



Executive Summary

In 2022, average Dubai price stood at 96.4 USD/barrel, increased significantly from 2021 where the average Dubai price was at 69.4 USD/barrel, as a result of tight crude oil supply situation amid the war between Russia and Ukraine. Despite concerns on global recession, caused by surging inflation and interest rates hikes by the Central Banks of several countries, the oil demand was still on the rise from improved Covid-19 situations. Dubai price reached its peak at 127.8 USD/barrel in March, on the back of Russia-Ukraine war outbreak, and remained at this high level onto the second quarter from the unrest in Libya and Ecuador. However, the oil release from Strategic Petroleum Reserves by several countries, global recession concerns, and China lockdown to cope with the new wave of Covid-19, had caused Dubai price in the third quarter to slightly decline. Continue onto the fourth quarter, though the OPEC+ had agreed to curb production at 2 million barrels per day effective from November 2022, Dubai price continued its downward trend. The supply and demand imbalance is expected to continue in 2023, with Dubai price moving in 75-90 USD/barrel range. Key factors that will affect 2023 oil price are global economy, China Covid-19 measures, Russia-Ukraine war, and the oil release from Strategic Petroleum Reserves.

Several progresses in E&P operations were achieved in 2022. First, the production start-up of G1/61 (Erawan) project in April, where PTTEP is the operator with safe and smooth transition. In July, PTTEP had assumed the operatorship of Yadana project in Myanmar after the previous operator withdrawn from the project. The Malaysia-Thailand Joint Development Area Project (MTJDA) was granted 10-year production period extension until 2039, as well as additional gas supply to Thailand at least 30 MMSCFD until 2025. Moreover, in September, PTTEP has participated in 24th Gulf of Thailand Bid Round with award announcement in February 2023. Lastly, Algeria Hassi Bir Rekaiz had commenced first phase of oil production at 13,000 barrel per day and the first oil sales was realized in Q4/2022. On the exploration front, PTTEP has made successful gas discovery at the second exploration well of SK410B project, in Malaysia, and exploration well of Abu Dhabi Offshore 2 Project, located in United Arab Emirates, with the estimated gas reservoir of 2.5-3.5 trillion cubic feet (TCF).

For the Business Beyond E&P, AI and Robotics Ventures Company Limited (ARV), a subsidiary of PTTEP, won “The National Innovation Awards”, by Thailand’s National Innovation Agency. The ROVULA business unit pushed forward its NAUTILUS, the world’s first operational subsea flow line control and repair robot, for commercial operations while ZeaQuest, a joint venture company, has generated continuous year-on-year revenue growth as well as secured and delivered subsea pipeline inspection and maintenance projects in the Gulf of Thailand and Gulf of Moattama. During 2022, ARV has also set up additional business units. BEDROCK provides Geospatial Location Intelligence Platform by AI & machine learning, including advanced location insights, while BIND provides security, privacy, and seamless access to Digital Identity and Personal / Enterprise data by Web 3.0 technology.

PTTEP continues adhering to sustainable value creation to wider society (From We to World), in line with the global practices and UN principles, that takes conscious consideration of all stakeholders’ interests, as well as maintains energy security for the nation. Together with relevant resources preparedness, PTTEP has established a strategic framework with three strategies; 1) Drive Value by maximizing values of existing assets, as well as business expansion in core strategic areas; 2) Decarbonize in order to achieve “Net Zero Greenhouse Gas Emission” by the year 2050; and 3) Diversify to expand into the new businesses, with the target that net income from those businesses will reach 20% of PTTEP’s consolidated net income by 2030.

From the above-mentioned operating performance, in 2022, PTTEP reported 12% higher sales volume at 468,130 BOED, from the operatorship transfer and production start-up of G1/61 (Erawan) project, as well as sales volume growth from overseas project. Moreover, the oil price spike in 2022 had caused the average selling price to increase from the previous year to stand at 53.39 USD/BOE, while Unit cost slightly declined to 28.36 USD/BOE. PTTEP had also recognized impairment losses of 300 MMUSD, mainly from Mozambique Area 1 project. Other items include oil price hedging loss, reported at 186 MMUSD and expense for the mediation agreement made under Class Action lawsuit brought by Indonesian seaweed farmer, recorded at 129 MMUSD. As at the end of 2022, PTTEP had total assets of 25,168 MMUSD, of which 3,539 MMUSD was cash on hand, while total liabilities were reported at 11,653 MMUSD, of which 3,833 MMUSD was interest-bearing debt. Total shareholders’ equity stood at 13,515 MMUSD with debt-to-equity ratio at 0.28 reflecting healthy financial structure and robust financial position.

Table of key financial results

(Unit: Million US Dollar)	2022	2021	Inc. (Dec.) YTD	Q3 2022	Q4 2022	Q4 2021	Inc. (Dec.) QoQ	Inc. (Dec.) YoY
Total Revenues	9,660	7,314	2,346	2,617	2,697	1,989	80	708
Revenue from sales *	9,270	6,731	2,539	2,388	2,469	1,867	81	602
EBITDA **	7,103	4,996	2,107	1,838	1,847	1,330	9	517
Profit (Loss) for the period	1,999	1,211	788	664	417	321	(247)	96
Basic earnings (loss) per share (Unit: US Dollar)	0.51	0.30	0.21	0.17	0.11	0.08	(0.06)	0.03
Profit (Loss) from normal operation	2,647	1,479	1,168	706	723	513	17	210
Profit (Loss) from non-operating items	(648)	(268)	(380)	(42)	(306)	(192)	(264)	(114)

* Included deemed income for the tax payment by Oman government but excluded in the average sales volume and selling price calculation

** Excluded gain from a bargain purchase of Oman Block 61 Project, asset write-offs in Brazil, a provision for the Class Action settlement from Montana incident and impairment loss on assets and goodwill which were recognized during the period



Strategies and Business Management

Strategies

PTTEP adheres to the sustainable development global practices and UN principles. Operating under the concept of “From We to World” in order to become a “sustainable organization” that takes a conscious consideration of all stakeholders’ interests. Delivering secure, affordable, and sustainable energy is a foundation of PTTEP’s strategy, especially in an on-going global energy crisis. Therefore, PTTEP establishes a strategic framework consisting of three strategy pillars as follows:

Drive Value

- Strengthen E&P and ensure Thailand energy security
 - Maximize production
 - Expedite development
 - Monetize discovery
- Enhance competitiveness of unit cost
- Expand gas-weighted portfolio and LNG in upstream and midstream business

Decarbonize

- Manage E&P for lower carbon portfolio to reach Net Zero Greenhouse Gas Emissions by 2050. This goal covers both Scope 1 and Scope 2 of the exploration and production business under PTTEP’s operational control. PTTEP has also set interim targets to reduce greenhouse gas emissions intensity by at least 30% within 2030 and 50% within 2040 (with 2020 base year).
- Execute GHG emission reduction plan
- Accelerate Carbon Capture and Storage (CCS) projects
- Maximize use of renewables and future energy in operation
- Pursue emission offsetting and ocean for life

Diversify

- Scale up AI and Robotics Ventures (ARV)
- Capture gas-to-power and renewable energy opportunity
- Explore Carbon Capture, Utilization, and Storage (CCUS), hydrogen, and future energy
- Commercialize in-house technology

Business Management and Company Activity

PTTEP aims to build sustainable growth encompassing Environmental, Social and Governance (ESG) dimensions in addition to the 3 main strategy pillars above, which is in line with the Company's key material issues on sustainability following the expectations of the stakeholders and business directions. The implementation and progress can be summarized as follows:

Good Corporate Governance Principles

PTTEP is committed to conducting its business with transparency and effectiveness by adhering to the good corporate governance principles, maintaining robust risk management and internal control system as well as strictly conforming to applicable laws and regulations. The main progress of works within 2022 is highlighted as follows:

- Implemented GRC according to GRC Strategies – Smart Assurance and Mindful GRC, which aims to effectively integrate assurance processes, cultivate GRC in employee mindset to be aware, accept and implement GRC, as well as prepare for becoming a GRC role model among Thai Listed Companies.
- Implemented GRC-related activities as per GRC roadmap to embed GRC culture and enhance the understanding in Malaysia Asset including monitoring and reporting to prepare for Company-wide GRC Maturity Level assessment program in 2023.
- Enhanced Risk Management System by implementing Chatbot to cover suggesting risk, searching risk information with an aim of no improperly managed high-impact risks (No Surprise Problem). The Chatbot has been successfully launched in full services in November 2022.
- Developed GRC One Digital System which covers various reporting related to GRC i.e. Whistleblower Reporting, Risk Management, Business Continuity Management, Internal Control Assessment, and Compliance Reporting to assist management and relevant parties to obtain immediate GRC information for efficient decision making.
- Continue building GRC culture throughout several communication campaigns focusing on employee's understanding on GRC principle and company operations such as GRC Strategy & Roadmap, GRC Targets, GRC Management System and communicate GRC Lesson Learnt to employee in order to ensure GRC implementation as part of their works including promoting good practices on GRC to external communities, such as communicating to shareholders through Explorer's Journal and Facebook: PTTEP Shareholders Society.

PTTEP has established its Human Rights Policy and Management System in line with the international best practices to ensure concrete implementation and prevention of Human Rights violations from our business operations. The Company also strictly conducts a human rights risk assessment on an annual basis. In 2022, the risk assessment covers 100% of its operating assets, non-operated joint ventures, and Tier-1 suppliers. Moreover, PTTEP continues our efforts to enhance staff's understanding and shared responsibility on human rights through an e-learning course and various promotional materials.

Furthermore, PTTEP has Safety, Security, Health and Environment Management System (SSHE MS) to minimize risks and impacts from its operations. In Q4/2022, PTTEP Lost Time Injury Frequency (LTIF) was 0.15, while the Total Recordable Incident Rate (TRIR) was 0.85. The LTIF and TRIR were in the average safety performance of the International Association of Oil & Gas Producers (IOGP).

