic plan.
- **PTT:** On 20 May, PTT's Board of Directors and Board of Directors of Interpharma Public Company Limited (IP) (Thai listed company on MAI ticker: IP) have approved the investment in IP's newly issued shares via private placement by Innobic LL Holding Co., Ltd. (INBL) to acquire IP's stakes at 20% of the total registered and paid-up capital. The total investment value is approximately Baht 1,043 million. The transaction is expected to complete in the third quarter of 2022. The collaboration aims for the further development of R&D and for the escalation in businesses across the country, covering a full range of healthcare products including innovative medicine, eye healthcare, nutraceuticals & supplement, Thai herbal medicines, as well as health food and drink.
- **PTT:** On 20 May, PTT's Board of Directors passed a resolution for PTT to relieve electricity generating cost of EGAT in order to alleviate electricity burden for Thai people during the

energy crisis in Thailand through the discharge of the interest from the delay of natural gas payment to EGAT according to the postponement of the natural gas payment for the period of May 2022. The due date will be extended from June to October 2022. The interest amount is approximately Baht 340 million.

- **OR:** On 20 May, Modulus Venture Company Limited (Modulus), a wholly-owned subsidiary of OR, has signed a share subscription agreement and a shareholder agreement to invest through purchasing newly issued preferred stock of Polar Bear Mission Company Limited (Freshket), on 19 May 2022 with a total investment amount not exceeding US\$ 14.5 million. Freshket is a food supply chain service provider that procures, imports, and distributes quality raw materials for restaurants, hotels and consumers.
- **PTT:** On 25 May, Alpha Com has established P-Dictor Company Limited (P-Dictor) with the registered capital of approximately Baht 54.5 million with the objective to operate the predictive maintenance and machine monitoring artificial intelligence (AI) for industrial solution which help predicting the possibility of any mechanical failures on the critical machineries and equipments of the plants. Therefore, the production and maintenance could be properly planned and the risk of damage on operational production and product distribution would be reduced. The service will be provided to the industrial plants both within PTT group and external customers.
- **PTT:** On 27 May, PTT has issued the unsubordinated and unsecured debenture No. 2/2022 for the total amount of Baht 20,000 million with the tenor of 7 years and interest rate of 3.25% per annum to general public, foundation, and non-profit organization. The debenture is issued under Baht 170,000 million Medium-Term Note Program (MTN Program) in 2020 which was approved by the Securities and Exchange Commission of Thailand.

June 2022

- **PTTEP:** On 1 June, the Algeria Hassi Bir Rekaiz Project has successfully commenced the production with the oil production target at 13,000 barrels per day. The Project will add the total production volume and support the long-term growth for PTTEP. The project is located onshore, in the eastern part of the People's Democratic Republic of Algeria, covering an area of 1,916 square kilometers. The Project's consortium consists of PTTEP at 49% and SONATRACH (Algeria's National Oil and Gas company) at 51%.
- **OR:** On 6 June, Phnom Penh Aviation Fuel Service Co., Ltd. (PPAFS) is a joint venture between PTTOR International Holdings (Singapore) (SG HoldCo), a subsidiary of OR, China National Aviation Fuel International Holdings Limited (CNAF) from the People's Republic of China, and Total Energies Marketing (Cambodia) Co., Ltd. (TOTAL) which hold 33.33% equally. PPAFS has signed a Concession Agreement dated 3 June 2022, together with Cambodia Airport Investment Company Limited (CAIC), a company awarded a concession to develop a new international airport in Phnom Penh from the Cambodian government, which granted PPAFS a concession right to become an operator of an aviation refueling service system at the New

International Airport in Phnom Penh. The source of investment will be from loans and capital from shareholders, where OR will invest in the amount of not exceeding US\$ 18.20 million.

- **OR:** On 8 June, Modulus, a wholly-owned subsidiary of OR, had signed the related contracts with Boonrawd Trading Co., Ltd. (Boonrawd) to establish a new joint venture which will be equally hold at 50% of all common shares. Modulus will invest in the amount of no more than Baht 210 million. The objective of this joint venture is to manufacture and distribute ready-to-drink products and expected to complete its registration by the third quarter of 2022.
- **PTT:** On 16 June, PTT's Board of Directors has reviewed and approved the revision of PTT and its wholly owned subsidiaries' investment plan for year 2022 from Baht 46,589 million to Baht 91,179 million. The revision is mainly from the adjustment of investment in wholly owned subsidiaries and New Business and Infrastructure group particularly from the shareholding restructure of power and LNG businesses as well as the investment expansion in the new businesses, especially in the electric vehicle business which Horizon Plus has reached its final investment decision (FID) for the electric vehicle manufacturing plant and the Life Science business (Pharmaceutical, Nutrition, and Medical device & Diagnostics) mainly from the increasing stakes in Lotus Pharmaceutical Company Limited. The investment in other projects still proceed as planned i.e. Gas Separation Plant (GSP) unit 7 to replace GSP unit 1, GSP unit 8, Bang Pakong–South Bangkok Power Plant Transmission Pipeline project, 5th Onshore Pipeline, and the investment through its wholly owned subsidiaries i.e. LNG receiving terminal 2 (Nong Fab), Map Ta Phut Industrial Port Development Phase 3, and Laem Chabang Port Phase 3 projects.
- **OR:** On 17 June 2022, OR's Board of Directors approved Modulus, a subsidiary of OR, to invest by purchasing newly issued common shares of K-NEX Corporation Company Limited (KNEX), with a total investment amount not exceeding Baht 1,105 million. After such investment, Modulus will hold 40% and the KNEX's former shareholders will hold 60% of all common shares issued by KNEX. KNEX sells and distributes industrial washing and drying machines and operates a self-service laundromat chain under the brand of Otteri Wash & Dry. In this regard, Modulus has signed a share subscription agreement and a shareholder agreement on 16 June 2022.

July 2022

- **GC:** On 1 July, the Board of Directors of PTTGC International (Netherlands) B.V. (GC Inter B.V.), a wholly own subsidiary of GC, approved to purchase additional 9.18% of the ordinary share of Vencorex Holding (Vencorex) from Perstorp Holding AB, after the transaction being completed, GC Inter B.V. will hold 100% in Vencorex, increased from 90.82%. The share purchase agreement and share payment process completed on 30 June 2022.
- **GC:** On 4 July, GC's Board of Directors has the resolution approved GC to accept the entire business transfer of GC Glycol Co., Ltd. (Glycol) and GC Styrenics Co., Ltd. (GCS). The

acquisition was effective legally on 1 July 2022 and GC will further proceed with the dissolution of Glycol and GCS. The group business restructuring will better support GC's long-term strategy including the business expansion internationally, sales and development of High Value Products, enhancing the GC's governance efficiency of group of companies both domestically and internationally, and also support GC's Sustainability strategy.

- **PTT:** On 11 July, PTT's Board of Directors passed a resolution for PTT's gas business to specifically support the Oil Fuel Fund for the amount of Baht 1,000 million per month for 3 months within the year of 2022 in the total amount of Baht 3,000 million. PTT aims to support the oil fuel fund to stabilize the energy prices in Thailand during the period of fluctuating global energy prices.
- **PTTEP:** On 15 July, PTTEP has dissolved an inactive subsidiary, namely PTTEP FLNG Holding Company Limited (PTTEP FH) in order to improve operational efficiency and minimize administrative costs. This transaction has no impact to PTTEP's operations.
- **PTT:** On 21 July, PTT's Board of Directors approved the establishment of Innobic Nutrition Company Limited (INNT) which is 100% owned by INBL, with the registered capital of Baht 100 million. The objective of the company establishment is to conduct Nutrition business including the Nutraceutical, which offer dietary supplements for general wellness that focuses on the suitable nutrition for each individual group by age, gender, or their nutritional needs as well as for specific prevention and the Medical Nutrition, which provide the nutritional needs for patients that will be developed for both general and specific patients. INNT is expected to complete its registration by the forth quarter of 2022.
- **PTT:** On 22 July, PTT Global LNG Company Limited (PTTGL) has signed the sale and purchase agreement of LNG with Corpus Christi Liquefaction LLC (CCL), which is a wholly-owned subsidiary of Cheniere Energy Inc (the energy company in US) in the amount of 1 million tons per year for a period of 20 years, starting its first delivery in 2026 onwards. The signing of this long-term LNG purchase agreement was in according with the Board's resolution of National Energy Policy (NEPC) which approved PTT to procure for the additional 1 million tonnes per annum of LNG, from current long-term LNG contracts of 5.2 million tons per annum, in order to increase country's energy security.

August 2022

- **PTTEP:** On 1 August, PTTEP MENA Limited (PTTEP MENA), a wholly-owned subsidiary of PTTEP, and Eni Abu Dhabi B.V. (Eni), the partner, have successfully made another significant gas discovery, in a deeper zone, of the first exploration well XF-002 in Abu Dhabi Offshore 2 Project, located in the north-west of Abu Dhabi, United Arab Emirates. The XF-002 exploration well was discovered significant raw gas with total approximately 2.5-3.5 trillion cubic feet (TCF). The gas-bearing reservoirs were tested with excellent flow rates and fast-track development

options are currently under evaluation. The Project will continue drilling nearby prospect to further evaluate potential of the block.

- **PTTEP:** On 1 August, PTTEP International Limited (PTTEPI), Yangon Branch, a wholly-owned subsidiary of PTTEP, informed that there was a leakage at the Zawtika's onshore pipeline, resulted in the gas pressure drop. To ensure operational safety, PTTEPI has promptly isolated the gas pipeline and temporarily suspended gas delivery from the Zawtika Project to Thailand. The preliminary investigation found no trace of explosion or fire. Further investigation on the cause of the leakage is underway. PTTEPI is accelerating the pipeline repairment which is expected to complete in around 2 weeks.
- **PTT:** On 2 August, PTT International Holdings Limited (PTTIH) (a wholly owned subsidiary of PTT) has entered into a Share Purchase Agreement of its entire investment, being 100% of the total issued shares, in PTT Mining Limited (PTTML) with PT Astrindo Nusantara Infrastruktur Tbk (Astrindo), a listed company in Indonesia Stock Exchange, or its affiliate, on 1 August 2022 with a purchase price of approximately US\$ 471 million. The transaction is expected to be completed within the fourth quarter of 2022. This transaction will divest all of PTT's investment in the coal business which is aligned with PTT's strategy towards sustainability and clean energy.

