



Executive Summary

During Q1/2023, the global economy, energy outlook, and oil prices experienced fluctuations. The average Dubai price dropped to 80.2 USD/barrel (from 84.8 USD/barrel in Q4/2022) due to concerns about the unexpected collapse of Silicon Valley and Signature Bank in the U.S. and the sudden takeover of Credit Suisse Bank, which triggered worries among investors about widespread risks to other banks and a possible global recession. However, these financial crises did not have any impact on our company's operations. In January, the Dubai price rose to 80.4 USD/barrel (from 77.2 USD/barrel in December 2022) following China's reopening, which led to a rise in global oil demand predicted for this year. The price continued to increase in February to 82.0 USD/barrel, as the U.S. Federal Reserve slowed down the interest rate hike, which eased the market's concerns about a global recession. However, in March, Dubai price fell to 78.5 USD/barrel after the Federal Reserve signaled that it might maintain high interest rates to tame inflation. This moves reignited investor concerns about a recession. In addition, the U.S. Strategic Petroleum Reserve continued to build up. As a result, Dubai price is expected to stay in the range between 75-90 USD/barrel during 2023. The key factors to monitor in the coming months are the global economy, the interest rate policies of central banks in various countries, the oil release from the Strategic Petroleum Reserves, and the prolonged Russia-Ukraine conflict.

In Q1/2023, several significant advancements were made in E&P operations. Firstly, PTTEP has been awarded the rights for petroleum exploration and production of exploration blocks No. G1/65 and G3/65 in the Gulf of Thailand by the Ministry of Energy. Additionally, we have also been granted the exploration block, SK325, from Malaysia's 2022 Bid Round. These accomplishments align with PTTEP's investment strategy, which focuses on driving growth in strategic areas. Regarding ongoing projects, progress is as expected. Work on the G1/61 (Erawan) production ramp-up is ongoing, with wells drilling and other preparations underway. Moreover, the transition of the Bongkot project into the G2/61 Production Sharing Contract was fully completed in early March. PTTEP's Business Beyond E&P initiative also made strides in Q1/2023. In collaboration with the Department of Highways, the AI and Robotics Ventures Company Limited (ARV) deployed "HORRUS," ARV's automated unmanned aerial vehicle technology, to monitor and analyze traffic conditions and accidents. Additionally, the ROVULA business unit established S2 Robotics Company Limited as a joint venture with Kongsberg Ferrotech (Norway) to commercialize the Nautilus, an operational subsea repair robot for horizontal pipelines. Finally, new subsidiaries were set up under ARV to serve two new business lines. BEDROCK provides Geospatial Location Intelligence Platform by AI & machine learning, including comprehensive data analysis. BIND, on the other hand, provides security, privacy, and seamless access to Digital Identity and Personal/Enterprise data through Web 3.0 technology.

PTTEP remains committed to creating sustainable value for the wider society (From We to World), in accordance with global practices and UN principles. This involves considering the interests of all stakeholders and ensuring energy security for the nation. To achieve this, PTTEP has developed a strategic framework consisting of three key strategies. Firstly, by maximizing the value of existing assets and expanding into core strategic areas to drive value. Secondly, by working towards achieving "Net Zero Greenhouse Gas Emission" by 2050 through decarbonization efforts. And thirdly, by diversifying and expanding into new businesses, with the aim of reaching a target of 20% of PTTEP's consolidated net income by 2030.

On the financial performance, in Q1/2023, PTTEP reported higher net profits, as a result of significantly lower non-operating losses. In Q4/2022, impairment losses of 205 MMUSD was recognized mainly from Mozambique Area 1 project, while there was none in this quarter. The operating net profit in Q1/2023 has declined, as a result of a drop in sales volume to 460,817 BOED, mainly from lower sales volume from overseas projects, coupled with a decline in average selling price following decrease in global crude price. The average selling price was then reported at 50.01 USD/BOE, while the unit cost was also reduced to 26.07 USD/BOE. As at the end of Q1/2023, PTTEP had total assets of 25,566 MMUSD, of which 4,242 MMUSD was cash on hand, while total liabilities were reported at 11,482 MMUSD, of which 3,849 MMUSD was interest-bearing debt. Total shareholders' equity stood at 14,084 MMUSD with debt-to-equity ratio at 0.27 reflecting healthy financial structure and robust financial position.

Table of key financial results

(Unit: Million US Dollar)	Q4 2022	Q1 2023	Q1 2022	Inc. (Dec.) QoQ	Inc. (Dec.) YTD
Total Revenues	2,697	2,314	2,083	(383)	231
Revenue from sales *	2,469	2,193	2,030	(276)	163
EBITDA **	1,847	1,616	1,601	(231)	15
Profit (Loss) for the period	417	569	318	152	251
Basic earnings (loss) per share (Unit: US Dollar)	0.11	0.14	0.08	0.03	0.06
Profit (Loss) from normal operation	723	592	570	(131)	22
Profit (Loss) from non-operating items	(306)	(23)	(252)	283	229

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

** Excluded provision for the Class Action settlement from Montana incident and impairment loss on assets and goodwill which were recognized during Q4/2022.



Strategies and Business Management

Strategies

PTTEP adheres to the global sustainable development practices and UN principles and operates 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 and energy transition. 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 greenhouse gas (GHG) emissions reduction plan through technology application.
- Maximize the use of renewables and explore other future energy application opportunities.
- Accelerate Carbon Capture and Storage (CCS) projects
- Pursue carbon offsetting through initiatives such as forestation and blue carbon to absorb carbon dioxide in coastal and marine ecosystem under Ocean for Life strategy.

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 works progress are as follows:

- Continually Implement 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.
- Conduct GRC Maturity Assessment to reflect GRC adaptation in PTTEP in order to perform gap improvement and level up GRC Maturity Level in 2030.
- Continually enhance Risk Management System by leveling up Chatbot to provide solutions corresponding to queries regarding Risk Management System.
- Continually develop GRC One Digital System by adding data analytic (AI feature) for more effectiveness on assurance function which can assist the decision making on capital project management process.
- Continue building GRC culture throughout several communication campaigns for all employee i.e., GRC roadshow, e-Learning to obtain the understanding on GRC principle and to ensure the effectiveness of GRC implementation that everyone has awareness and apply GRC into their work. Moreover, on external aspect, we promote good practices on GRC to communities, such as publish them through Explorer's Journal, IOD website and Facebook: PTTEP Shareholders Society to shareholders.

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 Q1/2023, the risk assessment covers 100% of its operating assets, joint ventures, and Tier-1 suppliers. Additionally, PTTEP is committed to continuously promoting diversity and capability building of foreign and local employees to ensure equal opportunities in career advancement to executive level. Moreover, PTTEP continues our efforts to enhance staff's understanding and shared responsibility for human rights through an e-learning course and various promotional materials.

PTTEP has Safety, Security, Health and Environment Management System (SSHE MS) to minimize risks and impacts from its operations. In Q1/2023, PTTEP Lost Time Injury Frequency (LTIF) was 0.07, while the Total Recordable Incident Rate (TRIR) was 0.74 case per 1 million man-hours. The LTIF and TRIR were in the average safety performance of the International Association of Oil & Gas Producers (IOGP). Furthermore, PTTEP continues the effort to raise safety awareness of all workforces through human factor clinic and learning from past incident.