Natural Resource Conservation, Environmental Restoration, and Community and Social Development

The highlighted implementation to create long-term value for stakeholders can be summarized as follows:

- Circular Model for E&P: PTTEP's work processes are designed to ensure optimum resource efficiency. It is encouraged that all unused materials are reused and recycled whilst appropriate, safe, and only when they are in an efficient condition to achieve our targets of at least 50% of main structures being reused with safety awareness, and efficient conditions; and zero waste to landfill by 2030. The performance is divided into 2 workstreams as follows:

- 1) Main Structure Reuse, with emphasis on reusing the wellhead platform topside. The company is studying the process of reusing the Wellhead Platform (WHP) jacket and the study's results will be taken into consideration for standardizing our future operations.
 - 2) Upcycling High Volume Waste, by increasing the value of waste from the petroleum production process, which can be reflected through important initiatives such as Carbon Capture and Utilization (CCU), CO₂ Conversion to Carbon-Based Product (CCC), CO₂ Curing and Sand to Zeolite.
- Ocean for Life: As most of PTTEP's operations are offshore, PTTEP gives the highest priority to conserve, restore, and monitor natural resources and marine ecosystems to support economic growth and the quality of life for nearshore communities to reflect the company's targets of achieving net positive impact of ocean biodiversity and ecosystem services (BES) value in all offshore operations and increasing 50% of focused communities' income by 2030. The performance is divided into 3 workstreams as follows:
 - 1) Clean & Friendly Operation, focusing on safety and minimizing environmental impacts in the areas where PTTEP has operations. In Q4/2022, PTTEP, Department of Fisheries, Prince of Songkla University, Kasetsart University and Southeast Asian Fisheries Development Center (SEAFDEC) signed a Memorandum of Agreement (MOA) for the implementation of a project on the use of petroleum platform jackets as artificial habitat (reefs) for sustainable fisheries in the Gulf of Thailand to support the restoration and development of marine habitats, as well as promoting public and private sectors to develop the knowledge of aquatic animal resource management to align with the sustainable marine ecosystem guidelines.
 - 2) Ocean Health & Biodiversity Monitoring, using our strengths in offshore operational locations and technology capabilities to drive our goal in becoming a marine database in the Gulf of Thailand for both domestic and international researchers, scientists, and other interested parties. In 2022, PTTEP developed PTTEP Ocean Data Platform to disclose marine science data collected by PTTEP and our ocean-related initiatives to the public on an online platform, allowing a wide range of further applications. The implementation is driven through a collaboration with many sectors such as Department of Marine and Coastal Resources (DMCR), Royal Thai Navy, Hydro-Informatics Institute (HII), Kasetsart University, Rajamangala University of Technology Srivijaya and Chulalongkorn University. For more information, please visit PTTEP Ocean Data Platform website: oceandata.pttep.com.
 - 3) Ramp Up CSR Around Ocean through implementing corporate social responsibility projects with stakeholders around our operational areas covering 17 provinces around the Gulf of Thailand. In 2022, PTTEP established 4 aquatic animal hatchery learning centers in Phetchaburi, Prachuap Khiri Khan, Samut Songkhram, and Rayong provinces. PTTEP also handed over the sea turtle conservation exhibition building and sea turtle hatchery building to the Royal Thai Navy Sea Turtle Conservation Center in Chonburi province and the Sea Turtle Conservation Center, Base 2nd Naval Area Command, Songkhla province. The aims are to raise public awareness about sea turtle conservation and promote the conservation of sea turtles in the marine ecosystem around Thailand.

Finance

PTTEP places great importance on effective financial management by focusing on building financial discipline and maintaining a robust capital structure. As at the end of 2022, the company maintained its strong liquidity position with cash on hand of approximately 3,539 MMUSD. The debt-to-equity ratio is 0.28 which is in line with the Company's financial policy.

On October 20, 2022, PTTEP Treasury Center Company Limited (PTTEP TC), which is a subsidiary of PTTEP, prepaid unsecured and unsubordinated banks loan in full amount of 600 MMUSD. After the loan prepayment, PTTEP still has sufficient liquidity for operation and investment, as well as maintains its solid financial position to withstand such oil price and global economic fluctuation.

Research and Development of Technology

PTTEP encourages the development of technology and innovation as well as technological applications to increase business operation efficiency and competitiveness by carrying out research and development under 3 objectives, which consist of:

- 1) To drive value and enhance competitiveness in E&P business
- 2) To reduce greenhouse gas emissions to become a low-carbon organization
- 3) To support the energy transition and new businesses.

As of Q4/2022, there are 65 projects under research and development and the progress of highlight projects are as follows;

- The technologies for condensate treatment were successful in field trial tested which consist of the chemical demulsifier injection for particulate contaminants separation, adsorbent, and filtration technology. The technologies have been implemented in both the domestic and international production field resulting in the condensate treatment efficiency improvement and reducing production cost.
- The contaminant removal technology for supporting pipeline decommissioning activities such as the decontamination chemicals for pipelines cleaning and intelligent sampling PIG have been completed field trial in Bongkot field in Q1/2022, and the performance is satisfactory. The development team is carrying out the technology performance improvement as well as expanding its use to support future petroleum pipeline decommissioning activities.
- The wellhead operator robot project is in progress of developing a prototype robot which has capability to detect equipment abnormalities and to autonomously manipulate the process equipment in the production platform. The prototype testing in offshore production platform had been performed during Q1 to Q2 of 2022. The test result is satisfactory, and the development is going to be continued to the next phase as well as expanding the development scope to cover other production fields.
- The flare gas conversion to Carbon Nanotube for greenhouse gas emission reduction project is in progress to carry out the front-end engineering design (FEED) for the pilot production unit that is expected to complete in 2024. The Carbon Nanotubes application development projects are also carried out in various applications such as battery, energy storage, composite material, etc.
- The Carbon Dioxide (CO₂) conversion to Propylene Carbonate for greenhouse gas emission reduction project is in progress to carry out the prototype process development and testing.

PTTEP's strong commitment and concrete performance have made PTTEP recognized by both domestic and international institutions, which can be seen from the awards received such as;

- Received the top-level Gold of Most Innovative Knowledge Enterprise Award in Southeast Asia (SEA MIKE Award 2022), 2022 Gulf Sustainability Awards for Best Community Development category from PTTEP's corporate social responsibility projects for healthcare development, CSR World Leader 2022 Award from the Green Organization, which is an international, independent, environmental group, and Innovative Medium Organization Award granted to AI and Robotics Ventures Company Limited (ARV), a subsidiary of PTTEP, at the National Innovation Agency (NIA) Ceremony.
- Received awards at 12th Asian Excellence Award 2022 by Corporate Governance Asia Magazine, which is a financial magazine that promotes corporate governance in Hong Kong and Asia. The awards included Asia's Best CEO for the 5th consecutive year, Asia's Best CFO for the 9th consecutive year, Asia's Best CSR for the 3rd consecutive year, Best Investor Relations Company (Thailand) for the 10th consecutive year, and Best Investor Relations Professional for the 2nd consecutive year.
- Received awards at SET Awards 2022 by Stock Exchange of Thailand (SET). The awards were Sustainability Awards of Honor which is granted to companies that receive Best Sustainability Awards for at least three consecutive years and Best

Investor Relations for the 2nd consecutive year. Both awards are in the category of the listed companies whose market capitalization exceeding 100 billion Baht. In the innovation front, PTTEP also received Best Innovative Company Awards for Intelligence Pipeline Internal Sampling PIG technology. In addition, PTTEP was honored to be listed in Thailand Sustainability Investment (THSI) for the 7th consecutive year.

- Received awards at the IR Magazine Awards – South East Asia 2022 held by IR Magazine - the United Kingdom's leading investor relations magazine. The awards were Best Overall Investor Relations (large cap), Best Investor Relations Officer (large cap) and the Best in Energy Sector.
- Received awards at Alpha South East Asia's 12th institutional investor corporate awards 2022 held by Alpha South East Asia Magazine, the leading investment magazine in Southeast Asia. The awards consist of Strongest Adherence to corporate governance, Most consistent dividend policy, and Best annual report in Thailand

Such recognitions are our pride, and it will motivate PTTEP to carry out its business with efficiency, transparency, accountability as well as conscious care for all stakeholders to achieve our vision of becoming the “Energy Partner of Choice”.



Economic Overview in 2022

Crude Oil Price

Crude price is one of the major factors affecting the Company's performance. In 2022, average Dubai crude price increased to 96.4 USD/barrel, from 2021 average price of 69.4 USD/barrel. This was mainly due to tight supplies amid the war in Ukraine, rebound in global petroleum demand as a result of improving Covid-19 situation, while inflation and interest rate hikes by many central banks around the world led to economic contraction.

During Q1/2022, apart from supply disruption in Kazakhstan, Libya, and Nigeria in January, Russia-Ukraine tension kept Dubai crude price elevated especially in February when Russia launched a full invasion of Ukraine. As a result, U.S. and its allies announced series of harsh sanctions against Russia including banning or phasing-out of Russian energy causing Dubai crude price to hit a multi-year record high of 127.8 USD/barrel in March.

Prolonged Russia-Ukraine war, as well as the instability in oil-producing countries such as Libya and Ecuador, have raised concerns on crude supply shortage in Q2/2022. Oil price received some support from the demand side as most international borders were finally reopened. However, member states of the IEA including U.S. helped suppress price gains by announcing 180 million barrels crude release from strategic reserves from May to October 2022. Dubai crude price in Q2/2022 hence increased to an average of 108.2 USD/barrel, higher than Q1/2022 average price of 96.2 USD/barrel.

Dubai crude price in Q3/2022 dropped to an average of 96.7 USD/barrel largely due to recessionary concerns from interest rates hike across the world at unprecedented level, strengthened U.S. Dollar to a 20-year high, as well as China's COVID-19 lockdowns resumption from new wave of the pandemic, prompting downward revision of the global oil demand while Russian oil production and exports have proved to be more resilient, due to orders from China and India.

During Q4/2022, even with OPEC+ agreed upon steep oil production quota cuts of 2 MMBPD, starting from November 2022, Dubai crude price slumped to 1-year low at the back of rising fears of global recession and little impact on crude availability as price cap set at moderate level on Russia's exports took effect on early of December. In addition, relaxation of China's zero-COVID policies not only triggered a surge COVID infections across China, but also hurt its economy as demand for goods and services shrank at a sharper pace, thus weakened oil demand. Consequently, Dubai crude price in Q4/2022 averaged 84.8 USD/barrel.