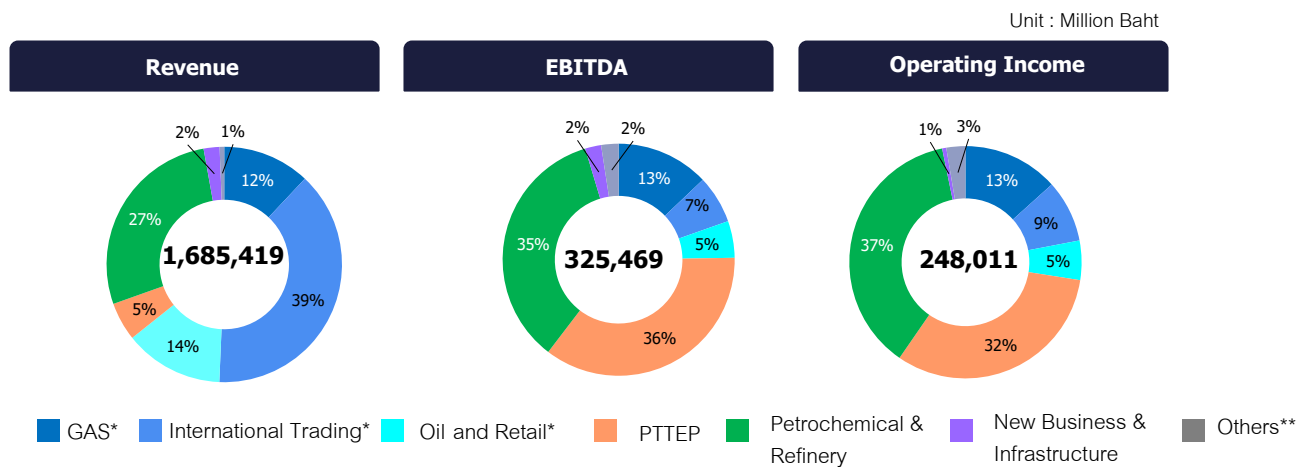
Financial Results of PTT Group by Business

Financial performance of 2Q2022 compared with 2Q2021 and 1Q2022 as well as 1H2022 compared with 1H2021 are summarized as follows:

Unit : Million Baht	2Q2021	1Q2022	2Q2022	% Inc. (Dec.)		1H2021	1H2022	% Inc. (Dec.)
				YoY	QoQ			
Sales revenue	533,256	758,465	926,954	73.8%	22.2%	1,011,093	1,685,419	66.7%
: Exploration & Production	54,830	68,149	83,088	51.5%	21.9%	97,584	151,237	55.0%
: Gas	112,927	169,216	174,573	54.6%	3.2%	215,641	343,789	59.4%
: Coal	3,137	4,651	11,683	>100.0%	>100.0%	6,262	16,334	>100.0%
: Oil & Retail	119,466	177,909	212,025	77.5%	19.2%	238,356	389,934	63.6%
: International trading	254,807	482,985	624,296	>100.0%	29.3%	480,905	1,107,281	>100.0%
: Petrochemical & Refining	247,825	361,248	429,350	73.2%	18.9%	472,254	790,598	67.4%
: New Business & Infrastructure	19,483	28,954	33,580	72.4%	16.0%	37,561	62,534	66.5%
: Others	862	975	991	15.0%	1.6%	1,731	1,966	13.6%
EBITDA	113,166	142,701	182,768	61.5%	28.1%	216,163	325,469	50.6%
: Exploration & Production	42,161	53,465	63,656	51.0%	19.1%	73,985	117,121	58.3%
: Gas	22,134	19,520	22,892	3.4%	17.3%	43,909	42,412	(3.4%)
: Coal	934	1,836	7,304	>100.0%	>100.0%	2,164	9,140	>100.0%
: Oil & Retail	5,605	6,686	10,152	81.1%	51.8%	12,136	16,838	38.7%
: International trading								
- Excluding effect of FX and derivatives	3,410	15,625	6,389	87.4%	(59.1%)	7,385	22,014	>100.0%
- Including effect of FX and derivatives	907	1,219	3,785	>100.0%	>100.0%	2,045	5,004	>100.0%
: Petrochemical & Refining	33,408	45,162	69,713	>100.0%	54.4%	66,900	114,875	71.7%
: New Business & Infrastructure	5,881	2,927	4,409	(25.0%)	50.6%	11,317	7,336	(35.2%)
: Others	(706)	(471)	(705)	0.1%	(49.7%)	(1,356)	(1,176)	13.3%
Depreciation and amortization expenses	38,608	37,145	40,313	4.4%	8.5%	73,644	77,458	5.2%
Operating income (loss)	74,558	105,556	142,455	91.1%	35.0%	142,519	248,011	74.0%
: Exploration & Production	22,477	36,431	44,267	96.9%	21.5%	37,804	80,698	>100.0%
: Gas	17,484	15,089	18,371	5.1%	21.8%	34,662	33,460	(3.5%)
: Coal	633	1,390	6,664	>100.0%	>100.0%	1,530	8,054	>100.0%
: Oil & Retail	4,160	5,177	8,591	>100.0%	65.9%	9,287	13,768	48.3%
: International trading								
- Excluding effect of FX and derivatives	3,361	15,502	6,256	86.1%	(59.6%)	7,287	21,758	>100.0%
- Including effect of FX and derivatives	858	1,096	3,652	>100.0%	>100.0%	1,947	4,748	>100.0%
: Petrochemical & Refining	23,739	34,457	58,865	>100.0%	70.8%	47,723	93,322	95.5%
: New Business & Infrastructure	3,183	143	1,302	(59.1%)	>100.0%	6,080	1,445	(76.2%)
: Others	(818)	(584)	(819)	(0.1%)	(40.2%)	(1,577)	(1,403)	11.0%
Share of net income from investments in joint ventures and associates	2,893	1,949	2,498	(13.7%)	28.2%	4,840	4,447	(8.1%)
Loss on impairment of assets (reversal)	3,165	(5)	493	(84.4%)	>100.0%	3,160	488	(84.6%)
Gain (loss) on derivatives	(12,620)	(48,979)	(34,505)	<(100.0%)	29.6%	(20,018)	(83,484)	<(100.0%)
Gain (loss) on foreign exchange	(873)	5,712	(13,021)	<(100.0%)	<(100.0%)	(5,203)	(7,309)	(40.5%)
EBIT	61,746	66,023	97,679	58.2%	47.9%	127,073	163,702	28.8%
Finance costs	7,102	7,445	9,150	28.8%	22.9%	13,540	16,595	22.6%
Income taxes	20,851	21,874	34,850	67.1%	59.3%	32,534	56,724	74.4%
Net income	24,578	25,571	38,848	58.1%	51.9%	57,166	64,419	12.7%
Earnings per share (Baht/share)	0.86	0.89	1.37	59.3%	53.9%	2.00	2.26	13.0%

Segmentation Performance of PTT Group

The details of revenue, EBITDA and operating income by segmentation of 1H2022 are as follows;



* Including PTT own operation and PTT's affiliates **Including coal and others.

1. Upstream Petroleum and Gas Business Group

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

	2Q2021	1Q2022	2Q2022	%Inc.(Dec.)		1H2021	1H2022	%Inc.(Dec.)
				YoY	QoQ			
Average selling price (US\$/BOE)	42.2	51.4	55.6	31.8%	8.2%	41.4	53.6	29.5%
Average sales volume (BOED)	443,126	427,368	465,459	5.0%	8.9%	413,168	446,519	8.1%

Second quarter of 2022 compared with Second quarter of 2021

In 2Q2022, sales revenue of PTTEP was Baht 83,088 million, increasing by Baht 28,258 million or 51.5% from 2Q2021 as the average selling price increased by 31.8% from US\$ 42.2 per BOE in 2Q2021 to US\$ 55.6 per BOE in 2Q2022 as well as the average sales volume increased by 5.0% from 443,126 BOED in 2Q2021 to 465,459 BOED in 2Q2022 primarily from first production of G1/61 Project since the end of April 2022, together with Arthit Project due to higher gas nomination from buyer and Oman Block 61 Project from higher gas sales volume.

EBITDA in 2Q2022 was Baht 63,656 million, increasing by Baht 21,495 million or 51.0% from 2Q2021 mainly due to an increase in sales revenue as aforementioned. In addition, depreciation, depletion and amortization decreased primarily from Bongkot Project, caused the operating income in 2Q2022 amounting to Baht 44,267 million, increasing by Baht 21,790 million or 96.9% from 2Q2021.

The overall performance of Exploration and Production business increased as an increase in operating income as aforementioned. In addition, in 2Q2022 there was gain from derivatives amounting to Baht 317 million while in 2Q2021 there was loss amounting to Baht 3,901 million mainly due to a decrease in loss from oil price hedging instruments, resulting from less upward trend of forward oil price than 2Q2021. However, income taxes increased following improved performance.

Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, sales revenue of PTTEP was Baht 83,088 million, increasing by Baht 14,939 million or 21.9% from 1Q2022 as the average sales volume increased by 8.9% from 427,368 BOED in 1Q2022 to 465,459 BOED in 2Q2022 primarily from first production of G1/61 Project since the end of April 2022, together with Oman Block 61 Project due to higher gas sales volume as well as the average selling price increased by 8.2% from US\$ 51.4 per BOE in 1Q2022 to US\$ 55.6 per BOE in 2Q2022.

EBITDA in 2Q2022 was Baht 63,656 million, increasing by Baht 10,191 million or 19.1% from 1Q2022 mainly due to an increase in sales revenue as aforementioned even though operating expenses increased primarily from first production of G1/61 Project and G2/61 Project, together with Malaysia Project due to higher sales volume and more maintenance activities, caused the operating income in 2Q2022 was Baht 44,267 million, increasing by Baht 7,836 million or 21.5% from 1Q2022.

The overall performance of Exploration and Production business increased as an increase in operating income as aforementioned. In addition, in 2Q2022 there was gain from derivatives amounting to Baht 317 million while in 1Q2022 there was loss amounting to Baht 8,127 million mainly due to a decrease in loss from oil price hedging instruments, resulting from less upward trend of forward oil price than 1Q2022. However, income taxes increased following improved performance.

First half of 2022 compared with First half of 2021

In 1H2022, sales revenue of PTTEP was Baht 151,237 million, increasing by Baht 53,653 million or 55.0% from 1H2021 as the average selling price increased by 29.5% from US\$ 41.4 per BOE in 1H2021 to US\$ 53.6 per BOE in 1H2022 as well as the average sales volume increased by 8.1% from 413,168 BOED in 1H2021 to 446,519 BOED in 1H2022 primarily from the acquisition of Oman Block 61 Project in March 2021 and first production of G1/61 Project in April 2022, together with Arthit Project due to higher gas nomination from buyer.

EBITDA in 1H2022 was Baht 117,121 million, increasing by Baht 43,136 million or 58.3% from 1H2021 mainly due to an increase in sales revenue as aforementioned caused the operating income in 1H2022 was Baht 80,698 million, increasing by Baht 42,894 million or more than 100.0% from 1H2021.

The overall performance of Exploration and Production business increased as an increase in operating income as aforementioned. Even if there was a gain from a bargain purchase of Oman Block 61 Project amounting to Baht 10,772 million offset with a partial write-off of exploration and evaluation assets of the exploration project in Brazil amounting to Baht 4,454 million, while no such transaction recognized in 1H2022. Moreover, income taxes increased due to improved performance.