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 with aim 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. For the main structure reuse, with emphasis on reusing the wellhead platform (WHP) topside, in Q1/2023, the Company has initiated a modification of unused WHP topsides in G2/61 project for further installation. As for the WHP jacket reuse study, the company has further studied the concept engineering study for a front-end engineering design (FEED) as well as conducting a cost-benefit analysis.
- **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 Q1/2023, Petroleum Institute of Thailand (PTIT), National Research Council of Thailand (NRCT) and Office of the National Security Council (NSC) signed a Memorandum of Understanding (MOU), with the cooperation from petroleum operators such as PTTEP and Chevron Thailand Exploration and Production Co., Ltd., for enhancing academic collaboration in the national maritime interests to exchange knowledge and co-sponsor research assistance related to the ecosystem around decommissioning petroleum wellhead platforms in the Gulf of Thailand in order to conserve marine biodiversity.
 - 2) **Ocean Health & Biodiversity Monitoring:** In Q1/2023, PTTEP put in place a plan to install a monitoring station for meteorological and oceanographic data at Arthit project to develop a marine database in the Gulf of Thailand to be incorporated in the PTTEP Ocean Data Platform. This also enhances the efficiency of emergency and early warning system, as well as the accuracy of ocean mathematical model prediction to support the study and disclosure of marine science data and leverage the data utilization for sustainable marine resource conservation and restoration.
 - 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 Q1/2023, PTTEP renovated the ocean waste management learning center, built community networks of ocean waste management in Pattani province and carried out fish home placement in 3 coastal conservation areas as well as establishing 2 more groups under the seafood product value enhancement project with aim to increase the abundance of marine biodiversity and promote a sustainable source of income for the local communities.

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 Q1/2023, the company maintained its cash on hand of approximately 4,242 MMUSD, and its debt-to-equity ratio at 0.27 which is in line with the Company's financial policy. The Company ensures adequate liquidity position for its existing operations and investment plans that strategically fit with its business strategy.

To manage foreign exchange (FX) risks associated with revenues from petroleum products and major expenses denominated in the same currency, PTTEP has implemented the natural hedge method. This approach enables the company to mitigate the impact of exchange rate fluctuations on its financial performance. For FX risks arising from non-USD revenues and expenses, PTTEP employs financial hedging instruments such as forwards and swaps.

In addition to FX risks, PTTEP is also able to effectively manage interest rate volatility. This is due to the fact that all of the company's interest-bearing debt is fixed rate, which ensures that fluctuations in interest rates do not have a material impact on its financial performance.

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 Q1/2023, there are 59 projects under research and development and the progress of highlight projects are as follows;

- The field trial of condensate treatment technologies, which include chemical demulsifier injection for separating particulate contaminants, adsorbent, and filtration technology, was successful. These technologies have been implemented both domestically and internationally, resulting in improved condensate treatment efficiency and reduced production costs.
- The technology for removing contaminants to support pipeline decommissioning activities, such as decontamination chemicals for pipeline cleaning and intelligent sampling PIG, underwent a field trial in the Bongkot field in Q1/2022, and its performance was satisfactory. The development team is currently working on improving the technology's performance and expanding its use to support future petroleum pipeline decommissioning activities.
- The development of a prototype robot for wellhead operation is underway. This robot is capable of detecting equipment abnormalities and autonomously manipulating process equipment on the production platform. Testing of the prototype was conducted on an offshore production platform during Q1 to Q2 of 2022, and the results were satisfactory. The development team plans to continue with the next phase of development and expand the scope to cover other production fields.
- The project to convert flare gas into Carbon Nanotubes for greenhouse gas emission reduction is currently underway. The team is working on the front-end engineering design (FEED) for the pilot production unit, which is expected to be completed in 2024. Carbon Nanotubes are being developed for various applications such as batteries, energy storage, composite materials, and more.
- 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 by the end of 2023.

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 in Q1/2023 such as;

- Received an award for the Most Outstanding Winners of the Global MIKE Award 2022: Global Most Innovative Knowledge Enterprise Award 2022. The highest accolade was granted in recognition of PTTEP and its systematic promotion of innovation and knowledge internally and through collaboration with partners across various sectors. PTTEP's corporate culture also supports the constant development of technologies and innovations for its sustainable growth.
- Received 2 awards at the Thailand Best Employer Brand Awards 2023, under the category of Best Employer Brand for Best HR strategy in line with business and for managing health at work. The awards ceremony was organized by World HRD Congress, CHRO Asia, and Employee Branding Institute to honor Thai organizations. These awards reflect that PTTEP places an importance on human resources management and benchmarks with Thailand's leading companies and which will lead toward our goal of being a sustainable organization.

- Received 6 awards at the PTT Group Operational Excellence (OpEx) Award 2023. The awards were granted across four categories of operational excellence including:
 - The Best Practice Sharing Award for PTTEP's knowledge sharing with PTT via 33 projects that enabled savings of 11,757 million Baht per year.
 - 2 Best Practice Sharing Project Awards from total 15 projects, which are MERIns™ - World's First Intelligent Sampling Pig for Pipeline Decommissioning and AiMs - AI Asset Integrity Management Solution for greater production continuity and safety.
 - Zero Unplanned Shutdown (ZUS) award for the Sinphuhorm Project and PTTEP 1 Project.
 - OEMS Assessor Certificate, which was reserved for Certified OEMS Assessor - Green Belt.

In addition, PTTEP also received the PTT Group KM Award in recognition of Maintenance & Inspection CoP Team's outstanding Knowledge Management (KM).

PTTEP takes great pride in receiving such recognitions, which motivate us to conduct our business with efficiency, transparency, accountability, and a conscientious approach towards all our stakeholders to become the "Energy Partner of Choice".



Economic Overview in the first quarter of 2022

Crude Oil Price

During Q1/2023, the average price of Dubai crude oil was 80.2 USD/barrel, down from 84.8 USD/barrel in Q4/2022, amid concerns over an economic recession. In January 2023, the Dubai price average rose to 80.4 USD/barrel, up from 77.2 USD/barrel in December 2022, primarily due to China's reopening of borders, the dismantling of its zero-COVID policy, and an increase in fuel demand as a result. The long holiday season of the Chinese New Year also led to a rise in domestic air travel. Dubai crude prices continued to recover in February, reaching 82.0 USD/barrel, as the market's worries over the economic recession eased. This was due to expectations of lower interest rate hikes and increased gasoline consumption in the U.S. and Europe, as the impact of the COVID-19 pandemic on travel decreased. However, on February 6, a massive earthquake of magnitude 7.8 in Türkiye led to the temporary shutdown of the Ceyhan oil terminal, which exports around 1 MMBPD. In March 2023, the Dubai crude price dropped to an average of 78.5 USD/barrel. This was due to The Fed's signal to keep interest rates high to curb inflation to the target level, the 10th consecutive week of crude stock builds in the U.S., with inventories reaching 480 MMBBL, and the unexpected collapse of Silicon Valley Bank (SVB) and Signature Bank (SB) of the U.S. which caused global equity concerns and raised fears of risks to other banks. Consequently, markets are reducing their oil demand and foreseeing the possibility of an economic recession.