Liquefied Natural Gas (LNG) Price

In 2022, the average Asian Spot LNG price increased to approximately 34 USD/MMBTU. During the year, LNG price was quite volatile with the lowest price around 19 USD/MMBTU in January as sentiment weakened on Chinese sell tenders. Then, the price increased significantly to the year's highest level in early March at 85 USD/MMBTU, driven by the conflicts between Russia and Ukraine. In Q2/2022, LNG price decreased due to low spot demand from Northeast Asia buyers. However, Asian Spot LNG price hit 70 USD/MMBTU level again in Q3/2022, mainly from the Russian gas supply to Europe which has been drastically reduced from the technical problems at Nord Stream 1 Pipeline, the largest pipeline from Russia to Europe. In addition, demand for LNG was driven upward from the need for various countries to increase their gas reserves in preparation for winter season. For the global LNG market in 2022, total capacity was at 421 million tons per annum (MTPA) (2021: 395 MTPA), while LNG demand remained at approximately 391 MTPA (2021: 380 MTPA). (Source: FGE as of January 2023)

Thailand's Energy Demand

According to the Energy Policy and Planning Office (EPPO), Ministry of Energy, domestic energy demand from January to October 2022 was approximately 2 MMBOED, 3.36% increase versus the same period in 2021, driven by increased energy consumption in the form of petroleum consumption for transportation and electricity usage from coal, hydro, and imported powers. This reflects higher economics activities in Thailand compared to 2021.

Exchange Rates (Thai Baht against US Dollar)

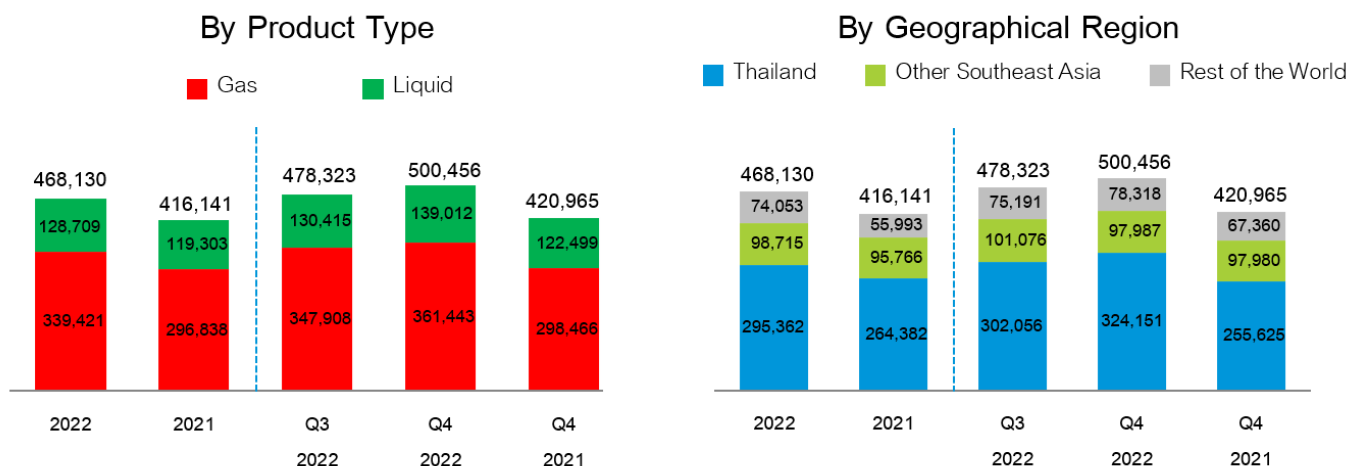
The Baht depreciated against US Dollar from 33.31 at beginning of 2022 to 34.56 by year end. The Baht experienced high volatility from key economic factors such as Thailand's weak tourism recovery, Thailand's current account deficits, economic uncertainty from the Russia-Ukraine war, and Federal Reserve's rate hikes, totaling 4.25% in 2022, to combat persistent and high inflation. In 2022, the policy interest rate in Thailand was 1.25%. However, late 2022 saw some Baht appreciation due to Thailand's current account, which turned positive in September and declining U.S. inflation which suggested a slowed down Fed rate hike schedule.



Financial Performance

Average Sales Volume and Selling Price

Unit: Barrels of Oil Equivalent per Day



Average selling price and			Inc. (Dec.)	Q3	Q4	Q4	Inc. (Dec.)	Inc. (Dec.)
Dubai crude oil price	2022	2021	YTD	2022	2022	2021	QoQ	YoY
(Unit : US Dollar)								
Average selling price (/BOE)	53.39	43.49	9.90	53.68	52.76	46.87	(0.92)	5.89
Liquid price (/BOE)	94.89	66.70	28.19	97.94	85.40	76.17	(12.54)	9.23
Gas price (/MMBTU)	6.27	5.69	0.58	6.18	6.70	5.81	0.52	0.89
Average Dubai crude oil price (/BBL)	96.38	69.39	26.99	96.68	84.77	78.27	(11.91)	6.50

Remark: The average sales volume and selling price were excluded deemed income for tax payment by Oman government

For 2022 compared with 2021

In 2022, the average sales volume of PTTEP and its subsidiaries (the “Group”) increased to 468,130 barrels of oil equivalent per day (BOED) or 12% when compared with 2021 of 416,141 BOED, primarily from first production of G1/61 Project since the end of April 2022, full year production of Oman Block 61 Project, as well as Arthit Project due to higher gas nomination from buyer. Additionally, the average selling price increased by 23% to 53.39 USD/BOE in 2022 (2021 : 43.49 USD/BOE).

For the Fourth quarter of 2022 compared with the Third quarter of 2022

In Q4/2022, the average sales volume of the Group increased to 500,456 BOED or 5% when compared with Q3/2022 of 478,323 BOED, primarily from first crude oil sales of Algeria Hassi Bir Rekaiz Project in October 2022, together with Bongkot Project, Zawtika Project and Arthit Project due to higher gas sales volume, offset with Oman Block 61 Project due to lower gas sales volume and Malaysia Project from lower crude oil sales volume. However, the average selling price decreased by 2% to 52.76 USD/BOE (Q3/2022 : 53.68 USD/BOE).

For the Fourth quarter of 2022 compared with the Fourth quarter of 2021

When compared the average sales volume for Q4/2022 to Q4/2021 of 420,965 BOED, the average sales volume increased 19%, primarily from first production of G1/61 Project and G2/61 Project since the end of April 2022, together with Arthit Project due to higher gas nomination from buyer and first crude oil sales of Algeria Hassi Bir Rekaiz Project in October 2022. In addition, the average selling price increased by 13% to 52.76 USD/BOE (Q4/2021 : 46.87 USD/BOE).

Overall Operating Results

For 2022 compared with 2021

In 2022, the Group had net profit of 1,999 MMUSD, an increase of 788 MMUSD or 65% from a net profit in 2021 of 1,211 MMUSD was primarily from higher revenue from sales. However, there was an increase in impairment loss on assets and a provision for the Class Action settlement from Montana incident was recognized in 2022. The net profit for 2022 of 1,999 MMUSD can be separated as following.

The profit from normal operation in 2022 was 2,647 MMUSD, an increase of 1,168 MMUSD when compared with a profit in 2021 of 1,479 MMUSD was primarily from an increase in revenue from sales of 2,539 MMUSD from higher average sales volume and average selling price. However, operating expenses increased by 249 MMUSD 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. Depreciation, depletion and amortization increased by 161 MMUSD primarily from first production of G1/61 Project and Malaysia Project which had higher sales volume, offset with Bongkot Project. In addition, petroleum royalties increased by 158 MMUSD, primarily from higher revenue from sales in Thailand and Malaysia. Income taxes also increased by 769 MMUSD mainly from projects in Thailand and Oman from higher earnings before tax.

Loss from non-operating items in 2022 was 648 MMUSD, an increase of 380 MMUSD when compared with a loss in 2021 of 268 MMUSD was primarily from an increase in administrative expenses since the provision of 129 MMUSD for the Class Action settlement from Montana incident was recognized (2021 : no recognition). Additionally, impairment loss on assets increased by 117 MMUSD as the Group recognized loss on Mozambique Area 1 Project, together with loss after reclassifying net assets of PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL) and Block 17/06 Project (Angola) to assets held-for-sale in 2022 (2021 : recognized loss on Mozambique Area 1 Project and Yetagun Project). However, other income increased from an adjustment of contingent liabilities of Oman Block 61 Project amounting to 71 MMUSD (2021 : no recognition). Meanwhile in 2021, the Group had recognized gain from a bargain purchase of Oman Block 61 Project amounting to 342 MMUSD, offset with a partial write-off of exploration and evaluation assets of the exploration project in Brazil of 145 MMUSD while there was no such transaction in 2022.

For the Fourth quarter of 2022 compared with the Third quarter of 2022

In Q4/2022, the Group had net profit of 417 MMUSD, a decrease of 247 MMUSD or 37% from a net profit in Q3/2022 of 664 MMUSD. Despite of an increase in revenue from sales, net profit decreased from higher impairment loss on assets, along with the provision for the Class Action settlement from Montana incident and loss from oil price hedging instruments (Q3/2022 : recognized gain). The net profit for Q4/2022 of 417 MMUSD can be separated as following.

The profit from normal operations in Q4/2022 was 723 MMUSD, an increase of 17 MMUSD when compared with a profit in Q3/2022 of 706 MMUSD was primarily from an increase in revenue from sales of 81 MMUSD from higher average sales volume while the average selling price decreased. In addition, exploration expenses decreased by 34 MMUSD primarily from write-off of assets of PTTEP Australasia Project in Q3/2022. However, administrative expenses increased by 84 MMUSD mainly from consulting fees and IT services. Income taxes increased by 44 MMUSD mainly from projects in Myanmar and Thailand from higher earnings before tax,

along with Malaysia Project due to lower tax benefit on investment when compared with Q3/2022 while projects in Oman had lower income tax from lower earnings before tax.

The loss from non-operating items in Q4/2022 was 306 MMUSD, an increase of 264 MMUSD when compared with a loss in Q3/2022 of 42 MMUSD was primarily from an increase in administrative expenses since the provision of 129 MMUSD for the Class Action settlement from Montana incident was recognized (Q3/2022 : no recognition). In addition, impairment loss on assets increased by 110 MMUSD as the Group recognized loss on Mozambique Area 1 Project and loss after reclassifying net assets of Block 17/06 Project (Angola) to assets held-for-sale (Q3/2022 : recognized loss after reclassifying net assets of PTTEP BL to assets held-for-sale). Net amount of changes in loss on financial instruments and gain on foreign exchange rate was mainly from loss from oil price hedging instruments of 2 MMUSD (included unrealized loss from mark-to-market of 1 MMUSD) due to an upward trend of forward oil price, while the Group recognized a gain of 94 MMUSD in Q3/2022 (included unrealized loss from mark-to-market of 64 MMUSD) from a downward trend of forward oil price. Meanwhile, other income increased from the adjustment of contingent liabilities of Oman Block 61 Project amounting to 71 MMUSD (Q3/2022 : no recognition).