Gas Business Group

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

Unit : Ton	2Q2021	1Q2022	2Q2022	% Inc.(Dec.)		1H2021	1H2022	% Inc.(Dec.)
				YoY	QoQ			
LPG	782,597	807,925	824,942	5.4%	2.1%	1,530,857	1,632,867	6.7%
Ethane	565,493	486,571	387,054	(31.6%)	(20.5%)	1,147,734	873,625	(23.9%)
Propane	275,908	262,167	338,995	22.9%	29.3%	546,401	601,162	10.0%
NGL	160,547	133,037	136,621	(14.9%)	2.7%	328,850	269,658	(18.0%)
Pentane	11,929	13,383	12,732	6.7%	(4.9%)	22,688	26,115	15.1%
Total	1,796,474	1,703,083	1,700,344	(5.4%)	(0.2%)	3,576,530	3,403,427	(4.8%)

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

Unit : US\$ per Ton	2Q2021	1Q2022	2Q2022	% Inc.(Dec.)		1H2021	1H2022	% Inc.(Dec.)
				YoY	QoQ			
LPG ^{1/}	519	803	852	64.2%	6.1%	551	827	50.1%
LDPE ^{2/}	1,540	1,641	1,658	7.7%	1.0%	1,537	1,649	7.3%
LLDPE ^{2/}	1,185	1,346	1,383	16.7%	2.7%	1,165	1,364	17.1%
HDPE ^{2/}	1,191	1,330	1,341	12.6%	0.8%	1,168	1,336	14.4%
Propane ^{1/}	528	803	847	60.4%	5.5%	561	825	47.1%

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 2022 compared with Second quarter of 2021

In 2Q2022, gas business reported sales revenue of Baht 174,573 million, increasing by Baht 61,646 million or 54.6% from 2Q2021. This resulted mainly from the increase in sales revenue of S&M business following the increase in average selling prices as a result of higher Pool Gas price as well as the average selling prices for industrial customers that increased from the higher fuel oil referenced prices. However, the average sales volume (calculated at heating value of 1,000 BTU per cubic feet) decreased by 422 MMSCFD or 8.9% from 4,715 MMSCFD in 2Q2021 to 4,329 MMSCFD in 2Q2022 mainly from lower output of gulf gas during the transition period of the operator for G1/61 concession resulted in

the adjustment of fuel management plan of Electricity Generating Authority of Thailand (EGAT) and Independent Power Producer (IPP) by calling the higher electricity generation from hydropower plants following the higher water level as well as operating some power plants with fuel oil and diesel instead of natural gas due to the highly surge of LNG import price since the end of 2021 onwards. Thus, gas sales volume to power plant customers decreased. In addition, sales volume to GSP decreased following lower output of gulf gas as well as the turndown of GSP's production and major planned maintenance shutdown of Ethane separation plant (ESP) for 23 days in 2Q2022. While, in 2Q2021, there was no major planned maintenance shutdown.

The sales revenue of GSP business increased following the higher average selling prices of all products in accordance with the higher petrochemical referenced prices. However, sales volume (including NGL derived from Dew Point Control units) decreased from 1,796,474 tons in 2Q2021 to 1,700,344 tons in 2Q2022 or decreased by 5.4%, mainly from Ethane due to lower gas supply from the operators and planned shutdown as aforementioned.

In 2Q2022, EBITDA of gas business was reported at Baht 22,892 million, increasing by Baht 758 million or 3.4%. The operating income was reported at Baht 18,371 million, increasing by Baht 887 million or 5.1%. This was mainly from higher gross profit of GSP as higher average selling prices of all products following higher referenced prices. Despite the lower in sales volume and higher gas cost following the increase of gulf gas price. While gross profit of S&M business dropped primarily from substantial increase in natural gas cost following the increase of Pool Gas price mainly from LNG import price. In addition, there is an incremental cost according to the effective of EPP policy since May 2022. Hence, the business unit that selling gas to industrial customers had to bear higher cost more than selling price which referenced to fuel oil price. Moreover, the overall sales volume decreased as aforementioned. However, in 2Q2022 there was the shortfall discount and the compensation from the gas producer increased approximately Baht 1,200 million compared with 2Q2021 mainly from the end of concession of Erawan field in April 2022.

Furthermore, NGV's loss increased from the higher gas cost following the higher Pool Gas price and incremental cost according to EPP policy while NGV retail price has 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 September 2022, and the NGV retail price for other vehicles have capped at 15.59 Baht/kg from 16 November 2021 to 15 September 2022. Moreover, sales volume increased following relaxation of lockdown measure and the rise of other fuel prices resulted to the increased of NGV volume.

Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, gas business reported sales revenue of Baht 174,573 million, increasing by Baht 5,357 million or 3.2% from 1Q2022. This resulted mainly from GSP business as the sales revenue increased from higher average selling prices of almost products following the higher petrochemical referenced prices. Despite, GSP's sales volume (including NGL derived from Dew Point Control units) decreased from 1,703,083 tons in 1Q2022 to 1,700,344 tons in 2Q2022 or 0.2%

mainly from Ethane following the lower output of gulf gas as well as the GSP's major planned maintenance shutdown as aforementioned.

Meanwhile, sales revenue of S&M business decreased in line with the lower average selling prices following Pool Gas price, despite average selling prices for industrial customers increased from the higher fuel oil referenced prices. Moreover, the average sales volume (calculated at heating value of 1,000 BTU per cubic feet) decreased by 93 MMSCFD or 2.1% from 4,422 MMSCFD in 1Q2022 to 4,329 MMSCFD in 2Q2022 mainly from sales volume to GSP, causing by the lower output of gulf gas. In addition, sales volume to power plant customers also decreased from EGAT and IPP's adjustment of fuel management plan as aforementioned.

In 2Q2022, EBITDA of gas business was reported at Baht 22,892 million, increasing by Baht 3,372 million or 17.3%. The operating income was reported at Baht 18,371 million, increasing by Baht 3,282 million or 21.8%. This was mainly from the higher gross profit of S&M business primarily from the business unit that selling gas to industrial customers that had lower gas cost following the global LNG price, although, there was an incremental cost from the EPP policy in 2Q2022, including an increase in average selling price in accordance with fuel oil referenced prices. However, the overall sales volume decreased as aforementioned. In addition, the shortfall discount and compensation from the gas producer in 2Q2022 was approximately Baht 1,200 million, while in 1Q2022 the discount was approximately Baht 700 million. The gross profit of GSP business increased due to the increase in average selling prices of almost products following the higher referenced prices despite the slightly dropped in sales volume.

However, NGV's loss increased from higher sales volume while there was the capped of NGV retail price to easing Thai people's cost of energy price. However, gas cost decreased following the Pool Gas price despite the incremental cost from the EPP policy.

First half of 2022 compared with First half of 2021

In 1H2022, gas business reported sales revenue of Baht 343,789 million, increasing by Baht 128,148 million or 59.4% from 1H2021. This resulted mainly from S&M business, the sales revenue of S&M business increased due to the higher average selling prices following Pool Gas price. In addition, the average selling prices for industrial customers increased from the higher average fuel oil referenced prices. However, average sales volume (calculated at heating value of 1,000 BTU per cubic feet) decreased by 312 MMSCFD or 6.7% from 4,686 MMSCFD in 1H2021 to 4,374 MMSCFD in 1H2022 mainly from lower output of gulf gas resulted to the decreased sales volume of power plant customers, and GSP as aforementioned.

Sales revenue of GSP business rose due to the higher average selling prices of all products in accordance with the higher petrochemical referenced prices. However, there was an decrease in sales volume (including NGL derived

from Dew Point Control units) in all products from 3,576,530 tons in 1H2021 to 3,403,427 tons in 1H2022 or decreased by 4.8%, mainly from Ethane due to lower output of gulf gas and GSP's major planned maintenance shutdown in 1H2022, while in 1H 2021 there was no major planned shutdown as aforementioned.

In 1H2022, EBITDA of gas business was reported at Baht 42,412 million, decreasing by Baht 1,497 million or 3.4%. The operating income was reported at Baht 33,460 million, decreasing by Baht 1,202 million or 3.5%. This was mainly from the decrease in S&M's gross margin due to the gas cost of industrial customers increased in the higher extent compared to the rise in selling price as aforementioned together with the decrease in overall sales volume. In addition, in 1H2022 there was the shortfall discount and compensation from the gas producer approximately Baht 1,800 million as aforementioned. Besides, NGV's loss increased from higher gas cost as higher pool gas price and the incremental cost from the EPP policy together with the capped NGV retail price and the higher sales volume as aforementioned. However, GSP's gross profit rose from the higher average selling prices of all products in accordance with the higher petrochemical referenced prices. Although, sales volume decreased and gas cost increased in line with higher gulf gas price.

Coal Business

	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	%Inc. (Dec.)
				YoY	QoQ			
Newcastle index price (US\$ per ton)	109.0	263.8	376.8	>100.0%	42.8%	98.9	320.3	>100.0%
Average selling price (US\$ per ton)	75.9	99.2	195.2	>100.0%	96.8%	71.6	153.0	>100.0%
Cash cost (US\$ per ton)	49.5	60.7	65.4	32.1%	7.7%	47.4	63.3	33.5%
Sales volume (million tons)	1.3	1.4	1.7	30.8%	21.4%	2.7	3.0	11.1%

Second quarter of 2022 compared with Second quarter of 2021

In 2Q2022, sales revenue of Coal business was Baht 11,683 million, increasing by Baht 8,546 million or more than 100.0% compared with 2Q2021 mainly due to the increase in average selling prices by US\$ 119.3 per ton or more than 100.0% from US\$ 75.9 per ton in 2Q2021 to US\$ 195.2 per ton in 2Q2022 following the increase in Newcastle referenced prices, primarily from an increasing demand for coal especially from Europe which import and stock more coal from other part of the world such as Asia as forecast the policy of sanctions on the Russian energy industry. In addition, sales volume increased by 0.4 million tons or 30.8% from 1.3 million tons in 2Q2021 to 1.7 million tons in 2Q2022, primarily from an increase in Production plan following higher demand and the postponement of some shipments to 2Q2022 as a result from the Indonesian government's ban on coal exports on January in 1Q2022.

EBITDA in 2Q2022 was Baht 7,304 million, increasing by Baht 6,370 million or more than 100.0% from 2Q2021 mainly from higher gross profit due to higher average selling price and sales volume as aforementioned despite higher mining cost following higher coal and gasoil prices. The operating income was Baht 6,664 million in 2Q2022, increasing by Baht 6,031 million or more than 100.00% mainly from the increase in EBITDA. Consequently, the overall performance

of Coal business improved. Despite there was impairment loss on coal mine project in Madagascar amounting to Baht 480 million while in 2Q2021, there was no such transaction.

Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, sales revenue of Coal business was Baht 11,683 million, increasing by Baht 7,032 million or more than 100.0% compared with 1Q2022 mainly due to the increase in average selling prices by US\$ 96.0 per ton or 96.8% from US\$ 99.2 per ton in 1Q2022 to US\$ 195.2 per ton in 2Q2022 in line with the increase in Newcastle referenced prices which mainly from higher demand especially from Europe as aforementioned. Furthermore, sales volume increased by 0.3 million tons or 21.4% from 1.4 million tons in 1Q2022 to 1.7 million tons in 2Q2022, primarily from an increase in Production plan and the postponement of some shipments to 2Q2022 as a result from the Indonesian government's ban on coal exports in 1Q2022.

EBITDA in 2Q2022 was Baht 7,304 million, increasing by Baht 5,468 million or more than 100.0% mainly from higher gross margin following higher average selling prices and sales volume as aforementioned. Operating income was Baht 6,664 million in 2Q2022, increasing by Baht 5,247 million or more than 100.0% according to the increase in EBITDA. As a result, Coal business's overall performance has improved. Despite there was impairment loss on coal mine project in Madagascar amounting to Baht 480 million while in 1Q2022, there was no such transaction.

First half of 2022 compared with First half of 2021

In 1H2022, sales revenue of coal business was Baht 16,334 million, increasing by Baht 10,072 million or more than 100.0% compared with 1H2021 mainly due to the increase in average selling prices by US\$ 81.4 per ton or more than 100.0% from US\$ 71.6 per ton in 1H2021 to US\$ 153.0 per ton in 1H2022 following the increase in referenced Newcastle prices which increase more than 100.0%. In addition, sales volume increased by 0.3 million ton or 11.1% from 2.7 million ton in 1H2021 to 3.0 million ton in 1H2022 due to higher production plan from higher demand.

EBITDA in 1H2022 was Baht 9,140 million, increasing by Baht 6,976 million or more than 100.0% from 1H2021 mainly due to the increase in gross profit following higher average selling prices and sales volume as aforementioned. Operating income in 1H2022 was Baht 8,054 million, increasing by Baht 6,524 million in line with the increase in EBITDA, resulting in an increase in overall performance even though there was impairment loss on coal mine project in Madagascar amounting to Baht 480 million. While in 1H2021, there was no such transaction.

2. Downstream Petroleum Business Group

Oil and Retail Business Group

	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	%Inc. (Dec.)
				YoY	QoQ			
Average Sales Volume* (Unit: Million Liter)	5,542	6,724	6,859	23.8%	2.0%	11,452	13,583	18.6%
Average selling prices (Unit: US\$ per barrel)								
Gasoline	76.8	113.3	143.0	86.2%	26.2%	72.0	128.2	78.1%
Aviation	71.5	111.8	147.2	>100.0%	31.7%	67.4	129.5	92.1%
Diesel	72.2	115.1	151.2	>100.0%	31.4%	68.5	133.1	94.3%

*The average sales volume of domestic oil segment only

Second quarter of 2022 compared with Second quarter of 2021

In 2Q2022, sales revenue of Oil and retail business group was Baht 212,025 million, increasing by Baht 92,559 million or 77.5% from 2Q2021 due to higher average selling prices which were in line with rising global oil prices. Additionally, sales volumes increased in all products, increased by 1,317 million liters or 23.8% from 5,542 million liters or equivalent to 383,064 barrels per day in 2Q2021 to 6,859 million liters or equivalent to 474,096 barrels per day in 2Q2022, mostly from diesel and fuel oil as natural gas price increased resulting in demands for diesel and fuel oil as an alternative fuel for power plants. In addition, sales volume of aviation increased from higher air travels according to loosen measures for travelers to Thailand. Non-oil business' revenue increased mostly from growing sales volume as a consequence of expanding food and beverage branches.

In 2Q2022, EBITDA was Baht 10,152 million, increasing from 2Q2021 by Baht 4,547 million or 81.1% mainly from overall average gross margin per liter and sales volume increased in diesel and fuel oil. Non-oil business' gross margin increased in line with higher sales revenue. The operating income in 2Q2022 was Baht 8,591 million, increasing by Baht 4,431 million or more than 100.0% according to higher EBITDA. This caused the overall performance of Oil and retail business to improve as well.

Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, sales revenue of Oil and retail business group was Baht 212,025 million, increasing by Baht 34,116 million or 19.2% from 1Q2022 mostly due to higher average global oil price. In addition, overall sales volume increased by 135 million liters or 2.0% from 6,724 million liters or equivalent to 469,928 barrels per day in 1Q2022 to 6,859 million liters or equivalent to 474,096 barrels per day in 2Q2022 mainly due to fuel oil, aviation, and gasoline. Non-oil business' revenue increased from increasing sales volume according to the recovery of economic activities from easing of COVID-19 measures as well as travelling and holidays season in Thailand.

EBITDA in 2Q2022 was Baht 10,152 million, increasing by Baht 3,466 million or 51.8% mostly from overall average gross margin per liter and sales volume increased mainly from diesel and aviation. The operating income in 2Q2022 was Baht 8,591 million, increasing by Baht 3,414 million or 65.9% in line with higher EBITDA. As a result, the overall performance of Oil and retail business has improved.

First half of 2022 compared with First half of 2021

In 1H2022, sales revenue of Oil and retail business group was Baht 389,934 million, increasing by Baht 151,578 million or 63.6% from 1H2021 mostly due to higher average selling price as the increased average global oil price. In addition, overall sales volume increased by 2,131 million liters or 18.6% from 11,452 million liters or equivalent to 397,969 barrels per day in 1H2021 to 13,583 million liters or equivalent to 472,024 barrels per day in 1H2022 mainly due to fuel oil and diesel which had higher demands as an alternative fuel for power plants in the high natural gas price situation, and aviation which increased from higher air travels. Non-oil business' revenue increased from increasing sales volume which resulted from expanding food and beverage stores network. Also, in 1H2022, there was lower affected by the outbreak of COVID-19 than in 1H2021.

EBITDA in 1H2022 was Baht 16,838 million, increasing from 1H2021 by Baht 4,702 million or 38.7% mostly from increasing gross margin according to overall sales volume and gross margin per liter increase mainly from diesel and fuel oil. The operating income in 1H2022 was Baht 13,768 million, increasing by Baht 4,481 million or 48.3% in line with higher EBITDA. As a result, the overall performance of Oil and retail business has improved.

International Trading Business Group

Unit : Million Litre	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	%Inc. (Dec.)
				YoY	QoQ			
Average sales volume	18,224	36,235	28,526	56.5%	(21.3%)	37,146	64,761	74.3%

Second quarter of 2022 compared with Second quarter of 2021

Sales revenue of International Trading business in 2Q2022 was Baht 624,296 million, increased by Baht 369,489 million or more than 100.0% from 2Q2021 due to the increase in product selling price following the rise in global oil prices as well as the increase in sales volume by 10,302 million liters or 56.5% from 18,224 million liters or equivalent to 1,259,647 barrels per day in 2Q2021 to 28,526 million liters or equivalent to 1,971,724 barrels per day in 2Q2022, mainly from higher volume of crude imports for domestic refineries and higher LNG LPG imports to fulfill lower output of gulf gas during transition period as well as higher volume of crude and refined product out-out trading as a result of the economic activities recovery from easing of lockdown in many regions.



EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 2Q2022 was Baht 3,785 million, increased by Baht 2,878 million or more than 100.0% mainly from higher sales revenue and sales volume as aforementioned along with the reversal of loss on mark-to-market inventory in 1Q2022 and additional gain on mark-to-market in 2Q2022. In addition, margin per unit of refined product and crude increased due to higher product spreads. The operating income, adjusted by the impact from foreign exchange rate and derivatives in 2Q2022 was Baht 3,652 million, increased by Baht 2,794 million or more than 100.0%.

Second quarter of 2022 compared with First quarter of 2022

Sales revenue of International Trading business in 2Q2022 was Baht 624,296 million, increased by Baht 141,311 million or 29.3% from 1Q2022 due to higher product selling price following the rise in global oil prices, although sales volume decreased by 7,709 million liters or 21.3% from 36,235 million liters or equivalent to 2,532,400 barrels per day in 1Q2022 to 28,526 million liters or equivalent to 1,971,724 barrels per day in 2Q2022 mainly from the decrease in volume of crude out-out trading together with lower LNG imports due to decreasing demand of LNG to fulfill lower output of gulf gas and the switching to alternative fuel in 2Q2022.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 2Q2022 was Baht 3,785 million, increased by Baht 2,566 million or more than 100.0% mainly from gain on mark-to-market inventory and higher margin per unit of refined product and crude, although sales volume decreased as aforementioned. The operating income, adjusted by the impact from foreign exchange rate and derivatives, in 2Q2022 was Baht 3,652 million, increased by Baht 2,556 million or more than 100.0%.

First half of 2022 compared with First half of 2021

Sales revenue of International Trading business in 1H2022 was Baht 1,107,281 million, increased by Baht 626,376 million or more than 100.0% from 1H2021 due to higher product selling price as aforementioned. Sales volume increased by 27,615 million liters or 74.3% from 37,146 million liters or equivalent to 1,290,863 barrels per day in 1H2021 to 64,761 million liters or equivalent to 2,250,513 barrels per day in 1H2022 mainly from higher volume of LNG and LPG imports to fulfill lower output of gulf gas and higher crude imports for domestic refineries following the increased demand as well as higher volume of crude and refined products out-out trading as a result of the economic activities recovery from easing of lockdown as aforementioned.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 1H2022 was Baht 5,004 million, increased by Baht 2,959 million or more than 100.0% mainly from higher sales revenue and sales volume together as aforementioned. Moreover, margin per unit also higher from cross-regional trade opportunities in a favorable timing as well as the higher product spreads of crude and domestic condensate following the increase in oil referenced price. The

operating income, adjusted by the impact from foreign exchange rate and derivatives in 1H2022 was Baht 4,748 million, increased by Baht 2,801 million or more than 100.0%.