Liquefied Natural Gas (LNG) Price

The average Asian Spot LNG price in Q1/2023 dropped significantly to 16.36 USD/MMBTU compared to the previous quarter. This was due to low LNG demand, resulting from milder winter weather across Europe and Northeast Asia. The inventory level reached 75% of capacity in late January, the highest level in the past five years, according to Refinitiv (as of January 2023). Despite additional procurement activities from price-sensitive South Asian importers such as India, Bangladesh, and Thailand, the average Asian Spot LNG price continued to decline from January through March, dropping from 20.84 USD/MMBTU to 13.24 USD/MMBTU.

Thailand's Energy Demand

The Energy Policy and Planning Office (EPPO) of the Ministry of Energy reported that domestic energy demand in January 2023 increased by approximately 3.6% compared to the same period in 2022, reaching around 2 million barrels of oil equivalent per day (MMBOED). The rise in energy consumption was mainly due to increased petroleum consumption and imported electricity for transportation and industrial uses. The overall growth can be attributed to higher economic activities in Thailand as compared to the same period in 2022.

Exchange Rates (Thai Baht against US Dollar)

The Thai baht (THB) appreciated against the US dollar (USD) in Q1/2023, closing at 34.10 compared to 34.56 at the end of 2022, despite high volatility throughout the quarter. On the negative side, lower-than-expected exports due to the global economic slowdown resulted in Thailand's current account deficits being adversely affected. However, the recovering tourism sector and the Bank of Thailand's decision to raise its interest rate from 1.25% at the end of 2022 to 1.75% in March 2023 contributed to the baht's appreciation to some extent. Nevertheless, global economic uncertainty remains a factor. High inflation rates around the world and the financial crisis in the US and Europe caused the THB to fluctuate against the USD.



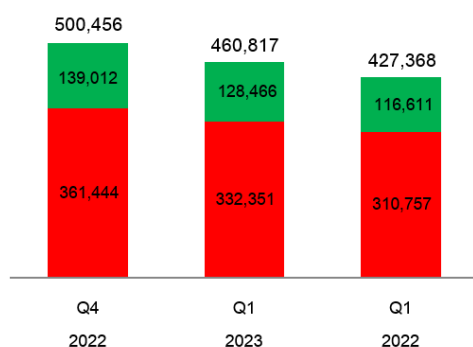
Financial Performance

Average Sales Volume and Selling Price

Unit: Barrels of Oil Equivalent per Day

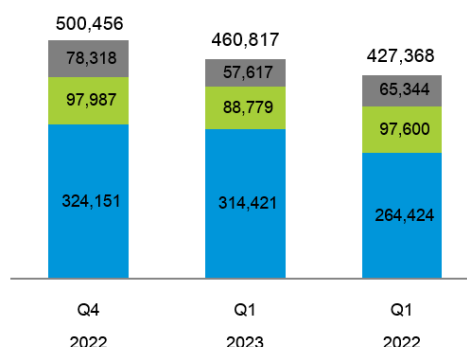
By Product Type

■ Gas ■ Liquid



By Geographical Region

■ Thailand ■ Other Southeast Asia ■ Rest of the World



Average selling price and Dubai crude oil price (Unit : US Dollar)	Q4 2022	Q1 2023	Q1 2022	Inc. (Dec.) QoQ	Inc. (Dec.) YTD
Average selling price (/BOE)	52.76	50.01	51.35	(2.75)	(1.34)
Liquid price (/BOE)	85.40	78.14	91.19	(7.26)	(13.05)
Gas price (/MMBTU)	6.70	6.52	6.07	(0.18)	0.45
Average Dubai crude oil price (/BBL)	84.77	80.23	96.21	(4.54)	(15.98)

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

For the First quarter of 2023 compared with the Fourth quarter of 2022

In Q1/2023, the average sales volume of PTTEP and its subsidiaries (the “Group”) decreased to 460,817 barrels of oil equivalent per day (BOED) or 8% when compared with Q4/2022 of 500,456 BOED, primarily due to lower gas sales volume from Oman Block 61 Project, Arthit Project, and Malaysia Block H Project, as well as lower crude sales volume from Algeria Hassi Bir Rekaiz Project. Additionally, the average selling price decreased by 5% to 50.01 USD/BOE (Q4/2022: 52.76 USD/BOE).

For the First quarter of 2023 compared with the First quarter of 2022

When compared the average sales volume of Q1/2023 with Q1/2022 of 427,368 BOED, the average sales volume increased by 8%, primarily from first production of G1/61 Project and G2/61 Project since the end of April 2022, offset with Bongkot Project end of concession in March 2023. However, the average selling price decreased by 3% to 50.01 USD/BOE (Q1/2022: 51.35 USD/BOE).

Overall Operating Results

For the First quarter of 2023 compared with the Fourth quarter of 2022

In Q1/2023, the Group had net profit of 569 MMUSD. An increase of 152 MMUSD or 36% from net profit in Q4/2022 of 417 MMUSD despite of lower revenue from sales, was primarily due to impairment loss on assets and provision for the Class Action settlement from Montara incident recognized in Q4/2022, while no such transaction in Q1/2023. The net profit for Q1/2023 of 569 MMUSD can be separated as following:

The profit from normal operation in Q1/2023 was 592 MMUSD. A decrease of 131 MMUSD from profit in Q4/2022 of 723 MMUSD was primarily from a decrease in revenue from sales of 276 MMUSD from lower average sales volume and average selling price. Operating expenses increased by 39 MMUSD, offset with depreciation, depletion and amortization decreased by 158 MMUSD was primarily from non-cash accounting transactions at the end of concession of Bongkot Project. Moreover, administrative expenses decreased by 64 MMUSD mainly from lower consulting fees and IT services.

The loss from non-operating items in Q1/2023 was 23 MMUSD. A decrease of 283 MMUSD from loss in Q4/2022 of 306 MMUSD was primarily due to the significant items occurred in Q4/2022. The significant items are the impairment loss on assets of 205 MMUSD from Mozambique Area 1 Project and Block 17/06 Project (Angola), as well as the provision for the Class Action settlement from Montara incident of 129 MMUSD, offset with other income from the contingent liability adjustment of Oman Block 61 Project amounting to 71 MMUSD, while no such transaction in Q1/2023.

For the First quarter of 2023 compared with the First quarter of 2022

In Q1/2023, the Group had net profit of 569 MMUSD. An increase of 251 MMUSD or 79% from net profit in Q1/2022 of 318 MMUSD was primarily from higher revenue from sales in Q1/2023 while massive loss from oil price hedging instruments was recognized in Q1/2022. The net profit for Q1/2023 of 569 MMUSD can be separated as following:

The profit from normal operation in Q1/2023 was 592 MMUSD. An increase of 22 MMUSD from profit in Q1/2022 of 570 MMUSD was primarily from an increase in revenue from sales of 163 MMUSD from higher average sales volume while average selling price decreased. However, operating expenses increased by 163 MMUSD, offset with depreciation, depletion and amortization decreased by 25 MMUSD was primarily from non-cash accounting transactions at the end of concession of Bongkot Project.