For the Fourth quarter of 2022 compared with the Fourth quarter of 2021

In Q4/2022, the Group had net profit of 417 MMUSD, an increase of 96 MMUSD or 30% from a net profit in Q4/2021 of 321 MMUSD was primarily from an increase in revenue from sales. However, there was an increase in impairment loss on assets and the provision for the Class Action settlement from Montana incident was recognized in Q4/2022. The net profit for Q4/2022 of 417 MMUSD can be separated as following.

The profit from normal operations in Q4/2022 was 723 MMUSD, an increase of 210 MMUSD when compared with a profit in Q4/2021 of 513 MMUSD was primarily from an increase in revenue from sales of 602 MMUSD from higher average sales volume and average selling price. However, depreciation, depletion and amortization increased by 230 MMUSD primarily from Bongkot Project and first production of G1/61 Project. Additionally, other income decreased by 51 MMUSD mainly from an increase in participating interests of Malaysia Block K Project in Q4/2021. Moreover, Operation expenses increased by 46 MMUSD mainly from first production of G1/61 Project and G2/61 Project and income taxes increased by 50 MMUSD mainly from projects in Myanmar and Thailand due to higher profits.

The loss from non-operating items in Q4/2022 was 306 MMUSD, an increase of 114 MMUSD when compared with a loss in Q4/2021 of 192 MMUSD was primarily from an increase in administrative expenses since the provision of 129 MMUSD for the Class Action settlement from Montana incident was recognized (Q4/2021 : no recognition). Additionally, loss on financial instruments increased mainly due to higher loss from foreign exchange forward contracts of 84 MMUSD, offset with higher gain on foreign exchange rate of 40 MMUSD according to more appreciation of Baht against USD in this quarter compared to Q4/2021. However, other income increased from the adjustment of contingent liabilities of Oman Block 61 Project amounting to 71 MMUSD (Q4/2021 : no recognition). Also, impairment loss on assets increased by 22 MMUSD as the Group recognized loss on Mozambique Area 1 Project and loss after reclassifying net assets of Block 17/06 Project (Angola) to assets held-for-sale in Q4/2022 (Q4/2021 : recognized loss from Mozambique Area 1 Project and Yetagun Project).

Operating Results by Segments

Net Profit (loss)	2022	2021	Inc. (Dec.) YTD	Q3 2022	Q4 2022	Q4 2021	Inc. (Dec.) QoQ	Inc. (Dec.) YoY
(Unit: Million US Dollar)								
Exploration and production	2,489	1,698	791	610	567	401	(43)	166
Southeast Asia	2,626	1,576	1,050	682	729	546	47	183
- Thailand	1,843	1,220	623	421	524	372	103	152
- Other Southeast Asia	783	356	427	261	205	174	(56)	31
Middle East	292	426	(134)	64	118	37	54	81
Australia	(164)	5	(169)	(31)	(131)	7	(100)	(138)
America	(110)	(175)	65	(96)	(3)	(23)	93	20
Africa	(167)	(147)	(20)	(10)	(148)	(169)	(138)	21
Others	12	13	(1)	1	2	3	1	(1)
Head office and others	(490)	(487)	(3)	54	(150)	(80)	(204)	(70)
Total	1,999	1,211	788	664	417	321	(247)	96

For 2022 compared with 2021

For 2022, the Group reported a net profit of 1,999 MMUSD, an increase of 788 MMUSD when compared with a net profit of 1,211 MMUSD in 2021 was primarily from an increase in Exploration and Production segment in Southeast Asia (Thailand increased by 623 MMUSD and Other Southeast Asia increased by 427 MMUSD), while there was a decrease in Australia of 169 MMUSD and Middle East of 134 MMUSD.

Exploration and Production segment

- **Southeast Asia**

- Thailand

In 2022, Thailand reported a net profit of 1,843 MMUSD, an increase of 623 MMUSD when compared with a net profit of 1,220 MMUSD in 2021 was primarily from an increase in revenue from sales due to higher sales volume which included first production of G1/61 Project since the end of April 2022, as well as higher average selling price. Meanwhile, income tax increased according to higher profit and operating expenses increased in line with higher sales volume.

- Other Southeast Asia

In 2022, Other Southeast Asia reported a net profit of 783 MMUSD, an increase of 427 MMUSD when compared with a net profit of 356 MMUSD in 2021 was primarily from an increase in revenue from sales due to higher average selling price, together with a decrease in exploration expenses from exploration wells write-off in last year while there was no such transaction in 2022.

- **Australia**

In 2022, Australia reported a net loss of 164 MMUSD, a change of 169 MMUSD when compared with a net profit of 5 MMUSD in 2021 was primarily from an increase in administrative expenses from the recognition of a provision for the Class Action settlement from Montana incident, together with the write-off assets of PTTEP Australasia Project from permit relinquishment.

- **Middle East**

In 2022, Middle East reported a net profit of 292 MMUSD, a decrease of 134 MMUSD when compared with a net profit of 426 MMUSD in 2021. Despite an increase in revenue from sales due to higher average selling price and higher sales volume from Oman Block 61 Project, there was a decrease in net profit from a recognition of gain from a bargain purchase of Oman Block 61 Project in 2021.

For the Fourth quarter of 2022 compared with the Third quarter of 2022

For Q4/2022, the Group reported a net profit of 417 MMUSD, a decrease of 247 MMUSD when compared with a net profit of 664 MMUSD in Q3/2022 was primarily from a decrease in Head Office and Others segment of 204 MMUSD and a decrease in Exploration and Production segment in Africa of 138 MMUSD while there was an increase in Southeast Asia (Thailand increased by 103 MMUSD).

Head Office and Others segment

In Q4/2022, Head Office and Others segment reported a net loss of 150 MMUSD, a decrease of 204 MMUSD when compared with a net profit of 54 MMUSD in Q3/2022 was primarily from an increase in loss on financial instruments mainly from oil price hedging instruments due to an upward trend of forward oil price, while in Q3/2022 recognized gain due to a downward trend of forward oil price, together with an increase in loss on foreign exchange forward contracts from an appreciation of Baht against USD in this quarter while it was depreciation in Q3/2022.

Exploration and Production segment

- **Africa**

In Q4/2022, Africa reported a net loss of 148 MMUSD, an increase of 138 MMUSD when compared with a net loss of 10 MMUSD in Q3/2022 was primarily from the impairment loss on assets of Mozambique Area 1 Project, together with the recognition of loss after reclassifying net assets of Block 17/06 Project (Angola) to assets held-for-sale.

- **Southeast Asia**

- Thailand

In Q4/2022, Thailand reported a net profit of 524 MMUSD, an increase of 103 MMUSD when compared with a net profit of 421 MMUSD in Q3/2022 was primarily from an increase in revenue from sales due to higher sales volume while income taxes increased in line with higher profit.

For the Fourth quarter of 2022 compared with the Fourth quarter of 2021

For Q4/2022, the Group reported a net profit of 417 MMUSD, an increase of 96 MMUSD when compared with a net profit of 321 MMUSD in Q4/2021 was primarily from an increase of Exploration and Production segment in Southeast Asia (Thailand increased by 152 MMUSD) and Middle East of 81 MMUSD, offset with a decrease in Australia of 138 MMUSD.

Exploration and Production segment

- **Southeast Asia**

- Thailand

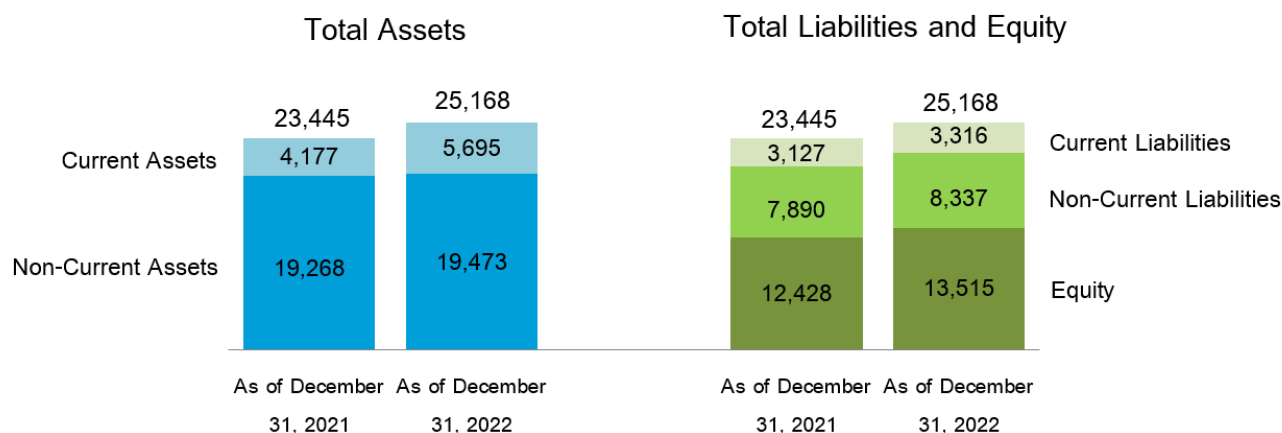
In Q4/2022, Thailand reported a net profit of 524 MMUSD, an increase of 152 MMUSD when compared with a net profit of 372 MMUSD in Q4/2021 was primarily from an increase in revenue from sales due to higher sales volume which included first production of G1/61 Project since the end of April 2022, as well as higher average selling price while income tax increased in line with higher profit.

- **Middle East**

In Q4/2022, Middle East reported a net profit of 118 MMUSD, an increase of 81 MMUSD when compared with a net profit of 37 MMUSD in Q4/2021 was primarily from other income increased from the adjustment of contingent liabilities of Oman Block 61 Project while no such transaction in 2021.

- **Australia**

In Q4/2022, Australia reported a net loss of 131 MMUSD, a change of 138 MMUSD when compared with a net profit of 7 MMUSD in Q4/2021 was primarily from an increase in administration expenses from the provision for the Class Action settlement from Montana incident.