Petrochemical and Refinery Business Group

Unit : US\$ per barrel	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	%Inc. (Dec.)
				YoY	QoQ			
Market GRM	1.6	6.1	21.3	>100.0%	>100.0%	1.7	13.8	>100.0%
Inventory gain (loss) excl. NRV	3.2	10.3	5.3	65.6%	(48.5%)	4.2	7.8	85.7%
Hedging gain (loss)	(0.4)	(7.6)	(13.4)	<(100.0%)	(76.3%)	(0.2)	(10.6)	<(100.0%)
Accounting GRM	4.4	8.8	13.2	>100.0%	50.0%	5.7	11.0	93.0%
Refinery Utilization rate (%)	96.1%	100.7%	102.0%	5.9%	1.3%	95.8%	101.3%	5.5%

*From 3 Refineries: TOP, GC and IRPC

Unit : US\$ per Ton	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	%Inc. (Dec.)
				YoY	QoQ			
Olefins								
Naphtha (MOPJ)	606	877	875	44.4%	(0.2%)	581	876	50.8%
HDPE	1,191	1,330	1,341	12.6%	0.8%	1,168	1,336	14.4%
LDPE	1,540	1,640	1,658	7.7%	1.1%	1,537	1,649	7.3%
LLDPE	1,185	1,346	1,383	16.7%	2.7%	1,165	1,364	17.1%
PP	1,336	1,387	1,351	1.1%	(2.6%)	1,351	1,369	1.3%
Aromatics								
Condensate	572	836	933	63.1%	11.6%	543	884	62.8%
PX (TW)	859	1,087	1,259	46.6%	15.8%	812	1,173	44.5%
PX (TW) – Condensate	287	251	326	13.6%	29.9%	270	289	7.0%
BZ	966	1,073	1,238	28.2%	15.4%	859	1,156	34.6%
BZ – Condensate	393	238	306	(22.1%)	28.6%	317	272	(14.2%)

Second quarter of 2022 compared with Second quarter of 2021

In 2Q2022, sales revenue of petrochemical and refining business was Baht 429,350 million, increasing by Baht 181,525 million or 73.2% primarily due to refinery business mainly from the increase in average selling price as the increase in petroleum product price. Moreover, PTT Group refineries' utilization rates increased from 96.1% in 2Q2021 to 102.0% in 2Q2022 and sales volume increased due to economic recovery as well as easing of lockdown measures and travel restrictions.

The sales revenue of petrochemical business also increased from Olefins business from higher selling prices of PE although sales volume decreased due to planned maintenance shutdown of Olefins 3 plant and LLDPE and LDPE plant of GC in 2Q2022. The sales revenue of Aromatics business also increased due to higher selling prices of PX and BZ despite the decrease in sales volume from planned maintenance shutdown of Aromatics 1 plant of GC in 2Q2022

EBITDA of petrochemical and refining business in 2Q2022 were Baht 69,713 million increasing by Baht 36,305 million from Baht 33,408 million in 2Q2021. There was operating income of Baht 58,865 million in 2Q2022, increasing by Baht 35,126 million when compared to Baht 23,739 million in 2Q2021 details as follows:

- **Refinery performance** increased, according to the higher Market GRM from US\$ 1.6 per bbl in 2Q2021 to US\$ 21.3 per bbl in 2Q2022 mainly from the increase in most of all petroleum product spreads due to easing of lockdown measures and travel restrictions. Moreover, there was higher stock gain (There was stock gain of US\$ 5.3 per bbl in 2Q2022 versus US\$ 3.2 per bbl in 2Q2021) as well as higher sales volume.
- **Petrochemical performance** decreased mainly from both Olefins business and Aromatics business due to the increase in product prices which increased at lower proportion to the rise in feed stock price and the decrease in sales volume as aforementioned.

The overall performance of petrochemical and refining business in 2Q2022 decreased compared with 2Q2021 despite an increase in operating income because loss on derivatives (mostly oil price hedging instruments) and loss on exchange rates increased significantly.

Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, sales revenue of petrochemical and refining business was Baht 429,350 million, increasing by Baht 68,102 million or 18.9% primarily due to refinery business mainly from the increase in selling price. Moreover, PTT Group refineries' utilization rates increased from 100.7% in 1Q2022 to 102.0% in 2Q2022 and sales volume increased as aforementioned.

The sales revenue of petrochemical business also increased mainly from Olefins business from higher selling prices of PE despite the decrease in sales volume due to planned maintenance shutdown of Olefins 3 plant and LLDPE and LDPE plant of GC in 2Q2022. Moreover, the revenue of Aromatics business increased due to higher PX and BZ prices whereas sales volume decreased due to the planned maintenance shutdown as aforementioned.

EBITDA of petrochemical and refining business in 2Q2022 were Baht 69,713 million increasing by Baht 24,551 million from Baht 45,162 million in 1Q2022. There was operating income of Baht 58,865 million in 2Q2022, increasing by Baht 24,408 million when compared to Baht 34,457 million in 1Q2022 details as follows:

- **Refinery performance** increased, according to the higher Market GRM from US\$ 6.1 per bbl in 1Q2021 to US\$ 21.3 per bbl in 2Q2022 mainly from the increase in most of all petroleum product spreads as aforementioned. However, there was lower stock gain (There was stock gain of US\$ 5.3 per bbl in 2Q2022 versus US\$ 10.3 per bbl in 1Q2022) as well as the increase of sales volume.

- **Petrochemical performance** is quite stable. Olefins business's performance decreased due to the increase in product prices which increased at lower proportion to the rise in feed stock price and the decrease in sales volume as aforementioned. While Aromatics business's performance increased from higher PX and BZ spread despite the decrease of sales volume.

The overall performance of petrochemical and refining business in 2Q2022 was increased compared with 1Q2022 following its operating income although loss on derivatives (mostly oil price hedging instruments) and loss on exchange rates increased significantly.

First half of 2022 compared with First half of 2021

In 1H2022, sales revenue of petrochemical and refining business was Baht 790,598 million, increasing by Baht 318,344 million or 67.4% primarily due to refinery business mainly from the increase in average selling price. Moreover, PTT Group refineries' utilization rates increased from 95.8% in 1H2021 to 101.3% in 1H2022 and sales volume increased as aforementioned.

The sales revenue of petrochemical business also increased from Olefins business from higher selling prices of PE despite the decrease in sales volume due to planned maintenance shutdown of Olefins 3 plant and LLDPE and LDPE plant of GC in 2Q2022. Aromatics business also increased due to higher selling prices of PX and BZ despite the decrease in sales volume from planned maintenance shutdown of plant Aromatics 1 of GC in 2Q2022 whereas there was no planned maintenance shutdown of petrochemical plants in 1H2021.

EBITDA of petrochemical and refining business in 1H2022 were Baht 114,875 million increasing by Baht 47,975 million from Baht 66,900 million in 1H2021. There was operating income of Baht 93,322 million in 1H2022, increasing by Baht 45,599 million when compared to Baht 47,723 million in 1H2021 details as follows:

- **Refinery performance** increased, according to the higher Market GRM from US\$ 1.7 per bbl in 1H2021 to US\$ 13.8 per bbl in 1H2022 mainly from the increase in most of all petroleum product spreads as aforementioned. Moreover, there was higher stock gain (There was stock gain of US\$ 7.8 per bbl in 1H2022 versus US\$ 4.2 per bbl in 1H2021) as well as an increase of sales volume.
- **Petrochemical performance** decreased mainly from both Olefins business and Aromatics business due to the increase in product prices which increased at lower proportion to the rise in feed stock price and sales volume decreased as aforementioned.

The overall performance of petrochemical and refining business was decreased compared with 1H2021 despite an increase in operating income because loss on derivatives (mostly oil price hedging instruments) increased significantly.

3. New Business and Infrastructure Group

	2Q2021	1Q2022	2Q2022	%Inc. (Dec.)		1H2021	1H2022	%Inc. (Dec.)
				YoY	QoQ			
Power sales volume (GWh)	5,254	5,220	5,265	0.2%	0.9%	10,195	10,487	2.9%
Steam sales volume (Thousand tons)	3,779	3,710	3,746	(0.9%)	1.0%	7,484	7,457	(0.4%)

Second quarter of 2022 compared with Second quarter of 2021

In 2Q2022, sales revenue of New Business and Infrastructure group was Baht 33,580 million, increased by Baht 14,097 million or 72.4% mainly from higher sales revenue of GPSC due to higher revenue of Small Power Producer (SPP) power plants from the increase in average electricity and steam selling prices to industrial customers. IPP power plants's revenue also increased due to higher electricity selling price following the natural gas and coal prices, as well as higher electricity volume dispatched to EGAT. In addition, PTTGM's revenue also increased as the company began to realize sales revenue from pharmaceutical business through the investments in Lotus since April.

EBITDA in 2Q2022 was Baht 4,409 million, decreased by Baht 1,472 million or 25.0% mainly due to lower gross profit of GPSC following the decrease in gross profit of SPP power plants. This was due to the significant increases in natural gas and coal prices, together with the slightly decreased in steam sales volume. As a result, the operating income in 2Q2022 was Baht 1,302 million, decreased by Baht 1,881 million or 59.1%. In this regard, the overall performance of New Business and Infrastructure group decreased mainly from lower GPSC's performance following the lower EBITDA.

Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, sales revenue of New Business and Infrastructure group was Baht 33,580 million, increased by Baht 4,626 million or 16.0% mainly from the increase of PTTGM's revenue as the company began to realize sales revenue from pharmaceutical business through the investments in Lotus since April. Moreover, the revenue of GPSC also increased due to higher revenue from SPP power plants as a result of higher average electricity and steam selling prices as well as higher electricity sales volume.

EBITDA in 2Q2022 was Baht 4,409 million, increased by Baht 1,482 million or 50.6% mainly from higher gross profit of GPSC following the higher gross profit of SPP power plants which increased from higher electricity and steam sales volume after Glow Energy Phase 5 power plant resumed its normal operation. Moreover, gross profit of IPP power plants also increased from higher Availability Payment (AP) revenue due to lower maintenance of GHECO-One power plant and higher revenue from USD-linked portion as THB depreciation against USD. As a result, the operating income in 2Q2022 was Baht 1,302 million, increased by Baht 1,159 million or over 100.0% from previous quarter. The overall performance of New

Business and Infrastructure group increased mainly from GPSC's higher performance following the higher EBITDA and increases in share of profit from associates and joint ventures, especially from Xayaburi Power Plant following higher water level and the beginning of the rainy season. However, in 1Q2022, there was the recognition of gain from selling Ichinoseki Solar Power 1 GK shares.

First half of 2022 compared with First half of 2021

In 1H2022, sales revenue of New Business and Infrastructure group was Baht 62,534 million, increased by Baht 24,973 million or 66.5%. This was mainly from GPSC due to higher Energy Payment (EP) revenue of IPP power plants following the increased in sales volume and average selling price of electricity, as well as the increase in AP revenue from lower planned and unplanned maintenance outages. Moreover, SPP power plants also increased due to higher average electricity and steam selling prices, despite slightly decreased in sales volume of electricity and steam. In addition, PTTGM's revenue also increased as the company began to realize sales revenue from pharmaceutical business through the investments in Lotus since April.

EBITDA in 1H2022 was Baht 7,336 million, decreased by Baht 3,981 million or 35.2% mainly from lower gross profit of GPSC's SPP power plants due to significant increases in natural gas and coal prices. In this regard, in 1H2022, operating income was Baht 1,445 million, decreased by Baht 4,635 million or 76.2% in accordance with lower EBITDA. As a result, the overall performance of New Business and Infrastructure group decreased mainly from lower performance of GPSC.