The loss from non-operating items in Q1/2023 was 23 MMUSD. A decrease of 229 MMUSD from loss in Q1/2022 of 252 MMUSD was primarily from gain from oil price hedging instruments of 1 MMUSD (included unrealized gain from mark-to-market of 5 MMUSD) due to a downward trend of forward oil price, while loss of 240 MMUSD was recognized in Q1/2022 (included unrealized loss from mark-to-market of 195 MMUSD) due to a strong upward trend of forward oil price.

Operating Results by Segments

Net Profit (loss)	Q4 2022	Q1 2023	Q1 2022	Inc. (Dec.) QoQ	Inc. (Dec.) YTD
(Unit: Million US Dollar)					
Exploration and production	567	664	631	97	33
Thailand	524	413	418	(111)	(5)
Other Southeast Asia	205	163	166	(42)	(3)
Middle East	118	69	54	(49)	15
Australia	(131)	1	(1)	132	2
America	(3)	(2)	(7)	1	5
Africa	(148)	19	(3)	167	22
Others	2	1	4	(1)	(3)
Head office and others	(150)	(95)	(313)	55	218
Total	417	569	318	152	251

For the First quarter of 2023 compared with the Fourth quarter of 2022

For Q1/2023, the Group reported net profit of 569 MMUSD. An increase of 152 MMUSD when compared with net profit of 417 MMUSD in Q4/2022 was primarily from an increase in Exploration and Production segment in Africa of 167 MMUSD and Australia of 132 MMUSD, while there was a decrease in Thailand of 111 MMUSD.

Exploration and Production segment

- **Africa**

In Q1/2023, Africa reported net profit of 19 MMUSD. A change of 167 MMUSD when compared with net loss of 148 MMUSD in Q4/2022 was primarily from the impairment loss on assets from Mozambique Area 1 Project and the loss after reclassifying net assets of Block 17/06 Project (Angola) to assets held-for-sale in Q4/2022 while no such transaction in Q1/2023.

- **Australia**

In Q1/2023, Australia reported net profit of 1 MMUSD. A change of 132 MMUSD when compared with net loss of 131 MMUSD in Q4/2022 was primarily from administrative expenses as the provision for the Class Action settlement from Montara incident was recognized in Q4/2022 while no such transaction in Q1/2023.

- **Thailand**

In Q1/2023, Thailand reported net profit of 413 MMUSD. A decrease of 111 MMUSD when compared with net profit of 524 MMUSD in Q4/2022 was primarily from lower revenue from sales due to decreases in average selling price and average sales volume. Moreover, there were higher operating expenses, offset with lower depreciation, depletion and amortization mainly from non-cash accounting transactions at the end of concession of Bongkot Project.

For the First quarter of 2023 compared with the First quarter of 2022

For Q1/2023, the group reported net profit of 569 MMUSD. An increase of 251 MMUSD when compared with net profit of 318 MMUSD in Q1/2022 was primarily from a decrease in Head Office and Others segment of 218 MMUSD, while there was an increase in Exploration and Production segment in Africa of 22 MMUSD.

Head Office and Others segment

In Q1/2023, Head Office and Others segment reported net loss of 95 MMUSD, a decrease of 218 MMUSD when compared with net loss of 313 MMUSD in Q1/2022 was primarily from gain from oil price hedging instruments due to a downward trend of forward oil price, while Q1/2022 recognized loss due to a strong upward trend of forward oil price.

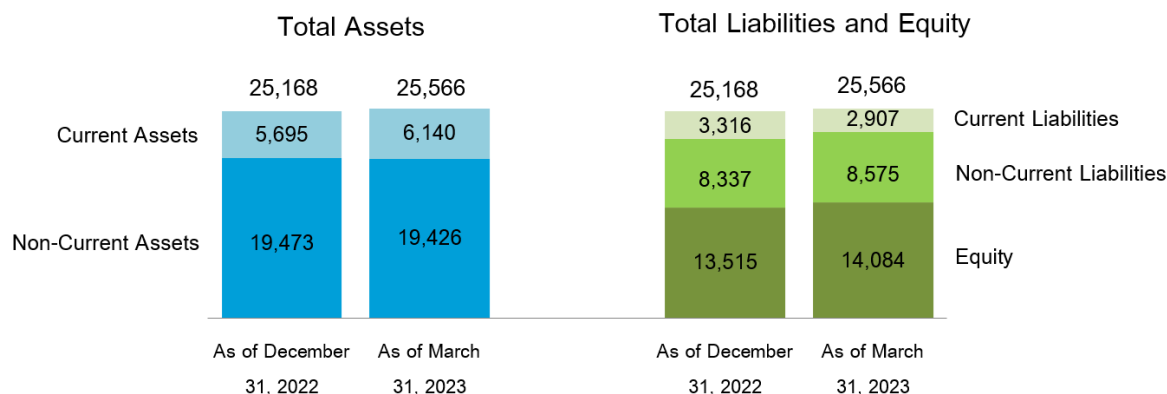
Exploration and Production segment

- Africa

In Q1/2023, Africa reported net profit of 19 MMUSD. A change of 22 MMUSD when compared with net loss of 3 MMUSD in Q1/2022 was primarily from higher revenue from sales since Algeria Hassi Bir Rekaiz Project started the first crude oil sales in October 2022.

Financial Position

Unit: Million US Dollar



Assets

As at March 31, 2023, the Group had total assets of 25,566 MMUSD. An increase of 398 MMUSD from total assets as at December 31, 2022 of 25,168 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 445 MMUSD from higher cash and cash equivalents of 703 MMUSD while trade and other receivables decreased by 258 MMUSD. Also, other current assets decreased by 125 MMUSD mainly from the prepayment in relation to provision for decommissioning costs was derecognized in accordance with Asset Transfer Agreement at the end of concession 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, right-of-use assets, goodwill, exploration and evaluation assets and deferred tax assets, decreased by 47 MMUSD as deferred tax assets decreased by 223 MMUSD and goodwill decreased by 75 MMUSD from non-cash accounting transactions at the end of concession of Bongkot Project, offset with higher property, plant and equipment of 227 MMUSD, primarily from G2/61 Project, G1/61 Project and Zawtika Project.

