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ขับเคลื่อนทุกชีวิตด้วยพลังแห่งอนาคต

MANAGEMENT DISCUSSION & ANALYSIS 1Q2022



Management's Discussion and Analysis (MD&A) and operating result for the first quarter of 2022 ended 31 March 2022

Executive Summary

Unit : Million Baht	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Sales Revenue	477,837	688,837	758,465	58.7%	10.1%
EBITDA	102,997	101,271	142,701	38.5%	40.9%
Net Profit	32,588	27,544	25,571	(21.5%)	(7.2%)
Earnings per share (Baht/share)	1.14	0.97	0.89	(21.9%)	(8.2%)
Average Dubai Price (US\$/barrel)	60.0	78.3	95.6	59.3%	22.1%

In the first quarter of 2022 (1Q2022), PTT and its subsidiaries reported Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) in an amount of Baht 142,701 million increased by Baht 41,430 million or 40.9% from the fourth quarter of 2021 (4Q2021) at Baht 101,271 million mainly from the increase in the performance of Petrochemical and Refining businesses. The performance of Refining business improved since Accounting Gross Refining Margin (Accounting GRM) increased from US\$ 5.9 per bbl in 4Q2021 to US\$ 8.8 per bbl in 1Q2022 due to higher stock gain and overall product spreads. PTT Group's stock gain increased approximately Baht 20,000 million compared to the previous quarter according to the increase of crude oil price. Whereas, Petrochemical business's performance declined according to the decrease in most of petrochemical product spreads of both Aromatics and Olefins. Petroleum Exploration and Production Business's performance rose mainly from the increase in average selling prices and sales volume. However, the performance of New Business and Infrastructure decreased primarily from Power business as the feed cost of natural gas and coal significantly increased along with the decline of electricity and steam sales volume. Net income of PTT and its subsidiaries in 1Q2022 was Baht 25,571 million decreased by Baht 1,973 million or 7.2% from 4Q2021 at Baht 27,544 million mainly because, in 1Q2022, there were the significant increase of loss on derivatives primarily from oil and commodity price hedging instruments due to an upward trend of forward oil price and higher corporate income taxes despite the improve of sales revenues and EBITDA. Moreover, there was the recognition of gain from non-recurring items (PTT's portion) after tax in 1Q2022 amounting to Baht 929 million which mainly consisted of PTT's discounted benefit from production shortfall approximately by Baht 700 million and gain on Ichinoseki Solar Power 1 GK divestment from Global Power Synergy Public Company Limited (GPSC). While, in 4Q2021, there was loss from non-recurring items (PTT's portion) amounting to Baht 6,931 million mainly from impairment loss (after tax) of PTT Group's assets approximately by Baht 7,000 million and other non-recurring items such as PTT's recognition of Take or Pay of Myanmar gas to government offset with discounted benefit from production shortfall, and gain on disposal of gas pipeline business in Egypt of PTT Energy Resources Company Limited (PTTER).

In 1Q2022 PTT and its subsidiaries reported EBITDA in an amount of Baht 142,701 million increased by Baht 39,704 million or 38.5% when compared to the first quarter of 2021 (1Q2021) of Baht 102,997 million mainly from the increase in Exploration and Production business's performance due to higher average selling prices and sales volume as aforementioned. Petrochemical and Refining businesses' performance increased from Refining business which accounting GRM rose from US\$ 6.9 per bbl in 1Q2021 to US\$ 8.8 per bbl in 1Q2022 following the increase in stock gain and overall product spreads as well as higher sales volume. PTT Group's stock gain increased approximately Baht 11,000 million regarding to crude oil price increased in the higher extent compared to the same period of last year. Meanwhile, Petrochemical business's performance decreased owing to the lower in most of petrochemical product spreads of both Aromatics and Olefins. 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 electricity sales to industrial customers. Net income of PTT and its subsidiaries in 1Q2022 was Baht 25,571 million which decreased by Baht 7,017 million or 21.5% from 1Q2021 at Baht 32,588 million as there were the significant increase of loss on derivatives as aforementioned and higher corporate income taxes despite higher EBITDA and gain on foreign exchange rate. However, there was lower gain from recognition of non-recurring items (PTT's portion) after tax. In 1Q2022, there was gain from non-recurring items (PTT's portion) after tax amounting to Baht 929 million as aforementioned. While, in 1Q2021, there was gain from recognition of non-recurring items (PTT's portion) after tax amounting to Baht 4,874 million mainly from PTT Exploration and Production Public Company Limited (PTTEP)'s 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.

As of 31 March 2022, PTT and its subsidiaries had the total assets amounting to Baht 3,315,950 million increased by Baht 237,931 million or 7.7% from 31 December 2021 which had total asset amounting to Baht 3,078,019 million mainly from the increase in inventories and trade account receivables following the higher product prices and volumes. In addition, cash and cash equivalents and short-term investments increased mainly from higher cash proceeds from borrowings. Whereas, the total liabilities were reported at Baht 1,815,259 million increased by Baht 210,180 million or 13.1% mainly from the increase in long-term loan and bond issuances during the period together with the increase in derivatives liabilities and trade accounts payables due to the increase in overall purchased volumes and prices. In addition, the total shareholders' equity was Baht 1,500,691 million, increased by Baht 27,751 million or 1.9% mainly from the increase in PTT and its subsidiaries' net income of 1Q2022.

Economic Overview in the First Quarter of 2022

The world economy in 1Q2022 continued to recover from 4Q2021, following the relaxation of COVID-19 containment measures in overall, despite the rise in number of the Omicron COVID-19 cases. Many countries imposed living with COVID-19 policy after the risk of severe infection and mortality rate from the Omicron variant decreased, amid a widespread vaccination and booster shots. Meanwhile, the implementation of more stringent containment measures under zero-tolerance COVID-19 policy in China after the new cases hit two-year high in March 2022, coupled with the Russia-Ukraine war that began in late February 2022, putting pressure on the shortages of key inputs, global supply chain disruptions, and commodity prices to further increase, especially the energy prices. As a result, inflation, which was already at high level, continued to accelerate in several countries. While, many central banks have tightened their monetary policy, including, the Federal Reserves (the Fed) that raised its federal funds rate from 0.00%-0.25% to 0.25%-0.50% at its March 2022 meeting. The International Monetary Fund (IMF), in April 2022, revised down its global growth forecast for 2022 to 3.6%, from its previous forecast of 4.4% in January 2022.

According to IHS Markit (IHS) report of April 2022, global oil demand in 1Q2022 was averaged at 98.1 million barrels per day (MMBD), decreasing from 4Q2021 at 100.2 MMBD but increasing from 1Q2021 at 93.5 MMBD amid surging crude and refined product price led by concern over Russia and Ukraine tension and resurgence COVID-19 in China.

Unit : US\$/barrel	1Q2021	4Q2021	1Q2022	% Inc. (Dec.)	
				YoY	QoQ
Average Dubai crude oil price	60.0	78.3	95.6	59.3%	22.1%
Gasoline Crack Spread	7.1	15.4	17.8	>100%	15.6%
Diesel Crack Spread	4.7	11.4	19.6	>100%	71.9%
FO Crack Spread (180 – 3.5%S)	(3.4)	(6.9)	(8.3)	<(100%)	(20.3%)
GRM-Singapore Crack	1.8	6.1	8.0	>100%	31.1%

Dubai oil price in 1Q2022 was averaged at US\$95.6 per barrel, increasing from 4Q2021 at US\$78.3 per barrel, and from 1Q2021 at US\$60.0 per barrel amid concern over sanction on Russia which will lead to loss of crude oil supply up to 3 MMBD. It is also supported by OPEC+ agreed to affirm the increase of oil production quota at 0.4 MMBD/month which will not be sufficient to cover the declining of Russia supply. In addition, delay of Iranian nuclear deal limit additional global oil supply to the market. However, on 1 March 2022, International Energy Agency (IEA) member agreed to release Strategic Petroleum Reserve (SPR) 1st round up to 60 MMB in April - May 2022 to compensate for the loss of supply.