Overall Performance of PTT and its Subsidiaries

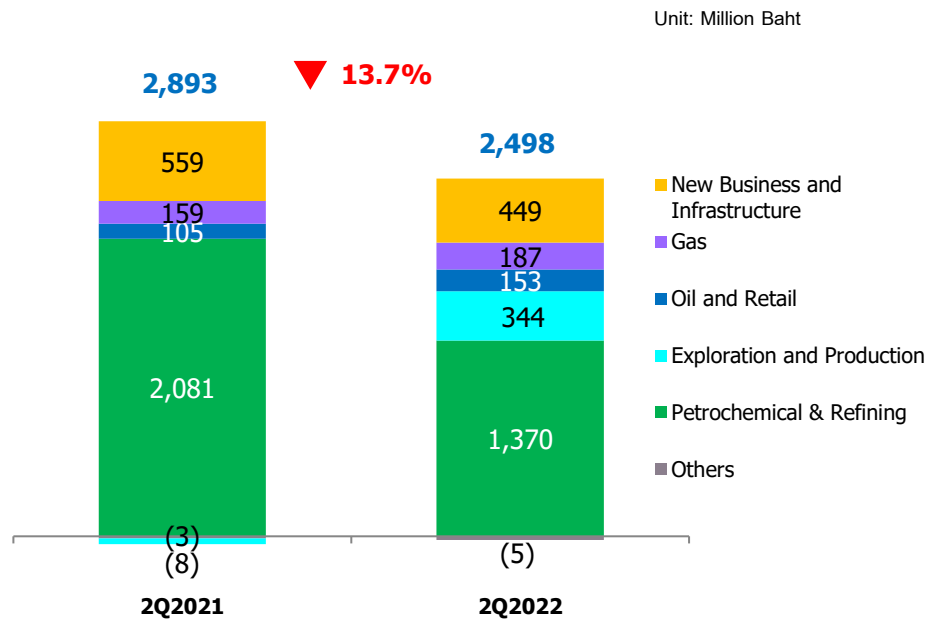
Second quarter of 2022 compared with Second quarter of 2021

In 2Q2022, sales revenue of PTT and its subsidiaries was reported at Baht 926,954 million increased from 2Q2021 by Baht 393,698 million or 73.8% from all businesses. Sales revenue of International Trading business, Petrochemical and Refining business, Oil and retail business, Exploration and Production business increased due to higher average selling prices following the rise in global product selling prices as well as higher overall sales volume according to the recovery of economic activities from the easing of COVID-19 restrictions. In addition, sales revenue of Gas business increased following higher pool gas price and reference product price although sales volume dropped compared to the same period last year regarding to the end of the concession period of the natural gas field.

EBITDA in 2Q2022 was Baht 182,768 million, increased by Baht 69,602 million or 61.5% from almost businesses. Petrochemical and Refining businesses increased from Refining businesses' performance increased due to market GRM rose from US\$ 1.6 per bbl in 2Q2021 to US\$ 21.3 per bbl in 2Q2022 from the rising in overall product spreads and higher sales volume. Moreover, PTT Group's stock gain increased approximately Baht 7,000 million as crude oil price increased in higher extent compared to the same period of last year. Meanwhile, Petrochemical business's performance decreased owing to the lower in petrochemical product spreads of both Aromatics and Olefins and lower sales volume from planned maintenance shutdown in 2Q2022. However, Exploration and Production business's performance increased from the increase in both of average selling prices and average sales volume. However, the performance of New Business and Infrastructure declined mainly from Power business as the feed cost of natural gas and coal significantly increased, resulting in lower profit margin of SPP.

The depreciation and amortization expenses of 2Q2022 were Baht 40,313 million, increased by Baht 1,705 million or 4.4% mainly from GC as a result of acquisition of Allnex in 4Q2021 and PTTGM as a result of higher production of coal business and acquisition of pharmaceutical business (Lotus).

Share of profit from investments in joint ventures and associates



In 2Q2022, the share of profit from investments in joint ventures and associates was Baht 2,498 million, decreased by Baht 395 million from 2Q2021. This was primarily from lower performance of joint venture in Petrochemical and Refining businesses mainly from PTT Asahi Chemical Company Limited (PTTAC) and HMC Polymers Company Limited (HMC) due to lower product to feed.

In 2Q2022, loss on derivatives was Baht 34,505 million, loss increased by Baht 21,885 million or over 100.0% mainly from loss on oil and commodity price hedging instruments due to trend of actual oil price and products spread were higher extent than hedged price compared to the same period last year mainly from TOP and GC.

There was loss on foreign exchange rate in 2Q2022 by Baht 13,021 million, loss increased by Baht 12,148 million or more than 100.0% mainly from higher unrealized loss of US currency loans as a result of Baht depreciation. (Thai Baht depreciation in 2Q2022 of Baht 2.01 per US Dollar, Thai Baht depreciation in 2Q2021 of Baht 0.71 per US Dollar).

Finance costs was Baht 9,150 million in 2Q2022 increased by Baht 2,048 million or 28.8% mainly from bond issuance of GC PTTEP and PTT as well as the increase in PTT's loan from financial institution.

In 2Q2022, there was recognition of non-recurring items (PTT's portion) after tax mainly from PTT's discounted benefit from production shortfall approximately Baht 1,000 million offset with impairment of coal mining project in Madagascar approximately Baht 400 million. While, in 2Q2021, there was loss recognition of non-recurring items (PTT's portion) after tax amounting mainly from GC's loss on impairment of investment in JV approximately Baht 1,500 million.

The corporate income taxes in 2Q2022 was Baht 34,850 million, increased by Baht 13,999 million or 67.1% mainly from PTTEP following its increased profit together with TOP's due to higher performance.

As aforementioned, this was resulted in PTT Group's net profit in 2Q2022 amounting to Baht 38,848 million, increased by Baht 14,270 million or 58.1% from the net profit amounting to Baht 24,578 million in 2Q2021.

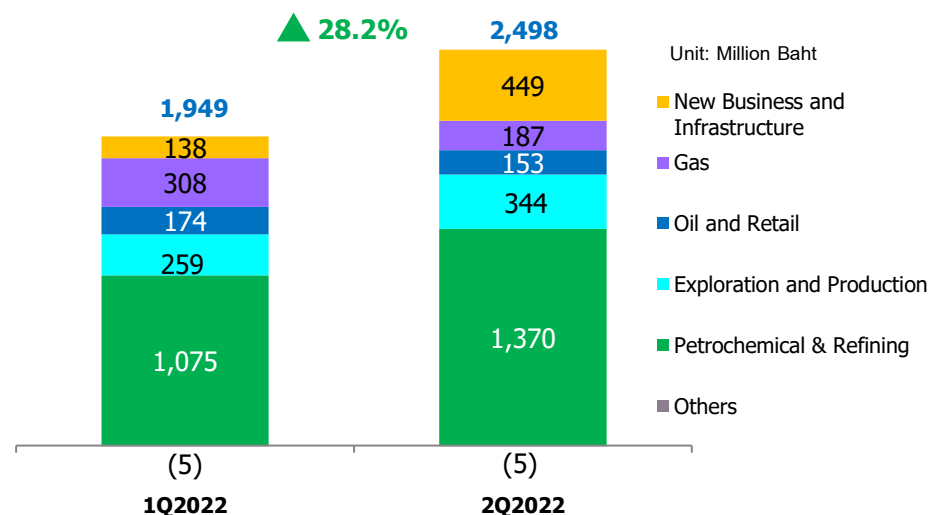
Second quarter of 2022 compared with First quarter of 2022

In 2Q2022, PTT and its subsidiaries' sales revenue was reported at Baht 926,954 million increased from 1Q2022 by Baht 168,489 million or 22.2% from all businesses. Sales revenue of International Trading business, Petrochemical and Refining business, Oil and retail business, and Exploration and Production business increased due to higher average selling prices according to the increase in global oil price and higher overall sales volume from the economic activities recovery following the easing of COVID-19 restrictions. However, International Trading business's sales volume decreased from the lower volume of crude out-out trading as well as LNG imports compared to previous quarter.

EBITDA in 2Q2022 was Baht 182,768 million, increased by Baht 40,067 million or 28.1% mainly from the increase in the performance of Petrochemical and Refining business. The performance of Refining business improved since Market GRM increased from US\$ 6.1 per bbl in 1Q2022 to US\$ 21.3 per bbl in 2Q2022 mainly from the increase in most of all petroleum product spreads, despite stock gain decreased. PTT Group's stock gain decreased approximately Baht 8,000 million as crude oil price increased in lower extent compared to the previous quarter. Moreover, Petroleum Exploration and Production Business and Coal Business 's performance increased primarily form the increase in both average selling prices and sales volume. In addition, Oil and retail business's performance also increased from higher gross margin per liter and sales volume mainly from diesel and aviation. Furthermore, Gas business's performance improved mainly from lower gas cost following the global LNG price.

The depreciation and amortization expenses in 2Q2022 were Baht 40,313 million, increased by Baht 3,168 million or 8.5% mainly from PTTEP as a result of first production of G1/61 Project, along with Malaysia Project due to higher sales volume and PTTGM from higher production of volume of coal as well as the investment in Phamaceutical business through Lotus.

Share of profit from investments in joint ventures and associates



In 2Q2022, the share of profit from investments in joint ventures and associates was Baht 2,498 million, increased by Baht 549 million or 28.2% mainly from performance of associates in New business and Infrastructure business from Xayaburi Power Plant resulting from the water level and the beginning of the rainy season, as well as share of profit from investments in associates in Petrochemical and Refining business mainly from GC's ownership of Vinythai Public Company Limited (VNT) increased.

In 2Q2022, there was loss on derivatives amounting to Baht 34,505 million, loss decreased by Baht 14,474 million or 29.6% mainly from PTTT and PTTEP due to less upward trend of forward oil price compare to the previous quarter.

In 2Q2022, loss on foreign exchange was Baht 13,021 million, loss increased by Baht 18,733 million or over 100.0% mainly from unrealized loss on US dollar loans as a result of Baht depreciation in this quarter compared to Baht in the previous quarter (Thai Baht depreciation in 2Q2022 of Baht 2.01 per US Dollar, Thai Baht appreciation in 1Q2022 of Baht 0.13 per US Dollar).

Finance costs was Baht 9,150 million in 2Q2022 increased by Baht 1,705 million or 22.9% from 1Q2022 mainly from corporate bond issuance of GC PTTEP and PTT as well as the increase in PTT's loan from financial institution.

In 2Q2022, there was recognition of non-recurring items (PTT's portion) after tax mainly from PTT's discounted benefit from production shortfall approximately Baht 1,000 million offset with the impairment of PTTGM's on coal mine project in Madagascar approximately Baht 400 million. While, in 1Q2022, there was non-recurring items (PTT's portion) after tax from PTT's discounted benefit from production shortfall approximately Baht 600 million and GPSC's gain on divestment of Ichinoseki Solar Power 1 GK divestment approximately Baht 350 million.