Liabilities

As at March 31, 2023, the Group had total liabilities of 11,482 MMUSD. A decrease of 171 MMUSD from total liabilities as at December 31, 2022 of 11,653 MMUSD was primarily due to;

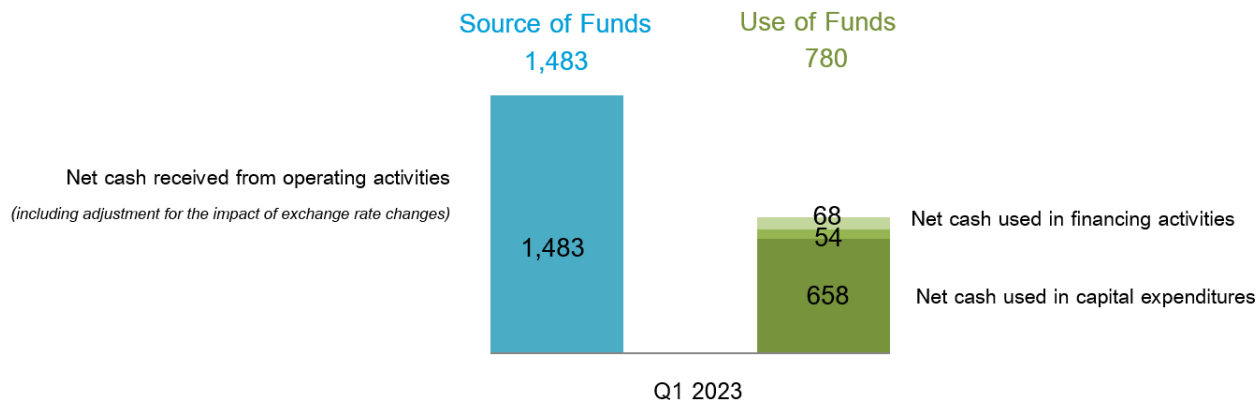
- (1) Current liabilities, which were primarily comprised of trade and other payables, current portion of long-term liabilities, income tax payable and short-term provisions, decreased by 409 MMUSD from lower trade and other payables of 240 MMUSD. Moreover, short-term provisions decreased by 231 MMUSD mainly from provision for decommissioning cost at the end of concession of Bongkot Project.
- (2) Non-current liabilities, which were primarily comprised of debentures, deferred tax liabilities and provision for decommission costs, increased by 238 MMUSD from higher provision for decommissioning costs of USD 268 MMUSD which was primarily from G2/61 Project.

Equity

As at March 31, 2023, the Group had equity of 14,084 MMUSD. An increase of 569 MMUSD when compared with December 31, 2022 of 13,515 MMUSD was primarily due to the net profit of 569 MMUSD in Q1/2023.

Cash Flows

Unit: Million US Dollar



As at March 31, 2023, the Group had cash and cash equivalents of 4,242 MMUSD. An increase of 703 MMUSD when compared with December 31, 2022 of 3,539 MMUSD.

Source of funds amount of 1,483 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 payment for expenses and income taxes.

Uses of funds amount of 780 MMUSD primarily from **Net cash used in additional capital expenditures** in exploration and production assets mainly from G1/61 Project, G2/61 project and Zawtika project, as well as **Net cash used in investing activities** primarily from payment for short-term investment and **Net cash used in financing activities** primarily from payments for lease liabilities and interests during Q1/2023.

Key Financial Ratios

	Q4 2022	Q1 2023	Q1 2022
Profitability Ratio (%)			
EBITDA* margin	73.48	72.54	77.69
Return on equity	15.41	16.99	9.39
Net profit margin	20.69	22.28	15.13
Leverage Ratio (Times)			
Debt to equity	0.28	0.27	0.33
Debt to EBITDA*	0.56	0.56	0.72

* EBITDA excluded provision for the Class Action settlement from Montana incident and impairment loss on assets and goodwill which were recognized during Q4/2022.

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

As of Q1/2023, PTTEP Group has over 50 projects with domestic and international operations in 14 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 Q1/2023, the average sales volume from projects in Thailand is 314,421 BOED, accounting for 68% of total sales volume. Average sales volume from other countries in this region is 88,779 BOED, which accounted for 19% of total sales volume.



Projects	Participation Interest	Operator	Activities
Projects in Thailand			
<i>Production Phase</i>			
1. S1	100%	PTTEP	The project is producing crude oil, natural gas and liquefied petroleum gas (LPG). Currently, the project continuously drills exploration and development wells to maintain its production level. Environmental impact assessments are 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. On March 7, 2023, the concession has expired, and the operatorship has been transferred to PTTEP Energy Development Company Limited (PTTEP ED), under G2/61 Project.
3. Arthit	80%	PTTEP	The project is producing natural gas and condensate. In Q1/2023, the project commenced producing gas from the new production well and was able to produce gas more than the GSA at CDC 294 MMSCFD continuously.
4. Contract 4	60%	Chevron	The project is producing natural gas, condensate, and crude oil. In Q1/2023, 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. The project is producing gas at 210 MMSCFD and is currently expediting drilling production wells and has planned to install 4 wellhead platforms in 2023 which a target to ramp up gas production to 400 MMSCFD in mid-2023 and 600 MMSCFD within the end of 2023.
6. G2/61 (Bongkot field)	100%	PTTEP	The project is producing natural gas, condensate. On Mar 8, 2023, the Bongkot transition was completed. Currently, the project is producing natural gas at 700 - 800 MMSCFD. In addition, the project is in the construction and installation of production platforms and continuous drilling development wells aiming to support production according to PSC.
7. Malaysia-Thailand Joint Development Area (MTJDA)	50%	CPOC	The Project is producing natural gas. In Q1/2023, the project completed installing 2 production platforms and continuously drilled production wells in order to maintain the production level. In addition, the project also drilled exploration and development wells in preparation for the further development phase.
Projects in Myanmar			
<i>Production Phase</i>			
8. Zawtika	80%	PTTEP	The project is natural gas field located in the Gulf of Moattama. In Q1/2023, the project was produced as planned and continued developing Phase 1D in order to maintain the production level. Currently, the project has completed installing 4 production platforms and drilling 5 appraisal wells.
9. Yadana	37.1%	PTTEP	The project is producing natural gas. Currently, the project is able to produce as planned.
<i>Exploration Phase</i>			
10. Myanmar M3	100%	PTTEP	The project is located offshore in the Gulf of Moattama. The project is currently pending development.

Projects	Participation Interest	Operator	Activities
Projects in Malaysia			
<i>Production Phase</i>			
11. Malaysia Block K	7.2 - 56%	PTTEP	The project is oil producing field consisting of Kikeh, Siakap North-Petai (SNP), and Gumusut-Kakap (GK) fields located offshore Sabah. Currently, the project is able to produce as planned.
12. Malaysia SK309 and SK311	42 – 59.5%	PTTEP	The projects are oil and gas producing fields located in the shallow water offshore Sarawak. Currently, the projects produce 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 Q1/2023, the project's production volume decreased due to the temporary suspension of the purchaser's storage vessel since Feb 10, 2023, and the operation was able to return on Mar 10, 2023. In addition, the project has planned to drill 2 exploration wells.
<i>Exploration Phase</i>			
14. Malaysia SK410B	42.5%	PTTEP	The project is located in offshore Sarawak and is in the Front-End Engineering Design (FEED) process with the target to complete by Q3/2023. In parallel, the commercial negotiation has been started to support the Final Investment Decision (FID) within 2023. Currently, the project is in the process to conduct further studies and evaluate the paprika-1 for future development plan.
15. Malaysia SK417	80%	PTTEP	The project is located in shallow water offshore Sarawak and is in the preparation process for drilling at Nangka to evaluate the field potential along with studies and preparation for drilling another exploration well.
16. Malaysia SK405B	59.5%	PTTEP	The project is located in shallow water offshore Sarawak and is currently drilling 1 exploration well and evaluating 1 exploration well after the discovery of crude oil and natural gas reservoirs.
17. Malaysia SK438	80%	PTTEP	The project is located in shallow water offshore Sarawak. Currently, the project is preparing for drilling exploration well in Q2/2023 and Q3/2023.
18. Malaysia SK314A	59.5%	PTTEP	The project is located in shallow water offshore Sarawak. In Q1/2023, the project was in the process of reviewing the petroleum potential of the exploration block and completed drilling 2 exploration wells which discovered the petroleum potential on 1 exploration well. Currently, the project is in evaluation and will be further informed to JV Partners.
19. Malaysia PM407	55%	PTTEP	The project is located in shallow water offshore Peninsular. In Q1/2023, the project was in process of commencement to drill the 1st exploration well according to commitment.