Petroleum product prices at Singapore spot market

- Gasoline crack spread** in 1Q2022 was averaged at US\$17.8 per barrel, increasing from 4Q2021 at US\$15.4 per barrel and from 1Q2021 at US\$7.1 per barrel amid increasing demand from easing lockdown measures and lower supply from refinery during turnaround period, which lead to lower gasoline inventory greatly. However, resurgence of COVID-19 in China and high gasoline price will lead to lower demand / consumption and put pressure on the crack spread.
- Diesel crack spread** in 1Q2022 was averaged at US\$19.6 per barrel, increasing from 4Q2021 at US\$11.4 per barrel and from 1Q2021 at US\$4.7 per barrel amid concern over Russia and Ukraine tension, which will have direct impact to diesel supply in Europe. In addition, it is also supported by lower supply from refinery during turnaround period lead to lower diesel inventory. However, high diesel price and higher inflation rate will put pressure on diesel demand, especially in the industrial sector, and be a pressure on crack spread.
- Higher Sulfur fuel oil 3.5% crack spread (HSFO)** in 1Q2022 was averaged at US\$ -8.3 per barrel, decreasing from 4Q2021 at US\$ -6.9 per barrel and from 1Q2021 at US\$ -3.4 per barrel amid ending summer season in Middle East and South Asia resulted in lower power demand, excess HSFO supply from Russia, and higher crude oil price.

Singapore Gross Refining margin (GRM) in 1Q2022 was averaged at US\$8.0 per barrel, increasing from 4Q2021 at US\$6.1 per barrel, and from 1Q2021 at US\$1.8 per barrel amid increasing product demand from easing lockdown especially gasoline and diesel. It is also supported by concern over Russia and Ukraine tension which will impact product supply if sanction is imposed. In addition, product supply also pressured by refinery turnaround. However, higher crude oil price will put pressure on overall GRM.

Unit : US\$/Ton	1Q2021	4Q2021	1Q2022	% Inc. (Dec.)	
				YoY	QoQ
HDPE: CFR SEA	1,145	1,252	1,330	16.2%	6.2%
PP: CFR SEA - Film	1,365	1,335	1,387	1.6%	3.9%
BZ: FOB Korea	753	945	1,073	42.5%	13.6%
BZ: FOB Korea Spread	196	200	196	-	(2.0%)
PX: CFR Taiwan	766	893	1,087	41.9%	21.7%
PX: CFR Taiwan Spread	209	148	210	0.5%	41.9%
Naphtha (MOPJ)	557	745	877	57.5%	17.7%

Petrochemical prices of Olefins and Aromatics in 1Q2022 increased from 4Q2021, on the back of higher crude oil and naphtha price. As feedstock cost increased rapidly, multiple producers have implemented rate cuts amid poor margins, while demand remained weak as they showed resistance to the high prices of downstream products.

- **Olefins:** High density polyethylene (HDPE) and polypropylene (PP) prices increased from 4Q2021, due to a rise in crude and naphtha prices, coupled with reduction in operating rates and unplanned maintenance shutdowns among producers due to weak margins. Meanwhile, sluggish buying interest in China and ASEAN resulting from the Lunar New Year holiday, air quality control during the Winter Olympics, and the impact of Omicron outbreak limited price upside.
- **Aromatics:** Benzene (BZ) price increased from 4Q2021. However, higher crude oil and naphtha prices caused BZ spread over naphtha to decrease due to lower demand from styrene monomer (SM) producers, amid a considerably increase in feedstock costs, high BZ inventory levels in China and the remained close of arbitrage window from Asia to the United States. Paraxylene (PX) price and PX spread over naphtha increased from the low level in 4Q2021, following a significantly increase in crude oil and naphtha prices. PX production rate slightly decreased as many Asian producers have cut their operating rates according to squeezed margins, and an increase in naphtha's demand for gasoline blending. However, high PX inventory levels in China, a slowdown in downstream market for both Purified terephthalic acid (PTA) and Polyester in China put pressure on an increase in PX price.

Comparing to same period last year, petrochemical prices of Olefins and Aromatics in 1Q2022 increased, following a surge in crude and naphtha prices, amid the market concerns over the escalation of the Russia's invasion of Ukraine and the economic sanctions levied upon Russia, together with higher demand boosted by a gradual global economic recovery and the widespread of global COVID-19 vaccination amid less restrictive of COVID-19 measures compared to the same period last year.

Thai economy in 1Q2022 continued to recover from 4Q2021, as merchandise exports continued to expand in tandem with the recovery of trading partner economies. Private consumption and private investment edged up due to easing containment measures, amid a surge in COVID-19 cases, but with limited impact to the economy. Besides, tourism sector improved as Thailand resumed its quarantine-free entry program for vaccinated travelers (Test & Go scheme) since 1 February 2022, after being suspended from 21 December 2021 to 31 January 2022. In addition, the government stimulus measures continued to support the economic growth, albeit on a reduced budget. However, higher commodity prices and cost – push Inflation, following Russia-Ukraine war since the end of February 2022, led to a decline in household's purchasing power and businesses' profit margins. The Bank of Thailand (BOT), in March 2022, revised down its Thai economic forecast for 2022 to 3.2%, from its previous estimate of 3.4% in December 2021.

Non-recurring items in the first quarter of 2022 until present



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

January 2022

- **PTT:** 1 January 2022, to support Thai people on energy prices, PTT has extended the cap of NGV retail price from 1 January to 15 June 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. 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 June 2022.
- **PTT & GPSC:** 11 January 2022, 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 millions. 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:** 3 February 2022, 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:** 7 February 2022, 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:** 17 February 2022, 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.
- **TOP:** 17 February 2022, 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.

March 2022

- **PTTEP:** 1 March 2022, 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:** 14 March 2022, 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 will be effective on 20 July 2022. 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:** 23 March 2022, 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:** 31 March 2022, 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

- **PTTEP:** 1 April 2022, 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 2022, 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 2022, 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 & PTTEP:** 20 April 2022, 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. This will assure continual petroleum production per development plan, as well as strengthening country's energy security.

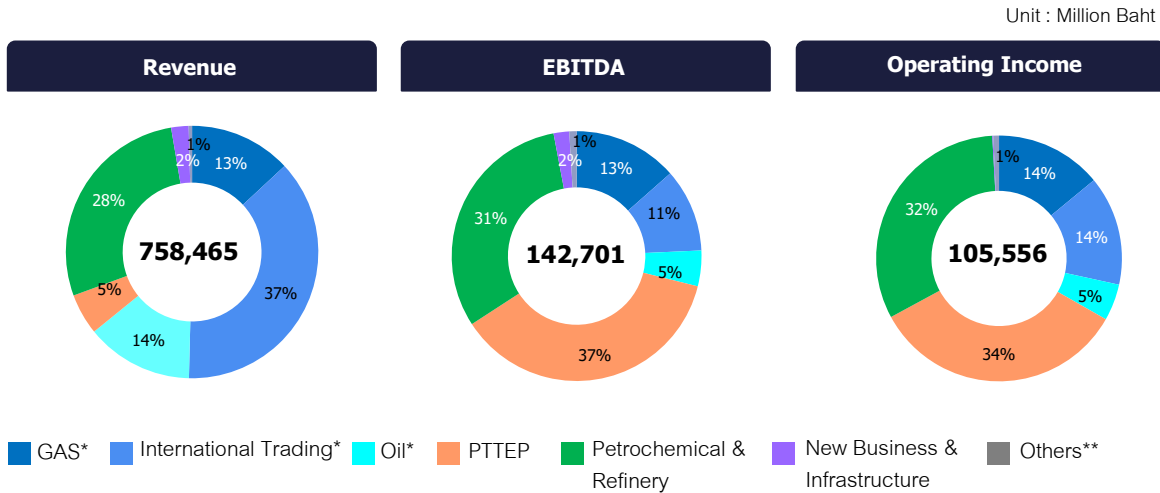
Financial Results of PTT Group by Business

Financial performance of 1Q2022 compared with 1Q2021 and 4Q2021 are summarized as follows:

Unit : Million Baht	1Q2021	4Q2021	1Q2021	% Inc. (Dec.)	
				YoY	QoQ
Sales revenue	477,837	688,837	758,465	58.7%	10.1%
: Exploration & Production	42,754	63,189	68,149	59.4%	7.8%
: Gas	102,714	132,464	169,216	64.7%	27.7%
: Coal	3,125	5,774	4,651	48.8%	(19.4%)
: Oil	118,890	158,265	177,909	49.6%	12.4%
: International trading	226,098	378,076	482,985	>100.0%	27.7%
: Petrochemical & Refining	224,429	310,044	361,248	61.0%	16.5%
: New Business & Infrastructure	18,078	24,263	28,954	60.2%	19.3%
: Others	869	889	975	12.2%	9.7%
EBITDA	102,997	101,271	142,701	38.5%	40.9%
: Exploration & Production	31,824	47,419	53,465	68.0%	12.8%
: Gas	21,775	19,200	19,520	(10.4%)	1.7%
: Coal	1,230	2,943	1,836	49.3%	(37.6%)
: Oil	6,531	4,513	6,686	2.4%	48.1%
: International trading					
- Excluding effect of FX and derivatives	3,975	(54)	15,625	>100.0%	>100.0%
- Including effect of FX and derivatives	1,138	1,449	1,219	7.1%	(15.9%)
: Petrochemical & Refining	33,492	23,573	45,162	34.8%	91.6%
: New Business & Infrastructure	5,436	4,423	2,927	(46.2%)	(33.8%)
: Others	(650)	(1,125)	(471)	27.5%	58.1%
Depreciation and amortization expenses	35,036	33,851	37,145	6.0%	9.7%
Operating income (loss)	67,961	67,420	105,556	55.3%	56.6%
: Exploration & Production	15,327	33,439	36,431	>100.0%	8.9%
: Gas	17,178	14,411	15,089	(12.2%)	4.7%
: Coal	897	2,257	1,390	55.0%	(38.4%)
: Oil	5,127	2,939	5,177	1.0%	76.1%
: International trading					
- Excluding effect of FX and derivatives	3,926	(108)	15,502	>100.0%	>100.0%
- Including effect of FX and derivatives	1,089	1,395	1,096	0.6%	(21.4%)
: Petrochemical & Refining	23,984	13,662	34,457	43.7%	>100.0%
: New Business & Infrastructure	2,897	1,682	143	(95.1%)	(91.5%)
: Others	(759)	(1,241)	(584)	23.1%	52.9%
Share of net income from investments in joint ventures and associates	1,947	1,937	1,949	0.1%	0.6%
Loss on impairment of assets (reversal)	(5)	9,250	(5)	-	<(100.0)%
Gain (loss) on derivatives	(7,398)	(172)	(48,979)	<(100.0)%	<(100.0)%
Gain (loss) on foreign exchange	(4,330)	5,139	5,712	>100.0%	11.2%
EBIT	65,327	65,019	66,023	1.1%	1.5%
Finance costs	6,438	7,153	7,445	15.6%	4.1%
Income taxes	11,683	19,648	21,874	87.2%	11.3%
Net income (loss)	32,588	27,544	25,571	(21.5%)	(7.2%)
Earnings per share (Baht/share)	1.14	0.97	0.89	(21.9%)	(8.2%)

Segmentation performance of PTT Group

The details of revenue, Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) and operating income by segmentation of 1Q2022 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)

	1Q2021	4Q2021	1Q2022	%Inc.(Dec.)	
				YoY	QoQ
Average selling price (US\$/BOE)	40.4	46.9	51.4	27.2%	9.6%
Average sales volume (BOED)	382,877	420,965	427,368	11.6%	1.5%

First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, sales revenue of PTTEP was Baht 68,149 million, increasing by Baht 4,960 million or 7.8% from 4Q2021 as the average selling price increased by 9.6% from US\$ 46.9 per BOE in 4Q2021 to US\$ 51.4 per BOE in 1Q2022 as well as the average sales volume increased by 1.5% from 420,965 BOED in 4Q2021 to 427,368 BOED in 1Q2022 primarily from Arthit Project due to higher gas nomination from buyer and Zawtika Project due to maintenance shutdown in the previous quarter, offset with a decrease in crude sales volume from Malaysia Project.

EBITDA in 1Q2022 was Baht 53,465 million, increasing by Baht 6,046 million or 12.8% from 4Q2021 mainly due to an increase in sales revenue as aforementioned together with a decrease in operating expenses primarily from Bongkot Project due to lower maintenance activities and Malaysia Project due to lower sales volume. However, depreciation, depletion and amortization increased primarily from Bongkot Project and other income decreased mainly from an increase in participating interests of Malaysia Block K Project in the previous quarter caused the operating income in 1Q2022 was Baht 36,431 million, increasing by Baht 2,992 million or 8.9% from 4Q2021.

The overall performance of Exploration and Production business decreased despite an increase in EBITDA, as there was a recognition of loss on financial instruments increased by Baht 7,864 million mainly from oil price hedging instruments due to an upward trend of forward oil price, offset with impairment loss on assets of Baht 6,142 million from Mozambique Area 1 Project and Yetagun Project in 4Q2021.

First quarter of 2022 compared with First quarter of 2021

In 1Q2022, sales revenue of PTTEP was Baht 68,149 million, increasing by Baht 25,395 million or 59.4% from 1Q2021 as the average selling price increased by 27.2% from US\$ 40.4 per BOE in 1Q2021 to US\$ 51.4 per BOE in 1Q2022 as well as the average sales volume increased by 11.6% from 382,877 BOED in 1Q2021 to 427,368 BOED in 1Q2022 primarily from the acquisition of Oman Block 61 Project in March 2021 and Malaysia Block H Project from first gas production in February 2021 including Arthit Project due to higher gas nomination from buyer, offset with Bongkot Project due to lower gas sales volume.

EBITDA in 1Q2022 was Baht 53,465 million, increasing by Baht 21,641 million or 68.0% from 1Q2021 mainly due to an increase in sales revenue as aforementioned caused the operating income in 1Q2022 amounting to Baht 36,431 million, increasing by Baht 21,104 million or more than 100.0% from 1Q2021.

The overall performance of Exploration and Production business decreased despite an increase in EBITDA, as income taxes increased by Baht 10,635 million mainly due to the higher profit from projects in Thailand and Oman together with the increase in loss on financial instruments by Baht 5,194 million mainly from oil price hedging instruments as a result of an upward trend of forward oil price. In addition, there was gain from a bargain purchase of Oman Block 61 Project of Baht 10,772 million, offset with partial write-off of the assets in the exploration project in Brazil amounting to Baht 4,455 million in 1Q2021.

Gas Business Group

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

Unit : Ton	1Q2021	4Q2021	1Q2022	% Inc.(Dec.)	
				YoY	QoQ
LPG	748,260	767,362	807,925	8.0%	5.3%
Ethane	582,241	512,947	486,571	(16.4%)	(5.1%)
Propane	270,493	201,818	262,167	(3.1%)	29.9%
NGL	168,303	143,620	133,037	(21.0%)	(7.4%)
Pentane	10,759	11,440	13,383	24.4%	17.0%
Total	1,780,056	1,637,187	1,703,083	(4.3%)	4.0%

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

Unit : US\$ per Ton	1Q2021	4Q2021	1Q2022	% Inc.(Dec.)	
				YoY	QoQ
LPG ^{1/}	582	807	803	38.0%	(0.5%)
LDPE ^{2/}	1,533	1,592	1,641	7.0%	3.1%
LLDPE ^{2/}	1,146	1,285	1,346	17.5%	4.7%
HDPE ^{2/}	1,145	1,252	1,330	16.2%	6.2%
Propane ^{1/}	593	822	803	35.4%	(2.3%)

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

First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, gas business reported sales revenue of Baht 169,216 million, increasing by Baht 36,752 million or 27.7% from 4Q2021. This resulted mainly from S&M business due to the higher average selling prices in line with the increase in Pool Gas price as well as the average selling prices for industrial customers, which increased from the higher fuel oil referenced prices. Moreover, the average sales volume (calculated at heating value of 1,000 BTU per cubic feet) increased by 264 MMSCFD or 6.3% from 4,158 MMSCFD in 4Q2021 to 4,422 MMSCFD in 1Q2022 mainly from power plant customers due to the increased in natural gas demand to generate electricity following the lower amount of water before summer caused the lower power generation from hydropower plants.

For GSP business, sales revenue increased from higher average selling prices of almost all products following the higher petrochemical referenced prices. In addition, GSP's sales volume (including NGL derived from Dew Point Control units) increased from 1,637,187 tons in 4Q2021 to 1,703,083 tons in 1Q2022 or 4.0% mainly from Propane and LPG following higher demand from petrochemical customers to manage the optimum production costs. Meanwhile, other GSP's products decreased mainly from a partial reduction in production rate, according to a decrease in natural gas intake which resulting from a shortfall of gas delivery during the end of the concession period from some natural gas fields.

In 1Q2022, EBITDA of gas business was reported at Baht 19,520 million, increasing by Baht 320 million or 1.7%. The operating income was reported at Baht 15,089 million, increasing by Baht 678 million or 4.7%. This was mainly from the higher gross profit of GSP business due to the increase in average selling prices of almost all products following the higher petrochemical referenced prices as well as the rise in sales volume according to the higher demand from petrochemical customers, despite the decrease in production volume. While, the gross profit of S&M business decreased due to higher gas cost following the highly surge of Pool Gas price mainly due to higher LNG import volume to fulfill lower output of gulf gas, despite the increase in average selling prices and sales volume as aforementioned. However, other costs and expenses decreased from 4Q2021 mainly from the recognized of the return of Take or Pay benefit from Myanmar

gas fields to the government according to the resolution of CEPA approximately by baht 2,700 million offset with the shortfall discount from the gas producer approximately by Baht 1,700 million while in 1Q2022 there was the shortfall discount approximately by Baht 700 million.