*Financial Position**Unit: Million US Dollar***Assets**

As at December 31, 2022, the Group had total assets of 25,168 MMUSD, an increase of 1,723 MMUSD from total assets as at December 31, 2021 of 23,445 MMUSD was primarily due to;

- (1) Current assets, which were primarily comprised of cash and cash equivalents, trade and other receivables and inventories, increased by 1,518 MMUSD mainly from higher cash and cash equivalents of 980 MMUSD, as well as higher trade and other receivables of 220 MMUSD. In addition, other current assets increased by 180 MMUSD, primarily from prepayment upon Asset Transfer Agreement of Bongkot Project.
- (2) Non-current assets, which were primarily comprised of exploration and production assets in joint venture projects being recognized as part of the property, plant and equipment, exploration and evaluation assets, goodwill, right-of-use assets and deferred tax assets, increased by 205 MMUSD mainly due to higher property, plant and equipment, together with higher right-of-use assets of 501 MMUSD and 455 MMUSD, respectively which were mainly from G1/61 Project and G2/61 Project. However, deferred tax assets decreased by 389 MMUSD from Bongkot Project and Oman Block 61 Project. Goodwill also decreased by 192 MMUSD from recognizing impairment loss on Mozambique Area 1 Project and Block 17/06 Project (Angola). In addition, investments in associates decreased by 106 MMUSD mainly from selling shares of PTT Global LNG Company Limited.

Liabilities

As at December 31, 2022, the Group had total liabilities of 11,653 MMUSD, an increase of 636 MMUSD from total liabilities as at December 31, 2021 of 11,017 MMUSD was primarily due to;

- (1) Current liabilities, which were primarily comprised of trade and other payables, income tax payable, and short-term provisions, increased by 189 MMUSD mainly due to higher trade and other payables of 435 MMUSD primarily from G1/61 Project and G2/61 Project. Short-term provisions increased by 107 MMUSD mainly from the provision for the Class Action settlement from Montana incident, offset with a decrease in current portion of long-term liabilities from the redemption of senior guaranteed debentures of 15,000 MMTHB (equivalent to 449 MMUSD) in June 2022.

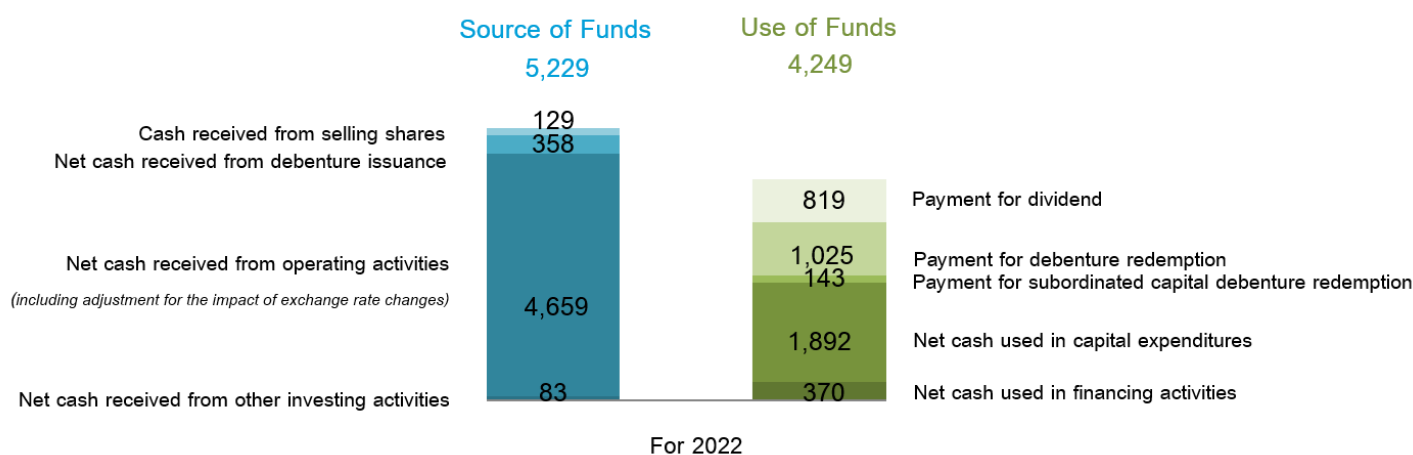
(2) Non-current liabilities, which were primarily comprised of debentures, provision for decommissioning costs, and deferred tax liabilities, increased by 447 MMUSD mainly due to higher provision for decommissioning costs of 341 MMUSD, together with higher debentures from the issuance of senior guaranteed debentures of 12,000 MMTHB (equivalent to 359 MMUSD) in April 2022. In addition, lease liabilities increased by 332 MMUSD mainly from G1/61 Project and G2/61 Project, offset with a decrease in long-term loans from early repayment of unsecured and unsubordinated loan of 600 MMUSD from PTTEP Treasury Center Company Limited in October 2022.

Equity

As at December 31, 2022, the Group had equity of 13,515 MMUSD, an increase of 1,087 MMUSD from equity as at December 31, 2021 of 12,428 MMUSD, primarily due to the net profit for the year, offset with the dividend payments in April and August 2022 and the redemption of subordinated capital debentures of 5,000 MMTHB (equivalent to 157 MMUSD) in June 2022.

Cash Flows

Unit: Million US Dollar



As at December 31, 2022, the Group had cash and cash equivalents of 3,539 MMUSD, an increase of 980 MMUSD when compared with December 31, 2021 of 2,559 MMUSD.

Source of funds amount of 5,229 MMUSD primarily came from **Net cash received from operating activities** as a result of the positive net cash flow from revenue from sales, offset with cash payments for expenses and income taxes, **Net cash received from financing activities** from the issuance of senior guaranteed debentures of 12,000 MMTHB (equivalent to 358 MMUSD) and **Net cash received from investing activities** from selling shares of PTT Global LNG Company Limited.

Uses of funds amount of 4,249 MMUSD primarily from the **Net cash used for additional capital expenditures** in exploration and production assets mainly from G1/61 Project, G2/61 Project, Zawtika Project, Bongkot Project and S1 Project, as well as **Net cash used in financing activities** primarily from the early repayment of unsecured and unsubordinated loan of 600 MMUSD from PTTEP Treasury Center Company Limited, together with the redemption of senior guaranteed debentures of 15,000 MMTHB (equivalent to 425 MMUSD) and subordinated capital debentures of 5,000 MMTHB (equivalent to 143 MMUSD). In addition, there were dividend payments for the second half of 2021 period and the first half of 2022 period.

Key Financial Ratios

	2022	2021	Q3 2022	Q4 2022	Q4 2021
Profitability Ratio (%)					
EBITDA* margin	75.39	73.21	75.61	73.48	70.27
Return on equity	15.41	9.99	15.14	15.41	9.99
Net profit margin	20.69	16.55	20.78	20.69	16.55
Leverage Ratio (Times)					
Debt to equity	0.28	0.33	0.33	0.28	0.33
Debt to EBITDA*	0.56	0.80	0.62	0.56	0.80

* EBITDA excluded gain from a bargain purchase of Oman Block 61 Project, asset write-offs in Brazil, a provision for the Class Action settlement from Montana incident and impairment loss on assets and goodwill which were recognized during the period.

Remark:

EBITDA margin	=	Profit before deduction of interest, tax and depreciation to revenue from sales (included deemed income for tax payment by Oman government), and revenue from pipeline transportation
Return on equity	=	Net profit for the past 12 months to average equity
Net profit margin	=	Net profit to total revenue (for the past 12 months)
Debt to equity	=	Interest Bearing Debt to equity
Debt to EBITDA	=	Average Interest-Bearing Debt to profit before deduction of interest, tax and depreciation for the past 12 months



Operational Highlights

Drive Value

At the end of 2022, PTTEP Group has over 50 projects with domestic and international operations in 15 countries. The following are key project highlights.

Projects in Southeast Asia

PTTEP Group’s primary operational base is in Thailand, with projects located across Southeast Asia including the Republic of the Union of Myanmar (Myanmar), Malaysia, the Socialist Republic of Vietnam (Vietnam), and the Republic of Indonesia (Indonesia). In the year 2022, the average sales volume from projects in Thailand is 295,362 BOED, accounting for 63% of total sales volume. Average sales volume from other countries in this region is 98,715BOED, which accounted for 21% of total sales volume.



Projects	Participation Interest	Operator	Activities
Projects in Thailand			
<i>Production Phase</i>			
1. S1	100%	PTTEP	The project is producing natural gas, liquefied petroleum gas (LPG) and crude oil. In 2022, the project continuously drilled exploration and development wells to maintain its production level. Environmental impact assessments were also undertaken in both existing and new production areas.

Projects	Participation Interest	Operator	Activities
2. Bongkot	66.67%	PTTEP	The project is producing natural gas and condensate. In 2022, Block B15 concession has expired, and the operatorship has been transferred to PTTEP Energy Development Company Limited (PTTEP ED), under G2/61 Production Sharing Contract (PSC) on April 23, 2022. For Bongkot Block B16 and Block B17, production will be continued until end of concessions on March 7, 2023, and will be transferred to PTTEP ED under G2/61 Project.
3. Arthit	80%	PTTEP	The project is producing natural gas and condensate. In 2022, the project has successfully increased gas sales volume under the new GSA at CDC 294 MMSCFD. In addition, the project has successfully started first gas from its main wellhead platform at Arthit South area.
4. Contract 4	60%	Chevron	The project is producing natural gas, condensate, and crude oil. In 2022, the project continued to drill additional development wells aiming to maintain production plateau.
5. G1/61 (Erawan field)	60%	PTTEP	The project is producing natural gas, condensate, and crude oil. PTTEP ED has become operator for the project under Production Sharing Contract (PSC) since April 24, 2022, which currently produces gas at 210 MMSCFD. In 2022, all 8 new wellhead platforms have been completely installed and continuously drilling additional wells, in order to ramp up gas production according to work plan.
6. G2/61 (Bongkot field)	100%	PTTEP	The project is producing natural gas, condensate. The project has transitioned from the concession to Production Sharing Contract (PSC) in G2/61 since April 24, 2022 and has been producing at the minimum volume stated in the PSC of 200 MMSCFD. In 2022, new platform was constructed and installed, with drilling of development wells to prepare for the transition from existing concession block B16 and B17 (Bongkot) in 2023 to ensure gas production at 700 MMSCFD.
7. Malaysia-Thailand Joint Development Area (MTJDA)	50%	CPOC	The Project is producing natural gas. In 2022, the project continuously drilled production wells in order to maintain the production level and was granted the rights to extend production period for 10 years, ending in 2039, as well as securing gas volume of at least 30 MMSCFD until 2025 to support Thailand's gas demand.
Projects in Myanmar			
<i>Production Phase</i>			
8. Zawtika	80%	PTTEP	The project is natural gas field located in the Gulf of Moattama. In 2022, the project produced as plan and continued developing Phase 1D in order to maintain the production level. The project is currently in the process of constructing the production platform.