The corporate income taxes in 2Q2022 was Baht 34,850 million, increased by Baht 12,976 million or 59.3% resulted primarily from higher performance of PTT and its subsidiaries together with TOP's income tax from sale of the investment in GPSC approximately Baht 2,100 million.

As previously mentioned, this was resulted in PTT and its subsidiaries' net profit in this quarter amounting to Baht 38,848 million increased by Baht 13,277 million or 51.9 % from net profit of Baht 25,571 million in 1Q2022.

First half of 2022 compared with First half of 2021

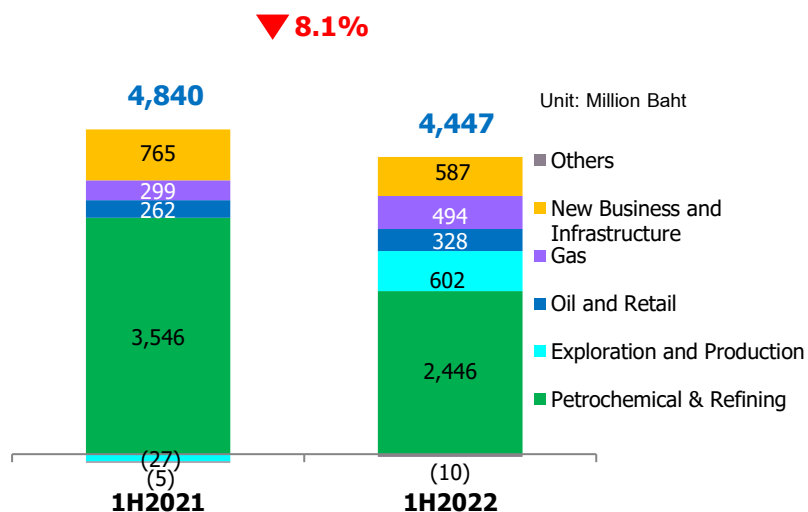
In 1H2022, sales revenue of PTT and its subsidiaries' was reported at Baht 1,685,419 million increased from 1H2021 by Baht 674,326 million or 66.7% from all businesses. Sales revenue of International Trading business, Petrochemical and Refining business and Oil and retail business increased due to higher average selling prices and overall sales volume according to the economic activities recovery as aforementioned. Sales revenue of Gas business increased due to Pool Gas price and higher referenced prices despite sales volume decreased compared to the same period of last year mainly from lower gas supply during the transition period of operator of concession. Moreover, Exploration and

Production business's revenue rose from the increase in average selling prices and average sales volume primarily from the acquisition of Oman Block 61 Project in March 2021 and the first production of G1/61 Project since the end of April 2022.

EBITDA in 1H2022 was Baht 325,469 million, increased by Baht 109,306 million or 50.6%. This was mainly from the increase in Petrochemical and Refining business's performance as Market GRM increased from US\$ 1.7 per bbl in 1H2021 to US\$ 13.8 per bbl in 1H2022 due to the improve in overall product spreads supported by Russia-Ukrain tension as well as the increase in sales volume and stock gain. In addition, PTT Group's stock gain increased approximately Baht 19,000 million following the crude oil price increased in higher extent compared to the same period last year. Whereas, Petrochemical business's performance decreased owing to the lower in most of petrochemical product spreads of both Olefins and Aromatics and lower sales volume from planned maintenance shutdown in 1H2022. However, Exploration and Production business as well as Coal business's performance enhanced from the increase in both of average selling prices and sales volume. In addition, the performance of Oil and retail business and Trading business increased following higher demand from easing of lockdown. However, the performance of New Business and Infrastructure dropped mainly from Power business as the feed cost of natural gas and coal significantly increased. Gas business's performance also decreased as the gross profit of S&M business decreased due to higher gas cost following the surge of global LNG price. However, GSP's gross profit rose from the higher average selling prices of all products in accordance with the higher petrochemical referenced prices.

The depreciation and amortization expenses of 1H2022 were Baht 77,458 million, increased by Baht 3,814 million or 5.2% mainly from GC as a result of acquisition of Allnex in 4Q2021 and PTTGM mainly from coal business following higher production and the investment of pharmaceutical business in Lotus company.

Share of profit from investments in joint ventures and associates



In 1H2022, the share of profit from investments in joint ventures and associates was Baht 4,447 million, decreased by Baht 393 million or 8.1%. This was primarily from lower performance of joint venture in Petrochemical and Refining business due to lower product to feed.

In 1H2022, loss on derivatives increased Baht 63,466 million, from loss on derivatives of Baht 20,018 million in 1H2021 to loss on derivatives of Baht 83,484 million in 1H2022 mainly due to loss on oil price hedging transactions from GC TOP PTTT and IRPC.

Loss on foreign exchange rate increased by Baht 2,106 million from loss Baht 5,203 million in 1H2021 to loss Baht 7,309 million in 1H2022 mainly due to unrealized losses of US currency loans as PTT Group's US currency loans increased compare to the same period last year. (Thai Baht depreciation in 1H2022 of Baht 1.87 per US Dollar, while Thai Baht depreciation in 1H2021 of Baht 2.01 per US Dollar).

Finance costs was Baht 16,595 million in 1H2022 increased by Baht 3,055 million from 1H2021 mainly from corporate bond issuance of GC PTTEP and PTT as well as an increase in PTT's loan from a financial institution.

In 1H2022, there were the recognition of non-recurring items (PTT's portion) mainly from PTT's shortfall discount from the gas producer of approximately Baht 1,600 million and GPSC's gain on Ichinoseki Solar Power 1 GK divestment approximately Baht 350 million offset with PTTGM's loss on impairment loss on coal mine project in Madagascar around Baht 400 million. Whereas, in 1H2021 PTTEP's gain on bargain purchase in Oman Block 61 project approximately Baht 7,000 million offset with the partial write-off of the assets in the exploration project in Brazil approximately Baht 2,900 million and GC's impairment loss from JV approximately Baht 1,500 million.

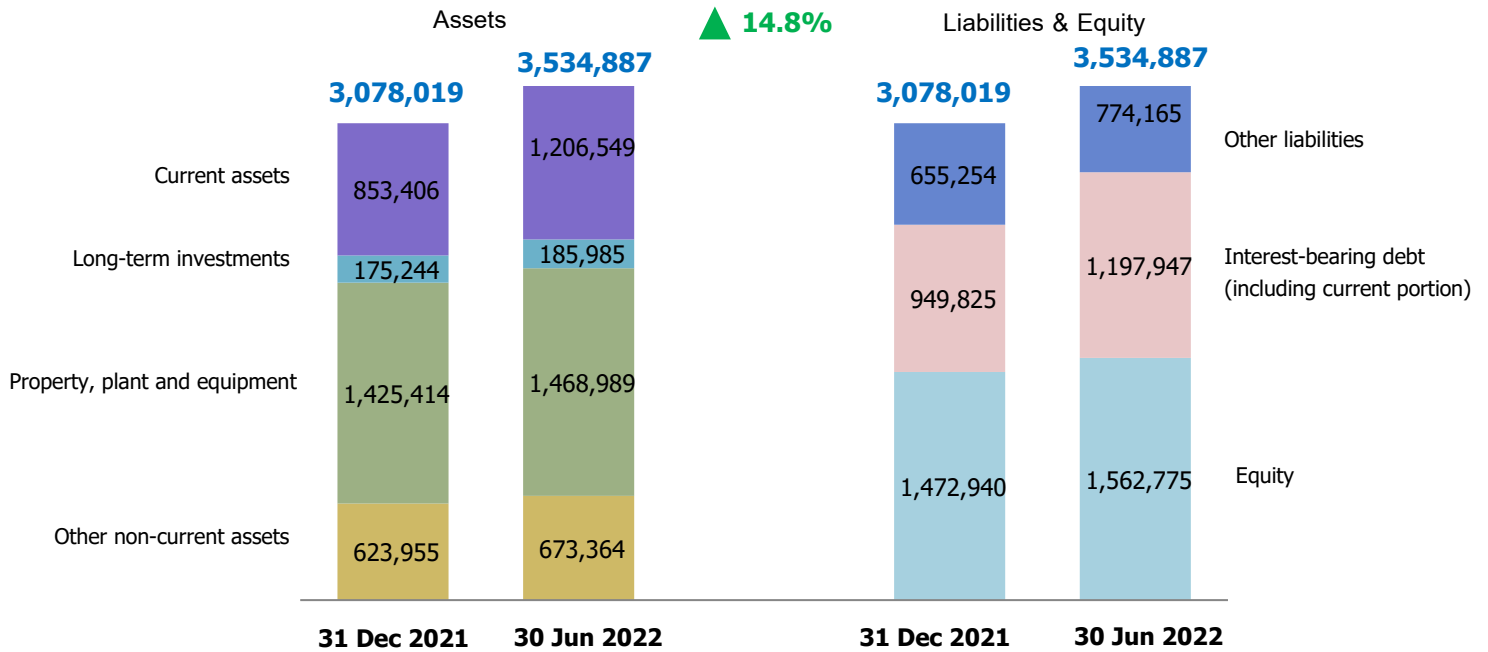
The corporate income taxes in 1H2022 was Baht 56,724 million, increased by Baht 24,190 million or 74.4% mainly from the better performance of PTT Group.

As aforementioned, this was resulted in PTT Group's net profit in 1H2022 amounting to Baht 64,419 million, which increased by Baht 7,253 million or 12.7% from the net profit amounting to Baht 57,166 million in 1H2021.

The Analysis of PTT Group Consolidated Financial Position

As of 30 June 2022 compared with 31 December 2021

Unit: Million Baht



Assets

As of 30 June 2022, total assets of PTT Group were Baht 3,534,887 million, increasing by Baht 456,868 million or 14.8% compared with 31 December 2021 mainly from the net effect as follows:

: Current assets increased by 353,143 million or 41.4% mainly from the following:

- Cash and cash equivalents and current investments increased by Baht 64,660 million mainly from cash received from long-term borrowing and issuance of debentures mainly from PTT and Net cash received from operating activities mainly from PTTEP, TOP, and GPSC.
- Trade accounts receivables increased by Baht 78,085 million mainly from higher average selling prices and sales volume of PTT, PTTT, and GC.
- Inventories increased by Baht 104,362 million due to higher prices and inventory level of crude oil, refined products, and petrochemical from TOP, PTT, IRPC, and GC.

: Long-term investments increased by Baht 10,741 million or 6.1% mainly from purchasing additional shares in Vinythai (VNT) of GC.

: Property, plant, and equipment (PPE) increased by Baht 43,575 million or 3.1% mainly from PTTEP's exploration and evaluation assets of G1/61 Project and G2/61 Project and TOP's additional construction in progress of Clean Fuel Project (CFP).