NGV's loss increased from the higher gas cost following the higher Pool Gas price as well as 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 June 2022, and the NGV retail price for private cars has capped at 15.59 Baht/kg. from 16 November 2021 to 15 June 2022.

First quarter of 2022 compared with First quarter of 2021

In 1Q2022, gas business reported sales revenue of Baht 169,216 million, increasing by Baht 66,502 million or 64.7% from 1Q2021. 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 197 MMSCFD or 4.3% from 4,619 MMSCFD in 1Q2021 to 4,422 MMSCFD in 1Q2022 mainly from a shortfall of gas delivery during to the end of the concession period causing the lower volume of natural gas sales to GSP. Moreover, sales volume to power plant customers decreased, resulting from the Electricity Generating Authority of Thailand (EGAT)'s switching of fuel for power generation by operating some power plants with fuel oil and diesel instead of gas due to the highly surge of LNG import price since the end of the year 2021 onwards.

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, there was a decrease in sales volume (including NGL derived from Dew Point Control units) from 1,780,056 tons in 1Q2021 to 1,703,083 tons in 1Q2022 or decreased by 4.3%, from almost all products due to lower gas delivery at the end of the concession resulted in lower production volume of GSP.

In 1Q2022, EBITDA of gas business was reported at Baht 19,520 million, decreasing by Baht 2,255 million or 10.4%. The operating income was reported at Baht 15,089 million, decreasing by Baht 2,089 million or 12.2%. This was mainly from lower gross profit of S&M business as a result of the increase in gas cost following the significant increase of Pool Gas price and lower sales volume, despite the higher selling prices as aforementioned. While GSP business's gross margin increased according to the increase in average selling prices of all products following their higher referenced prices despite the decrease in sales volume and the increase in feed gas cost following the higher gulf gas price.

Furthermore, NGV's loss increased from the higher gas cost following the higher Pool Gas price as well as there was a capped for retail price of NGV as aforementioned.

Coal Business

	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Newcastle index price (US\$ per ton)	88.7	183.9	263.8	>100.0%	43.4%
Average selling price (US\$ per ton)	67.9	95.3	99.2	46.1%	4.1%
Cash cost (US\$ per ton)	43.6	50.2	60.7	39.2%	20.9%
Sales volume (million tons)	1.5	1.8	1.4	(6.7%)	(22.2%)

First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, sales revenue of Coal business was Baht 4,651 million, decreasing by Baht 1,123 million or 19.4% compared with 4Q2021 mainly due to the decrease in sales volume by 0.4 million tons or 22.2% from 1.8 million tons in 4Q2021 to 1.4 million tons in 1Q2022, primarily from the Indonesian government's ban on coal exports resulting in postponement of some shipments. In addition, China slowed down coal imports due to high coal price and its lockdown policy due to the Covid situation. Despite the increase in average selling prices by US\$ 3.9 per ton or 4.1% from US\$ 95.3 per ton in 4Q2021 to US\$ 99.2 per ton in 1Q2022 in line with the increase in Newcastle referenced prices which mainly from the tension between Russia and Ukraine that pushed up unease of the decline in supply, together with the Indonesian government's ban on coal exports including the natural gas shortage situation in North Asia that has resulted in increased coal demand for substitution.

In 1Q2022, EBITDA was Baht 1,836 million, decreasing by Baht 1,107 million or 37.6% mainly from lower gross margin following lower sales volume as aforementioned. Operating income was Baht 1,390 million in 1Q2022, decreasing by Baht 867 million or 38.4% according to the decrease in EBITDA and increase in loss on derivatives following higher Newcastle coal price. As a result, Coal business's overall performance has dropped.

First quarter of 2022 compared with First quarter of 2021

In 1Q2022, sales revenue of Coal business was Baht 4,651 million, increasing by Baht 1,526 million or 48.8% compared with 1Q2021 mainly due to the increase in average selling prices by US\$ 31.3 per ton or 46.1% from US\$ 67.9 per ton in 1Q2021 to US\$ 99.2 per ton in 1Q2022 following the increase in Newcastle referenced prices as aforementioned. However, sales volume decreased by 0.1 million tons or 6.7% from 1.5 million tons in 1Q2021 to 1.4 million tons in 1Q2022, primarily from the Indonesian government's ban on coal exports as aforementioned.

In 1Q2022, EBITDA was Baht 1,836 million, increasing by Baht 606 million or more than 49.3% from 1Q2021 mainly from higher gross profit due to higher average selling price despite higher mining cost following higher coal and gasoil prices. The operating income was Baht 1,390 million in 1Q2022, increasing by Baht 493 million or 55.0%. Consequently, the overall performance of Coal business improved.

2. Downstream Petroleum Business Group

Oil Business Group

	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Average Sales Volume* (Unit: Million Liter)	5,910	6,476	6,724	13.8%	3.8%
Average selling prices (Unit: US\$ per barrel)					
Gasoline	67.1	93.8	113.3	68.9%	20.8%
Aviation	63.3	88.6	111.8	76.6%	26.2%
Diesel	64.8	89.8	115.1	77.6%	28.2%

*The average sales volume of domestic oil segment only

First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, sales revenue of Oil business group was Baht 177,909 million, increasing by Baht 19,644 million or 12.4% from 4Q2021 mainly due to higher average global oil price according to the concerns of lower supply from sanctions on Russia. In addition, sales volume increased a few by 248 million liters or 3.8% from 6,476 million liters or equivalent to 442,757 barrels per day in 4Q2021 to 6,724 million liters or equivalent to 469,928 barrels per day in 1Q2022 mainly due to diesel that increased from OR stations' retail prices was lower than other brands due to the slowdown in price increases, and aviation that increased due to higher air travel and cargos. Non-oil business revenue decreased from previous quarter because of lower demand from seasonal factor as previous quarter was long holidays, and lower promotional activities, which resulted in the decrease of sales volume.

EBITDA in 1Q2022 was Baht 6,686 million, increasing by Baht 2,173 million or 48.1% mostly from oil business' increasing gross margin due to the increase of average gross margin per liter and lower net operating expenses mainly from higher depots' maintenance expenses and outsource expenses than previous quarter. The operating income in 1Q2022 was Baht 5,177 million, increasing by Baht 2,238 million or 76.1% in line with higher EBITDA. As a result, the overall performance of Oil business has improved.

First quarter of 2022 compared with First quarter of 2021

In 1Q2022, sales revenue of Oil business group was Baht 177,909 million, increasing by Baht 59,019 million or 49.6% from 1Q2021 due to higher average selling prices which were in line with rising global oil prices. Additionally, sales volume increased by 814 million liters or 13.8% from 5,910 million liters or equivalent to 413,039 barrels per day in 1Q2021 to 6,724 million liters or equivalent to 469,928 barrels per day in 1Q2022, from diesel which OR stations' retail prices are lower than other brands due to a slowdown in price increases. In addition, natural gas price increased resulting in demands for diesel as an alternative fuel for power plants, from aviation due to higher air travel, and from fuel oil due to demand for

alternative fuels as well. Non-oil business' revenue increased mostly from growing sales volume as a consequence of expanding food and beverage branches.

In 1Q2022, EBITDA was Baht 6,686 million, increasing from 1Q2021 by Baht 155 million or 2.4% mainly from Non-oil business group which gross margin increased in line with higher sales revenue, and from International business group, which gross margin increased in Laos, Philippines, and Cambodia following its sales volume and selling price as economic recovery. While Oil business group's EBITDA decreased due to lower average gross margin per liter mainly from diesel according to a cap on retail price at gas station in accordance with the cooperating with government to relieve people's burden in the increasing global oil price situation, and from aviation that declined from its price structure which reference to the previous month's oil price. The operating income in 1Q2022 was Baht 5,177 million, increasing by Baht 50 million or 1.0% according to higher EBITDA. This caused the overall performance of Oil business to improve as well.