Projects	Participation Interest	Operator	Activities
9. Yadana	37.1%	PTTEP	The project is producing natural gas. On July 20, 2022, PTTEP Group became operator. The project continues producing natural gas as planned.
<i>Exploration Phase</i>			
10. Myanmar M3	100%	PTTEP	The project is located offshore in the Gulf of Moattama. The Field Development Plan was approved since April 2021 and is pending development. In November 2022, the Government of Myanmar approved the withdrawal of Mitsui Oil Exploration Company Limited (MOECO), a joint partner of the project, which resulted in PTTEP Group holding 100% shareholding interest in this project.
Projects in Malaysia			
<i>Production Phase</i>			
11. Malaysia Block K	7.2 - 56%	PTTEP	The project is oil producing field consisting of Kikeh, Siapak North-Petai (SNP), and Gumusut-Kakap (GK) fields located offshore Sabah. In 2022, the project drilled the development well in GK field to increase the production level.
12. Malaysia SK309 and SK311	42 – 59.5%	PTTEP	The projects are an oil and gas producing fields located in the shallow water offshore Sarawak. In 2022, the projects produced condensate and crude oil from infill wells.
13. Malaysia Block H	42 – 56%	PTTEP	The project is located in the deep-water offshore Sabah. In 2022, the project produced as plan and aim for drilling exploration wells in 2023.
<i>Exploration Phase</i>			
14. Malaysia SK410B	42.5%	PTTEP	The project has started the Front-End Engineering Design (FEED) in July 2022 with the target to complete by Q3/2023. In parallel, the commercial negotiation has been started to ensure the Final Investment Decision (FID). In addition, the project successfully made new gas discovery at the Paprika-1 which is the second exploration well of the project and will conduct further studies in order to evaluate future development plan.
15. Malaysia SK417	80%	PTTEP	The project is located in shallow water offshore Sarawak and has completed drilling exploration wells, Dokong-1 and Nangka-1, in 2021. In addition, the remaining one appraisal well is planned as per exploration commitment. The exploration well preparation is ongoing for drilling campaign in 2023.
16. Malaysia SK405B	59.5%	PTTEP	The project is located in shallow water offshore Sarawak. Following the discovery of crude oil and natural gas reservoirs at Sirung-1, the project is currently studying the potential for future exploration. In December 2022, the project's development plan was approved by Petronas. The project has prepared for drilling campaign in 2023.
17. Malaysia SK438	80%	PTTEP	The project is located in shallow water offshore Sarawak. Currently, the project is preparing for drilling exploration well in 2023.
18. Malaysia SK314A	59.5%	PTTEP	The project is located in shallow water offshore Sarawak. In 2022, 2 exploration wells have been drilled as planned.

Projects	Participation Interest	Operator	Activities
19. Malaysia PM407	55%	PTTEP	The project is located in shallow water offshore Peninsular. In 2022, the project has completed the geological and geophysical studies to evaluate petroleum potential. Currently, the project is preparing to drill an exploration well in Q1/2023.
20. Malaysia PM415	70%	PTTEP	The project is located in shallow water offshore Peninsular. In 2022, the project was in the process of post-drilling evaluation, after drilled 2 exploration wells in 2020. It is currently in the process of evaluating remaining petroleum potential of the field for future exploration strategy.
21. Malaysia SB412	60%	PTTEP	The project is located in shallow-deep water offshore Sabah. In 2022, the project has performed the geological and geophysical studies to evaluate the petroleum potential of the block.
Projects in Vietnam			
<i>Production Phase</i>			
22. Vietnam 9-2	25%	HV JOC	The project is producing natural gas and crude oil located offshore southeast of Vietnam. In 2022, the project has a drilling campaign to drill 1 development well, which is expected to be completed by Q1/2023.
23. Vietnam 16-1	28.5%	HL JOC	The project is producing natural gas and crude oil located offshore southeast of Vietnam. The project completed drilling campaign of 2 development wells in Q4/2022.
<i>Exploration Phase</i>			
24. Vietnam B & 48/95 and the Vietnam 52/97	8.5% 7%	Vietnam Oil and Gas Group	The projects are located offshore Vietnam. It is currently in the negotiation process on commercial terms in order to push forward the Final Investment Decision (FID) with targeted first production by the end of 2026, and gradual ramp up to 490 MMSCFD, including the production from Vietnam 52/97 Project.

Projects in the Middle East and Africa



Projects	Participation Interest	Operator	Activities
Projects in Sultanate of Oman (Oman)			
<i>Production Phase</i>			
25. Oman Block 6 (PDO) and Oman Block 53	2% 1%	Petroleum Development Oman / Occidental	Oman Block 6 is the largest potential onshore oil producing asset in Oman, and the Oman Block 53 Project is a large producing onshore oil field located in the southern part of Oman. Both projects continue to produce as per OPEC+ agreement.
26. Oman Block 61	20%	BP	The project is producing natural gas and condensate resources. Currently, the project has a full production capacity of natural gas and condensate at 1,500 MMSCFD and 59,000 barrels per day (BPD), respectively.
<i>Exploration Phase</i>			
27. Oman Onshore block 12	20%	TotalEnergies	The project is located in central Oman. Currently, the project is in the process of geological and geophysical studies throughout the year 2023 and plans to drill 2 exploration wells in 2023-2024.
Project in United Arab Emirates (UAE)			
<i>Exploration Phase</i>			
28. Abu Dhabi Offshore 1	30%	Eni	The project is located in offshore northwest of Abu Dhabi and currently is in the geological study and evaluation process of the petroleum potential for the future exploration plan.
29. Abu Dhabi Offshore 2	30%	Eni	The project is located in the northwest of Abu Dhabi. In 2022, the project successfully made significant gas discovery in a deeper zone of the XF-002. In addition, the project is in the progress of 1 appraisal well drilling, including further evaluation of petroleum potential for drilling another 1 exploration well.

Projects	Participation Interest	Operator	Activities
30. Abu Dhabi Offshore 3	30%	Eni	The project is located offshore northwest of Abu Dhabi. Currently, the project is in progress of petroleum potential evaluation for the preparation of appraisal well and exploration well which to be drilled in 2024-2026.
31. Sharjah Onshore Area C	25%	Eni	The project is located in the central part of Sharjah. The 3D seismic survey has been completed, and it is currently in the progress of 3D seismic processing in order to assess the potential.
32. Sharjah Onshore Area A	25%	Eni	The project is located in the central part of Sharjah. PTTEP has signed a Farm-in/Farm-out Agreement, which completed on December 23, 2022. Currently, the project is in the progress of 3D seismic processing.
Projects in People's Democratic Republic of Algeria (Algeria)			
<i>Production Phase</i>			
33. Algeria 433a & 416b	35%	GBRS	The project is crude oil producing located onshore in the eastern part of Algeria. The average crude oil production in 2022 was at approximately 16,300 BPD.
34. Algeria Hassi Bir Rekaiz	49%	GHBR	The project is located onshore in the eastern part of Algeria. On June 1, 2022, the project commenced its first crude oil production with capacity approximately 13,000 BPD. The project is under studying and planning for development of the second phase to increase production to 50,000 - 60,000 BPD at the end of 2027. In addition, it has changed the operator from PTTEP to Groupment Hassi Bir Rekaiz (GHBR), which is a joint operating company between PTTEP and SONATRACH, effective on October 1, 2022.
Project in Republic of Mozambique (Mozambique)			
<i>Development Phase</i>			
35. Mozambique Area 1	8.5%	TotalEnergies	The project, which is a large LNG project located in offshore Mozambique, is currently in the development phase. In April 2021, the operator has decided to announce the suspension of all construction due to Force Majeure from the unrest occurring near the project site. The operator has been closely monitoring the situation and is in the process of considering plans to return to the project area.
Project in Republic of Angola (Angola)			
<i>Development Phase</i>			
36. Block 17/06	2.5%	TotalEnergies	The project is located offshore west coast of Angola. On December 16, 2022, PTTEP Group has entered into a Sale and Purchase Agreement (SPA) to sell all participation interest in the project. Completion of the sale is expected by mid-2023 subject to the conditions prescribed in the SPA.

Projects in Australia

Projects	Participation Interest	Operator	Activities
Projects in Commonwealth of Australia (Australia)			
<i>Exploration Phase</i>			
37. PTTEP Australasia	90 - 100%	PTTEP	This Project is located in Australia and has 6 concession permits, currently in progress to define the proper direction of the project. In 2022, the project received the approval to return the exploration of the Challis Field (AC/L3), submitted a request to return Orchid Field (AC/P54), and decided not to submit a renewal application of Audacious Field (AC/RL6). With regards to a class action lawsuit made against PTTEP Group in the Federal Court of Australia by a group of Indonesian seaweed farmers for compensation relating to the Montara oil spill incident in 2009 on November 21, 2022, PTTEP group had participated in mediation process and reached an in-principle agreement with the group of Indonesian seaweed farmers. PTTEP Group will pay equivalent to 129 MMUSD in full and final settlement of the class action including the appeal.

Projects in the Americas



Projects	Participation Interest	Operator	Activities
Projects in Canada			
<i>Exploration Phase</i>			
38. Mariana Oil Sands	100%	PTTEP	The project is located in Alberta, Canada, and underway for reclamation activities according to government’s conditions.
Project in United Mexican States (Mexico)			
<i>Exploration Phase</i>			
39. Mexico block 12 (2.4)	20%	Petronas	The project is located in the Mexican Ridges, Western part of Gulf of Mexico. The exploration well drilling was completed according to work commitment under the concession, with no petroleum potential confirmed.
40. Mexico block 29 (2.4)	16.67%	Repsol	The project is located in the Campeche basin, southern part of Gulf of Mexico. The project is currently undergoing a pre-development study and evaluation of future petroleum potential.
Project in Federative Republic of Brazil (Brazil)			
<i>Exploration Phase</i>			
41. Barreirinhas AP1 and Brazil BM-ES-23	25% 20%	Shell / Petrobras	On August 31, 2022, the Company entered into a Sale and Purchase Agreement (SPA) to sell all investments in PTTEP Brazil Investments in Oil and Gas Exploration and Production Limitada (PTTEP BL), a subsidiary of PTTEP, which holds interest in both projects. Completion of the sale is subject to the conditions prescribed in the SPA.