: Other non-current assets increased by Baht 49,409 million or 7.9% mainly from PTTEP's right-of-use assets of G1/61 Project and G2/61 Project and exploration and evaluation assets of Abu Dhabi project and Myanmar M3 Project.

Liabilities

As of 30 June 2022, PTT Group had total liabilities of Baht 1,972,112 million, increasing by Baht 367,033 million or 22.9% from 31 December 2021, mainly from the following:

: Other liabilities increased by Baht 118,911 million or 18.2% mainly from the increase in trade accounts payables due to the increase in overall purchase volume and higher purchase prices mainly from PTT as well as the increase in commodity derivatives primarily from PTTT, GC, and TOP.

: Interest-bearing debt increased by Baht 248,122 million or 26.1% due to the increase in long-term loans and bond by Baht 164,509 million mainly from GC PTT and the increase in short-term loans by Baht 68,116 million mainly from GC TOP, and IRPC.

Equity

As of 30 June 2022, PTT Group had total shareholders' equity of Baht 1,562,775 million, increasing by Baht 89,835 million or 6.1% from 31 December 2021 as PTT Group reported the 6 months in 2022 net income amounting to Baht 64,419 million. Additionally, non-controlling interests increased by Baht 22,342 million mainly from gain of subsidiaries.

Liquidity

For the 6-month ended 30 June 2022, PTT Group had net increase in cash and cash equivalents amounting to Baht 56,705 million. There was cash and cash equivalents at the beginning of the period of Baht 312,730 million. As a result, cash and cash equivalents at the end of the period was Baht 369,435 million. Details of cash flow by activities are as follows:

	Unit: Million Baht
	PTT Group
Net cash provided by operating activities	13,017
Net cash used in investing activities	(91,118)
Net cash provided by financing activities	138,997
Effects of exchange rates on cash and cash equivalents	1,891
Exchange differences on translation	(6,082)
Net increase in cash and cash equivalents during the period	56,705
Cash and cash equivalents at the beginning of the period	312,730
Cash and cash equivalents at the end of the period	369,435

Net cash provided by operating activities of Baht 13,017 million was derived from Baht 147,107 million of profit before income taxes, adjusted to net cash provided by (used in) operating activities. The increase in net cash flow from

operating activities mainly resulted from Baht 77,459 million of depreciation and amortization expenses, Baht 29,887 million of loss on derivatives, Baht 16,595 million of finance costs, and Baht 13,566 million of loss on foreign exchange rate. The decrease in net cash flow from operating activities mainly resulted from Baht 4,447 million of share of profit from investments in joint ventures and associates, Baht 2,792 million of unrealized gain on fair value of commodity contracts, and the change in net operating assets resulting in the decrease in cash flow of Baht 215,087 million while income taxes paid of Baht 48,256 million.

Net cash used in investing activities was Baht 91,118 million mainly resulted from the following:

: The cash outflow of investments in property, plant and equipment, investment property, intangible assets, and exploration and evaluation assets amounting to Baht 68,548 million, mainly due to additional investment in exploration and production assets in G1/61 Project, G2/61 Project, S1 Project, Bongkot Project, and Zawtika Project of PTTEP, additional investment of TOP in CFP and expand the capacity of electricity and steam of TOP SPP Company Limited (TOP SPP), GC's Olefins 2/2 Modification project, LNG receiving terminal at Nong Fab of PTT LNG Company Limited (PTTLNG), and PTT's the 7th Gas Separation Plant, as well as the 5th transmission pipeline project.

: The cash outflow of business acquisition and long-term investments amounting to Baht 22,727 million, mainly from the investment in pharmaceutical business of PTTGM and purchasing additional shares in VNT of GC.

: The cash outflow from short-term investment in financial assets totaling Baht 5,821 million, mainly from GC and TOP invested in fixed deposit while increase from maturity of fixed deposits of OR, PTT and GPSC.

Net cash provided by financing activities was Baht 138,997 million, mainly from the following:

: The net cash inflow of short-term and long-term loans amounting to Baht 197,797 million mainly from GC, PTT, and IRPC.

: Dividend payment amounting to Baht 37,041 million mainly from PTT, GC, and PTTEP.

: Finance costs paid amounting to Baht 15,981 million mainly from GC, TOP, and PTTEP.

Financial ratios and earnings per share of PTT Group

Financial Ratio	Unit	1H2021	1H2022
<u>Profitability Ratios</u>			
Gross profit margin	%	18.18	18.40
Net profit margin	%	8.01	5.36
<u>Solvency Ratios</u>			
Interest coverage	Times	15.96	19.61
<u>Earnings per share</u>			
Earnings per share	Baht/share	2.00	2.26

Financial Ratio	Unit	31 Dec 2021	30 Jun 2022
<u>Liquidity Ratios</u>			
Current ratio	Times	1.73	1.80
Quick ratio	Times	1.13	1.05
<u>Solvency Ratios</u>			
Debt to equity	Times	0.64	0.77

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

*The calculation formula has been changed (old formula: Net cash flow from operating activities + Taxes paid from operating activities divided by Finance costs paid)

Economic Outlook in the Third Quarter of 2022

The world economy in 3Q2022 is expected to recover at a slower rate from 2Q2022, following an expected slowdown of US economy due to reduced purchasing power of households and tighter monetary policy. The Fed raised its interest rate by 0.75% to 2.25%-2.50% at July meeting. Moreover, Chinese economy is also facing pressure from a further lockdown under zero-COVID policy in order to secure the nation's public health security, and the deepening real estate problems. In addition, the spillovers from the Russia-Ukraine war to Euro Area economy is expected to intensify as sanctions on Russia are extended such as the EU ban on Russian coal imports, which will be fully effective from the second week of August 2022. Besides, Euro Area could plunge into an energy crisis if Russia fully cutoff natural gas supplies. Downside risks to the world economy include a sudden tightening of global financial conditions, Chinese economic stability, the uncertainty of the spread of the new variants of COVID-19, and the possibility of global food shortages.

According to the S&P Global's report of July 2022, global oil demand in 3Q2022 is expected to increase by 3.1 MMBD in 2Q2022 to 100.6 MMBD following easing of lockdown in China. However, there are higher concerns over economic growth, amid continuously high inflation, which led to many central banks to increase interest rate and could moderate oil demand. On the supply side, there is more risk of price volatility due to lower spare capacity, after OPEC+ progressively attempt to increase oil production, while IEA members lower their SPR. In 3Q2022, Dubai crude oil price is expected to average at US\$101-106 per barrel; whereas, Singapore GRM is expected to average at US\$11.5 – 12.5 per barrel, decreased from 2Q2022 mainly due to the diesel and high sulfur fuel oil market has been pressured by new supply added. In 2022, Dubai crude oil price is expected to average at US\$100- 105 per barrel; whereas, Singapore GRM is expected to average at US\$13.1 – 14.1 per barrel,

Petrochemical prices of Olefins and Aromatics in 3Q2022 are likely to be soften from 2Q2022, due to more bearish crude oil and naphtha price outlook, amid a clear sign of global economic slowdown.

- Olefins: HDPE and PP prices in 3Q2022 are expected to decrease from 2Q2022 to an average of US\$1,220 – 1,240 per ton for HDPE, and US\$1,240 – 1,260 per ton for PP, amid weakening demand caused by economic slowdown due to rising inflation rate and upcoming rainy season. Furthermore, new Asia refineries capacity which expected to start within 3Q2022 including PRefChem (Malaysia) will also add some pressure on market. However, refineries run cuts from lower margins, and signs of recovery demand in China after easing lockdown remain a supportive for the market.
- Aromatics prices in 3Q2022 is expected to be lower comparing with 2Q2022. BZ and PX prices are projected to average US\$1,110-1,130 per ton for BZ and US\$1,130-1,150 per ton for PX amid lower feedstock prices, the loosening of BZ and PX supply tightness as its feedstock demand for gasoline blending is expected to be lower as driving season end. In addition, an expected lower downstream demand following an expected

global economic slowdown, upcoming of new capacities in China, and the resume of refinery operation after seasonal maintenances in 2Q2022 will add further pressure on the market.

Thai economy in 3Q2022 is expected to keep expanding compared to 2Q2022, as tourism sector, private consumption, and private investment are likely to continue to recover due to further easing COVID-19 curbs, with a few steps closer for returning to a normal life, including the cancellation of “Thailand Pass” registration and compulsory COVID-19 insurance, and the declaration of the whole nation as a green (COVID-19 surveillance) zone since 1 July 2022. Meanwhile, merchandise export is expected to expand at a slower rate due to a clear sign of global economic slowdown. Besides, government spending for the last quarter of fiscal year 2022 is projected to show slower pace due to smaller amount of the budget. Thai economic recovery could face further downside risks, including a sudden surge of cost-push inflation due to rising tensions between NATO and Russia, a tightening of global financial conditions which could lead to global economic recession, the emergence of new COVID-19 variants such as Omicron BA.5, and the rise of political risk in Thailand.

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 2022: 87.54% (Including 3 phases construction)
 - COD: December 2022

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 the future.

- **LNG Receiving Terminal #2:**

Total Project progress as of June 2022: approximately 95.00% (Including total project)

- Total Capacity of 7.5 MTA be approved by the Cabinet meeting on 11 April 2017
 - The capacity of 2.5 MTA is already COD since July 2022 and capacity of 5 MTA is scheduled to COD in December 2022
- **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 III (Section 1) as proposed by the Eastern Economic Corridor Office. Gulf MTP LNG Terminal Company Limited, a new joint venture company between PTT Tank Terminal Company Limited (PTT Tank) and Gulf Energy Development Public Company Limited (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 2022

Plant	1Q2022	2Q2022	3Q2022	4Q2022
GSP #1			SD (6-19 Aug :14 days)	
GSP #2		TD (10 May-1 June : 23 days)		
GSP #3		TD (10 May-1 June : 23 days)		
GSP #4			Major SD (1-20 Sep : 20 days)	
GSP #5				Minor SD (5-19 Dec : 15 days)
ESP		TD (10 May-1 June : 23 days)		

*TD: Turndown

**SD: Shutdown



Appendix

Exploration and Production Business consists of PTT Exploration and Production Public Company Limited (PTTEP)

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

Coal Business consists of PTT Energy Resources Co., Ltd (PTTER), PTT Global Management Co., Ltd (PTTGM)

Oil and Retail Business consists of PTT Oil and Retail Business Public Company Limited (OR)

International Trading Business consists of PTT international business unit and 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 Company Limited (GC), Thai Oil Public Company Limited (TOP), IRPC Public Company Limited (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 Company Limited (GPSC), PTT Energy Solution Co., Ltd. (PTTES), Energy Complex Co., Ltd. (EnCo) and PTT Digital Solutions Co., Ltd. (PTT DIGITAL)

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

*Note: *PTTGM owns shares in many companies which operate in various businesses such as Coal Business, Natural Gas Business, and New Business and Infrastructure Business. However, currently PTTGM's performance is mainly contributed from the Coal Business.*