International Trading Business Group

Unit : Million Liter	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Average sales volume	18,922	25,082	36,235	91.5%	44.5%

First quarter of 2022 compared with Fourth quarter of 2021

Sales revenue of International Trading business in 1Q2022 was Baht 482,985 million, increasing by Baht 104,909 million or 27.7% from 4Q2021 due to the increase in product selling price following the rise in global oil prices as well as the increase in sales volume by 11,153 million liters or 44.5 % from 25,082 million liters or equivalent to 1,714,829 barrels per day in 4Q2021 to 36,235 million liters or equivalent to 2,532,400 barrels per day in 1Q2022, mainly from higher volume of crude imports for domestic refineries as well as higher LNG imports to fulfill lower output of gulf gas at the end of the concession.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 1Q2022 was Baht 1,219 million, decreasing by Baht 230 million or 15.9% mainly from loss on mark-to-market despite the increase in product spreads following crude oil price as well as the increase in sales volume as aforementioned. The operating income, adjusted by the impact from foreign exchange rate and derivatives in 1Q2022 was Baht 1,096 million, decreasing by Baht 299 million or 21.4% according to the decrease in EBITDA.

First quarter of 2022 compared with First quarter of 2021

Sales revenue of International Trading business in 1Q2022 was Baht 482,985 million, increasing by Baht 256,887 million or more than 100.0% from 1Q2021 due to higher product selling price as aforementioned. Besides, sales volume

increased by 17,313 million liters or 91.5% from 18,922 million liters or equivalent to 1,322,425 barrels per day in 1Q2021 to 36,235 million liters or equivalent to 2,532,400 barrels per day in 1Q2022 mainly from higher sales volume of crude imports for domestic refineries, LNG import to fulfill gulf gas as aforementioned and LPG and refined product out-out trading activity which increased from the economic activities recovery and the easing of COVID-19 restrictions in many countries.

EBITDA, adjusted by the impact from foreign exchange rate and derivatives, in 1Q2022 was Baht 1,219 million, increasing by Baht 81 million or 7.1% mainly from higher sales revenue and sales volume as aforementioned along with the increase in product spreads following the increase in oil referenced price despite higher loss on mark-to-market. The operating income, adjusted by the impact from foreign exchange rate and derivatives, in 1Q2022 was Baht 1,096 million, increasing by Baht 7 million or 0.6% in line with the increase in EBITDA.

Petrochemical and Refinery Business Group

Unit : US\$ per barrel	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Market GRM	1.9	5.5	6.1	>100.0%	10.9%
Inventory gain (loss) excl. NRV	5.1	1.8	10.3	>100.0%	>100.0%
Hedging gain (loss)	(0.1)	(1.4)	(7.6)	<(100.0%)	<(100.0%)
Accounting GRM	6.9	5.9	8.8	27.5%	49.2%
Refinery Utilization rate (%)	95.7%	101.5%	100.7%	5.0%	(0.8%)

*From 3 Refineries: TOP, GC and IRPC

Unit : US\$ per Ton	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Olefins					
Naphtha (MOPJ)	557	745	877	57.5%	17.7%
HDPE	1,145	1,252	1,330	16.2%	6.2%
LDPE	1,533	1,592	1,641	7.0%	3.1%
LLDPE	1,146	1,285	1,346	17.5%	4.7%
PP	1,365	1,335	1,387	1.6%	3.9%
Aromatics					
Condensate	513	683	836	63.0%	22.4%
PX (TW)	766	893	1,087	41.9%	21.7%
PX (TW) – Condensate	253	210	251	(0.8%)	19.5%
BZ	753	945	1,073	42.5%	13.5%
BZ – Condensate	240	262	238	(0.8%)	(9.2%)

First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, sales revenue of petrochemical and refining business was Baht 361,248 million, increasing by Baht 51,204 million or 16.5% primarily from the increase in sales revenue of refinery business mainly due to the increase in selling price following the improved product referenced price in global market while PTT Group refineries' utilization rates slightly decreased from 101.5% in 4Q2021 to 100.7% in 1Q2022.

Overall sales revenue of petrochemical business also increased mainly due to Olefins business from higher selling prices of PE as the increase in crude oil price as well as the increase in sales volume due to higher utilization rates as there was planned maintenance shutdown from GC's polymer plants in 4Q2021. Whereas sales revenue of Aromatics business is stable compared to previous quarter due to the decrease in sales volume from the lower utilization rate that in line with market situation despite higher selling prices.

EBITDA of petrochemical and refining business in 1Q2022 were Baht 45,162 million increasing by Baht 21,589 million from Baht 23,573 million in 4Q2021. There was operating income of Baht 34,457 million in 1Q2022, increasing by Baht 20,795 million when compared to Baht 13,662 million in 4Q2021, details as follows:

- **Refinery performance** increased, according to the higher Accounting GRM from US\$ 5.9 per bbl in 4Q2021 to US\$ 8.8 per bbl due to higher stock gain (There was stock gain of US\$ 10.3 per bbl in 1Q2022 versus US\$ 1.8 per bbl in 4Q2021). Moreover, Market GRM increased from US\$ 5.5 per bbl in 4Q2021 to US\$ 6.1 per bbl in 1Q2022 from the increase in most of all petroleum product spreads despite the increase in Crude Premium and the decrease in sales volume.
- **Petrochemical performance** decreased mainly from Aromatics business from lower BZ spread due to the increase in feed stock price following crude oil price and sales volume decreased as aforementioned despite PX spread increased from tight supply from the lower production in China according to the higher crude oil price and lower demand in downstream product. However, Olefins business is close to previous quarter due to the increase in product prices which increased at lower proportion to the rise in feed stock price despite higher sales volume as abovementioned. Moreover, the performance of Performance Materials and Chemicals business increased from starting recognition performance of Allnex in this quarter.

The overall performance of petrochemical and refining business in 1Q2022 increased in line with EBITDA. However, there was a recognition of loss on financial instruments increased from oil price hedging instruments.

First quarter of 2022 compared with First quarter of 2021

In 1Q2022, sales revenue of petrochemical and refining business was Baht 361,248 million, increasing by Baht 136,819 million or 61.0% primarily due to refinery business mainly from the increase in selling price as aforementioned. Moreover, PTT Group refineries' utilization rates increased from 95.7% in 1Q2021 to 100.7% in 1Q2022 and sales volume increased due to economic recovery as well as easing lockdown and travel restrictions.

The sales revenue of petrochemical business also increased from Olefins business from higher selling prices of PE following the increase in crude oil price from the easing of Lockdown and sales volume also increased and Aromatics business increased due to higher selling prices of PX and BZ due to the increase in crude oil price despite the decrease in sales volume from managing production to line with market situation.

EBITDA of petrochemical and refining business in 1Q2022 were Baht 45,162 million increasing by Baht 11,670 million from Baht 33,492 million in 1Q2021. There was operating income of Baht 34,457 million in 1Q2022, increasing by Baht 10,473 million when compared to Baht 23,984 million in 1Q2021 details as follows:

- **Refinery performance** increased, according to the higher Accounting GRM from US\$ 6.9 per bbl in 1Q2021 to US\$ 8.8 per bbl in 1Q2022 due to higher stock gain (There was stock gain of US\$ 10.3 per bbl in 1Q2022 versus US\$ 5.1 per bbl in 1Q2021). Moreover, Market GRM increased from US\$ 1.9 per bbl in 1Q2021 to US\$ 6.1 per bbl in 1Q2022 mainly from the increase in most of all petroleum product spreads due to the relaxing of lockdown and the increase in sales volume as aforementioned.
- **Petrochemical performance** decreased mainly from Olefins business due to the increase in product prices which increased at lower proportion to the rise in feed stock price despite the increase in sales volume as aforementioned. Aromatics business's performance also decreased from lower BZ and PX spread and sales volume decreased as aforementioned. However, the performance of Performance Materials and Chemicals business increased from starting recognition performance of Allnex in this quarter.

The overall performance of petrochemical and refining business decreased despite an increase in EBITDA because there was a recognition of loss on financial instruments significantly increased from oil price hedging instruments.

3. New Business and Infrastructure Group

	1Q2021	4Q2021	1Q2022	%Inc. (Dec.)	
				YoY	QoQ
Power sales volume (GWh)	4,941	5,295	5,220	5.6%	(1.4%)
Steam sales volume (Thousand tons)	3,705	3,741	3,710	0.1%	(0.8%)

First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, sales revenue of New Business and Infrastructure group was Baht 28,954 million, increased by Baht 4,691 million or 19.3% mainly from GPSC. This was due to the increased of revenue from the Small Power Producer (SPP) because of the higher average electricity and steam selling price to industrial customers. Moreover, the Energy Payment (EP) of Independent Power Producer (IPP) also increased from Sriracha Power Plant as a result of higher electricity dispatch and average selling price to EGAT.