Projects	Participation Interest	Operator	Activities
20. Malaysia PM415	70%	PTTEP	The project is located in shallow water offshore Peninsular. In 2022, the project completed post-drilling evaluation which does not have sufficient petroleum potential for commercial development. In Q1/2023, the project was in the preparation process for block relinquishment after the exploration period has ended.
21. Malaysia SB412	60%	PTTEP	The project is located in shallow-deep water offshore Sabah. In Q1/2023, the project has performed the geological and geophysical studies to evaluate the petroleum potential of the block.
22. Malaysia SK325	32.5%	PCSB	The project is located in shallow water offshore Sarawak and is currently in the preparation process for the commencement of exploration activities and receiving the data of geological and geophysical, infill well, and 3D seismic.
Projects in Vietnam			
<i>Production Phase</i>			
23. Vietnam 9-2	25%	HV JOC	The project is producing natural gas and crude oil located offshore southeast of Vietnam. In Q1/2023, the project completed drilling 1 development well and also was under negotiation and preparation for Petroleum Contract Extension for another 5 years, which result is expected in 2023.
24. Vietnam 16-1	28.5%	HL JOC	The project is producing natural gas and crude oil located offshore southeast of Vietnam. In Q1/2023, the project was under negotiation and preparation for Petroleum Contract Extension for another 5 years, which result is expected in 2023.
<i>Exploration Phase</i>			
25. 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>			
26. 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.
27. 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 54,000 barrels per day (BPD), respectively.
<i>Exploration Phase</i>			
28. Oman Onshore block 12	20%	TotalEnergies	The project is located in central Oman. Currently, the project is in the geological and geophysical studies process and has planned to drill 2 exploration wells in 2023-2024.
Project in United Arab Emirates (UAE)			
<i>Exploration Phase</i>			
29. Abu Dhabi Offshore 1	30%	Eni	The project is located in offshore northwest of Abu Dhabi. Currently, the project is in the geological study and evaluation process of the petroleum potential for the future exploration plan and preparation of geological and geophysical study reports.
30. Abu Dhabi Offshore 2	30%	Eni	The project is located in offshore northwest of Abu Dhabi. In Q1/2023, the project completed drilling 1 appraisal well and is currently in the preparation process of a development plan for the petroleum potential area.
31. Abu Dhabi Offshore 3	30%	Eni	The project is located in 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 2024-2027.

Projects	Participation Interest	Operator	Activities
32. Sharjah Onshore Area A	25%	Eni	The project is located onshore in the central part of Sharjah. The project is in preparation to drill 1 exploration well in early April 2023.
33. Sharjah Onshore Area C	25%	Eni	The project is located onshore in the central part of Sharjah. The project is in the process to interpret 3D seismic survey in order to assess the petroleum potential.
Projects in People's Democratic Republic of Algeria (Algeria)			
<i>Production Phase</i>			
34. 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 Q1/2023 was at approximately 16,500 BPD.
35. Algeria Hassi Bir Rekaiz	49%	GHBR	The project is located onshore in the eastern part of Algeria. The average crude oil production in Q1/2023 was at approximately 13,800 BPD and in the process to increase production to 17,000 BPD at the end of 2023.
Project in Republic of Mozambique (Mozambique)			
<i>Development Phase</i>			
36. 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. Currently, the security situation and the plans to return to the area of people, government, and services are constantly improving.
Project in Republic of Angola (Angola)			
<i>Development Phase</i>			
37. 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>			
38. PTTEP Australasia	90 - 100%	PTTEP	<p>This Project is located in Australia and has 6 concession permits. In 2022, after the final geological studies, confirmed that Orchid Field (AC/P54), Audacious Field (AC/RL6) and Katandra Field (AC/RL10) do have not sufficient petroleum potential for commercially developed. In Q1/2023, the company submitted a request to return AC/P54 and AC/RL6. On February 27, 2023, the company has been approved to transfer its shares in AC/RL10 to Bengal Energy Limited. However, AC/RL10 was expiration on March 21, 2023.</p> <p>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 February 23, 2023, the Federal Court of Australia has approved the in-principle agreement for the settlement and also approved settlement allocation approach to the group members in March 2023. The payment will be processed as per court approval.</p>

Projects in the Americas



Projects	Participation Interest	Operator	Activities
Projects in Canada			
<i>Exploration Phase</i>			
39. 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>			
40. 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.
41. 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>			
42. Barreirinhas AP1 and Brazil BM-ES-23	25% 20%	Shell / Petrobras	The project is located offshore of Brazil. Currently, 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 have been fulfilled on February 23, 2023.

Decarbonize

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

- Currently, PTTEP has accumulated avoidance and reduction of greenhouse gas emissions at 1.7 million tonnes of CO₂ equivalent or greenhouse gas emissions intensity by 13.6 % from 2020 base year. In addition, PTTEP is conducting a front-end engineering and design (FEED) at Arthit field and a feasibility study at Lang Lebah field for Carbon Capture and Storage (CCS) project.
- PTTEP has foreseen an opportunity to support greenhouse gas offsetting through initiatives to absorb greenhouse gas from the atmosphere. In Q1/2023, PTTEP kicked off its 1st year of maintaining mangrove forestation planted of 1,000 rais in 2022 and prepared to register the Voluntary Greenhouse Gas Reduction (T-VER) with the Thailand Greenhouse Gas Management Organization (Public Organization) or TGO. PTTEP is also preparing to plant 4,007 rais of mangrove forestation, which already approved by the Department of Marine and Coastal Resources (DMCR). Additionally, PTTEP is in the process of signing a contract on preserving and restoring natural resources by Mae Fah Luang Foundation under Royal Patronage for 20,000 rais after signed a MOU in Q4/2022.
- As part of our collaboration with partners, PTTEP signed a MOU to launch joint actions on climate change and biodiversity conservation with the Office of Natural Resources and Environmental Policy and Planning or ONEP. The MOU aims to support and drive actions to address climate change and support Thailand to achieve carbon neutrality and become a low-carbon society while promoting the conservation and rehabilitation of natural resources and biodiversity as well as establishing a link of biodiversity data sources with national database. It also entails supports to public-private activities in the national, regional, and international levels and the building of public awareness.