Decarbonize

For our decarbonization efforts, we have made progress as follows:

- PTTEP achieved GHG emissions reduction in accumulation from January to December 2022 by 166,352 tonnes of CO₂ equivalent (2020 Base year). PTTEP has also initiated Thailand's first Carbon Capture and Storage (CCS) project at the Arthit offshore gas field with expectation to reduce carbon dioxide emissions by approximately 700,000 -1,000,000 tonnes per annum and expected to commence the CCS operations by 2026. Additionally, the Company has initiated CCS feasibility studies in other operational areas to support the EP Net Zero 2050 commitment.
- PTTEP foresees an opportunity to support greenhouse gas offsetting to absorb carbon dioxide from the atmosphere under blue carbon initiatives, such as mangrove reforestation. PTTEP aims for 45,000 rais mangrove reforestation by 2030. In 2022, PTTEP obtained an approval of mangrove areas totaling 4,007.15 rais from the Department of Marine and Coastal Resources (DMCR). In December 2022, PTTEP, Mae Fah Luang Foundation under Royal Patronage and AI and Robotics Ventures Company Limited (ARV), a subsidiary of PTTEP, jointly signed a Memorandum of Understanding (MoU) to collaborate on preserving and restoring natural resources to increase forest density and increase carbon dioxide absorption rate of community forests. Under the MoU, the involved parties will support community engagement in preserving and restoring forest areas, while using satellite imaging and unmanned aerial vehicles (Drone) technology to process and analyze data through machine learning to collect data for forestation carbon credit assessment.

Diversify

AI and Robotics Ventures Company Limited (ARV) is a Ventures Builder with two key groups of operations: 1) ARV-Core is the headquarter engaging in research and development, and provision of solutions using AI and Robotics technologies, as well as ventures ideation, incubation, development, and commercialization; and 2) Startups which ARV has spun-off into separate legal entities focused on further commercialization and development of their respective deep-tech domains. Key business highlights during 2022 are as follows:

1) AI & Robotics Ventures (ARV)

- In 2022, ARV was the winner of "The National Innovation Awards" in the private-sector, medium-sized companies, awarded by Thailand's National Innovation Agency (NIA).
- ARV and the state enterprise under the Ministry of Transport, Aeronautical Radio of Thailand (AEROTHAI) signed an MoU on July 27, 2022, to develop and test data connectivity between ARV's UAS (unmanned aircraft systems) flight-operations and fleet-management systems and AEROTHAI's UAS traffic management system (UTM). Wangchan Valley was designated as the pilot area for development and testing; the parties expect to deploy the technology to other domestic and international locations. These developments are intended to support Thailand's New S-Curve initiatives and bring sustainable improvements to Thailand's economy.
- ARV is pioneering the development of the next-generation aerial and ground based automated robotic systems which are being deployed to support critical operations of oil and gas projects including asset integrity inspection, security surveillance operations and cargo delivery. These automated robotic technologies are also targeted to support a broader client in different industries and verticals.

2) ARV's Start-ups

ROVULA: Specializing in intelligent underwater inspection, maintenance, and repair

- ROVULA was certified under the ISO 9001:2015 Quality Management System standards on November 21, 2022, to demonstrate its dedication to its stakeholders to provide and maintain quality management system which meets international standards, and promotes business operation process efficiency and ensures customer satisfaction.

- ZeaQuest, a 50% joint venture between ROVULA and Mermaid Subsea Services Limited (Thailand), has generated continuous year-on-year growth from 2021 reaching double digit revenues in 2022. During the past year, ZQ secured and delivered subsea pipeline maintenance and exploration projects in the Gulf of Thailand and the Gulf of Moattama.
- ROVULA has successfully developed and tested the XPLOER version 1.5 Autonomous Underwater Vehicle (AUV), an untethered intelligent underwater inspection robot; the start-up also completed a technology readiness level-7 test of its intelligent horizontal subsea pipeline maintenance robot named NAUTILUS, which is now ready for commercial operations. In addition, XPLOER version 1.5 has completed a challenging Proof-of-concept (POC) exercise with the Electricity Generating Authority of Thailand (EGAT) under the EGAT Floating Solar Farm project on May 8 – 14, 2022, to explore locations inaccessible by human-divers and boats. The successful POC is a testament to ROVULA and ARV's ability to bring in new and advanced technologies to increase the capabilities overcome complex obstacles to support the efficient operation of business partners.
- The NAUTILUS technology, which is the world's first operational subsea flow line control and repair robot for horizontal pipelines is ready for commercial services and was awarded "The Spotlight on New Technology" award from OTC Asia 2022 in Kuala Lumpur Malaysia. Additionally, ROVULA and its European partner, Kongsberg Ferrotech will joint venture in a company called S2 Robotics Company Limited to further develop and commercialize the NAUTILUS technology.

SKYLLER: Specializing in the inspection of critical infrastructures through robotics and artificial intelligence

- SKYLLER and Nam Thuan Energy Investment Joint Stock Company, a subsidiary of Super Energy Corporation Public Co.,Ltd., jointly signed a Memorandum of Agreement (MoU) for the "Eyes from the Sky" project on June 2, 2022, to cooperate on technology, deployment of intelligent drone solutions, and giving Vietnam's renewable sector a new technological a new dimension.
- In April 2022, SKYLLER signed a long-term agreement with HMC Polymers Ltd. worth more than 20 MMTHB, for the inspection of flares and confined spaces (silo) for plastic pellets, using UAV technology and digital platforms, including the creation and development of Digital Twin technology, which is used to control industrial operating systems.
- In May 2022, SKYLLER signed an MoU with Thyssenkrupp Uhde, a leading German industrial solution firm, to expand both firms' market, expertise, and technologies; and effectively promote the engineering and industrial markets in Thailand, Germany, and Southeast Asia.
- In 2022, SKYLLER continued its development of digital and artificial intelligence platforms for infrastructure inspection in the energy exploration and production industry. The platform enhances data management by implementing AI technology to improve the efficiency of analyzing defects such as cracks, rust, and corrosion on structures and equipment, and to generate reports for users allowing clients, asset owners and operators to visualize and prepare maintenance plan.

VARUNA: Focusing on Smart Agriculture, Forestry and Nature-based Carbontech

- VARUNA is committed to developing technologies for the agricultural and forestry industries that promote efficiency, sustainability, and environmental protection. VARUNA offers a wide range of technologies and services, such as agricultural drones, digital and geospatial farm management systems, comprehensive mobile applications for the agricultural sector with features related to cultivation, land monitoring, plantation suitability analysis, weather forecasting and carbon credit projects. In addition, VARUNA's product and solutions are also capable of analyzing forest fertility and carbon sequestration using remote sensing technologies.
- In 2022, VARUNA's joint venture company, ATI Company Ltd., generated increasing sales of agricultural drones, helping promote VARUNA's ecosystem of digital products and solutions, and making valuable technologies more

accessible to farmers. In addition, VARUNA has partnered with a start-up company Gaorai Co., Ltd. to provide agricultural spraying services using the company's agricultural drones as well.

- VARUNA continues to cooperate with PTT Public Company Limited in research and development of carbon stock assessment technologies for the forestry sector, with a plan to collect data and create an artificial intelligence model for all forest-types planted and monitored by PTT Group. VARUNA aims to collect 1 million tons of carbon credits by 2030.
- VARUNA also cooperates with PTT Public Company Limited and more than 30 other partners, to employ DeepTech for restoration initiatives in the green area at Khung Bang Krachao under “OUR Khung BangKachao” project. VARUNA’s analysis platform “VARUNA Analytics” ingests collected data in the area from survey drones and satellites and applies proprietary artificial intelligence (AI) models to analyze and monitor 6,000 rais of green space. The project aims to be a model for “Social Collaboration with Collective Impact” to restore the environment sustainably within 5 years.

CARIVA: Dedicating to personalized digital health solutions leveraging data, networks, and DeepTech

- In 2022, CARIVA launched 3 mobile-applications namely ARVIC (a personal health data platform, which includes health risk assessment and health monitoring), NEXTCERCISE (a health promotion platform that incentivizes people to engage in physical activities), BEAUT (a platform for beauty and wellness).
- CARIVA, together with BJC Healthcare established a 50:50 joint-venture called B-Med X on April 21, 2022, to co-develop a Healthcare Platform to make it easier for Thai people to get medical services. B-Med X’s services include a platform for promoting health education, which also helps assess/diagnosis users’ initial symptoms (Basic Screening technologies) in a manner which corresponds to modern lifestyles wherein users’ prefer to self-assess and select treatments according to their own needs.
- CARIVA signed an MoU with Dhipaya Insurance on September 6, 2022, to jointly develop a health data-platform with features such as AI-Symptom Checker, Telemedicine, as well as insurance premium calculation. Furthermore, the parties agreed to collaborate to test health-kiosk solutions, home-care solutions, and metaverse technologies for mental health insurance. The objective is to provide customers with an end-to-end digital solution connecting health insurance products to a healthy lifestyle.
- CARIVA also signed an MoU with Thammasat University Hospital on August 26, 2022, to provide CARIVA’s digital health screening tools and digital data collection solution for the Area 4 Health region (AH4) which is divided into 8 provinces namely Saraburi, Nonthaburi, Lopburi, Ang Thong, Nakhon Nayok, Sing Buri, Phra Nakhon Si Ayutthaya and Pathum Thani.

BEDROCK: Specializing in Location Intelligence

- BEDROCK has collected, processed and analyzed data, such as city infrastructure data, demographic data, street data, and building data etc. BEDROCK develops various Location Intelligence products and solutions for consultancy projects.
- BEDROCK has completed the development of its City Data Digital Platform (CDDP), a digital tool that enables intelligent spatial data analysis which is used for commercial purposes, such as the signboard tax collection, land and building tax management, construction-permit and property management systems, etc. In 2022, the CDDP platform has been deployed in more than 130 locations and is expected to expand to more than 5,000 areas by 2025.
- BEDROCK has formed alliances and signed MoUs with more than 10 agencies, such as the Municipal League of Thailand, Digital Economy Promotion Agency (DEPA), Promotion of Local Administration Foundation, Chiang Mai University, Khon Kaen University, Khon Kaen City Development Company Ltd. etc. These alliances will significantly accelerate the development and dissemination of CDDP and lead to integration of city data analytics into the

forecasting, planning, monitoring, and problem solving of the cities, and enable efficient expansion of urban development surrounding municipalities.