EBITDA in 1Q2022 was Baht 2,927 million, decreased by Baht 1,496 million or 33.8% mainly from lower gross profit of GPSC despite higher sales revenue as mentioned. This was due to lower gross profit of SPP power plants mainly from significant increase in natural gas and coal prices, resulting in lower profit margin of electricity sales to industrial customers. In addition, electricity dispatch to EGAT and steam sales volume to industrial customers also decreased as well. As a result, the operating income in 1Q2022 was Baht 143 million, decreased by Baht 1,539 million or 91.5% from previous quarter. The overall performance of New Business and Infrastructure group decreased mainly from GPSC's lower performance following the lower EBITDA, despite gain from selling all of shares in Ichinoseki Solar Power 1 GK (ISP1) in this quarter.

First quarter of 2022 compared with First quarter of 2021

In 1Q2022, sales revenue of New Business and Infrastructure group was Baht 28,954 million, increased by Baht 10,876 million or 60.2% mainly from the higher sales revenue of GPSC according to the EP revenue of IPP power plants due to higher electricity dispatch and average selling prices of Sriracha and GHECO-One power plants to EGAT as well as higher revenue of SPP power plants from the increase in average electricity and steam selling price to industrial customers.

EBITDA in 1Q2022 was Baht 2,927 million, decreased by Baht 2,509 million or 46.2% 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, resulting in lower profit margin of electricity sales to industrial customers. In addition, electricity dispatch to EGAT also slightly decreased as well. As a result, the operating income in 1Q2022 was Baht 143 million, decreased by Baht 2,754 million or 95.1%. In this regard, the overall performance of New Business and Infrastructure group decreased mainly from lower GPSC's performance following the lower EBITDA, despite gain from selling all shares in ISP1.

Overall performance of PTT and its subsidiaries

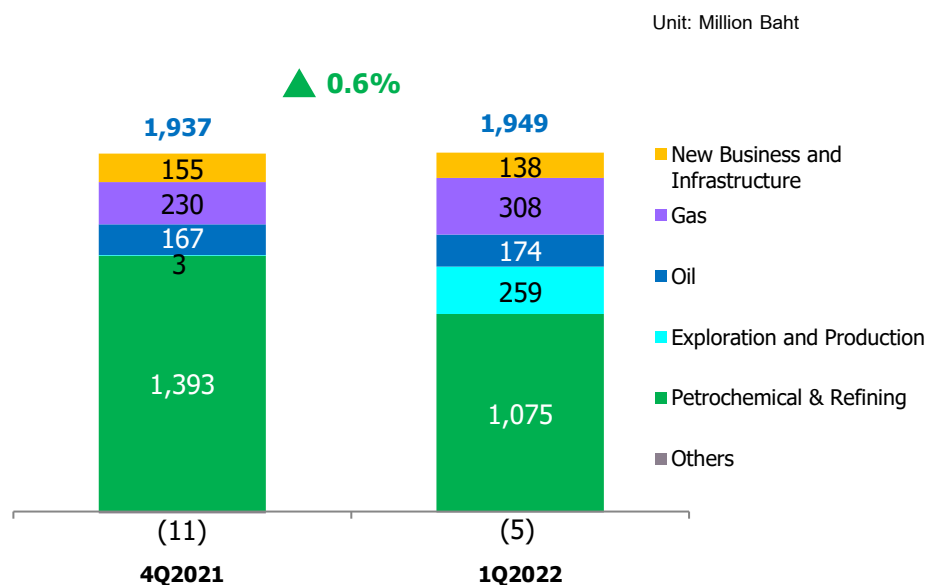
First quarter of 2022 compared with Fourth quarter of 2021

In 1Q2022, PTT and its subsidiaries' sales revenue was reported at Baht 758,465 million increased from 4Q2021 by Baht 69,628 million or 10.1% from almost all businesses. Sales revenue of International Trading business, Petrochemical and Refining businesses, Gas business, and Oil 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.

EBITDA in 1Q2022 was Baht 142,701 million, increased by Baht 41,430 million or 40.9% mainly from the increase in the performance of Petrochemical and Refining businesses. The performance of Refining businesses improved since accounting GRM increased from US\$ 5.9 per bbl in 4Q2021 to US\$ 8.8 per bbl in 1Q2022 due to higher stock gain and overall product spreads. PTT Group's stock gain increased approximately Baht 20,000 million compared to the previous quarter according to the increase in crude oil price. Whereas, Petrochemical business's performance declined according to the decrease in most of petrochemical product spreads of both Aromatics and Olefins. Petroleum Exploration and Production Business's performance rose mainly from the increase in average selling prices and sales volume. However, the performance of New Business and Infrastructure decreased primarily from Power business as the feed cost of natural gas and coal significantly increased along with the decline of electricity and steam sales volume.

The depreciation and amortization expenses in 1Q2022 were Baht 37,145 million, increased by Baht 3,294 million or 9.7% mainly from Bongkot project of PTTEP and the recognition of depreciation and amortization of Allnex from GC.

Share of profit from investments in joint ventures and associates



In 1Q2022, the share of profit from investments in joint ventures and associates was Baht 1,949 million, increased by Baht 12 million or 0.6% mainly from performance of joint ventures in Exploration and Production business from Oman LNG LLC due to the increase in sales revenue driven by higher products selling prices, while share of profit from investments in joint ventures in Petrochemical and Refining business decreased mainly from PTT Asahi Chemical Company Limited (PTTAC) driven by lower AN product to feed and lower sales volume as well as HMC Polymers Company Limited (HMC) owing to lower PP product to feed.

In 1Q2022, there was loss on derivatives amounting to Baht 48,979 million, increased by Baht 48,807 million or over 100.0% mainly due to loss on oil and commodity price hedging instruments due to an upward trend of forward oil price from PTTT, GC, PTTEP, TOP, and PTTT LDN.

In 1Q2022, gain on foreign exchange was Baht 5,712 million, increased by Baht 573 million or 11.2% mainly from unrealized loss on US dollar deposit and short term investment as a result of Baht lower appreciation in this quarter compared to Baht in the previous quarter (Thai Baht appreciation in 1Q2022 of Baht 0.13 per US Dollar, Thai Baht appreciation in 4Q2021 of Baht 0.50 per US Dollar).

Finance costs was Baht 7,445 million in 1Q2022 which was close to 4Q2021.

In 1Q2022, there was the recognition of non-recurring items (PTT's portion) after tax amounting to Baht 929 million which mainly from PTT's discounted benefit from production shortfall approximately by Baht 700 million and gain on Ichinoseki Solar Power 1 GK divestment from GPSC. While, in 4Q2021, there was loss from non-recurring items (PTT's portion) amounting to Baht 6,931 million mainly from impairment loss (after tax) of PTT Group's assets approximately by Baht 7,000 million primarily from PTTEP's Mozambique Area 1 Project and Yetagun Project, PTT's NGV business, and GC's US Petrochemical Project. Moreover, there were PTT's recognition of Take or Pay of Myanmar gas to government according to the resolution of CEPA approximately by Baht 2,700 million together with loss from restructuring of Emery Group of GC approximately by Baht 1,000 million net off PTT's discounted benefit from production shortfall approximately of Baht 1,700 million and gain on disposal of gas pipeline business in Egypt of PTER approximately of Baht 1,400 million, and benefit from lawsuit approximately of Baht 1,000 million.

The corporate income taxes in 1Q2022 was Baht 21,874 million, increased by Baht 2,226 million or 11.3% resulted primarily from Exploration and Production business.

As previously mentioned, this was resulted in PTT and its subsidiaries' net profit in 1Q2022 amounting to Baht 25,571 million decreased by Baht 1,973 million or 7.2% from net profit of Baht 27,544 million in 4Q2021.