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 has 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 in Q1/2023 are as follows:

1) AI & Robotics Ventures (ARV)

- ARV in collaboration with the Department of Highways deployed "HORRUS", ARV's automated unmanned aerial vehicle technology, to monitor and analyze traffic conditions and accidents during December 30, 2022 – January 2, 2023. HORRUS provided photographs, videos, together with other necessary information in real time for Department of Highways officers' further analysis. Machine-learning technologies are used for processing traffic images and detecting abnormal events on the road, enabling officers to accurately and promptly assess situations, and take efficient action. This project is the first Proof of Concept (PoC) of HORRUS implemented to aid in traffic management.
- ARV has developed and further tested ARV Platform, which is the central platform for controlling ground-based autonomous robots such as autonomous mobile manipulator robots (MARs) and quadrupedal inspection robots (Laika) for inspection and surveillance in hazardous environments. The ARV Platform can also manage and analyze data obtained from these robots. In May 2023, the platform and automated robots will be tested together in an offshore working environment.

2) ARV's Start-ups

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

- On January 10, 2023, S2 Robotics Company Limited was registered as a joint venture between ROVULA and Kongsberg Ferrotech, a Norwegian technology start-up. The aim of this joint venture is to commercialize the Nautilus, an operational subsea flow-line control and repair robot for horizontal pipelines. The robot successfully completed the Technology Readiness Level-7 trials last year. Additionally, S2 Robotics has signed an agreement with Eureka Efektif to expand Nautilus' subsea pipeline inspection and maintenance business in Malaysia.
- ROVULA exhibited its untethered intelligent underwater inspection robot (Xplorer) at the 15th International Petroleum Technology Conference (IPTC 2023). The Xplorer was developed for underwater equipment inspection, including petroleum pipelines, and is capable of collecting special corrosion measurement data.
- ZeaQuest, a joint venture between ROVULA and Mermaid Subsea Services Company Limited (Thailand), won the bid for a subsea structure inspection project in the Gulf of Thailand, scheduled to execute from April to November this year.

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

- SKYLLER exhibited three technologies at the IPTC 2023 conference; 1) **Skyller Platform**, a platform that provides comprehensive inspection services for various infrastructure assets, which analyzes and processes data from drones, ground-robots, and sensors, to provide fast, accurate and convenient inspection results; 2) **Digital Twin**, a simulation that creates a virtual replica of physical assets or places in three dimensions, and 3) **Augmented Reality (AR)** that combines real environments with virtual simulations to build engagement and create new customer experiences.
- SKYLLER won the bid from the Department of Marine and Coastal Resources to conduct a high-resolution aerial photography project using unmanned aerial vehicles and data analysis. This project aims to survey and monitor the eastern coast of Phuket and has an implementation period from February 2023 to May 2023.

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

- VARUNA publicly launched its intelligence software, "VLM Forest" (or VARUNA Land Monitoring for Forestry) at the IPTC 2023. VLM Forest is a platform that provides smart forestry solutions capable of analyzing and displaying information about green areas. The platform uses multispectral survey drones to capture high-resolution images with centimeter-level accuracy over large areas together with Normalized Difference Vegetation Index (NDVI) images from satellites to acquire detailed spatial information. This information is then analyzed and processed using artificial intelligence (AI) to create a database that allows users to plan, develop, and restore the area in accordance with their desired goals.
- VARUNA launched a pilot project in carbon farming to reduce greenhouse gas emissions and promote sustainable agriculture. Technology and tools have been developed to collect data and introduce knowledge, such as crop rotation, alternative wetting and drying (AWD) rice cultivation, and burning reduction in agricultural areas. These carbon farms increase carbon accumulation in the soil and reduce greenhouse gas emissions from various agricultural activities. Moreover, participating farmers can earn income by buying and selling carbon credits generated from their project areas.

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

- CARIVA collaborated with Bedrock Analytics to develop the "IoT devices for Smart Cities Project" for the Sub-district Health Promoting Hospital Network in Khon Kaen Province, in order to provide safety and protection for the elderly by using the smart wearable devices and a care kit. In the event of an accident such as an elder falling over, the

smart wearable device will detect and alert the nearest hospital, allowing medical officers to provide immediate assistance.

- CARIVA and Sharmble Technology Co., Ltd. have successfully co-developed and implemented a health service system on Cariva's ARVIC application. The system includes medical consultation (Tele-consultation) and pharmacist consultation (Tele-pharmacy), as well as an online payment system (payment gateway) to speed up the purchase of health-related goods and services for customers.
- CARIVA has successfully developed and implemented Health Mall Block technology on the BeDee application of Bangkok Dusit Medical Services Public Company Limited (BDMS). The technology provides a complete range of health care services including Tele-consultation, Tele-pharmacy, and an online health store that offers rapid delivery within 90 minutes for customers which aligns with the standards of BDMS group.

BEDROCK: Specializing in Location Intelligence

- On January 10, 2023, Bedrock Analytics Company Limited was registered and established as a leading developer of geospatial data infrastructure and platform. BEDROCK provides software services for data analysis, map services, geospatial software services, and also comprehensive data analysis, using artificial intelligence and machine learning technologies. These services enable both public and private sectors to access in-depth business insights and advanced technologies efficiently, quickly, and comprehensively.
- In Q1/2023, BEDROCK signed MoUs with more than 80 municipalities, local governments, and other foundations across the country, including Hat Yai City Municipality, Yala City Municipality, Roi Et Municipality, to develop and disseminate the City Digital Data Platform (CDDP). The goal of these partnerships is to bring knowledge, technology, artificial intelligence, and innovation to the implementation of various municipal missions, with the aim of supporting public services and improving operational efficiency.
- BEDROCK collaborated with Chiang Mai University, Chulalongkorn University, The Municipal League of Thailand and Program Management Unit for Area Based Development to organize the "Training courses: City Data Planner (CDP) Batch 1". The purpose of this program is to develop skills and knowledge of local Thai officers in preparing for smart city development. The training course was attended by municipal officers from all over the country, a total of 78 municipalities, who were given the opportunity to present a research project that will be further developed into local development projects based on the concept of a smart city.

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

- On January 10, 2023, BIND Systems Company Limited was registered and established as a provider of systems and tools for creating security, privacy, and data control. BIND's innovation applies Web 3.0 technologies such as Blockchain and Cryptography to create a Digital Corporate Identity (DCID) system for the Know-your-customer (KYC) process in opening a corporate account with a financial institution.
- On February 24 – 25, 2023, BIND participated in the Digital Governance Thailand 2023 under the theme of Happiness Creation, organized by the Electronic Transactions Development Agency (ETDA). This event brought together a collaborative network to promote and support the e-Transaction Ecosystem by applying digital technology in various dimensions. BIND has showcased its digital capabilities and services to the public, as well as demonstrating its readiness to support, collaborate, and drive digital operations with the government sector.
- In March, BIND released the DCID system for the Indonesian and Indian markets. BIND also presented the DCID system to a number of renown financial institutions, including Bank of America in Southeast Asia and ICICI Bank for India; both banks are considering piloting the system in the region with BIND.