BIND: Focusing on bringing Digital Identity for Corporations and juristic entities

- BIND has successfully developed and deployed its National Digital Corporate Identity (NCID) solution, which leverages innovations in Digital-ID and e-documents to allow juristic persons and organizations to fully achieve complete end-to-end Digital Transformation process; BIND has developed propriety to combine e-KYC, e-Signature, and e-POA (electronic power of attorney) into a seamless, scalable, and efficient user-journey by applying Web 3.0 principles of Self-Sovereign-Identity (SSI), Blockchain, and Cryptography. One of NCID's main functions is to facilitate enterprises and commercial banks perform Know Your Customer (KYC) processes and transactions involving large volumes of signed documents through a fully digital process which helps businesses to be more efficient and faster without losing business opportunities.
- BIND signed an MoU with several commercial banks, including Krung Thai Bank, Siam Commercial Bank, Bank of America Corporation, Standard Chartered, Overseas-Chinese Banking Corporation, and other commercial banks; to test NCID system in its SaaS (software-as-a-service) model, wherein Krung Thai Bank has piloted and conducted numerous real banking transactions with PTT Group through the NCID system, which is operating under the Digital Service Sandbox, under the supervision of the Electronic Transactions Development Agency (ETDA).

Other Updates on Beyond E&P Businesses

Gas to Power Project

An exclusive right to develop the integrated Domestic Gas to Power Project has been received from Myanmar Government since the end of 2020. The project is currently on the preparation process.

Green e-methanol Project

PTTEP and 5 multinational companies have signed a Memorandum of Understanding (MoU) on a 'Green Methanol Value Chain Collaboration' which will explore the feasibility of establishing a green e-methanol pilot plant. Green e-methanol is being considered as one of the candidates for alternate fuel to meet IMO2030/2050 goals, which can significantly reduce greenhouse gas emissions.

Carbon Capture and Storage (CCS) Project

- PTTEP and PTT Group companies have signed a MoU to conduct a feasibility study on the application of Carbon Capture and Storage (CCS) as a prototype technology towards carbon neutrality and Net Zero Greenhouse Gas emissions under the concept of CCS Hub Model.
- PTTEP, INPEX CORPORATION (INPEX) and JGC Holdings Corporation (JGC) have initiated a collaboration to explore the potential development of a CCS project in Thailand that will help reduce greenhouse gas emissions and accelerate the decarbonization of Thai industries and the country as a whole.



Business Outlook

Energy Outlook

The breakout of the Russo-Ukrainian war leads to the global energy crisis. The price of energy, including electricity has reached a historic high, resulting in inflation. In the short term, it is expected that global economy will slow down, if not a full recession. Consequently, global demand for all forms of energy is expected to stall. After that, global energy demand is expected to recover in a medium term but risk of supply shortage from less reliance on Russia and high electrification costs still exist. Besides, net zero commitment will be a predominant policy objective and goal as many countries are acceleration their investment in new energy.

For the Southeast Asia (SEA) region, the fast rate of economic growth put a strong pressure for increasing energy demand. The increase in energy supply will have to meet net zero commitments of multiple countries such as Thailand, Malaysia, Singapore, Vietnam, and Indonesia. Replacing coal with natural gas is the primary step of the regional energy security and decarbonization. Based on Wood Mackenzie, the SEA demand of natural gas is expected to increase from around 13 BCFD in 2022 to around 17 BCFD and 25 BCFD in 2035 and 2050, respectively. This is a great challenge as SEA pipeline gas supply is expected to decrease from around 10 BCFD in 2022 to around 8 BCFD and 2 BCFD in 2035 and 2050, respectively. Imported LNG from both regional and distant supply will, therefore, play a crucial role in stabilizing SEA energy supply.

Oil Price Outlook

According to global high inflation, many central banks are still planning to increase the interest rate, for example, US Fed has signaled potential rates for 2023 between 4.75% and 5.75% looming the economic recession concerns. This will subsequently hinder economic growth as well as oil consumption in some regions. However, China has shown some easing of zero-COVID-19 measures, and hope that China reopening in 2023 is within reach. Subjected to the above key factors, 2023 Global oil demand growth is projected to be around 1.7 to 2.3 MMBPD.

Following EU oil embargo and price cap on Russian crude export since December 5, 2022, Russian crude production is expected to be slightly reduced from average 10.6 to 9.6 MMBPD in 2023. However, Russia's retaliations are being prepared and could risk cutting crude export in response. Meanwhile, U.S. production is expected to grow by 1 MMBPD in 2023 based on structural strength of activities in Permian basin while OPEC+ will continue to maintain their production cut around 1-2 MMBPD to stabilize the market and support high oil price level. Therefore, global oil supply growth in 2023 could be seen between 1.4 to 1.8 MMBPD.

In conclusion, PTTEP expects that the oil market balance will continue to be tight in 2023 while economic concerns are playing a big part, leading Dubai price forecast around 75 - 90 USD/barrel in 2023. However, many uncertainties exist such as China's COVID policy, economic conditions, Russia-Ukraine war situation and further strategic petroleum reserves plan.

LNG Market Outlook

The oversupply situation of Global LNG market is expected to prolong throughout 2023, with total production capacity of existing and upcoming LNG projects growing by 12 MTPA from 2022 to 433 MTPA (approximately 3% growth), with additional supply coming mainly from Indonesia, the United States and Russia, while demand for LNG is expected to be around 415 MTPA (Source: FGE as of January 2023). LNG demand tends to increase as a result of LNG market liberalization in several Asian countries. Moreover, a decline in domestic gas production in many countries would cause more demand for LNG import. In addition, rising interest rates by central banks to control inflation will directly impact world economic growth and energy demand. Factors to watch for in the near term include China's pace of recovery as it lifts its restrictive COVID measures and the impact of sanctions on Russian LNG supply to Asia. The average 2023 Asian Spot LNG price is expected to be around 28-33 USD/MMBTU (Source: Platts as of November 2022 and FGE as of January 2023).

Thai Economy and Foreign Exchange Outlook

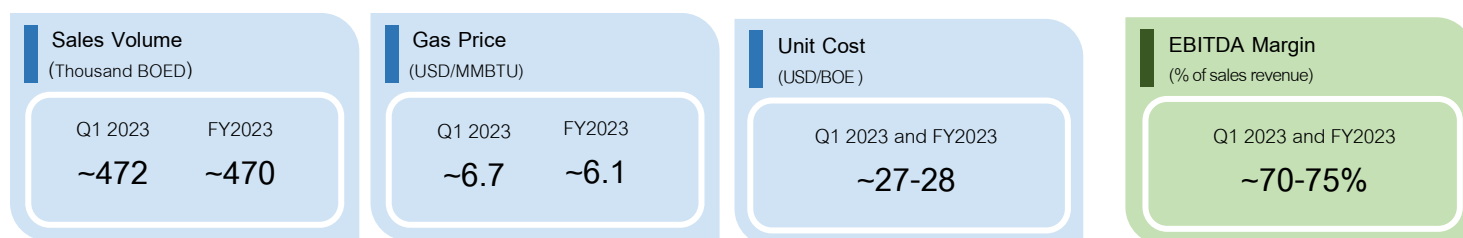
The Bank of Thailand expects the economy to expand at 3.7% in 2023, supported by Thailand's tourism recovery and private consumption. However, slower-than-expected global growth, especially in China, is a downside risk to Thailand's growth. In terms of monetary policy, the Bank of Thailand sees gradual monetary policy normalization as suitable to ensure stable economic growth in the long run.

In 2023, the Thai Baht is expected to appreciate due to tourism recovery particularly from China's reopening. The Baht will also find support from US Federal Reserve's monetary policy which saw a slowdown in rate hikes in late 2022 due to declining US inflation. However, the Baht is expected to experience a degree of volatility due to uncertainty factors such as the Russia-Ukraine war and potential of slower-than-expected global growth.

PTTEP has adopted the natural hedge method to manage FX risks of revenues from petroleum products and major expenses which are in the same currency. Remaining FX risk exposures from non-USD revenues and expenses are managed by utilizing financial hedging instruments such as forwards and swaps. Moreover, interest rate volatility does not materially impact the Company's financial performance as the entirety of interest-bearing debt is fixed rate.

PTTEP's performance outlook for the year 2023

PTTEP's performance depends on three major factors including Sales volumes, Gas price and Unit cost with guidance as follows.



Note: 1. The sales volume includes the sales volume from ADNOC Gas Processing (AGP)

2. The assumption is based on average Dubai price in 2023 of 88 USD/Barrel

3. Including increased sales volume from G1/61 sole investment

4. EBITDA margin: A percentage of Earnings before interest, taxes, depreciation, and amortization to the Sales Revenues and Revenue from pipeline transportation

Sales volume:

PTTEP expects the average sales volume for the first quarter and full year 2023 to be approximately 472,000 and 470,000 barrels of oil equivalent per day, respectively. Sales volume will increase slightly in 2023, compared to the previous year, on the back of the production ramp up of G1/61 (Erawan) Project according to workplan.

Sales price:

- PTTEP's liquid prices will fluctuate according to global crude prices.
- PTTEP's gas price formulas are partially linked to oil prices with reference to average historical prices ranging from the past 6 to 24 months. The average gas price for the first quarter and full year 2023 is estimated at approximately 6.7 and 6.1 USD/MMBTU, respectively, lower than the previous year, reflecting lower Dubai price assumption and more sales volume contribution from G1/61 (Erawan) and G2/61 (Bongkot) project under Petroleum Sharing Contracts, which the gas price will be lower, compared to the concession regime.
- The Company has entered into oil price hedging contracts, where the outstanding volume as at the end of 2022 was 3.3 million barrels. The Company has consistently monitored crude oil price movements and has the flexibility to adjust its hedging plan as appropriate.

Unit Cost:

For the first quarter and full year 2023, PTTEP expects to be able to maintain unit cost in the range of 27-28 USD/BOE, lower than the reported unit cost of 2022 mainly from lower royalty expense per unit following a decline in average selling price, as well as a drop in depreciation expense per unit.