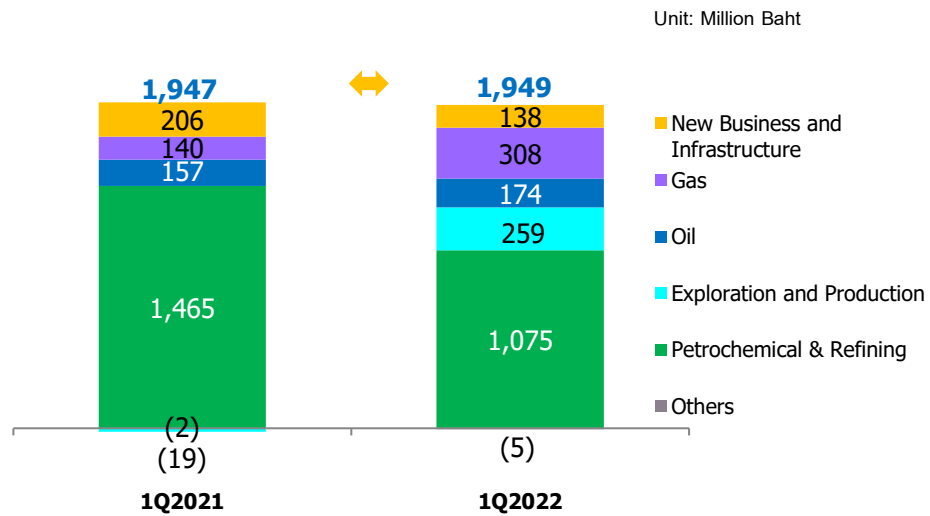
First quarter of 2022 compared with First quarter of 2021

In 1Q2022, sales revenue of PTT and its subsidiaries was reported at Baht 758,465 million increased from 1Q2021 by Baht 280,628 million or 58.7% from all businesses. Sales revenue of International Trading business, Petrochemical and Refining businesses, Gas business, and Oil 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. However, gas's sales volume dropped compared to the same period last year regarding to the end of the concession period of the natural gas field. In addition, Exploration and Production business's revenue increased mainly from the increase in both of average selling prices and sales volume primarily from the acquisition of Oman Block 61 Project in March 2021 and the first gas production of Malaysia Block H Project in February 2021.

EBITDA in 1Q2022 was Baht 142,701 million, increased by Baht 39,704 million or 38.5% mainly from the increase in Exploration and Production business's performance due to higher average selling prices and sales volume as aforementioned. Petrochemical and Refining businesses' performance increased due to Refining business's performance which accounting GRM rose from US\$ 6.9 per bbl in 1Q2021 to US\$ 8.8 per bbl in 1Q2022 following the increase in stock gain and overall product spreads, as well as higher sales volume. PTT Group's stock gain increased approximately Baht 11,000 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 of petrochemical product spreads of both Aromatics and Olefins. 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 electricity sales to industrial customers.

The depreciation and amortization expenses of 1Q2022 were Baht 37,145 million, increased by Baht 2,109 million or 6.0% mainly from GC as a result of acquisition of Allnex in 4Q2021 and the start of commercial operation of the Olefins Reconfiguration Project (ORP) in June 2021.

Share of profit from investments in joint ventures and associates



In 1Q2022, the share of profit from investments in joint ventures and associates was Baht 1,949 million which was close to 1Q2021. This was primarily from higher performance of joint venture in Exploration and Production business from Oman LNG LLC due to the increase in sales revenue driven by the higher product prices while lower performance of joint venture in Petrochemical and Refining businesses mainly from PTTAC due to lower AN product to feed.

In 1Q2022, loss on derivatives was Baht 48,979 million, loss increased by Baht 41,581 million or over 100.0% mainly from loss on oil and commodity price hedging instruments due to an upward trend of forward oil price from PTTT, GC, TOP, and PTTEP.

There was gain on foreign exchange rate in 1Q2022 by Baht 5,712 million, increased by Baht 10,042 million or over 100.0% mainly from higher unrealized gain of US currency loans as a result of Baht appreciation. (Thai Baht appreciation in 1Q2022 of Baht 0.13 per US Dollar, Thai Baht depreciation in 1Q2021 of Baht 1.30 per US Dollar).

Finance costs was Baht 7,445 million in 1Q2022 increased by Baht 1,007 million or 15.6% mainly from corporate bond issuance of GC and PTTEP

In 1Q2022, there was the gain from recognition of non-recurring items (PTT's portion) after tax amounting to Baht 929 million as aforementioned. While, in 1Q2021, there was gain from recognition of non-recurring items (PTT's portion) after tax amounting to Baht 4,874 million mainly from PTTEP's 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.

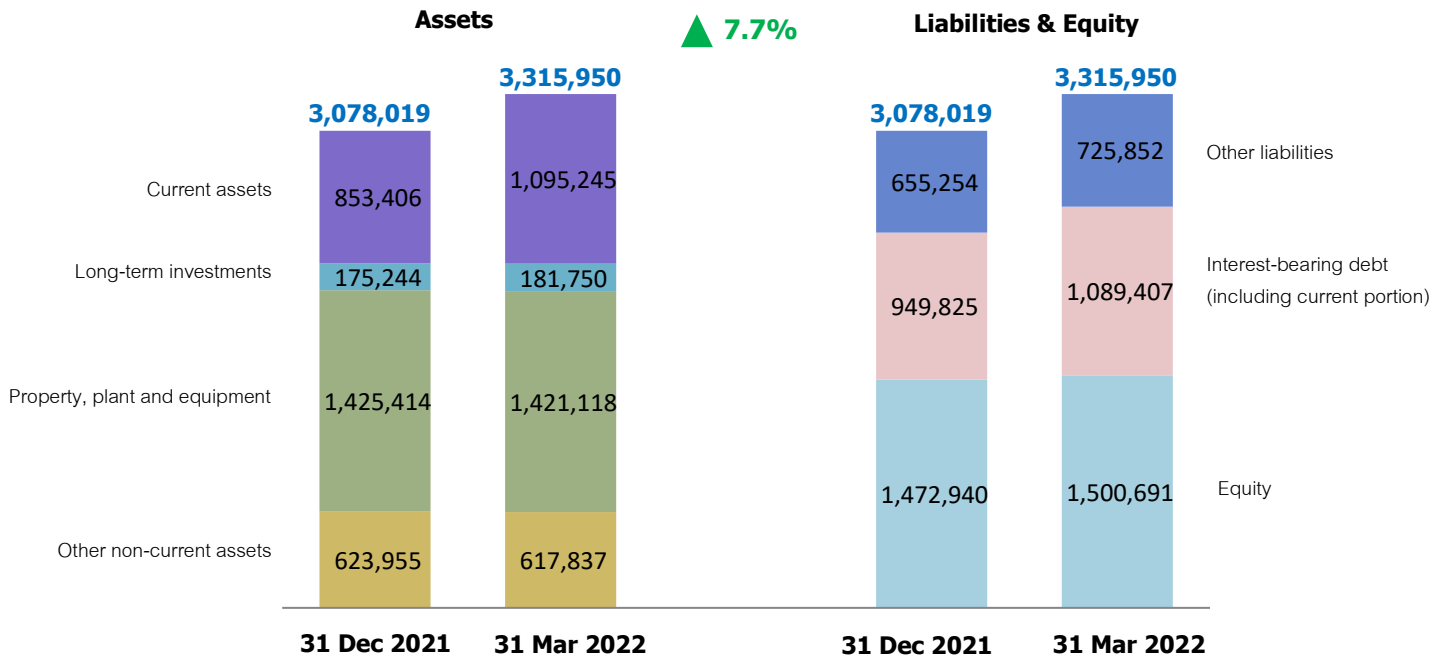
The corporate income taxes in 1Q2022 was Baht 21,874 million, increased by Baht 10,191 million or 87.2% mainly from PTTEP due to higher profit from projects in Thailand and Oman.

As aforementioned, this was resulted in PTT Group's net profit in 1Q2022 amounting to Baht 25,571 million, decreased by Baht 7,017 million or 21.5% from the net profit amounting to Baht 32,588 million in 1Q2021.

The analysis of PTT Group consolidated financial position

As of 31 March 2022 compared with 31 December 2021

Unit: Million Baht



Assets

As of 31 March 2022, total assets of PTT Group were Baht 3,315,950 million, increasing by Baht 237,931 million or 7.7% compared with 31 December 2021 mainly from the net effect as follows:

: Current assets increased by 241,839 million or 28.3% mainly from the following:

- Cash and cash equivalents and current investments increased by Baht 64,431 million mainly from the increase in borrowings mainly from GC PTT and TOP.
- Trade accounts receivables increased by Baht 37,198 million mainly from higher average selling prices and sales volume of PTT, PTTT, and GC.
- Inventories increased by Baht 70,431 million due to higher prices and inventory level of crude oil, refined products, and petrochemical from PTT, TOP, IRPC, and GC.

: Long-term investments increased by Baht 6,506 million or 3.7% mainly from GC's investment in VNT.

: Property, plant, and equipment (PPE) decreased by Baht 4,296 million or 0.3% mainly from depreciation and amortization of PTTEP, while increased from TOP's additional construction in progress of Clean Fuel Project (CFP).

: Other non-current assets decreased by Baht 6,118 million or 1.0% mainly from other intangible assets of GC from amortization and exchange differences on translation of financial statements.