- BIND has continued developing further features for the DCID system to meet the specific needs of its customers, such as Anti-Money Laundering (AML) check, AI-assistant for onboarding, AI-assistant in pre-sales activities of banks, as well as collaboration modules to facilitate interactions between banks and corporates. Additionally, BIND is developing systems and products to prepare for planned widescale expansion.

Other Updates on Beyond E&P Businesses

Gas to Power Project

The Myanmar government granted PTTEP an exclusive right to develop the Integrated Domestic Gas-to-Power Project since 2020. The project has been delayed from the current situation in Myanmar.

Green e-methanol Project

PTTEP and another 5 multinational companies have signed a Memorandum of Understanding (MoU) on a 'Green Methanol Value Chain Collaboration' to explore the feasibility of establishing a green e-methanol pilot plant in Singapore. Green e-methanol is being considered as one of the candidates for alternate fuel to reduce greenhouse gas emissions in various industries, including the maritime industry, which has legal frameworks and standards such as the EU Emission Trading System (EU ETS), Fuel EU Maritime, and the International Maritime Organization (IMO) decarbonization target. Moreover, the marine industry has ordered a significant number of vessels powered by methanol fuel, which can significantly reduce carbon dioxide emissions and support the company's goals of becoming a low-carbon organization.

Carbon Capture and Storage (CCS) Project

- PTTEP and PTT Group companies signed a MoU to conduct a feasibility study on the application of Carbon Capture and Storage (CCS) under the concept of CCS Hub Model. The study started off in PTT Group's operational sites in Rayong and Chonburi provinces, targeting the reduction of emissions from the Group and nearby industries.
- PTTEP, INPEX CORPORATION (INPEX) and JGC Holdings Corporation (JGC) have initiated a collaboration to explore the potential development of a CCS project in Thailand, aimed at reducing greenhouse gas emissions from industries in the future.

S1 Solar Farm

The S1 Solar Farm Project is located in Lan Krabue District, Kamphaeng Phet Province, covering an area of approximately 110 rais and has a capacity of approximately 9.98 megawatts. The objective of this project is to help reduce carbon dioxide emissions by generating electricity from renewable energy for use in the S1 project. Currently, the project is under construction and is expected to achieve Commercial Operation Date (COD) in Q2/2023.



Business Outlook

Oil Price Outlook

The demand for crude oil is expected to decline in Q2/2023 due to concerns over interest rate hikes by several central banks, which could lead to an economic slowdown. However, it is crucial to closely monitor economic signals in China, particularly after the country's opening. If the demand for oil surpasses market expectations, it could tighten the overall market and positively impact prices. Furthermore, the high season of travel in the U.S. and Europe is expected to increase the demand for crude oil in Q2/2023.

Regarding oil supply, despite the EU oil embargo and price cap on Russian crude exports since December 5, 2022, Russia has continued to produce and sell its crude oil to other countries. However, this may result in a slight reduction in Russian crude production. On the other hand, OPEC+ has surprised the market by announcing a reduction in its production target by an additional 1.16 MMBPD for the rest of the year. This decision is likely to lead to a tight supply of crude oil in 2023. In conclusion, PTTEP anticipates that the oil market balance will remain tight while economic concerns continue to play a significant role, which is likely to result in Dubai price forecasts ranging from 70-90 USD/barrel in 2023. However, several uncertainties persist, such as global economic situations, interest rates, strategic petroleum reserve plans, the ongoing Russia-Ukraine conflict, and geopolitical tensions in various countries.

LNG Market Outlook

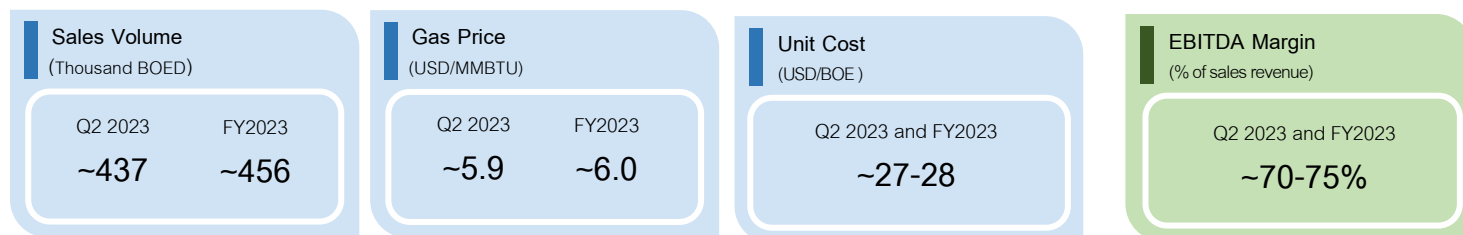
The oversupply situation in the global LNG market is expected to persist throughout 2023, with the total production capacity of existing and upcoming LNG projects increasing by 12 MTPA from 2022 to 433 MTPA (approximately 3% growth), while demand for LNG is expected to be around 412 MTPA (source: FGE as of March 2023). The average 2023 Asian Spot LNG price is forecasted to range between 14-26 USD/MMBTU (source: Wood Mackenzie as of March 2023 and FGE as of February 2023). Other factors to watch in the LNG market include the anticipated surplus of around 2.7 MT of LNG available for Europe this summer (source: Refinitiv as of March 2023). While LNG demand is expected to gradually increase due to market liberalization in several Asian countries, the market will also depend on China's demand recovery to balance the surplus. Additionally, Europe is expected to continue contracting LNG to prepare for winter this year.

Thai Economy and Foreign Exchange Outlook

According to the Bank of Thailand, the economy is expected to grow by 3.6% in 2023, driven primarily by the strong recovery of Thailand's tourism industry, increased international flight capacity, and growing private consumption. However, the country's exports may face challenges due to the global economic slowdown. The Bank of Thailand sees gradual monetary policy normalization as suitable to ensure stable economic growth in the long run. Despite these positive projections, the Thai Baht may experience volatility in 2023 due to several factors, including global economic uncertainty and the US Federal Reserve's monetary policy, which is expected to remain high before gradually decreasing towards the end of the year. Nevertheless, the Baht may appreciate due to Thailand's tourism recovery and the Bank of Thailand's monetary policy, which is anticipated to raise its policy rate once more during the year.

PTTEP's performance outlook for the second quarter and 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 75-80 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 second quarter and full year 2023 to be approximately 437,000 and 456,000 barrels of oil equivalent per day, respectively. Sales volume is expected to decline in 2023, compared to the previous year, as a result of lower sales volume from overseas projects.

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 second quarter and full year 2023 is estimated at approximately 5.9 and 6.0 USD/MMBTU, respectively, lower than the previous year, reflecting 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, as well as lower Dubai price assumption which affects the gas price.
- The Company has entered into oil price hedging contracts, where the outstanding volume as at the end of the first quarter of 2023 was 4.6 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 second 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.