Liabilities

As of 31 March 2022, PTT Group had total liabilities of Baht 1,815,259 million, increasing by Baht 210,180 million or 13.1% from 31 December 2021, mainly from the following:

: Other liabilities increased by Baht 70,598 million or 10.8% from the increase in commodity derivative liabilities mainly from PTTT, GC, and PTTEP and trade accounts payables due to the increase in overall purchase volume and higher purchase prices from mainly from PTT and PTTT.

: Interest-bearing debt increased by Baht 139,582 million or 14.7% due to the increase in short-term loans by Baht 74,180 million and the increase in long-term loans and bonds by Baht 65,353 million.

Equity

As of 31 March 2022, PTT Group had total shareholders' equity of Baht 1,500,691 million, increasing by Baht 27,751 million or 1.9% from 31 December 2021 as PTT Group reported the 3 months in 2022 net income amounting to Baht 25,571 million. Additionally, non-controlling interests increased by Baht 5,253 million mainly from and gain of subsidiaries.

Liquidity

For the 3-month ended 31 March 2022, PTT Group had net increase in cash and cash equivalents amounting to Baht 64,780 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 377,510 million. Details of cash flow by activities are as follows:

	Unit: Million Baht
	PTT Group
Net cash used in operating activities	(26,702)
Net cash used in investing activities	(38,935)
Net cash provided by financing activities	130,895
Effects of exchange rates on cash and cash equivalents	1,046
Exchange differences on translation	(1,524)
Net increase in cash and cash equivalents during the period	64,780
Cash and cash equivalents at the beginning of the period	312,730
Cash and cash equivalents at the end of the period	377,510

Net cash used in operating activities of Baht 26,702 million was derived from Baht 58,578 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 37,145 million of depreciation and amortization expenses, Baht 35,803 million of loss on derivatives, Baht 7,445 million of finance costs. The decrease in net cash flow from operating activities mainly resulted from Baht 6,327 million of unrealized gain on fair value of commodity contracts, Baht 2,259 million of gain on foreign

exchange rate, and Baht 1,949 million of share of profit from investments in joint ventures and associates, the change in net operating assets resulting in the decrease in cash flow of Baht 146,250 million and income taxes paid of Baht 7,082 million.

Net cash used in investing activities was Baht 38,935 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 34,646 million, mainly due to additional investment in exploration and production assets in G2/61 Project, S1 Project, Bongkot Project, and Zawtika Project of PTTEP, additional investment of TOP's CFP and expand the capacity of electricity and steam of TOP SPP Company Limited (TOP SPP), LNG receiving terminal at Nong Fab of PTT LNG Company Limited (PTTLNG), GC's Olefins 2/2 Modification project, and PTT's the 5th transmission pipeline project.

: The cash outflow of business acquisition and long-term investments amounting to Baht 6,908 million, mainly from the investment in VNT of GC.

: The cash inflow from short-term investment in financial assets totaling Baht 1,340 million, mainly from maturity of fixed deposits of Baht 4,000 million of OR, Baht 3,000 million of PTT, and Baht 2,998 million of GPSC, despite GC's investment in fixed deposit and debt instruments Baht 8,487 million.

Net cash provided by financing activities was Baht 130,895 million, mainly from the following:

: The net cash inflow of short-term and long-term loans amounting to Baht 138,782 million mainly from GC, PTT, and TOP.

: Finance costs paid amounting to Baht 7,825 million mainly from GC, PTT, TOP, and GPSC.

Financial ratios and earnings per share of PTT Group

Financial Ratio	Unit	1Q2021	1Q2022
<u>Profitability Ratios</u>			
Gross profit margin	%	18.40	17.76
Net profit margin	%	9.88	4.84
<u>Solvency Ratios</u>			
Interest coverage	Times	16.00	19.17
<u>Earnings per share</u>			
Earnings per share	Baht/share	1.14	0.89

Financial Ratio	Unit	31 Dec 2021	31 Mar 2022
<u>Liquidity Ratios</u>			
Current ratio	Times	1.73	1.62
Quick ratio	Times	1.13	0.98
<u>Solvency Ratios</u>			
Debt to equity	Times	0.64	0.73

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 for Second Quarter of 2022

The world economy in 2Q2022 is expected to recover at a slower rate from 1Q2022, due to the worsening COVID-19 outbreak in China as the number of new cases surged in several key economic areas, resulted in a further tightening and widespread COVID-19 lockdown measures. Meanwhile, an expected prolonged Russia-Ukraine war and international sanctions on the Russian economy could increase global economic uncertainty and inflationary pressures, especially in the products of which Russia and Ukraine are the main exporters (including oil, natural gas, palladium, wheat, and corn). These also pose challenge to many central banks in conducting their monetary policy, especially during the ongoing of COVID-19 crisis. However, an increase in percentage of fully vaccinated and a widespread booster shot, amid living with COVID-19 policy will support economic recovery in many countries. Downside risks to the world economy include the uncertainty of the spread of the new variants of COVID-19, a possible of further severe international sanctions on the Russian economy, Chinese economic stability and a sudden tightening of global financial conditions.

According to the IHS's report of April 2022, global oil demand in 2Q2022 is expected to increase from 0.8 MMBD in 1Q2022 to 98.9 MMBD following global economic recovery and preparing for upcoming driving season in US and Europe which lead to increase of demand. On oil supply, it is expected that OPEC+ and non-OPEC will keep increasing oil production, and IEA members will increase the release of Strategic Petroleum Reserve (SPR) to cover loss of supply amid tensions between Russia and Ukraine. In 2Q2022, **Dubai crude oil price is expected to average at US\$98 - 103 per barrel**; whereas, **Singapore GRM is expected to average at US\$10.5 – 11.5 per barrel**.

Petrochemical prices of Olefins and Aromatics in 2Q2022 are likely to edge up from 1Q2022, due to bullish crude oil and naphtha prices, amid a prolonged war between Russia and Ukraine, followed by further sanctions.

- **Olefins:** High density polyethylene (HDPE) and polypropylene (PP) prices in 2Q2022 is expected to increase with average prices of \$1,420 – 1,440 per ton for HDPE, and \$1,430 – 1,450 per ton for PP, as feedstock cost is expected to remain high, and producers are likely to continue reducing their operating rates due to weak margins including seasonal turnaround in 2Q2022. However, there were negative factors to pressure on market as an upcoming of new capacities in Asia and weak downstream product demand due to lockdowns across China in early 2Q2022. Nevertheless, it is expected to recover within late 2Q2022 from easing lockdown in China.
- **Aromatics:** Benzene (BZ) and Paraxylene (PX): in 2Q2022 is expected to be higher comparing with 1Q2022. BZ and PX prices are projected to average at US\$1,160- 1,180 per ton and US\$1,180- 1,200 per ton due to expected higher crude oil and naphtha prices, tighter supply from production cut from many Asian producers due to lower margin, seasonal maintenance, and downstream product demand is expected to recover within

late 2Q2022 as aforementioned. However, an upcoming of new capacities in China and India will pressure the market further.

Thai economy in 2Q2022 is expected to keep expanding from 1Q2022, as private consumption and private investment are likely to continue recovery due to easing COVID-19 containment measures amid downward pressures from COVID-19 new cases that remain in high level, and a prolonged war between Russia and Ukraine and further sanctions that result to a sudden surge in cost–push inflation. Additionally, tourism sector is expected to improve steadily due to relaxation of travel restrictions, especially after the cancellation of Test & Go started from 1 May 2022 onwards, amid concerns on China's restrictions on outbound trip due to its zero-COVID strategy and travel limitations among European and Russian travelers due to the impact of Russia–Ukraine war. Merchandise export is also expected to expand, but maybe affected by a sign of global economic slowdown, particularly in China. Besides, the government spending is projected to play an important role, albeit momentum moderating due to a smaller amount of the budget. Thai economic recovery could face further downside risks, including a sudden surge of Inflation due to rising tensions between the North Atlantic Treaty Organization (NATO) and Russia, the emergence of new COVID-19 variants, the tightening of global financial condition, a higher likelihood of business and household debt defaults, 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 March 2022: 87.24% (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 March 2022: 97.81%

- Total Capacity of 7.5 MTA be approved by the Cabinet meeting on 11 April 2017
 - The capacity of 2.5 MTA is scheduled to COD by the middle of 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 million tons per annum. 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 #2		TD (1-23 May : 23 days)		
GSP #3		TD (1-23 May : 23 days)		
GSP #4			Major SD (1-20 Sep : 20 days)	
GSP #5				Minor SD (5-19 Dec : 15 days)
ESP		Major SD (1-23 May : 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), PTT LNG Co., Ltd (PTTLNG), and PTT Global LNG Co., Ltd (PTTGL)

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

Oil 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)